QM (PRC - 02)
Last Assignment
1304 Questions
For
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Last Assignment Mixed Questions of All chapters

1) Consider the following sample: 4.5, 4.9, 5.2, 5.6, 6.2

With 99% confidence level the population mean is between:

a) 3.94 & 6.62	b) 5.92 & 6.08
c) 4.99 & 5.91	d) 5.22 & 6.08

2) Which of the following are correct about sampling distribution?

i. Sampling distribution of mean is a Normal Distribution about its mean
ii. The mean of the sampling distribution is the same as the mean of population

a) Only statement 1 is correct	b) Only statement 2 is correct
c) Both statements are correct	d) None of the above are correct

3) Which of the following are correct about sampling distribution?

iii. The mean of the sampling distribution is the same as the mean of population
iv. Sampling distribution is systematical about its mean

a) Only statement 1 is correct	b) Only statement 2 is correct
c) Both statements are correct	d) None of the above are correct

4) Which of the statement as regard to variance is/are correct?

i. It can never be smaller than standard deviation
ii. It can never be zero

a) Both statements are not correct	b) Both statements are correct
c) Only statement 1 is correct	d) Only statement 2 is correct

5) Which of the following statement regarding scatter diagram is/are correct?

I. It leads to more accurate results if the collected data is atypical
II. It might indicate a relationship where there is none

a) Only statement 1 is correct	b) Only statement 2 is correct
c) Both statements are correct	d) None of the above are correct

6) From a given finite population samples are drawn with replacement if the sample size is measured from 10 to 100 the standard error would

a) Decrease by 90%	b) Decrease by 21.62%
c) Decrease by 68.38%	d) Decrease by 31.62%

7) There are five red and seven black cars for sale at F wheels. If 2 cars are sold what is the probability that both are red

a) 0.6364	b) 0.1515
c) 0.3636	d) 0.4167

8) Which of the following statement as regard to normal distribution is/are correct?

i. Both tails of the distribution approach and meet the horizontal axis at a finite but high value
ii. Lower Standard Deviation leads to a flatter curve

a) Only statement 1 is correct	b) Only statement 2 is correct
c) Both statements are correct	d) None of the above are correct

9) The weights of bag of rice packed on a machine are normally distributed with mean 5.15kg and SD 0.05kg if a bag is picked at random probability that it weighs less than 5 kg is:

a) 0.9987	b) 0.5013
c) 0.4987	d) 0.0013

10) The events A and B are mutually exclusive if P(A)=0.5 and P(B)=0.4 then P (A OR B) is:

a) 0.1	b) 0.54
c) 0.2	d) 0.9

11) A 4-digit pin code can begin with any number except 0 ,1,2. If repetition of the same digit is allowed the probability that the pin will begin with 3 is?

a) 1/70	b) 1/90
c) 1/80	d) 1/49

12) Following CPI has been computed taking 2008 as base year.

Year	CPI
2008	104.98
2009	100
2010	116.19
2011	115.11
2012	132.01

Yearly inflation/ deflation for the above data shall be?

a) (4.98%), 5.83%, 7.75%, 12.80%	b) 4.98%, 6.19%, 8.41%, 14.69%
c) (4.74%), 6.19%, 8.40%, 14.68%	d) 4.74%, 6.19%, 8.40%, 14.68%

13) If a consignment of 25 auto batteries 3 are defective. If a random sample of 5 batteries is selected the probability of having exactly 2 defective batteries is:

a) 0.053	b) 0.035
c) 0.12	d) 0.087

14) Which of the following statement as regard to the value of the correlation coefficient is/are correct?

i. It always greater than zero
ii. It always lies in the range of -1 to +1

a) Only statement 1 is correct	b) Only statement 2 is correct
c) Both statements are correct	d) None of the above are correct

15) A sample of 100 employees of an entity has a mean weight of 170 pounds with a SD of 5 pounds. Which pf the following sample size will result in a confidence interval of mean +! Pound for this date at the 90% confidence interval?

a) 3	b) 280
c) 20	d) 68

16) Which of the following construction of null and alternative hypothesis is/are correct? (Note that population mean in both cases is 36)

i. The same data provide evidence that the population mean is less than 36. Therefor:
$H_O = \mu < 36$
$H_a = \mu = 36$

ii. The sample data provide evidence that the population mean is greater than 36. Therefore,
$H_O = \mu = 36$
$H_1 = \mu > 36$

a) Only statement 1 is correct	b) Only statement 2 is correct
c) Both statements are correct	d) None of the above are correct

17) An automobile company reports that the average annual maintenance cost for its 1300 cc car is currently RS 11025. A random sample of 100 customers has mean annual maintenance of RS. 11418 and SD of RS 1775. The calculated and table values of z in this case at 1% level of significance is:

a) -2.214 & 2.576	b) 2.214 & 2.330
c) -2.214 & 2.330	d) 2.214 & 2.576

18) Online booking system of food channel receives an average of two orders in every four minutes. Assuming an approx. poisson distribution that five or more orders will be received during a period of eight minutes.

a) 0.3712	b) 0.4679
c) 0.5321	d) 0.4679

19) Which of the following statement is correct?

i. Range is measured of dispersion
ii. Percentile is a measure of dispersion

a) Only statement 1 is correct	b) Only statement 2 is correct
c) Both statements are correct	d) None of the above are correct

20) The average performance of the students of a college over last 10 years shows that the percentages of students securing A, B, C grades are 15%, 30% respectively. The current year result shows that out of total 400 students the number of students securing A, B, C grades aggregated to 64, 144 respectively. calculate the value of Chi square for this data would be:

a) 3.44	b) 2.24
c) 8.63	d) 8.16

21) Which of the following is/ are correct about random sample?

i. It is bias free sample
ii. It is not suitable for investigator who are interested in issues related to sub group of population

a) Only statement 1 is correct	b) Only statement 2 is correct
c) Both statements are correct	d) None of the above are correct

22) Consider the following statement about mean.

i. It must be one of the values found in the data

ii. In case of one group data, there may be more than one mean

Which of the above statement is/are correct?

a) Only statement 1 is correct	b) Only statement 2 is correct
c) Both statements are correct	d) None of the above are correct

23) The price of a Juicer Machine during past five years is as follows:

Year	Price (Rs.)
20X7	3,700
20X8	4,500
20X9	4,800
20Y0	5,000
20Y1	5,300

Keeping 20X7 as base year, simple index numbers relative to price for the given period would be:

a) 100, 121.62, 129.73, 135.14, 143.24	b) 121.62, 100, 93.75, 90, 84.91
c) 100, 82.22, 77.08, 74, 69.81	d) 82.22, 100, 106.67, 111.11, 117.78

24) Construction of frequency distribution:

a) Helps in deleting the data	**b) Begins by recording the number of times a particular value occurs**
c) Is the only way to assess mode od population.	d) All of the above

25) Which of the following is correct?

a) Results of sampling enquiries or a census is called raw data	b) The data which is collected specifically for the ongoing investigation is called primary data
c) The data which is stored after classification is called secondary data	**d) Both (a) and (b)**

26) Which of the following is correct?

a) Results of sampling enquiries or a census is called raw data	b) The data which is collected specifically for the ongoing investigation is called primary data
c) The data which is stored after classification and summation is called secondary data	**d) Both (a) and (b)**

27) If a frequency distribution is skewed to the left (negatively skewed), then:

a) Mean<median>mode	b) Mean>median>mode
c) Mode>median> Mean	d) Arithmetic mean < geometric mean < harmonic mean

28) Following is the data related to number of persons per house in a village town:

No. of persons per house	1	2	3	4	5	6	7	8	9	10
No. of houses	25	114	120	90	50	41	20	12	3	2

The mean, median and modal number of persons per house are:

a) 3.67, 3, 3	b) 3.62, 4, 5

c) 3.67, 3, 5	d) 3.42, 3, 3

29) Which of the following statement is CORRECT about the median?

a) The upper quartile is also called the median
b) It is a measure of central tendency
c) It is middle value no matter the data is arranged in any order
d) The position of the median can be found by using the expression $\frac{3(n+1)}{2}$

30)

Class boundary	10--12	12—14	14—16	16—18	18—20
Frequency	14	26	42	38	8

The geometric mean of the above data is:

a) 1.17	b) 14.53
c) 14.70	**d) 14.87**

31) Which of the following statements is correct in respect of the equation? X+2Y+3=0

a)	The value of the intercept on the y-axis is 3
b)	**The value of the intercept on x-axis is –3**
c)	The slope of the line is 1
d)	The degree of the equation is 0

32) If a negative slope line passes through a point (4,8) and x intercept is ¼ of the y-intercept. Find equation of straight line

a) 4x+y=24	b) 4x – y=24
c) X+4y=24	d) X – 4y=24

33) Which of the following statements is correct in respect of the equation? 5X+2Y-10=0

a)	The value of the intercept on the y-axis is 2
b)	The value of the intercept on x-axis is –5
c)	The slope of the line is 2.5
d)	**The degree of the equation is 1**

34) If in a frequency distribution, mode<median<mean then the frequency distribution is

a) Symmetrical around the median	b) Symmetrical around the mean
c) Skewed to left (negatively skewed)	**d) Skewed to right (positively skewed)**

35) If a frequency distribution Skewed to left (negatively skewed), then

a) Mean<median<mode	b) Mean>median>mode
c) Mode>median>mean	d) Arithmetic mean < geometric mean < harmonic mean

36) If the peak of the histogram is in the middle and the frequencies on either side are similar to each other, the distribution is said to be (01 mark)

a) Normal	b) Balanced
c) Binomial	**d) Symmetrical**

37) Which of the following statements is correct?

a)	An Ogive is the graph of a cumulative frequency distribution
b)	Median of a grouped frequency distribution can be found by constructing an Ogive
c)	An Ogive is constructed by joining the mid points of the top of each rectangle histogram with straight lines
d)	**Both (a) and (b)**

38) Which of the following statements is correct?

a)	A frequency polygon can be constructed by joining two symmetrical ogives
b)	A histogram can be converted to an ogive by joining the mid-point of the top of each of its rectangle with a straight line
c)	**An ogive is the graph of a cumulative frequency distribution**
d)	Both (a) and (b)

39) Starting salaries of a group of fresh graduates are as follows:

45,000; 47,500; 52,000; 52,500; 52,500; 56,000; 56,500; 57,000

Find median from above data:

a) 52,000	b) 52,375
c) 52,500	d) 57,000

40) Starting salaries of a group of fresh graduates are as follows:

45,000; 47,500; 52,000; 52,500; 52,500; 56,000; 56,500; 57,000; 59,000; 60,000

Find median from above data:

a) 52,000	b) 52,500
c) 54,250	d) 56,000

41) A group of people were surveyed about their favourite car. The following results were obtained:

Gender	**Frequency**		
	Civic	**Corolla**	**Suzuki**
Female	26	14	5
Male	27	37	11

Using Chi-square test at 5% level of significance, if we have to test the hypothesis that the choice of favourite car is independent of one's gender, which of the following is true?

a) Degree of freedom is 3
b) Calculated value of chi-square is 5.99
c) Sum of expected values for two rows is 45 and 75
d) Favourite car is independent of one's gender as calculated value of Chi-square is greater than its tabulated value.

42) A group of people were surveyed about their favourite car. The following results were obtained:

Gender	**Frequency**		
	Civic	**Corolla**	**Suzuki**

Female	26	14	5
Male	27	37	11

Using Chi-square test at 5% level of significance, if we have to test the hypothesis that the choice of favourite car is independent of one's gender, which of the following is true?

a) Degree of freedom is 3
b) Calculated value of chi-square is 5.48
c) Favourite car is not independent of one's gender as calculated value of Chi-square is greater than its table value.
d) Favourite car is independent of one's gender as calculated value of Chi-square is greater than its tabulated value.

43) A group of people were surveyed about their favourite smart phone. The following results were obtained:

Gender	**Frequency**		
	Apple	**Samsung**	**Oppo**
Female	25	19	5
Male	30	37	11

Using Chi-square test at 5% level of significance, if we have to test the hypothesis that the choice of smart phone is independent of one's gender, which of the following is correct?

a) Calculated value of chi-square is 5.68
b) Degree of freedom is 3
c) Favourite car is independent of one's gender as calculated value of Chi-square is greater than its tabulated value.
d) Favourite smart phone is not independent of one's gender as calculated value of Chi-square is greater than its table value.

44) A group of people were surveyed about their favourite car. The following results were obtained:

Gender	**Frequency**		
	Civic	**Corolla**	**Suzuki**
Female	26	14	5
Male	27	37	11

Using Chi-square test at 5% level of significance, if we have to test the hypothesis that the choice of favourite car is independent of one's gender, which of the following is true?

a) Favourite car is independent of one's gender as calculated value of Chi-square is greater than its table value.
b) Favourite car is not independent of one's gender as calculated value of Chi-square is greater than its table value.
c) Degree of freedom is 3
d) Calculated value of Chi-square is 5.48

45) The term degree of freedom is used with reference to:

a)	Test of goodness of fit	b)	Z-test and test of goodness of fit
c)	**T-test and test of goodness of fit**	d)	T-test and z-test

46) The term degree of freedom is used with reference to:

a)	T-test	b)	Test of goodness of fit
c)	**Both A and B**	d)	None of these

47) Ali plans to invest Rs. 8,000 every year for 3 years starting from today. Interest rate is 10% per annum compounded annually. At the end of year 3 he will receive:

a)	Rs 26,480	b)	Rs 26,328
c)	**Rs 29,128**	d)	Rs 31,944

48) Project A would provide annual inflows of Rs. 525,000 Rs. 648,000, Rs 853,000 and Rs 2,844,000 at the end of year 1 to 4 respectively, whereas project B would yield annual inflows of Rs 947,000, Rs 1,155,000 and Rs 2,068,000 from year 1 to 3 respectively. The discount rate at which both projects would have same net present value is:

a)	**18.27%**	b)	18.83%
c)	19.31%	d)	19.73%

49) Project X would provide annual inflows of Rs. 650,000 Rs. 500,000, Rs 1,000,000 and Rs 2,500,000 at the end of year 1 to 4 respectively, whereas project Y would yield annual inflows of Rs 849,650, Rs 1,166,800 and Rs 2,068,000 from year 1 to 3 respectively. The discount rate at which both projects would have same net present value is:

a)	16.31%	**b)**	**17.51%**
c)	18.27%	d)	19.31%

50) The human resource director of a large company wants to know what the employees of his company think about the proposed changes in remuneration package. A questionnaire is given to 250 employees, 220 employees returned the questionnaire of which 180 employees support the proposed changes in remuneration package. The population is:

a) 250 employees receiving the questionnaire
b) All employees of the company
c) 220 questionnaires which have been returned
d) 180 employees who support the proposed change in remuneration package.

51) The human resource director of a large company wants to know what the employees of his company think about the proposed changes in remuneration package. A questionnaire is given to 250 employees, 220 employees returned the questionnaire of which 180 employees support the proposed changes in remuneration package. The sample is:

a) 250 employees receiving the questionnaire
b) All employees of the company
c) 220 questionnaires which have been returned
d) 180 employees who support the proposed change in remuneration package.

52) Hamid and Sajid invested in a business. The sum of investment of Hamid and seven times the investment of Sajid amounts to Rs 18 million. Difference between thrice the investment of Hamid and twice the investment of Sajid is Rs 8 million. Amounts invested by Hamid and Sajid is:

a) Rs 11 and Rs 1 million respectively
b) Rs 7.5 million and Rs 1.5 million respectively

c) Rs 4 and Rs 2 million respectively.
d) Rs 8 million each.

53) Kamran and Salman invested in a business. The sum of investment of Kamran and seven times the investment of Salman amounts to Rs 18 million. Difference between thrice the investment of Kamran and twice the investment of Salman is Rs 8 million. Amounts invested by Kamran and Salman is:

a) Rs 11 and Rs 1 million respectively
b) Rs 7.5 million and Rs 1.5 million respectively
c) Rs 4 and Rs 2 million respectively.
d) Rs 8 million each.

54) Which of the following statement is correct?

a) Maxima and minima lie at turning points on a graph but a turning point is not necessarily at a maxima or minima
b) The value of the second order derivative must be zero at a turning point
c) Slope of a function is positive and increasing before a maximum point
d) If a second order derivative of a function is less than zero at point "x" it means it has a local minimum at point "x"

55) The table below describes the smoking habits of a group of asthma sufferers:

Gender	Non smokers	Light smokers	Heavy Smokers	Total
Men	353	42	49	444
Women	352	32	40	424
Total	705	74	89	868

If a person is randomly selected from the group, the probability that selected person is either Women or Light Smoker Male, is:

a)	0.5737	**b)**	**0.5369**
c)	0.5115	d)	0.0373

56) Which of the following equation is not linear?

a)	Y=2x-5	b)	$x - \frac{y}{5} + 20 \neq 0$
c)	**$Y=2x^2$**	d)	

57) Consider following data

Ingredients	Jan 20x2 (Base Period)		Dec 20x5 (current period)	
	Price per kg	Kg per unit	Price per kg	Kg per unit
A	3.00	10.00	3.95	11.00
B	9.00	3.00	9.90	2.50
C	1.00	2.00	0.95	3.00
D	2.00	2.00	4.50	5.00

Using Paasche Price index as at Dec 20x5, which of the following statement is correct?

a) Prices have risen by 8.73% between Jan 20x2 and Dec 20x5
b) Prices have risen by 16.79% between Jan 20x2 and Dec 20x5
c) Prices have risen by 27.14% between Jan 20x2 and Dec 20x5

d) Prices have risen by 36.57% between Jan 20x2 and Dec 20x5

58) Which of the following is correct?

a) Net Present Value (NPV) is a financial metric that seeks to capture the total value of a potential investment opportunity
b) Multiplying by a discount factor is the same as multiplying a compounding factor.
c) The present value of a cash flow is the reciprocal of its future value
d) Present value fails to appraise large projects with multiple cash flows

59) A company intends to invest Rs 4 million into a project which would yield 12,14 and 16 percent during three years respectively. The company would also recover the original investment after 3 years. Company's cost of capital is 10%, NPV of the project would be:

a) 385,274	b) 436,364
c) 480,841	d) 1,380,015

60) A company intends to invest Rs 3 million into a project which would yield 10,12 and 14 percent during three years respectively. The company would also recover the original investment after 3 years. If the company's cost of capital is 10%, the NPV of the project is:

a) Rs 139,745	b) Rs 45,582
c) Rs 1,046,582	d) Rs 3,139,745

61) A company intends to invest Rs 3 million into a project which would yield 10,12 and 14 percent during three years respectively. The company would also recover the original investment after 3 years. If the company's cost of capital is 8%, the NPV of the project is:

a) Rs 277,778	**b) Rs 301,326**
c) Rs 333,410	d) Rs 919,830

62) A company intends to invest Rs 3 million into a project which would yield 10,15 and 20 percent during first three years respectively. The company would also recover the original investment after 3 years. If the company's cost of capital is 12%, the NPV of the project would be:

a) Rs 1,350,000	b) Rs 168,754
c) Rs (39,783)	d) Rs 189,003

63) A project costing Rs. 2.5 million is expected to generate cash flows of Rs. 200,000, Rs. 300,000, Rs. 2,900,000 at the end of each of the next three years respectively. The IRR of the project is:

a) 9.9%	b) 10.4%
c) 11.7%	d) 12.8%

64) A project costing Rs. 2 million is expected to yield Rs. 300,000, Rs. 400,000, Rs. 1,900,000 at the end of each of the next 3 years respectively. The nearest IRR approximation of the project is:

a) 10.18%	**b) 10.66%**
c) 11.15%	d) 11.51%

65) A project costing Rs. 2 million is expected to yield Rs. 100,000, Rs. 200,000, Rs. 2,300,000 at the end of each of the next 3 years respectively. The nearest IRR approximation of the project is:

a) 8.8%	**b) 9.7%**
c) 9.2%	d) 11.51%

66) A project costing Rs. 4 million is expected to yield Rs. 600,000, Rs. 800,000, Rs. 4,000,000 at the end of each of the next 3 years respectively. The nearest IRR approximation of the project is:

a) 11.52%	b) 11.84%
c) 12.22%	d) 12.71%

67) Feroz textiles (FT) is planning to export ready-made garments for adults to England. Which of the following would be an appropriate sample for measuring waste sizes?

a) Sample of all sizes of leading ready-made garment brands in England.	**b) Adults selected at random from residents in major cities of England**
c) Adults selected at random from a large corporation of England	d) Both (a) and (b)

68) An auto analyst is conducting a satisfaction survey, sampling from a list of 10,000 new car buyers. The list includes 2500 Suzuki buyers, 2500 Hyundai buyers, 2500 Honda buyers, and 2500 Toyota buyers. The analyst selects a sample of 400 car buyers by randomly sampling 100 buyers of each brand. Is this an example of a simple random sample?

a) Yes, because each buyer in the sample was randomly selected	b) Yes, because each buyer in the sample had an equal chance of being selected.
c) Yes, because buyers of every brand were equally represented in the sample	d) No, because every possible sample of 400 buyers did not have an equal chance of being chosen.

69) Detail of minor claims of an automobile insurance company is as follows:

Claims (Rs.)	1-1,000	1,001-2,000	2,001-3,000	3,001-4,000	4,001-5,000
No. of Claims	5	30	60	70	80

The standard deviation and variance for the insurance companies above data is:

a) 3,276 and 57	b) 1,093 and 33
c) 1,194,502 and 1,093	**d) 1,093 and 1,194,502**

70) The rate of interest is 8% per annum compounded monthly, the value of perpetuity of Rs 2,500 per month would be:

a) Rs 375,000	b) Rs 187,500
c) Rs 37,500	d) Rs 31,250

71) If the rate of interest is 12% per annum compounded monthly, the value of perpetuity of Rs 2,500 per month would be achieved by investing:

a) Rs 250,000	b) Rs 20,833
c) Rs 125,000	d) Rs 187,500

72) If the rate of interest is 6% per annum compounded monthly, the value of perpetuity of Rs 2,500 per month would be:

a) Rs 41,667	b) Rs 166,667
c) Rs 250,000	**d) Rs 500,000**

73) If the rate of interest is 8% per annum compounded monthly, the value of perpetuity of Rs 2500 per month would be

a) 31,250	b) 37,500
c) 187,500	**d) 375,000**

74) If the rate of interest is 8% per annum compounded quarterly, the value of perpetuity of Rs 3,500 per quarter would be:

a) Rs 131,250	**b) Rs 175,000**
c) Rs 262,500	d) Rs 525,000

75) If the rate of interest is 5% per annum compounded quarterly, the value of perpetuity of Rs 2,500 per quarter would be achieved by investing

a) Rs 50,000	**b) Rs 200,000**
c) Rs 250,000	d) Rs 500,000

76) If the rate of interest is 15% per annum compounded monthly, the value of perpetuity of Rs 1,975 per month would be achieved by investing

a) Rs 375,000	b) Rs 187,500
c) Rs 158,000	d) Rs 37,500

77) If the rate of interest is 10% per annum compounded monthly, the value of perpetuity of Rs 3,000 per month would be achieved by investing

a) Rs 400,000	b) Rs 300,000
c) Rs 270,000	**d) Rs 360,000**

78) A factory produces two products x and y. Each product passes through two departments A and B which have a capacity of 1120 hours and 1400 hours The Product X requires 4 hours in department A and 7 hours in department B, the product Y requires 5 hours in department A and 8 hours in department B. The constraints representing the above data:

a) $4x+5y \leq 1120$ and $7x+8y \leq 1400$	b) $4x+7y \leq 1400$ and $5x+8y \leq 1120$
c) $7x+5y \leq 1400$ and $8x+4y \leq 1120$	d) $7x+8y \leq 1120$ and $4x+5y \leq 1400$

79) A factory produces two products x and y. Each product passes through two departments A and B which have a capacity of 1120 hours and 1400 hours The Product X requires 7 hours in department A and 4 hours in department B, the product Y requires 8 hours in department A and 5 hours in department B. The constraints representing the above data:

a) $7x+4y \leq 1120$ and $8x+5y \leq 1400$	b) $7x+8y \leq 1400$ and $4x+5y \leq 1120$
c) $7x+5y \leq 1400$ and $8x+4y \leq 1120$	**d) $7x+8y \leq 1120$ and $4x+5y \leq 1400$**

80) A factory produces two products x and y. Each product passes through two departments M and N which have a capacity of 1120 hours and 1400 hours The Product A requires 7 hours in department M and 4 hours in department N, the product B requires 8 hours in department M and 5 hours in department N. The constraints representing the above data:

a) 7A+4B ≤ 1120 and 8A+5B ≤ 1400	b) 7A+8B ≤ 1400 and 4A+5B ≤ 1120
c) 7A+5B ≤ 1400 and 8A+4B ≤ 1120	**d) 7A+8B ≤ 1120 and 4A+5B ≤ 1400**

81) A factory produces two products x and y. Each product passes through two departments A and B which have a capacity of 1,100 hours and 1,400 hours The Product X requires 4 hours in department A and 5 hours in department B, the product Y requires 7 hours in department A and 8 hours in department B. The profit margin on x and y is Rs. 500 and Rs. 700 respectively. Objective function related to the given situation will be:

a) 1100x+1400y	**b) 500x+700y**
c) 600x+700y	d) 660,000x+980,000y

82) If the discount rate is 10%, the present value of Rs X received at the end of each year for the next five years is equal to:

a) 3.5X	b) 4.17X
c) **3.79X**	d) 5X

83) If the discount rate is 11%, the present value of Rs X received at the end of each year for the next five years is equal to:

a) 3.17X	b) 4.10X
c) 3.7X	d) 5X

84) If the discount rate is 8%, the present value of Rs X received at the end of each year for the next four years is equal to:

a) 2.2X	**b) 3.31X**
c) 1.2X	d) None of these

85) If the discount rate is 12%, the present value of Rs X received at the end of each year for the next four years is equal to: (01 mark)

a) 3.4X	**b) 3.04X**
c) 4X	d) 3.6X

86) If the discount rate is 12%, the present value of Rs X received at the end of each year for the next five years is equal to: (01 mark)

a) 6X	b) 5X
c) 3.6X	d) 4.03X

87) If the discount rate is 9%, the present value of Rs X received at the end of each year for the next four years is equal to: (01 mark)

a) 3.24X	b) 3.42X
c) 3.89X	d) 4X

88) If the discount rate is 14%, the present value of Rs X received at the end of each year for the next five years is equal to: (01 mark)

a) 3.91X	b) 3.43X

c) 3.7X	d) 5X

89) Ashfaq is planning to invest in a scheme whereby he would be required to invest Rs 130,000 annually (at the start of the year) for 5 years. If the interest rate is 13% compounded annually, what amount would he receive at the end of the 5th year?

a) Rs 842,435	**b) Rs 951,952**
c) Rs 964,952	d) Rs 1,075,706

90) Abid is planning to invest in a scheme whereby he would be required to invest Rs 120,000 annually (at the start of the year) for 6 years. If the interest rate is 8% compounded annually, what amount would he receive at the end of the 6th year? (03 marks)

a) Rs 648,500	b) Rs 777,600
c) Rs 880,311	**d) Rs 950,736**

91) A company earns profit of Rs 250 and Rs 375 per unit on product X and Y respectively. Find the maximum profit that the company could earn if the company is subject to the following constraints:

$$4x+2y \leq 25{,}000$$
$$3x+2y \leq 20{,}000$$

a) Rs 1,666,667	b) Rs 2,187,500
c) Rs 3,750,000	d) Rs 4,687,500

92) Consider the following observations

95	103	97	130	96	73	78	95	89	68
85	62	69	83	118	112	95	87	93	117

The number of observations lying in the limit mean ±2σ are:

a) 20	**b) 19**
c) 18	d) 17

93) Saeed invested Rs 400,000 for ten years after which he received a lump sum amount of Rs 900,000. If he earned 8.50% interest compounded quarterly during last five years which of the following rate compounded quarterly did he earn during first five years

a) 7.89%	b) 8.25%
c) 8.39%	d) 8.50%

Answer

$$900{,}000 = 400{,}000(1+\frac{r}{4})^{4\times5}(1+\frac{0.085}{4})^{4\times5}$$

By solving on calculator we get r=0.078843=7.89%

94) Anees invested Rs 500,000 for six years after which he received a lump sum amount of Rs 822,531. If he earned 10% interest compounded annually during last four years, which of the following rate compounded quarterly did he earn during first two years

a) 7.89%	b) 8.25%
c) 8.39%	d) 8.50%

Answer

$$900{,}000 = 400{,}000(1+\frac{r}{4})^{4\times5}(1+\frac{0.085}{4})^{4\times5}$$

By solving on calculator we get r=0.078843=7.89%

95) Ali invested Rs 500,000 for5 years after which he received a lump sum amount of Rs 762,150. If he earned 10% interest compounded annually during last 2 years, what rate of interest compounded annually did he earn during the first three years?

a) 6%	b) 7%
c) 8%	d) 9%

Answer $762{,}150 = 500{,}000(1+r)^3(1+0.10)^2$

By solving on calculator we get r = 0.0800114499=8%

96) Jamil invested Rs. 6 million with a real estate firm. The firm returned him Rs. 8 million after four years. The effective annual rate of interest on his investment was: (01 mark)

a) 7.46%	b) 7.00%
c) 8.25%	d) 8.33%

97) Naeem and Karim have invested same amounts in two different investment schemes. Naeem is getting a return of 7% compounded annually whereas Karim gets a return of 9% compounded annually, the amount of Karim's interest over a period of five years would exceed the amount of Naeem's interest by: (02 Marks)

a) 25.26%	b) 9.70%
c) 13.60%	**d) 33.80%**

98) Kamran and Salman invested in a business. The sum of investment of Kamran and seven times the investment of Salman amounts to Rs 18 million. Difference between thrice the investment of Kamran and twice the investment of Salman is Rs 8 million. Amount invested by Kamran and Salman is:

a) Rs 11 and 1 million respectively	b) Rs 7.5 and 1.5 million respectively
c) Rs 4 and 2 million respectively	d) Rs 8 million each.

99) Saad and Ali invested in a business. The sum of investment of Saad and seven times the investment of Ali amounts to Rs 18 million. Difference between thrice the investment of Saad and twice the investment of Ali is Rs 8 million. Amount invested by Saad and Ali is:

a) Rs 11 and 1 million respectively	b) Rs 7.5 and 1.5 million respectively
c) Rs 4 and 2 million respectively	d) Rs 8 million each.

100) Chemical Master Company (CMC) produces a special industrial chemical that is a blend of four chemical ingredients. The prices at the beginning and the end of year of each material and quantities required to make one unit of finished product are given below: (03 marks)

Ingredients	Jan 20X2 (Base Period)		Dec 20X5 (Current Period)	
	Price per kg	Kg per unit	Price per kg	Kg per unit
A	2.50	10.00	3.95	11.00
B	8.75	3.00	9.90	2.50

C	0.99	2.00	0.95	3.00
D	4.00	2.00	4.50	5.00

Using Laspeyre price index as at Dec 20X5, which of the following statement is correct?

a) Prices have risen by 30.82% between Jan 20X2 and Dec 20X5	b) Prices have risen by 23.56% between Jan 20X2 and Dec 20X5
c) Prices have risen by 22.67% between Jan 20X2 and Dec 20X5	d) Prices have risen by 29.31% between Jan 20X2 and Dec 20X5

101) Chemical Master Company (CMC) produces a special industrial chemical that is a blend of four chemical ingredients. The prices at the beginning and the end of year of each material and quantities required to make one unit of finished product are given below: (03 marks)

Ingredients	Jan 20X2 (Base Period)		Dec 20X5 (Current Period)	
	Price per kg	Kg per unit	Price per kg	Kg per unit
A	3.00	10.00	3.95	11.00
B	9.00	3.00	9.90	2.50
C	1.00	2.00	0.95	3.00
D	2.00	2.00	4.50	5.00

Using Laspeyre price index as at Dec 20X5, which of the following statement is correct? (03 M)

a) Prices have risen by 30.82% between Jan 20X2 and Dec 20X5	b) Prices have risen by 23.56% between Jan 20X2 and Dec 20X5
c) Prices have risen by 22.67% between Jan 20X2 and Dec 20X5	d) Prices have risen by 29.31% between Jan 20X2 and Dec 20X5

102) Which of the following statements is correct about Laspeyre price index? (01 mark)

a) It fails to account for the fact that people will buy less of those items which have risen in price
b) The denominator in the Laspeyre price index has to be recalculated every year to take account of the most recent quantities consumed.
c) It is based on most recent quantities purchased.
d) It tends to understate inflation

103) Which of the following is correct about Laspeyre price index?

a) It has a focus which is biased to the cheaper items bought by consumers as a result of inflation.
b) The denominator in the Laspeyre price index has to be recalculated every year to take account of the most recent quantities consumed.
c) It is based on quantities bought in the base year
d) It tends to understate inflation

104) Which of the following is correct about Laspeyre price index?

a) It has a focus which is biased to the cheaper items bought by consumers as a result of inflation.
b) The denominator in the Laspeyre price index has to be recalculated every year to take account of the most recent quantities consumed.
c) It is based on the most recent quantities purchased
d) It tends to overstate inflation

105) Which of the following is correct about Laspeyre price index?

a)	It has a focus which is biased to the cheaper items bought by consumers as a result of inflation.
b)	**The denominator in the Laspeyre price index does not change from year to year.**
c)	It is based on the most recent quantities purchased
d)	It tends to understate inflation

106) Which of the following is correct about Paasche index?

a)	It fails to account for the fact that people will buy less of those items which have risen in prices.
b)	The denominator in the Paasche price index does not change from year to year.
c)	**It is based on the most recent quantities purchased**
d)	It tends to overstate inflation

107) Compute Laspeyres Price Index for the following data using 2002 as base:

Ingredients	Price in 2002	Price in 2007	Quantity in 2002
A	140	220	40
B	120	180	25
C	80	110	60

a)	147.21	**b)**	**148.51**
c)	149.50	d)	146.50

108) How many 3-digit numbers can be formed from the digits 1, 3, 4, 5, 7 and 9, which are divisible by 2 and none of the digits is repeated?

a)	6	**b)**	**20**
c)	30	d)	120

Answer

Since each desired number is divisible by 2, so we must have 4 at the unit place. So, there is 1 way of doing it.

The tens place can now be filled by any of the remaining 5 digits (1, 3, 5, 7, 9). So, there are 5 ways of filling the tens place.

The hundreds place can now be filled by any of the remaining 4 digits. So, there are 4 ways of filling it.

Required number of numbers = (1 x 5 x 4) = 20.

109) A 5digit Pin Code can begin with any number except 0 and 1. If repetition of the same digit is allowed then probability of a Pin Code beginning with a 7 and ending with an 8 is

a)	1/10	b)	1/100
c)	1/90	**d)**	**1/80**

110) How many 3-digit numbers can be formed from the digits 2, 3, 5, 6, 7,8 and 9, which are divisible by 5 and none of the digits is repeated?

a)	12	**b)**	**30**
c)	120	d)	720

111) How many 3-digit numbers can be formed from the digits 2, 3, 5, 6, 7 and 9, which are divisible by 5 and none of the digits is repeated?

a) 6	**b) 20**
c) 120	d) 360

Answer

Since each desired number is divisible by 5, so we must have 5 at the unit place. So, there is 1 way of doing it.

The tens place can now be filled by any of the remaining 5 digits (2, 3, 6, 7, 9). So, there are 5 ways of filling the tens place.

The hundreds place can now be filled by any of the remaining 4 digits. So, there are 4 ways of filling it.

Required number of numbers = (1 x 5 x 4) = 20.

112) Find the probability of making a 5-digit number from the digits 2, 3, 4, 7 and 8, in such a way that 7 is the first number and 8 is the last number?

a) 1/20	b) 20%
c) 120	d) 360

113) A 5-digit pin code can begin with any number except 0 and 9. If repetition of the same digit is allowed, the probability of Pin code beginning with 3 and ending with a 5 is:

(01 mark)

a) 1/10	b) 1/100
c) 1/90	**d) 1/80**

114) Following numbers are given 1, 2, 5, 6, 8, 9 you are required to make a 3-digit number which is divisible by 5. How many arrangements are possible?

Answer:

A number can only be divisible by 5 if the last digit is 5. So last digit is fix but 10^{th} place and 100^{th} place digit can be any from remaining 5 digits.

Answer: 4 x 5 x 1 = 20 ways

115) Raza wants to save money over a period of ten years in order to meet the expenses to be incurred on higher education of his son. He has recently invested a sum of Rs 200,000 and plans to further invest Rs 20,000 at the end of each quarter, which of the following amount will be available to him at the end of 10th year if he earns a profit of 6% per annum compounded quarterly?

a) Rs 1,448,161.56	b) Rs 1,321,027.61
c) Rs 992,497.74	d) Rs 718,018.61

116) Zahid wants to save money over a period of ten years in order to meet the expenses to be incurred on higher education of his son. He has recently invested a sum of Rs 200,000 and plans to further invest Rs 20,000 at the end of each quarter, which of the following amount will be available to him at the end of 10th year if he earns a profit of 6% per annum compounded quarterly?

a) Rs 1,448,161.56	b) Rs 1,321,027.61
c) Rs 992,497.74	d) Rs 718,018.61

117) Aman wants to save money over a period of eight years in order to meet the expenses to be incurred on higher education of his son. He has recently invested a sum of Rs 100,000 and plans to further invest Rs 20,000 at the end of each quarter, which of the following amount will be available to him at the end of 8th year if he earns a profit of 8% per annum compounded quarterly?

a) Rs 1,234,876.08	b) Rs 1,117,221.68
c) Rs 1,072,994.65	d) Rs 623,788.75

118) XYZ and Company has developed a new product which would earn a revenue of Rs 90 million during the first year. Thereafter, the revenue would decline by 10% each year. Calculate the revenue that the company would be able to earn over the life of the product

a) 450 million	b) 500 million
c) 900 million	d) 1 billion

Answer

$$S = \frac{a}{1-r} = \frac{90}{1-0.9} = 900 \ million$$

119) ABC and Company has developed a new product which would earn a revenue of Rs 80 million during the first year. Thereafter, the revenue would decline by 20% each year. Calculate the revenue that the company would be able to earn over the life of the product

a) 400 million	b) 500 million
c) 800 million	d) 100 million

Answer

$$S = \frac{a}{1-r} = \frac{80}{1-0.8} = 400 million$$

120) Which of the following is correct?

a) The data which is collected specifically for ongoing investigation is called raw data	b) Results of sampling enquiries or a census is called primary data
c) The data which is relevant to the investigation but was collected previously for some other purpose is called secondary data	d) Both (b) and (c)

121) A U shaped curve:

a) Departs from symmetry and the frequencies tend to pileup at one or the other end of the curve	b) Represent values that are at equal distance from a central maximum value
c) Has the maximum frequencies occurring at both ends of the range and a minimum frequency towards the center	d) Has frequencies that run up to a maximum at one end of the range

122) A U shaped curve:

a) **Has the maximum frequencies occurring at both ends of the**	b) Has frequencies that run up to a maximum at one end of the range

range and a minimum frequency towards the center	
c) Represent values that are at equal distance from a central maximum value	d) Departs from symmetry and the frequencies tend to pileup at one or the other end of the curve

123) A company makes and sells two products X and Y. the contribution per unit is Rs 250 for product X and 375 for product Y. due to various constraints, the company cannot make more than 750 units of X and 500 units of Y in a month. If x represents the number of product X, y represents the number of product Y and C represents contribution, which of the following relationship represents maximum contribution?

a) C=250x+375y	b) C=750x+500y
c) C=500x+125y	d) C=3x+1.33y

124) A company makes and sells two products X and Y. the related information is as follows:

	X	Y
Contribution per unit (Rs.)	450	375
Maximum sales demand per month	2,800	1,200
Direct labour hour per unit	2	5
Machine hours per unit	6	7

A total of 10,000 direct labour hours and 22,000 machine hours are available per month. Which of the following objective function (Z) and set of constraints represents the above situation?

a) Z=450x+375y x ≤ 2,800 2x+5y ≤ 22,000 y ≤ 1,200	b) Z=450x+375y x ≤ 2,800 2x+5y ≤ 10,000 y ≤ 1,200
c)	d)

125) Tooba furniture (TF) manufacture chairs (C) and tables (T). the sale price and cost of production of the two articles are as follows:

Article	Sale price	Cost of Production
	Amount in Rs.	
C	850	700
T	1,300	1,200

Manufacturing time is 3 and 4 labour hours for each chair and table respectively. TF has a labour force of 20 workers and each worker can work a maximum of 180 hours. The total funds available for manufacturing are Rs. 4 million. The objective function (Z) and the constraints representing the given scenario are: (02)

a) Z=100C+150T 700x+1200y ≤ 4,000,000 3x+4y ≤ 3,600	**b) Z=150C+100T** **700x+1200y ≤ 4,000,000** **3x+4y ≤ 3,600**
c) Z=700C+1,200T 700x+1200y ≤ 4,000,000 3x+4y ≤ 180	d) Z=850C+1,300T 700x+1200y ≤ 4,000,000 3x+4y ≤ 3,600

126) A museum wants to determine the fee that should be charged from the visitors to enable it to earn revenue of Rs 40 million per annum. The administrator of the museum has estimated that 500 visitors visit the museum daily. Identify the size of the sample that would be needed at 95% confidence level such that error in the above claim does not exceed 25, assuming that population standard deviation is 60.

a) 28	b) 35
c) 23	d) 25

127) While assessing the accuracy of packed weight of 1 kg sugar bags, a quality controller estimated that the standard deviation is 0.05 gram. How large a sample must he take in order to be 95% confident that the error in his estimate of mean weight will not exceed 0.01 gram?

a) 68	b) 69
c) 96	**d) 97**

128) D-electric claims that its energy saver bulbs have an average life of 8000 hours. A consumer rights protection agency tested 15 such bulbs to check this claim. It found that the mean life of 15 bulbs was 7800 hours with a standard deviation of 200 hours. Assume that life of such bulbs have an approximately normal distribution. At 5% significance level, on assuming the claim of D-electric we:

a) Rejects the D-electric claim as number of standard error between the sample means and asserted mean is beyond the table value of t-statistic which is -1.7611
b) Accept the D-electric claim as number of standard error between the sample means and asserted mean is within the table value of t-statistic which is -1.7611
c) Accept the D-electric claim as number of standard error between the sample means and asserted mean is -3.8730 which is within the table value of t-statistic which is -2.1458
d) Rejects the D-electric claim as number of standard error between the sample means and asserted mean is 3.8730 which is greater than the table value of t-statistic which is -2.1458

129) A significance level of 0.01 means:

a) If null hypothesis is rejected, there is a maximum chance of 1%that the decision may be wrong
b) There is more than 99% chance that the null hypothesis is false
c) If the null hypothesis is accepted, there is atleast 1% chance that the decision may be wrong
d) If type II error is made, there is 99% chance of making a type 1 error too

130) A significance level of 0.05 means:

a) There is more than 95% chance that the null hypothesis is false.
b) If null hypothesis is rejected, there is a maximum chance of 5% that the decision may be wrong
c) If the null hypothesis is accepted, there is atleast 5% chance that the decision may be wrong
d) If type II error is made, there is 95% chance of making a type I error too

131) A pharmaceutical company claims that the amount of alcohol in each bottle of a drug is 0.750ml. A random sample of 50 bottles of that drug was tested and found to have mean alcohol contents of 0.767ml with a standard deviation of 0.06 ml. if we test the company's claim at 6% level of significance, which of the following statements will become true? (03 m)

a) Reject the company's claim as calculated value of Z is more than table value of Z.	b) Calculated value of Z is 1.985
c) Table value of Z is 1.96	d) All of the above

132) A pharmaceutical company claims that the amount of alcohol in each bottle of a drug is 0.706mg. A random sample of 38 bottles of that drug was tested and found to have mean alcohol contents of 0.705mg with a standard deviation of 0.02 mg. if we test the company's claim at 6% level of significance, which of the following statements will become true? (03 m)

1. Calculated value of Z is – 0.308
2. Table value of Z is 1.96
3. Claim is accepted

a) 1 , 2	b) 2,3
c) 1,3	d) All are correct

133) Fahad is receiving interest from Doller Bank Limited (DBL) at 15% compounded semi-annually. Each bank limited (EBL) has introduced a scheme whereby interest would be compounded on a monthly basis. The minimum rate of interest that EBL should offer to motivate Fahad shift his investment from DBL to EBL is: (03 mark)

a) 14.06%	**b) 14.55%**
c) 15.00%	d) 15.01%

134) Nadir is receiving interest from Sun Bank Limited (SBL) at 12% compounded semi-annually. Moon Bank Limited (MBL) has introduced a scheme whereby interest would be compounded on a monthly basis. The minimum rate of interest that MBL should offer to motivate Fahad shift his investment from SBL to MBL is: (03 mark)

a) 10.35%	b) 10.75%
c) 11.39%	**d) 11.71%**

135) Bank B is offering interest at 15% compounded semi-annually to all investments made with that bank, Bank D is entering the market and want to attract the investors and it has also decided to give interest on monthly compounding basis. The minimum rate of interest that Bank D should offer to motivate investors to shift their investment from Bank B to bank D is: (03 mark)

a) 14.60%	b) 13.06%
c) 12.05%	d) 10.25%

136) A company owns a machine which runs for 208 hours a month. The machine is used to make two parts X and Y. each part X takes 1 hour of machine time and each part Y takes 2 hours of machine time. If x represents the number of part X made in a month and y represents the number of part Y made in a month, which of the following statements/ inequalities is correct?

a) The company could make any quantity of X and Y but the total machine hours in a month cannot exceed 208.	b) x+2y<208 represents the boundary of maximum production in a month
c) y ≤ 208 if x=0, represents the maximum production of Y in a month	d) both (a) and (b)

137) If $3x+7 \geq x+5 \geq 5x-3$, then the inequality holds when x lies in the range (02 marks)

a) $7 \leq x \leq -3$	b) $5 \geq x \geq 7$
c) $3 \leq x \leq 5$	**d) $2 \geq x \geq -1$**

138) If $3x+7 \leq 5x-3$, then the inequality holds when x lies in the range (02 marks)

a) Less than or equal to 7	**b) Greater than or equal to 5**
c) Less than or equal to 5	d) Greater than or equal to 2

139) Jamal got a rise of 12%, 20% and 18% in 2011, 2012 and 2013 respectively. The average annual increase rate is:

a) 16.5%	**b) 16.62%**
c) 17.1%	d) 17.33%

140) Arman got a rise of 12%, 20% and 18% in 2011, 2012 and 2013 respectively. The average annual increase rate is:

a) 16.5%	**b) 16.62%**
c) 17.1%	d) 17.33%

141) Which of the following statements is NOT correct as regards the sampling distribution of the means?

a) The sampling distribution of the means is a normal distribution.	b) The mean of the sampling distribution of the mean is the same as the mean of the population
c) The standard deviation of the sampling distribution is called standard error	**d) The standard deviation of the sampling distribution of the mean is the same as the standard deviation of population.**

142) Which of the following statements is NOT correct as regards the sampling distribution of the means?

a) It is distribution made up of mean of many samples	**b) It is not symmetrical about the mean**
c) The standard deviation of the sampling distribution is called standard error	d) Both B and C

143) The sampling distribution of mean: (01 mark)

a) Has a mean equal to population mean	b) Is obtained by taking all possible samples of a fixed size n from a population, noting the sample and classifying the means into a distribution
c) Is a normal distribution	**d) All of the above**

144) Which of the following statements as regards the Normal Distribution is NOT correct? (01 m)

a) Both tails of the distribution approach and meet the horizontal axis at a finite but high value.
b) Higher standard deviation leads to a flatter curve
c) The area under the curve represents probability and so totals to 1.
d) It is described by its mean and standard deviation.

145) Which of the following statements as regards the Normal Distribution is correct? (01 m)

a) The area under the curve represents probability and so totals to 100%
b) The Flatter the curve, the higher the standard deviation
c) The Curve is obtained by Mean(μ) and standard deviation (σ)
d) All are correct

146) An unprepared student makes random guess for ten true-false questions on a quiz. The probability of atleast one correct answer is:

a) 0.9990	b) .99
c) 0.9	d) 1

147) An unprepared student makes random guess for ten MCQs questions having 4 options, on a quiz. The probability of atleast one correct answer is:

a) 0.9990	b) .99
c) 1	d) 0.9437

148) The weights of bags of rice packed on a machine are randomly distributed with mean = 5.05 kg and standard deviation 0.02kg. if a bag is packed at random, the probability that it weighs between 5 kg and 5.06 kg is:

a) 47.72%	**b) 68.53%**
c) 34.13%	d) 49.86%

149) The weights of bags of rice packed on a machine are randomly distributed with mean = 5.05 kg and standard deviation 0.02kg. if a bag is packed at random, the probability that it weighs less than 5 kg is:

a) 0.62%	b) 2.28%
c) 2.5%	d) 49.38%

150) The weights of bags of rice packed on a machine are randomly distributed with mean = 5.05 kg and standard deviation 0.025kg. if a bag is packed at random, the probability that it weighs between 5 kg and 5.06 kg is:

a) 15.54%	b) 47.72%

c) 63.26%	d) 0.2.28%

151) The weights of bags of rice packed on a machine are randomly distributed with mean = 5.05 kg and standard deviation 0.025kg. if a bag is packed at random, the probability that it weighs less than 5kgs is:

a) 15.54%	b) 47.72%
c) 63.26%	**d) 2.28%**

152) In a certain town, 70% of the households own a UPS, 30% own a generator and 20% own both a UPS and generator. The population of households that own neither a UPS nor a generator is:

a) 10%	**b) 20%**
c) 30%	d) 50%

153) In a certain town, 50% of the households own a cellular phone, 40% own a pager, and 20% own both a phone and pager. The proportion of households that own neither a cellular phone nor a pager is:

a) 90%	b) 70%
c) 10%	**d) 30%**

154) In how many different ways can the letters of the word "CORRECT" be arranged

a) 210	**b) 1260**
c) 2520	d) 5040

Answer

No of ways = 7!/2!x2! = 1260

155) A bookcase contains 6 math books and 12 accounting books. If a student randomly selects two books, then find the probability that both of them are math books or accounting books

a) 0.0423	b) 0.5556
c) 0.5000	**d) 0.5294**

156) A local news channel has conducted an opinion poll for constructing more dams in the country. The poll result indicates that 80% of the participating viewers support the idea, 10% are against the idea and 10% are undecided. If a sample of 10 participating viewers is selected at random, the probability that atleast 8 viewers will support the idea will be:

a) 0.2684	b) 0.3020
c) 0.3222	**d) 0.6778**

157) A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?

a) 0.4762	b) 0.1429
c) 0.1905	d) 0.4000

158) A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that one of the balls drawn is green?

a) 0.4286	b) 0.6857
c) 0.1143	**d) 0.5714**

159) There are 2 red balls, 2 green and 3 blue balls in a bag. It two balls are drawn at random. What is the probability that none is blue?

a) 0.2857	b) 0.5875
c) 0.2458	d) 0.2485

160) Three dices rolled together. The probability of rolling a 3 on atleast one of three dices is:

a) 0.3333	b) 0.3472
c) 0.4212	d) 0.5787

161) Three dices rolled together. The probability of rolling a 2 on atleast one of three dices is:

a) 0.3333	b) 0.3472
c) 0.4212	d) 0.5787

162) Three dices rolled together. The probability of rolling a 4,5,6 on each dice respectively is:

a) 1/216	b) 6/216
c) 3/216	d) None of these

163) Two dice are rolled together. The probability of getting atleast one six is:

a) 2/36	b) 9/36
c) 11/36	d) 25/36

164) In a consignment of 25 auto-batteries, 3 are defective. If a random sample of 5 batteries is selected, then probability of having exactly 2 defective batteries in the sample is:

a) 5.3%	b) 3.5%
c) 12%	**d) 8.7%**

165) In a consignment of 25 Bulbs, 3 are defective. If a random sample of 5 bulbs is selected, then probability of having exactly 2 defective Bulbs in the sample is:

a) 5.3%	b) 3.5%
c) 12%	**d) 8.7%**

166) While checking out and from a departmental store, a customer passes through one out of the 12 cash counters C1 to C12 with equal probability. After that his bill is verified by one of the 3 verifying officers V1, V2 or V3 with equal probability and then he embarks on one of the two elevators E1 or E2 and is twice as likely to embark on E2 as it is twice as large as E1.

What is the probability that a consumer will pass through C_1, verified by either V_1 or V_3 and embark on E_2.

a) 17/12	**b) 1/27**
c) 1/36	d) 1/54

Answer

$P(C_1) \times (V_1 \text{ or } V_3) \times (E_2)$

$$= \left(\frac{1}{12}\right)\left(\frac{1}{3}+\frac{1}{3}\right)\left(\frac{2}{3}\right)$$

167) In how many different ways can the letter of the word "BINOMIAL" be arranged in such a way that the vowels always come together?

a) 120	b) 40320
c) 2880	**d) 1440**

168) Which of the following pairs of values cannot form part of a Geometric Progression?

a) (6 and -6)

b) $\sqrt{5}$ *and* $1/\sqrt{7}$

c) 1,000,000 and 0

d) **All of the above**

169) If A and B are matrices, then which of the following is mostly true?

a) A+B≠B+A	b) $(A^t)^t \neq A$
c) AB≠BA	d) None of the above

170) 100,000 adults were randomly selected from all over Karachi and asked whether they drink atleast 10 glasses of water each day. Only 45% percent said yes. The population and sample in data is:

a) Population: 45% adults who drink atleast 10 glasses of water Sample: 100,000 selected adults	b) Population: all adults in Karachi Sample: 45% adults who drink atleast 10 glasses of water
c) Population: all adults in Karachi Sample: 100,000 selected adults	d) None of these

171) 50,000 adults were randomly selected from all over Lahore and asked whether they drink atleast 12 glasses of water each day. Only 30% percent said yes. The population and sample in data is:

a) Population: 30% adults who drink atleast 12 glasses of water Sample: 50,000 selected adults	b) Population: all adults in Lahore Sample: 30% adults who drink atleast 12 glasses of water
c) Population: all adults in Lahore Sample: 50,000 selected adults	d) Population: 50,000 selected adults. Sample: 30% adults who drink atleast 12 glasses of water

172) A set of exam scores is represented by the following stem and leaf display:

4	5	6	8								
5	3	4	5	6	9						
6	2	3	5	6	6	9	9				
7	0	1	1	3	3	4	5	5	5	7	8
8	1	2	3	6	9						
9	3	5	7	8							

The mode for the data set is

a) 75	b) 71
c) 78	d) 69

173) The following stem and leaf display show the number of pizza slices eaten by contestants in a recent pizza eating contest.

3	1

4	0
5	4 7
6	2 2 6
7	0 2 5 6 9 9
8	5 7 9

Based on above data, which of the following statement is/are true?

(I) The range is 57
(II) The median is 71
(III) The mean is 66

a) Statement (I) only	**b) Statement (II) only**
c) Statement (III) only	d) All statements are correct

174) In how many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together?

a) 120	b) 360
c) 720	d) 5040

Answer
The word 'LEADING' has 7 different letters.
When the vowels EAI are always together, they can be supposed to form one letter.
Then, we have to arrange the letters LNDG (EAI).
Now, 5 (4 + 1 = 5) letters can be arranged in 5! = 120 ways.
The vowels (EAI) can be arranged among themselves in 3! = 6 ways.
Required number of ways = (120 x 6) = 720.

175) The "Yates" continuity correction:

a) Reduce the numerical value of the difference between actual and estimated value by 0.5 regardless of the sign of the numerical value
b) Increase the numerical value of the difference between actual and estimated value by 0.5 regardless of the sign of the numerical value
c) Reduce the numerical value of the difference between actual and estimated value by 0.5 only if actual value is greater than estimated value.
d) Reduce the numerical value of the difference between actual and estimated value by 0.5 only if actual value is less than estimated value.

176) Yates correction is applied in case of:

a) Poisson Distribution	b) Binomial Distribution
c) Chi-square Distribution	d) Normal Distribution

177) Under the yates continuity correction, the numerical value of the difference between actual and estimated value is:

a) Reduced by 0.5 regardless of the sign of the numerical value
b) Increased by 0.5 regardless of the sign of the numerical value
c) Reduced by 0.5 if actual value is greater than estimated value
d) Reduced by 0.5 if actual value is less than estimated value

178) Alia borrowed Rs. 700,000 from Sara for a period of 2 years and 3 months at r% simple interest. She paid a total of 950,000 at the end of loan period. the value of "r" is

a) 14.29%	b) 15.53%

c) 15.87%	d) 17.86%

179) Suman borrowed Rs. 900,000 at simple interest of 7.5% per annum. At the end of the loan period she repaid a total of 1,372,500. Period of the loan was:

a) 7 years	b) 7 years 3 months
c) 7 years 6 months	d) 8 years

180) Haroon has borrowed a certain amount at an interest of 12% compounded semi-annually. In how many years the amount owed would double?

a) 3 years	b) 5 years
c) 6 years	d) 8 years

181) Hashir has borrowed "x" amount at an interest of 13% compounded semi-annually. If he does not return the amount, in which of the following years the amount owed would be 2x?

a) Third year	b) Fifth year
c) sixth years	d) eighth years

182) Rida has borrowed a certain amount at an interest of 9% compounded quarterly. In which year the amount owed would be double?

a) 6^{th} year	b) 7^{th} year
c) 8^{th} year	d) 9^{th} year

183) Saad borrowed Rs 600,000 from Fahad for a period of 3 years and 9 months at r% simple interest. He paid Rs 400,000 in excess of the borrowed amount at the end of loan period. The value of "r" is:

a) 22.22%	**b) 17.78%**
c) 17.09%	d) 16.67%

184) Mani borrowed Rs 900,000 from Rani for a period of 4 years and 10 months on simple interest. He paid Rs 750,000 in excess of the borrowed amount at the end of loan period. The rate of interest is:

a) 18.33%	**b) 17.24%**
c) 20.33%	d) 16.67%

185) Hanif borrowed Rs 800,000 from Rehan for a period of 4 years and 5 months on simple interest. He paid Rs 650,000 in excess of the borrowed amount at the end of loan period. The rate of interest is:

a) 18.06%	b) 18.13%
c) 18.40%	d) 20.31%

186) Baber borrowed Rs. 900,000 at simple interest of 9.68% per annum. At the end of the loan period he repaid a total of Rs. 1,510,000. Period of the loan was" (01 marks)

a) 5 years and 9 months	b) 6 years
c) 6 years and 3 months	**d) 7 years**

187) Baber borrowed Rs. 900,000 at simple interest of 8.34% per annum. At the end of the loan period he repaid a total of Rs. 1,500,000. Period of the loan was" (01 M)

a) 7 years	b) 7 years and 3 months

c) 7 years and 9 months	d) 8 years

188) Faraz borrowed Rs. 1,000,000 at simple interest of 8.5% per annum. At the end of the loan period he repaid a total of Rs. 1,510,000. Period of the loan was" (01 M)

a) 5 years and 9 months	**b) 6 years**
c) 6 years and 3 months	d) 7 years

189) Saleem borrowed Rs. 500,000 from a bank at simple interest of 2% per month for a period of 3 years. the principal is payable in equal monthly instalments, along with interest. Which of the following statements is correct? (01 marks)

a) His monthly instalments would be Rs. 23,000	b) He would pay Rs. 100,000 per annum in interest
c) He would have paid an additional amount of Rs 300,000 by the end of 3 years	**d) At the end of year 1, his balance principal amount would be Rs. 333,333.33**

190) T-test may be used to test the hypothesis regarding:

a) Sample mean	b) Population variance
c) Population mean	d) Population standard deviation.

191) T-test may be used to test the hypothesis regarding:

a) Population variance	b) **Population mean**
c) Population standard deviation.	d) Sample mean

192) T-test may be used to test the hypothesis when:

a) Sample size are small and population is normally distributed	b) Sample size are large and population is normally distributed
c) Sample size are either small or large but population is normally distributed	d) Sample size are either small or large but population is not normally distributed

193) A medical research company has developed the following equation for regression line of y on x (line of best fit) for a particular age group y= 6.93 +0.38x where x represent height in centimetres and y represents weight in kilogram. Using above equation, we can say that

a) For each centimetre increase in height, weight will decrease by 0.38 kilogram
b) For each centimetre increase in height, weight will increase by 0.38 kilogram
c) For each centimetre increase in height, weight will increase by 6.55 kilogram
d) For each centimetre increase in height, weight will decrease by 6.55 kilogram

194) Consider following data

Towns	Bee	Cee	Dee	Gee	Jay	Kay	Pee	Tee
Police strength	140	130	220	150	140	150	180	160
No. of crimes per Month	95	110	80	75	90	120	100	110

The equation for regression line of y on x (line of best fit) for the above data is:

Y=129.25-0.2x

Using the above regression equation, which of the following statement is correct?

a) Police of Bee town is more efficient than police of Cee town
b) Police of Dee town is more efficient than police of Gee town

c) Police of Kay town is more efficient than police of Pee town
d) Both (a) and (b)

195) The Citizen Police Liaison Committee of Port City has gathered following information from the various towns of the city:

Towns	East	West	South	North	Central	Costal	Upper	Lower
Police strength	120	150	130	125	156	150	130	160
No. of crimes per Month	105	90	108	108	155	180	130	125

The equation for regression line of y on x (line of best fit) for the above data is: (03)

a) Y=31.825+1.123x	b) Y=3.840+0.866x
c) Y=110.533+0.237x	d) Y=3.840+0.237x

196) The Citizen Police Liaison Committee of Utopia City has gathered following information from the various towns of the city:

Towns	Bee	Cee	Dee	Gee	Jay	Kay	Pee	Tee
Police strength	120	150	230	235	156	150	130	160
No. of crimes per Month	95	110	90	55	90	180	130	110

The equation for regression line of y on x (line of best fit) for the above data is:

Y=185.031 – 0.466x

Using the above regression equation, which of the following statement is correct?

a) Police of Cee town is more efficient than police of Bee town
b) Police of Dee town is more efficient than police of Gee town
c) Police of Kay town is more efficient than police of Pee town
d) Police of Jay town is more efficient than police of Tee town

197) *If* $\Sigma X = 2000,\ \Sigma Y = 1020,\ \Sigma X^2 = 10{,}000,\ \Sigma Y^2 = 750,\ \Sigma XY = 15{,}000$ *and* $n = 100$

The line of regression of Y on X is:

a) 5.6+0.17x	**b) 6.6+0.18x**
c) 6.6+0.15x	d) 9.6+0.18x

198) *If* $\Sigma X = 1{,}239,\ \Sigma Y = 79,\ \Sigma X^2 = 568{,}925,\ \Sigma Y^2 = 293,\ \Sigma XY = 17{,}233$ *and* $n = 100$

Find line y on x and x on y and their point of intersection

a)	**b)**
c)	d)

199) *If* $\Sigma X = 173,\ \Sigma Y = 613,\ \Sigma XY = 11{,}965,\ \Sigma X^2 = 4{,}119,$ *and* $n = 10$, then equation for regression line of y on x (line of best fit) would be: (02)

a) Y=40.402+20.898x	b) Y=-61.30+20.898x
c) Y=40.402+1.208x	d) Could not be calculated as value of ΣY^2 is not given

200) *If* $\Sigma X = 173,\ \Sigma Y = 613, \Sigma XY = 11{,}965, \Sigma X^2 = 4{,}119,\ and\ n = 10$, then equation for regression line of y on x (line of best fit) would be: (02)

a) Y=40.40+20.90x	b) Y=-61.30+20.90x
c) Y=40.40+1.21x	d) Could not be calculated as value of ΣY^2 is not given

201) *If* $\Sigma X = 58,\ \Sigma Y = 313, \Sigma XY = 3{,}015, \Sigma X^2 = 594,\ and\ n = 6$ then the equation for regression line of y on x (line of best fit) would be:

a) X=-0.32+55.26y	b) Y=55.26+0.32x
c) Y=0.32-55.26x	d) Y=55.26-0.32x

202) Find the coefficient of correlation between x and y if:

Regression line of x on y is: 5x-4y+2=0 and
Regression line of y on x is: x-5y+3=0

a) 0.4	b) -0.4
c) ±0.4	d) ±0.16

203) If a = -12.57 and b = 0.35 then equation for regression line of y on x (line of best fit) would be:

a) Y=-0.35+12.57x	b) Y=0.35-12.57x
c) Y=12.57- 0.35x	**d) Y= -12.57+0.35x**

204) If the equation for regression line of y on x (line of best fit) is y=16 - 1.5x, then by increasing every 1-unit of x the value of y would:

a) Decrease by 16 units	b) Decrease by 14.5 units
c) Decrease by 1.5 units	d) Increase by 14.5 units

205) If the equation for regression line of y on x (line of best fit) is y=32+0.5x, then for every unit increase in x, y would: (02 marks)

a) Increase by 32 units	b) increase by 16 units
c) increase by 48 units	**d) Increase by 0.5 units**

206) What will be the coefficient of correlation for s sample of 20 pairs of observations, given that:

$\overline{X} = 2,\ \overline{Y} = 8, \Sigma X^2 = 180,\ \Sigma Y^2 = 1424\ and\ \Sigma XY = 404$

a) 0.90	**b) 0.70**
c) 0.80	d) None of these

207) If the value of coefficient of determination i.e r2=0.64, it means that:

a) 80% of variations in the value of y are explained by variations in the value of x	**b) 64% of variations in the value of y are explained by variations in the value of x**
c) 36% of variations in the value of y are explained by variations in the value of x	d) 20% of variations in the value of y are explained by variations in the value of x

208) If the coefficient of determination is a positive value, then the coefficient of correlation:

a) Must be positive	b) Must be negative
c) Must be zero	**d) Can be negative as well as negative**

209) There is a perfect positive correlation when

a) All the data points lie on a scatter diagram in a discrete form	**b) all the data points lie in an exact straight line and a linear relationship exists between the two variables**
c) All the data points lie in an exact straight line but relationship ,may or may not be linear	d) None of the above

210) Perfect positive correlation is denoted by value: (01 marks)

a) 1	b) 0
c) Between 0.90 and 1.0	d) 1 or -1

211) Value of r=0, indicates:

a) Perfect positive correlation	b) Perfect negative correlation
c) No correlation	d) None of the above

212) If 25% of variations in the value of y are explained by variations in the value of x then coefficient of correlation is:

a) 0.25	b) 0.75
c) 0.50 or -0.50	d) Either 0.25 or – 0.25

213) If 49% of variations in the value of y are explained by variations in the value of x then coefficient of correlation is:

a) 0.51	**b) 0.70**
c) 0.50 or -0.50	d) Either 0.49 or – 0.49

214) If the value of r2 is 0.25, it means that: (01 mark)

a) 75% of the variation in the value of y is explained by variation in the value of x
b) 50% of the variation in the value of y is explained by variation in the value of x
c) 25% of the variation in the value of y is explained by variation in the value of x
d) 0.25% of the variation in the value of y is explained by variation in the value of x

215) If covariance(x,y)=62, standard deviation (x) = 16 and standard deviation (y)=7, "r" will be equal to:

a) 0.6435	**b) 0.5536**
c) 0.6235	d) 0.5235

216) If all the points on scatter diagram lies on the regression line, then coefficient of correlation is?

a) 0	b) 1
c) -1	**d) 1 or -1**

217) If regression coefficient of y on x is 1.44 and the coefficient of correlation between x and y is 0.6, the regression coefficient of x on y will be

a) 0.84	b) 2.4
c) 0.25	d) 4

218) Find out the regression coefficient of y on x if regression coefficient of x on y is 0.25 and coefficient of correlation between x and y is 0.6:

a) 1.24	b) 1.44
c) 1.96	d) 2.02

219) The president of National Cardiac Association (NCA) wants to determine the average number minutes that patients of each doctor walks per day. He randomly selected 30 doctors and advised each of them to poll 50 of their patients at random and submit the main number of walk minutes per day to the NCA. The sample size for NCA will be:

a) 30	b) 50
c) 1500	d) 80

220) Which of the following statements as regards Histogram is correct?

a) A vertical rectangle is drawn to represent each class of the frequency distribution	b) The frequency of the class is represented by the height of rectangles
c) Histogram cannot represent continuous data	d) Both (a) and (b)

221) Which of the following statements as regards Histogram is correct? (01 mark)

a) Histogram can represent continuous data	b) **A vertical rectangle is drawn to represent each class of the frequency distribution**
c) The frequency of the class is represented by the height of rectangles	d) Histogram are used to compare variables

222) Which of the following statements is correct as regards scatter diagrams? (01 mark)

a) It is least important to establish which variable is independent before plotting the scatter diagram	b) It leads to correct conclusions even if there are only few data points.
c) It can show relationship between more than two variables	**d) It may indicate a relationship where there is none**

223) Which of the following statements is correct as regards scatter diagrams? (01 mark)

a) It can show relationship between more than two variables	b) It leads to correct conclusions even if there are only few data points.
c) It is important to establish which variable is independent before plotting the scatter diagram	d) Both (b) and (c)

224) If the median is 49.21 and the two quartiles are 37.15 and 61.27, what can be said of the skewness?

a) Distribution is positively skewed	b) Distribution is negatively skewed
c) Distribution is symmetrical	d) None of the above

225) Which of the following equations is not linear?

a) $y = 2x^2$	b) X+9=0
c) $x - \frac{y}{5} + 20 = 0$	d) Y=2x-5

226) A sample survey conducted by an organisation obtained the following data on the average number of items that persons in the various age group visit a physician each year:

Age Group (years)	Number of persons In the sample	Mean number of visits
Less than 5	50	2.1
5—20	115	1.6
21—60	155	2.6
61 and over	90	3.5

Calculate the mean number of visits to the physician:

a) 2.456	b) 2.656
c) 2.896	d) None of the above

227) The equation representing a straight line is 7y=11x+3. The y-intercept is:

a) 3/7	b) 11/3
c) 7/3	d) 11/7

228) The equation representing a straight line is 4y=5x+8. The slope of line is:

a) 1.25	b) 5
c) 0.8	d) 0.5

229) The scores obtained by six students in a set of examination are 80,40,50,72,45, and 81. These scores are changed by 15%. What will be the effect of these changes on the mean and standard deviation?

a) Mean and standard deviation will remain unchanged	b) Mean will increase by 15% but standard deviation will remain unchanged.
c) Mean and standard deviation both will increase by 15%	d) Mean will remain unchanged but standard deviation will increase by 15%

230) From a given finite population samples are drawn with replacement. If the sample size is increased from 10 to 100, the standard error would: (02 Marks)

a) Decrease by 21.62%	b) Decrease by 31.62%
c) Decrease by 68.38%	d) Decrease by 90%

231) From a given finite population samples are drawn with replacement. If the sample size is increased from 50 to 70, the standard error would: (02 Marks)

a) Decrease by 7.07%	**b) Decrease by 15.48%**
c) Decrease by 14.14%	d) Decrease by 8.37%

232) From a given finite population samples are drawn with replacement. If the sample size is decreased from 70 to 50, the standard error would: (02 Marks)

a) Increase by 18.32%	b) Increase by 15.48%
c) Increase by 14.14%	d) Increase by 8.37%

233) From a given finite population samples are drawn with replacement. If the sample size is decreased from 75 to 40, the standard error would: (02 Marks)

a) Increase by 36.93%	b) Increase by 46.17%
c) Increase by 32.81%	d) Increase by 29.73%

234) From a given finite population samples are drawn with replacement. If the sample size is decreased from 60 to 40, the standard error would: (02 Marks)

e) Increase by 12.90%	f) Increase by 15.81%
g) Increase by 18.35%	**h) Increase by 22.47%**

235) If a finite population of size 324 has a mean 18, what would be the mean of the sampling distribution of the mean for samples of sizes 25?

a) 5	b) $3\sqrt{2}$
c) 18	d) It cannot be determined from the information given

236) Random samples of 50 items were drawn with replacement from a finite population. If $\Sigma(X-\overline{X})^2=700,$ the standard error of the mean would be: (02 marks)

a) 0.529	b) 0.535
c) 0.011	d) Cannot be calculated from given data

237) Random samples of 70 items were drawn with replacement from a finite population. If $\Sigma(X-\overline{X})^2=500,$ the standard error of the mean would be: (02 marks)

a) 0.319	b) 0.322
c) 2.67	d) 2.69

238) Asif plans to invest Rs 5,000 every year starting from today for next 3 years. Interest rate is 10% per annum compounded annually. Future value of the annuity is: (01 mark)

a) Rs 16,500	b) Rs 17,050
c) Rs 17,600	**d) Rs 18,205**

239) Sami plans to invest Rs 8,000 every year for 3 years starting from today. Interest rate is 10% per annum compounded semi-annually. At the end of year 3 he will receive: (01 mark)

a) Rs 29,128	**b) Rs 29,265**

c) Rs 26,480	d) Rs 27,871

240) Kaleem plans to invest Rs 8,000 every year for 3 years starting from today. Interest rate is 10% per annum compounded annually. At the end of year 3 he will receive: (01 mark)

a) Rs 26,480	b) Rs 28,328
c) Rs 29,128	d) Rs 31,944

241) Razia plans to invest Rs 9,000 every year for 3 years starting from today. Interest rate is 10% per annum compounded annually. At the end of year 3 she will receive: (01 mark)

a) Rs 29,790	b) Rs 31,869
c) Rs 35,937	**d) Rs 32,769**

242) Zaki plans to invest Rs 6,000 every year for 3 years starting from today. Interest rate is 10% per annum compounded annually. At the end of year 3 he will receive: (01 mark)

a) Rs 23,958	b) Rs 21,846
c) Rs 21,246	d) Rs. 19,860

243) Zaki plans to invest Rs 6,000 every year for 4 years starting from today. Interest rate is 10% per annum compounded annually. At the end of year 4 he will receive: (01 mark)

a) Rs 30,000	**b) Rs 30,631**
c) Rs 33,600	d) Rs. 26,400

244) Razia plans to invest Rs 9,000 every year for 4 years starting from today. Interest rate is 10% per annum compounded annually. At the end of year 4 she will receive: (01 mark)

a) Rs 29,790	b) Rs 31,869
c) Rs 35,937	**d) Rs 45,945.9**

245) Which of the following statement is CORRECT?

a) Discounting estimates the present day equivalent of a future cash flow at a specified time in the future at a given rate of interest
b) Multiplying by a discount factor is the same as multiplying by a compounding factor
c) The present value of a cash flow is the recipient of its future value
d) Present value fails to appraise large projects with multiple cash flows.

246) Which of the following as regards random sample is INCORRECT?

a) It can be cumbersome when sample is to be obtained from an unusually large population	b) It is not suitable for investigators who are interested in issues related to subgroups of a population
c) It is a bias free sample	**d) It is a sample in which every member of population has unequal chance of being selected**

247) The prices of commodity in different years is given below:

Years	Prices
2010	49
2011	53
2012	58
2013	62

Determine the chain indices in the above case: (01 mark)

a) 100,105.5,118.40,112.80	b) 100,92.50,91.40,93.55
c) 100,108.16,109.43,106.90	d) 100,105.50,116.50,114.50

248) The price relatives of three commodities are given below:

Year	A	B	C
2013	100	105	102
2014	106	100	100

The chain indices for each commodity are: (01 mark)

a) 94, 105 and 102 respectively	**b) 106, 95 and 98 respectively**
c) 106, 105 and 102 respectively	d) 106, 95 and 102 respectively

249) Calculate mode of the following data:

15, 16, 20, 20, 20, 21, 21, 21, 21, 23, 23, 28, 28, 28, 28, 28, 29, 29, 29, 33

a) 21	b) 29
c) 21 and 28	**d) 28**

250) Which of the following statements is correct as regards the mode of a grouped frequency distribution?

a) Modal class can be identified by preparing histogram	b) Mode is the mid-point of the Modal class
c) Modal class is the Mode of grouped frequency distribution	d) Both (a) and (b)

251) Government has issued a five years bond of Rs. 200,000. On maturity the buyer will get Rs 300,000. If the current interest rate is 8% per annum, is purchasing the bond worth?

a) Yes, as present value of Rs 300,000 is more than Rs 200,000	b) No, as present value of Rs 300,000 is more than Rs 200,000
c) Yes, as present value of Rs 300,000 is less than Rs 200,000	d) No, as future value of Rs 200,000 is more than Rs 300,000

252) Government has issued a five years bond of Rs. 200,000. On maturity the buyer will get Rs 300,000. If the current interest rate is 9% per annum, is purchasing the bond worth?

a) Yes, as Future Value of Rs 200,000 at current interest rate is more than Rs 300,000	b) No, as Future value of Rs 200,000 at current interest rate is more than Rs 300,000
c) Yes, as present value of Rs 300,000 at current interest rate is more than Rs 200,000	**d) No, as present value of Rs 300,000 at current interest rate is less than Rs 200,000**

253) Which of the following statements is correct?

a) Bar charts are usually used for plotting continuous data	b) Bar charts are usually used for plotting discrete data
c) Bar charts can be plotted horizontally or vertically.	**d) Both (b) and (c)**

254) Which of the following statements regarding Bar charts is correct?

a) Bar charts are usually used for plotting continuous data	**b) Bar charts can be plotted horizontally or vertically.**

c) Bar charts are usually used for plotting vertical data only	d) Both (a) and (b)

255) A bank is planning to offer a unique product to its customers whereby it would pay Rs 250,000 per annum for an indefinite period commencing from the end of year 6. How much amount should the bank ask its customers to pay now, if the rate of interest that the bank can pay, is 5% compounded annually?

a) Rs 3,191,221	b) Rs 3,547,829
c) Rs 3,917,631	d) Rs 3,960,498

256) A pharmaceutical company sent its teams into rural areas of the country to interview all mothers with children under 2 years of age. The selected sample is an example of:

a) Cluster sampling	b) Systematic sampling
c) Stratified sampling	d) Quota sampling

257) A business researcher wanted to evaluate the eating habits of England residents from rural site, such mothers which have less than 3 babies. The sampling used for this purpose is called

a) Cluster sampling	b) Systematic sampling
c) Stratified sampling	d) Multi-stage sampling

258) A company has 1,000 customers. The customer service office of the company selected a customer at random from the first 10 customers on the list of customers. Thereafter he selected every 10th customer from the list and called them to get feedback on the services offered by the company. This is an example of

a) Random sampling	**b) Systematic sampling**
c) Stratified sampling	d) Quota sampling

259) Which of the following statements is correct for the equation $3x^2 + 5x = 9$?

a) Coefficient of x is 2	**b) Constant = -9**
c) The equation contains two variables	d) It is a linear equation

260) The mean and standard deviation of a sample of 100 values were found to be 104 and 4.7 respectively. Later, errors were discovered in three records enumerated below:

Sr no.	Correct values (as per original record)	Amount taken (for computation)
58	151	115
72	78	87
89	98	89

The correct mean and standard deviation is:

a) 105.21 and 6.2	b) 107.5 and 7.2
c) **104.36 and 6.7**	d) None of the above

261) 5 years ago the age of father was 3 times of his son's age. After 7 years it will be twice the age of his son. The present age of father and son is:

a) 53 and 21	**b) 41 and 17**
c) 50 and 20	d) 47 and 19

262) Which of the following are the factors of the expression $3x^2 - 6x - 9$ (01 mark)

a) $3(x-3)(3x+1)$	b) $3(x-3)(x+1)$
c) $(3x+9)(x-1)$	d) $(3x-9)(3x+3)$

263) Ali wishes to plant flowers in front of his house. His father has brought him a box containing 3 tulips, 4 roses and 3 jasmines. If he selects five flowers at random, the probability that 1 tulip, 2 roses and 2 jasmines are selected is: (03 marks)

a) 1/9	b) 2/27
c) 3/14	d) 3/28

264) Which of the following values of x will satisfy the equation?

$$x+10 = 11x^2 - x+1$$

a) 1 and 0.818	b) – 1 and –0.818
c) 1 and –0.818	d) –1 and 0.818

265) Which of the following is correct?

a) If there is a strong relationship between two variables, the points on the scatter diagram concentrated around a curve

b) Linear regression analysis is used to calculate values of "a" and "b" in the linear cost equation

c) The standard regression equation is y= a – bx

d) Both (a) and (b)

266) Which of the following is correct? (01)

a) If there is a strong relationship between two variables, the points on the scatter diagram would be concentrated around a curve

b) Linear regression analysis can be used to estimate fixed costs and variable cost per unit from historical total cost and production data.

c) The standard regression equation is y= a – bx

d) Both (a) and (b)

267) Which of the following is correct? (01)

a) If there is a strong relationship between two variables, the points on the scatter diagram would be concentrated around a curve

b) The standard regression equation is y= a – bx

c) Scatter diagram leads to correct conclusions even if there are few data points

d) Both (a) and (b)

268) If a coin is flipped three times, the possible sample will be:

a) HHH, HTT, HTH, TTT, HTT, THH, HHT, THT
b) HTT, THT, HTH, HHH, TTH, TTT
c) HHH, THT, HTH, HTT, THH, THT, TTH, TTT
d) HHH, TTT, THT, HTH, HHT, TTH, HTH

269) A coin is tossed 3 times find the probability that it lands on head exactly once is?

a) 0.125	**b) 0.375**
c) 0.5	d) 0.25

270) The helpline of an ISP receives an average of four calls in every five minutes during peak load hour. Assuming an appropriate Poisson distribution, what is the probability that three or more calls will be received during a period of ten minutes?

a) 0.8488	b) 0.9576
c) 0.9862	d) 0.0424

271) Detail of leaves availed during 20X8 by top three students in a class is as follows:

Name of Student	Taha	Amir	Zahid
Number of Leaves	7	5	3

Harmonic mean of the number of leaves taken by the above students is:

a) 5.00	b) 0.68
c) 0.20	**d) 4.44**

272) Drawing a conclusion about a population from a sample is known as:

a) Hypothesis testing	b) Point estimate
c) Statistical inference	d) Systematic sampling

273) Which of the following statement is correct?

a) A grouped frequency distribution of discrete data has gaps between the classes	b) Discrete data can be converted into continuous data
c) In the case of discrete data, the mid-point of upper class limit of one class and lower class limit of subsequent class is termed as class boundary	**d) All of the above**

274) The following data shows the weight (in grams, round to the nearest gram) of 35 randomly picked oranges from a farm:

155	161	164	166	168	170	172	172	173	175
177	178	178	179	181	182	182	184	186	188
189	192	195	196	197	198	203	206	208	209
210	214	218	221	243					

The mean and median of the above data is:

a) 186.50 and 182	b) 184.50 and 183
c) 188.29 and 184	d) None of the above

275) The average runs scored by seven leading test cricketers during last calendar year are given below:

Average runs scored in 1st innings (x)	46	73	68	79	49	43	81
Average runs scored in 2nd innings (y)	31	55	65	62	85	36	53

The spearman's rank correlation coefficient for the runs scored in first and second innings is:

a) 0.7143	b) 0.1190
c) 0.2857	d) 0.8810

276) Find rank correlation of the following data

1	3	3	5	4	4
1	2	3	4	5	6

a)	b)
c)	d)

277) $\Sigma(x-\bar{x})(y-\bar{y}) = 954$ and standard deviation of x is 21.5 and standard deviation of y is 10.61 r=0.524 then find n=?

a) 20	b) 17
c) 19	d) 18

278) Team A scored an average of 205 runs in twenty-one-day international matches with a standard deviation of 10 whereas Team B scored an average of 190 runs in same one-day international matches with a standard deviation of 8. Which of the following is correct?

a) Team A is more consistent	**b) Team B is more consistent**
c) Both teams are equally consistent	d) Consistency cannot be determined from the above information

279) Which of the following value of x will satisfy the equation $3^{2x-2} = \sqrt[3]{2}$

a) 1.105	b) 1.510
c) 1.751	d) 2.015

280) In a sample of 300 medical students of a college, 109 are males. We can say with 95% confidence that the population proportion of male students is between: (03 marks)

a) 29.17% and 43.50%	b) 31.75% and 40.92%
c) 30.31% and 42.36%	**d) 30.89% and 41.78%**

281) In a sample of 700 medical students of a college, 313 are males. We can say with 99% confidence that the population proportion of male students is between: (03 marks)

a) 41.61% and 47.82%	b) 41.03% and 48.40%
c) 40.64% and 48.79%	**d) 39.87% and 49.56%**

282) Hospital data shows that Star Football Club (SFC) team loses 9% of its matches in every session. The Probability that SFC will lose exactly one of its next five matches is:

a) 04.50%	b) 09.00%
c) 08.50%	**d) 30.86%**

283) A survey of 316 randomly selected patients in a hospital, produced the following data:

Hospital Stays	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27
Frequency (patients)	06	12	110	103	42	25	13	04	01

The mean and Standard Deviation of the data is: (03 marks)

a) 11 and 4	b) 11 and 5
c) 11and 3	d) 12 and 2

284) A survey of 316 randomly selected patients in a hospital, produced the following data:

Hospital Stays	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27
Frequency (patients)	125	115	91	59	70	25	07	02	01

The mean and Standard Deviation of the data is: (03 marks)

a) 24.96 and 7.72	**b) 7.72 and 5.00**
c) 7.72 and 24.96	d) 5.00 and 7.72

285) PABX system of Nadia Travels receives an average of two calls in every three minutes. Assuming poisson distribution, what is the probability that four or more calls will be received during a period of 9 minutes?

a) 0.1512	b) 0.2851
c) 0.6667	**d) 0.8488**

286) PABX system of Nadia Travels receives an average of two calls in every three minutes. Assuming poisson distribution, what is the probability that six or more calls will be received during a period of 9 minutes?

a) 0.4457	**b) 0.5543**
c) 0.6063	d) 0.8488

287) Age distribution of employees in Dynamic Corporation is as follows:

Age in Years	22-26	26-30	30-34	34-38	38-42	42-46	46-50
No. of Employees	6	10	8	5	7	6	3

Find the Standard Deviation: (03 marks)

a) 7.3708	b) 6.9397
c) 6.1397	d) 6.3708

288) Age distribution of employees in Dynamic Corporation is as follows:

Age in Years	22-26	26-30	30-34	34-38	38-42	42-46	46-50
No. of Employees	6	10	8	5	7	1	3

Find the Standard Deviation: (marks 03)

a) 7.1397	**b) 6.9397**

c) 6.7397	d) 6.5397

289) The index that uses quantities of base period as weights, is known as: (01 mark)

a) Laspeyre's index	b) Paasche's index
c) Fisher's index	d) Both (a) and (b)

290) A wallet contains fifty Rs. 1,000 and fifty Rs. 500 currency notes. If four notes are drawn from the wallet at random with replacement, the probability that the total amount drawn would exactly be equal to Rs. 3,000 is: (02 marks)

a) 25.0%	**b) 37.5%**
c) 50.0%	d) 62.5%

291) A wallet contains sixty-five Rs. 1,000 and thirty-five Rs. 500 currency notes. If four notes are drawn from the wallet at random with replacement, the probability that the total amount drawn would exactly be equal to Rs. 3,000 is: (02 marks)

a) 31.05%	b) 35.00%
c) 50.00%	d) 65.00%

292) In order to decide whether to use z-test or t-test, we need to consider: (01 Mark)

a) Size of sample only	**b) Size of sample and population variance**
c) Either size of sample or population variance	d) Either size of sample or population standard deviation

293) Which of the following is correct?

a) The coefficient of determination is the square root of the correlation coefficient.	b) The coefficient of coefficient is the square of the correlation of determination.
c) The coefficient of correlation explains the variations in the value of y by variations in the value of x.	**d) The coefficient of determination explains how much variability of one factor can be caused by relationship to another related factor**

294) Which of the following statements regarding regression is correct?

a) If there is a weak relationship between two variables, the points on the scatter diagram would be concentrated around a curve	b) In linear regression, both variables are dependent to each other
c) The standard regression equation is Y=a-bx	**d) In linear regression, one variable is considered to be an explanatory variable, and the other is considered to be a dependent variable**

295) Which of the following statements regarding regression is correct?

a) If there is a weak relationship between two variables, the points on the scatter diagram would be	b) **If the curve of regression is a straight line, it is described as a linear regression line**.

concentrated around a curve	
c) The standard regression equation is Y=a-bx	d) In linear regression, both variables are dependent to each other

296) Consider the following data set: 11,19,19,20,21,24,25,25,36

297) The lower quartile of the data is: (01 mark)

a) 20	b) 25
c) 19	d) 24

298) Consider the following data: 2,5,7,6,9

The coefficient of variance of the above data is: (02 marks)

a) 36.94%	**b) 39.92%**
c) 41.57%	d) 60.08%

299) Consider the following data:

X	0	1	2	3	4
F	8	7	3	1	1

The variance of the above data is: (02 marks)

a) 1.095	**b) 1.200**
c) 2.098	d) 4.400

300) An IQ test is administered by a well-known testing center. The test has a mean scores of 100 and standard deviation of 15. If Ali's z-score is -1.20, what was his score on the test? (01)

a) 82	b) 100
c) 112	d) 118

301) In a bakery, 3 cakes of fresh cream pineapple, 4 cakes of chocolate, 2 cakes of buttercream strawberry and 1 cake without cream are available. If two customers purchase one cake each, such that first cake is replaced before the sale of the second then, the probability that both the cakes would be of chocolate flavour is:

a) 7/12	b) 2/15
c) 0.12	**d) 0.16**

302) In a bakery, 3 cakes of fresh cream pineapple, 4 cakes of chocolate, 2 cakes of buttercream strawberry and 1 cake without cream are available. If two customers purchase one cake each, such that first cake is replaced before the sale of the second then, the probability of selling both the pineapple flavour cakes is:

a) 7/12	b) 2/15
c) 0.16	d) 0.09

303) Which of the following is not a quadratic equation?

a) $5x^2 - 7 = 2x$	b) $2x - 11 = 15$
c) $\sqrt{3}x^2 - 12x = 15$	d) $\frac{3}{5}x - 12 = 12x^2$

304) Which of the following diagrams represents fixed plus variable cost?

a)	b)
c)	d)

305) Which of the following constraints are represented by the given graph?

a) 2x+3y ≤ 24, 3x+5y ≤45, x ≤ 4, x,y ≥ 0	b) 2x+3y ≤ 24, 3x+5y ≤ 45, y ≤ 4, x ≤ 0, y≥0
c) 3x+2y≤24, 5x+3y≥45, x ≤ 4, y≥0, x≥0	d) 3x+2y≤24, 5x+3y≥45, y ≤ 4, x≤0 x,y≥0,

306) Desi Restaurant collected the following data about advertising and sales for five months:

Advertising Expense (Rs. 000)	10	40	20	35	50
Sales (Rs. 000)	125	535	180	415	560

Equation of a line of best fit for the above data will be: (03 marks)

a) Y= - 17.06+12.26x	b) Y=17.06-12.26x
c) Y=-17.06x+12.26	d) Y=17.06x-12.26

307) Immaculate Enterprise Assesses performance of its staff on annual basis assigning weightages to their performance scores. Following are the scores of two of its managers.

	weightage	**Manager 1**	**Manager 2**
Annual goals achieved	5	75	80
Client Satisfaction	5	75	80
Addition of new clients	3	40	35
Initiatives taken	2	20	15

The weightage arithmetic mean of Manager 1 and Manager 2 are: (02 marks)

a) 62.33 and 60.67	b) 52.50 and 51.5
c) 60.67 and 62.33	d) 52.50 each

308) The correlation between height and weight for adults is +0.90. it depicts height on account of variation in weight is:

a) 90%	b) 45%
c) 10%	**d) 81%**

309) Which of the following diagrams represent fixed plus variable cost?

a)	b)
c)	d)

310) Which of the following statements is CORRECT?

a) **It is impossible to find the future value of a perpetuity**.	b) It is impossible to find the present value of a perpetuity
c) Perpetuity factor is square of the cost of capital	d) In investment appraisal, an annuity might be assumed when a constant annual cash flow is expected for a long term into the future.

311) The manager of a fitness club claims that new entrants lose more than 25% of their weight within 3 months of joining the club. A sample of 25 new entrants shows that on average they lost 23.5% of their weight with a standard deviation of 2.5%. the calculated and table value of "t" in this case at 0.05 level of significance is:

a) – 3.0 and 2.0639	b) 3.0 and 2.0639
c) 3.0 and 1.7109	**d) – 3.0 and 1.7109**

312) Which of the following statements is NOT correct as regards the term population?

a) Population may be defined as all items under study/consideration
b) In gathering information about a population it is desirable to test each member of that population
c) A population may be defined as all people or items with a characteristics that a researcher wishes to understand
d) The term "population" includes every single member of a particular group.

313) Random samples of 90 items were drawn with replacement from a finite population. If variance is 49, the standard error of the mean would be:

a) 0.763	**b) 0.738**
c) 0.551	d) 0.544

314) What is the standard error of the mean, if sample size, sample mean and sample standard deviation are 7,8 and 4.2 respectively?

a) 2.65	b) 5.80
c) 2.05	d) 1.56

315) A population has a mean of 75 and standard deviation 10, sample of size 20 are selected and sample means are recorded. What is the standard deviation of sample mean?

a) 10	b) 75
c) 2.24	d) None of these

316) What is considered when choosing between z and t distribution

a) Sample size	b) Population size
c) Whether population variance is known or unknown	**d) Both A and C**

317) What is correct about T-distribution?

a) It varies with sample size	b) As sample size decreases, it approaches towards normal distribution
c) It is used when n>30	d) Both A and B

318) Which of the following does not come under normal distribution?

a) Age of students in a class	b) Height of men above 20 years
c) Age of entire population of a country	d) Both a and b

319) a statistician wants to test whether intelligence level of college students of two cities are different or not. The above test would require to use:

a) test of goodness of fit	b) Z-test
c) Chi-square test	d) T-test

320) A null hypothesis is rejected whereas the right decision was to accept the null hypothesis it is:

a) A type I error	b) A type II error
c) A type III error	d) Either type I or Type II error

321) What will be the 95% confidence interval for the proportion of defective units in a large shipment when 200 units were found defective in a random sampling of 1000 units

a) $0.1994 \leq \mu \leq 0.2006$	b) $0.1997 \leq \mu \leq 0.2003$
c) $0.1792 \leq \mu \leq 0.2208$	**d) $0.1752 \leq \mu \leq 0.2248$**

322) To select every 5th name from the list of students in a class is an example of:

a) Random sampling	**b) Systematic sampling**
c) Stratified sampling	d) Quota sampling

323) In a test there are 20 questions, all questions are MCQs with 4 options one of which is correct. 4 questions are selected at random from the questions, find the probability that all are correct:

a) 18.97%	b) 20.23%
c) 8.67%	d) 33.75%

324) In a test there are 20 questions, all questions are MCQs with 4 options one of which is correct. He solved all question haphazardly, find the probability that exactly 4 are correct:

a) 18.96%	b) 19.86%
c) 16.98%	d) 16.66%

325) A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways balls be drawn from the box, if at least one black ball is to be included in the draw:

a) 32	b) 48
c) 64	d) 96

326) A telephone operator receives on average 2 calls in 3 minutes. Find the probability of receiving more than or equal to 4 calls in 9 minutes:

a) 0.5120	**b) 0.8488**
c) 0.5217	d) 0.4884

327) Ahmed received on average 4 calls in 5 minutes. Find the probability of receiving more than 3 calls in 10 minutes:

a) 0.0286	b) 0.2682
c) 0.2862	d) 0.0862

328) During peak hours a center receives 4 calls per 30 minutes. What is the probability of getting 3 or more calls in an hour?

a) 0.9862	b) 0.9682

c) 0.8692	d) 0.2689

329) A problem in statistics is given to three students A, B, C whose chances of solving are ½, ¾,1/4 respectively. What is the probability that problem will be solved?

a) 3/32	b) 29/32
c) 3/7	d) ½

Answer

Problem will be considered as solved if anyone or more of the students will solve it.

P(Problem solve)=P(A solve or B solve or C solve)=1-P(none solve)

P(A)=1/2

	A	B	C
Solve the problem	½	¾	¼
Not solve	**1/2**	¼	¾

$$P(Solve) = 1 - P(\overline{A} \cap \overline{B} \cap \overline{C}) = 1 - \frac{1}{2} \times \frac{1}{4} \times \frac{3}{4} = 1 - \frac{3}{32} = \frac{29}{32}$$

Correct option is B

330) If two dice are rolled, what is the probability that either the sum of the two will be seven or at least one of the dice will show the number 5

a) 18/36	b) 6/36
c) 15/36	d) 12/36

331) The events A and B are mutually exclusive events and P(A) = 0.5 and P(B)= 0.4, then P(A and B) is:

a) 0.9	**b) 0.20**
c) 0.54	d) 0.1

332) A and B are two mutually exclusive events and P(A) = 0.4 and P(B) 0.3 Find P(AUB)

a) 0.58 b) **0.70** c) 0.4 d) 0.3

333) Following data is given

Goal	0	1	2	3	4	5	>5
P(X=x)	0.05	0.2	0.15	0.15	0.3	0.05	0.1

Find the probability that there would be total 5 goals in two matches

a) 0.17	b) 0.83
c) 0.84	d) 0.12

Answer

5 goals in 2 match can be scored in following order

(i) 0 goals in first match and 5 goals in second match 0.05*0.05=0.0025
(ii) 1 goals in first match and 4 goals in second match 0.2*0.3=0.06
(iii) 2 goals in first match and 3 goals in second match 0.15*0.15=0.0225
(iv) 3 goals in first match and 2 goals in second match 0.15*0.15=0.0225
(v) 4 goals in first match and 1 goals in second match 0.3*0.2=0.06
(vi) 5 goals in first match and 0 goals in second match 0.05*0.05=0.0025

Total probability is 0.17

334) A consignment of 12 refurbished CNG kits contain 4 defective kits. If 4 Kits are selected at random then find the probability that at least 3 are defective

$P(x \geq 3) = P(x=3) + p(x=4)$

$$\frac{{}^4C_3 \times {}^8C_1 + {}^4C_3 \times {}^8C_1}{{}^{12}C_4} = \frac{1}{15}$$

335) A consignment of 12 refurbished CNG kits contain 4 defective kits. If 5 Kits are randomly chosen for inspection, what is the probability that at least 3 of them are defective?

$P(x \geq 3) = P(x=3) + p(x=4)$

$$\frac{{}^4C_3 \times {}^8C_2 + {}^4C_4 \times {}^8C_1}{{}^{12}C_5} = \frac{5}{33}$$

a) 1/11	b) 2/33
c) 5/33	d) None of these

336) a national achievement test is administered annually to 3rd graders. The test has a mean score of 100 and standard deviation of 15. If a particular students z-score is 1.20 what was his score on the test?

a) 118	b) 87
c) 92	d) 82

337) The average number of traffic accidents on a certain section of highway is two per week. Assuming that the number of accidents follow a poisson distribution. Find the probability of 3 accidents on this section of highway during two-week period.

a) 19.5%	b) 28.9%
c) 23.8%	d) 12.8%

338) If the sample mean of a data set is 15 and the sample standard deviation is 9 what percent of the data would you expect to fall between 6 and 24 assuming that distribution is fairly symmetric

a) 81.5%	**b) 68.3%**
c) 95%	d) 99.73%

339) A mobile service provider offers the following options to its customers

Call metering	5 sec	20 sec	30 sec	60 sec
Fixed monthly charges	0 with no free minutes	Rs 300 with 300 free Minutes	Rs 1,000 Rs for 1,500 free Minutes	
SMS bundle charges	Rs 1 per SMS	Rs 30 for 300 SMS bundle	Rs 100 for 10,000 SMS bundle	
GPRS package	0 with no GPRS	Rs 300 Rs for 300 MB download limit	Rs 500 for 500 MB download limit	

In how many ways can a customer select a service package? (01 mark)

a) 10	b) 12
c) 36	**d) 108**

340) A mobile service provider offers the following options to its customers

Call metering	1 Min	2 Min	3 Min	4 Min
Call package	300 Rs for 300 Min	400 Rs for 400 Min	500 Rs for 500 Min	
GPS package	300 Rs for 300 MBs	400 Rs for 450 MBs	450 Rs for 500 MBs	

In how many ways can a customer select a service package? (01 mark)

a) **36** b) 144 c) 16 d) none of these

Answer

No of ways = call metering option x call package options x GPS package options

No of ways = 4x3x3=36

Correct option is A

341)

Call metering	1 Min	2 Min	3 Min	4 Min
Call package	300 Rs for 300 Min	400 Rs for 400 Min	500 Rs for 500 Min	
GPS package	300 Rs for 300 MBs	400 Rs for 450 MBs	450 Rs for 500 MBs	
SMS package	500 per month	750 per month	1000 per month	

If a customer wants to choose one of these package, then find the number of ways available to him

a) 36 b) **108** c) 120 d) none of these

Answer

No of ways = call metering option x call package options x GPS package options

No of ways = 4x3x3x3=108

Correct option is B

342) There are 12 runners in marathon and all runners have equal chance of winning. What is the probability that a person may win a bet on the race if he has to correctly select the top 3 runners and the order they finish in?

a) 1/1320	b) 1/1728
c) 3/1728	d) 1/12

Answer

Total outcomes = 12P3 = 1320

Probability = 1/1320

343) In a T20 cricket match between falcon club (FC) and eagle club (EC) the probability of winning by FC is 0.4, in a series of 5 T20 matches, the probability that FC would win exactly two matches, is:

a) 34.56%	b) 65.44%
c) 66.33%	d) 33.79%

344) A firm installed two machines U and V, on January 1, 2017. The probability that the machines will break down during first year of operations is 0.2 and 0.1 for machines U and V respectively. The probability that one of two machines will break down during the year is:

a) 0.02	**b) 0.26**
c) 0.28	d) Cannot be calculated

345) Following equations are given

X+2Y+5=0

X+3Y−10=0

Find coefficient of correlation

a) 0.8165 b) **– 0.8165** c) 1.2247 d) -1.2247

346) From following information given, find coefficient of correlation.

X	3	5	8	11	9
Y	1	0	4	0	1

a. **r= 0.038** b. r= 0.082 c. r=0.018 d. r= none of these

347) Which of the following is correct about coefficient of determination?

a) It ranges from 0 to -1	b) It is Square root of r
c) It ranges from 0 to +1	d) All of these

348) Find the coefficient of correlation between x and y if:

Regression line of x on y is: 5x-4y+2=0 and
Regression line of y on x is: x-5y+3=0

a) 0.4	b) -0.4
c) ±0.4	d) ±0.16

349) If r falls between 0.9 and 1.0 then which of the following is correct

a) There is strong correlation	b) There is no correlation
c) There is perfect correlation	d) None of these

350) $\overline{X} = 6,\ \overline{Y} = 10,\ \ \Sigma XY = 293,\ \ \Sigma X^2 = 266,\ \ n = 6,\ \ \Sigma Y^2 = 706$

Find coefficient of correlation

a) 0.9203	**b) –0.9203**
c) –0.2903	d) 0.2903

351) $\overline{X} = 6,\ \overline{Y} = 10,\ \ \Sigma XY = 293,\ \ \Sigma X^2 = 266,\ \ n = 6,\ \ \Sigma Y^2 = 706$

Find coefficient of correlation

a) 0.9203	**b) –0.9203**
c) –0.2903	d) 0.2903

352) Y = 1.96x + 15 (y on x), X = 0.45y + 7.16 (X on Y). Find Co-efficient of determination.

a) 0.94	b) 0.9983
c) **0.88**	d) 0.5569

353) If the Co-efficient of determination is equal to 1, then correlation Co-efficient is:

a) Must be equal to 1	b) Any value between – 1 and + 1
c) **Either – 1 or + 1**	d) Must be – 1

354) In regression, the sum of the residuals is always:

a) **0**	b) >0
c) <0	d) All of these

355) For 9 observations on supply (x) and price (y), following data was obtained

$\Sigma(Y-127)=12,\quad \Sigma(Y-127)^2=1006\quad \Sigma(X-90)=-25,\ \Sigma(X-90)^2=301\ \ \Sigma(X-90)(Y-127)=469$

The estimated value of supply when the price is Rs 125/- comes to be:

a) **87.79**	b) 78.79
c) 79.87	d) 79.78

356) if the coefficient of correlation between x and y is -0.75 the SD of y is 5 and $\Sigma(x-\bar{x})(y-\bar{y})=-15$. The value of SD of x would be:

a) **4**	b) 16
c) 5	d) 6

357) For r2 = 0.6 the explained variation in dependent variable due to independent variable is:

a) **0.6**	b) 0.4
c) 0.36	d) 0.16

358) If the regression line is a perfect estimator of the dependent variable, then which of the following is false.

a) Co – efficient of determination is one	b) Co – efficient of correlation is zero
c) All the data points fall on regression line	d) None of these

359) There is a perfect positive correlation when

a) All the data points lie on a scatter diagram in a discrete form	**b) all the data points lie in an exact straight line and a linear relationship exists between the two variables**
c) All the data points lie in an exact straight line but relationship ,may or may not be linear	d) None of the above

360) Which of the following statements is correct as regards scatter diagrams?

a) It is least important to establish which variable is independent before plotting the scatter diagram	b) It leads to correct conclusions even if there are only few data points.
c) It can show relationship between more than two variables	**d) It may indicate a relationship where there is none**

361) Which of the following statements is correct as regards scatter diagrams?

a) It can show relationship between	b) It leads to correct conclusions even

more than two variables	if there are only few data points.
c) It is important to establish which variable is independent before plotting the scatter diagram	d) Both (b) and (c)

362) Which of the following is correct?

a) If there is a strong relationship between two variables, the points on the scatter diagram concentrated around a curve
b) Linear regression analysis is used to calculate values of "a" and "b" in the linear cost equation
c) The standard regression equation is y= a – bx
d) Both (a) and (b)

363) Which of the following is correct? (01)

a) If there is a strong relationship between two variables, the points on the scatter diagram would be concentrated around a curve
b) Linear regression analysis can be used to estimate fixed costs and variable cost per unit from historical total cost and production data.
c) The standard regression equation is y= a – bx
d) Both (a) and (b)

364) Which of the following is correct? (01)

a) If there is a strong relationship between two variables, the points on the scatter diagram would be concentrated around a curve
b) The standard regression equation is y= a – bx
c) Scatter diagram leads to correct conclusions even if there are few data points
d) Both (a) and (b)

365) Mean of 38 values is 62, mean of 10 values is 57, find the mean of remaining 28 values

Answer

Using combined mean formula

$$\overline{Xc} = \frac{n_1 \overline{X}_1 + n_2 \overline{X}_2}{n_1 + n_2}$$

$$62 = \frac{10 \times 57 + 28 \times \overline{X}_2}{38}$$

$$\overline{X}_2 = 63.786$$

366) A batsman scored following runs in ten T20 matches played in a calendar year. 35,15,51,28,0,3,35,20,45,30. The mode of his scores is:

a) 0	**b) 35**
c) 45	d) 3

367) A batsman scored following runs in ten T20 matches played in a calendar year. 35,15,51,28,0,3,85,20,15,30. The mode of his scores is:

a) 0	**b) 15**
c) 45	d) 3

368) Data can be collected through which of the following method(s):

a) Direct Observation	b) National Census
c) CCTV recordings	**d) All of the above**

369) A two-digit number is equal to "4 times the sum of its digits" and "12 times equal to the difference of its digits." If xy represents the required number, solving which of the following simultaneous equations could lead to that number?

a) 4x+xy=4y and 12x – xy=12y	b) Xy – 4y =4x and 12y – xy=12x
c) Xy – 4x = 4y and xy +12y =12x	**d)** Xy – 4x = 4y and xy – 12x =12y

370) A line passes through (3,2). It has an X-intercept value which is thrice the y-intercept value. The slope intercept form of equation of the straight line is:

a)	b)
c)	**d)**

371) Find the value of x:

$$\frac{(x+1)}{(x-1)}=\frac{4}{5} \quad and \quad \frac{(x-1)}{(x+1)}=\frac{1}{2}$$

a) (9,5)	b) (-7,-9)
c) (7,9)	**d) (-9,3)**

372) 6 years ago the age of father was 3 times of his son's age. After 9 years it will be twice the age of his son. The present ages of father and son are:

a) 48 and 20	**b) 51 and 21**
c) 54 and 22	d) 57 and 23

373) Mr. Adeel saved Rs x in January, then each subsequent month he saved Rs 100 more than the previous month. If his total savings at the end of December stood at Rs 16,200 how much did he save in January?

a) 700	**b) 800**
c) 900	d) 1000

374) Ali borrowed Rs. 1,500,000 on first year he returned Rs. 80,000 and then he increases his instalment by 1.5 times of the previous instalment every year. In how many years he will be able to return the loan?

a) 9 years b) 8 years c) 10 years d) **6 years**

$$S=\frac{a(r^n-1)}{r-1}$$

$$1500000=\frac{80000(1.5^n-1)}{1.5-1}$$

By solving from calculator we get r = 5.77= 6 years

375) Ali borrowed Rs. 1,500,000 on first year he returned Rs. 80,000 and then he increases his instalment by 1.2 times of the previous instalment every year. In which years he will be able to return the loan?

a) **9th year** b) 8th years c) 10th years d) 6 years

$$S = \frac{a(r^n - 1)}{r - 1}$$

$$1500000 = \frac{80000(1.2^n - 1)}{1.2 - 1}$$

By solving from calculator we get r = 8.54 = 9th years

376) Rashid has savings of 3.6 million whereas sajjad has savings of 5.4 million. If Rashid invest his savings at 9% compounded quarterly whereas Sajjad invest his savings at 7% compounded annually, in how many years would the value of Rashid's savings exceed that of Sajjad's savings.

a) 9 years	b) 14 years
c) 19 years	d) 24 years

377) Miss Salma requires a sum of Rs. 300,000 after three years from now and Rs. 500,000 after 5 years from now, for the purpose of education of her son. She is planning to deposit quarterly amounts in a bank account from which she would draw the desired amounts at the required time. If interest rate is 12% compounded Quarterly, which of the following amounts should Salma deposit at the start of each quarter?

a) Rs 76,766	b) Rs 74,530
c) Rs 31,797	d) Rs 32,751

378) A certain sum of money lent out at simple interest amount to 690 in three years and 750 in five years. The sum lent is:

a) Rs 500	**b) Rs 600**
c) Rs 700	d) Rs 800

379) If Rs 100,000 is invested yearly for 3 years @7% compounded annually and some other unknown amount is invested annually for next 2 years @5% compounded annually and Rs 500,000 is received at the end of five years, then find the amount invested in last two years.

a) Rs 71,003.55	b) Rs 60,000
c) Rs 70,000	d) Rs 80,000

380) If Rs 1000 is invested yearly for 3 years @7% compounded annually and some other unknown amount is invested annually for next 2 years @5% compounded annually and Rs 500,000 is received at the end of five years, then find the amount invested in last two years.

a) Rs 212,173.45	**b) Rs 242,173.45**
c) Rs 202,173.45	d) Rs 302,173.45

381) Mr. A invested Rs. 10,000 @4% compounded quarterly and received the total amount at the end of 5th year. Find the amount.

a) Rs 12,000	b) Rs 13,202
c) Rs 12,202	d) Rs 15,302

382) Mr A invested 200,000 in an account today. He also deposits 20,000 quarterly in this account and made first payment today. If the interest is 8% compounded quarterly. What will be total value of investment after 5 years?

a) Rs 992,855	b) Rs 222,855
c) Rs 792,855	d) Rs 692,855

383) Construction of frequency distribution:

a) Helps in deleting the data	**b) Begins by recording the number of times a particular value occurs**
c) Is the only way to assess mode od population.	d) All of the above

384) Which of the following is correct?

a) Results of sampling enquiries or a census is called raw data	b) The data which is collected specifically for the ongoing investigation is called primary data
c) The data which is stored after classification is called secondary data	**d) Both (a) and (b)**

385) $\sqrt{x4-18x2+81}=0$ which of the following represent the roots of the equation?

a) $\pm 2\sqrt{3}$	b) ±3
c) ±9	d) $\pm\sqrt{3}$

386) Which two of the following are not quadratic equations?

a) $\frac{3}{5}x-12=2x$	b) $2x-11=5x$
c) $\sqrt{3}x^2-12x=15$	d) $5x^2-7=2x$

387) A two-digit number is equal to "7 times the sum of its digits" and "21 times equal to the difference of its digits". If xy represents the required number, solving which of the following simultaneous equations could lead to that number?

a) 7y– xy =7x and 21x +xy=21y	b) 7x+xy=7y and 21x – xy=21y
c) 7x– xy = 7y and $x+\frac{xy}{21}$=y	**d) 7x – xy= –7y and 21y +xy=21x**

388) XYZ and company has developed a new product which would earn a revenue of rs 80 million during the first year. Therefore, the revenue would decline by 20% each year. The company would be able to earn a revenue of Rs _____ million over the life of the product.

389) A company makes and sells two products X and Y. The contribution per unit is Rs. 250 for product X and 375 for product Y. due to various constraints, the company cannot make more than 750 units X and 500 units of Y in a month.

If x represents number of units of product X and y represents the number of units of product Y and C represents contribution, then relationship which represents maximum contribution would be C=250x+375y

a) True	b) False

390) A company makes and sells two products X and Y. the related information is as follows:

	X	Y
Contribution per unit (Rs.)	450	375
Maximum sales demand per month	2,800	1,200
Direct labour hour per unit	2	5
Machine hours per unit	6	7

A total of 10,000 direct labour hours and 22,000 machine hours are available per month. **The objective function (Z) and set of constraints represents the above situation would be:**

$Z=450x+375y$ $2x+5y \leq 22,000$ $6x+7y \leq 10,000$
$x \leq 2,800$ $y \leq 1,200$ $x, y \geq 0$

a) True	**b) False**

391) Nasir had taken Rs. 900,000 from his office at 13.5% simple interest for a period of 5 years and 5 months. The principal amount was paid at the expiry of loan period.

He paid interest of Rs. 595,000 during the period of loan.

a) True	b) False

392) If the discount rate is 9%, the present value of "X" received at the end of each year for a period of four years is equal to:

a) 3.24X	b) 4X
c) **3.89X**	d) 3.42X

393) If the interest rate is 9% compounded monthly, the value of perpetuity of Rs. 3,000 per month would be_____.

394) Sohail is receiving interest from Fast Bank Limited (FBL) at 14% compounded semi-annually. Slow bank limited (SBL) has introduced a scheme whereby interest would be compounded on a quarterly basis.
SBL should offer a minimum interest rate of 13.16% to motivate Sohail to shift his investment from FBL to SBL is:

a) True	**b) False**

395) Saleem is planning to invest in a scheme whereby he would be required to invest Rs. 160,000 annually (at the start of the year) for 5 years. If interest rate is 14% **compounded annually, he would receive Rs. 1,057,617 at the end of 5^{th} year.**

a) True	b) False

396) To _____ present value of a project, the discount rate should be adjusted _____

397) A company intends to invest Rs 6 million into a project which would yield 10,12 and 14 percent during first three years respectively. The company would also recover the original investment after 3 years. If the company's cost of capital is 9%, NPV of the project would be:

e) Rs 393,745	f) Rs 438,204
g) Rs 648,634	h) Rs 1,805,103

398) A project costing Rs. 2 million is expected to yield Rs. 300,000, Rs. 400,000, Rs. 1,900,000 at the end of each of the next 3 years respectively. The IRR of the project is:

e) 11.51%	**f) 10.66%**
g) 11.15%	h) 10.18%

399) A project costing Rs. 2.5 million is expected to generate cash flows of Rs. 200,000, Rs. 300,000, Rs. 2,900,000 at the end of each of the next three years respectively. The IRR of the project is 11.7%

e) True	f) False

400) Which two of the following statements are correct regarding construction of a frequency distribution?

a) It sometime leads to provide incorrect data	b) It is the most common method of summarizing data
c) It begins by recording the number of times a particular value occurs	d) It is the basis for construction of a percentage distribution

401) Which two of the following statements are correct?

a) An ogive is the graph of a cumulative frequency distribution	b) Median of a grouped frequency distribution can be found by constructing an ogive.
c) An ogive is constructed by joining the mid points of the top of each rectangle of a histogram with straight lines	d) An ogive is the least desirable method of presentation of data

402) The mean of 11 numbers is 7. One of the numbers i.e 17 is deleted. The mean of the remaining 10 numbers is_____

403) Starting salaries of a group of fresh graduates is as follows:

45,500, 50,000 48,000 60,000 62,000 55,000 58,000 and 49,000

Median of above salaries is:

a) 50,000	b) 53,437.50
c) 55,000	d) 52,500

404) Team A scored an average of 205 runs in twenty one-day international matches with a standard deviation of 10 whereas Team B scored an average of 190 runs in the same number of matches with a standard deviation of 8.

It may be concluded that Team A is more consistent than Team B

a) True	b) False

405) Consider the following data

X	0	1	2	3	4
f	8	7	3	1	1

The variance of the above data is:

a) 1.095	b) 1.200
c) 4.400	d) 2.098

406) Paasche price index fails to account for the fact that people will buy less of those items which have risen in price.

c) True	**d) False**

407) The prices of commodity in different years are given below:

Year	Prices
2010	49
2011	53
2012	58
2013	62

The chain indices in the above case would be:

a) 100,92.50,91.40,93.55	**b) 100, 108.16, 109.43, 106.90**
c) 100, 105.50, 118.40, 112.80	d) 100, 105.50, 116.50, 114.50

408) Which two of the following are correct?

a) The value of coefficient of determination shows how much variation in the value of y is explained by variation in the value of x	b) If coefficient of correlation i.e r=0, it means there is a perfect correlation between x and y
c) The value of coefficient of determination is in range -1 to +1	**d) The perfect negative or positive coefficient of correlation cannot be achieved in real life scenario.**

409) The value of 0! is equal to _____ and 1! is equal to _____.

410) A sample of 4 different calculators is randomly selected from a group containing 57 calculators out of which 36 are defective. The probability that all the selected calculators are defective is:

a) 0.1400	b) 0.1491
c) 0.0184	d) 0

411) 8 people are selected at random from the group of 10 men and 11 women to form a committee. The probability that at least 5 men would be selected on the committee is 0.1401

a) True	b) False

412) In a certain town, 50% of the households own a cellular phone, 40% own a pager, and 20% own both a phone and pager. The proportion of households that own neither a cellular phone nor a pager is_____.

413) If a student randomly guesses 20 multiple choice questions with four possible choices. The probability that the student would get exactly four right answers is 46.23%.

c) True	d) False

414) Which two of the following statements as regards the Normal Distribution are not correct?

a) Area under the Curve represents probability and so totals to 1	b) Lower standard deviation leads to Flatter curve
c) Both tails of the normal distribution curve always meet the horizontal axis.	d) It is described by its Mean and Standard deviation

415) Sadiq earned a total of 940 on a general knowledge test. The mean test score was 850 with a standard deviation of 100. What proportion of students had a higher score than Sadiq? (assume that test scores are normally distributed)

a) 82%	b) **18%**
c) 10%	d) 32%

416) The Human Resource Director of a large company wants to know what the employees of his company think about proposed changes in remuneration package. A questionnaire is given to 250 employees. 220 employees returned the questionnaire of which 180 employees support the proposed change in remuneration package. The population is:

a) All employees of company	b) 250 employees receiving the questionnaire
c) 180 employees who support the proposed change in remuneration package	d) 220 questionnaires which have been returned

417) A population may be defined as including all people or items with a characteristic that a researcher wises to understand.

a) true	b) false

418) A company has 1000 customers. The customer service office of the company selected a customer at random from the first 10 customers on the list of customers. Thereafter he selected every10th customer from the list and called them to get feedback on the services offered by the company. This is an example of ---------- sampling

a) random	**b) systematic**
c) stratified	d) quota

419) A pharmaceutical company sent its teams into the rural areas of the country to interview all mothers with children under 2 years of age. The selected sample is an example of ----------sampling

420) Which of the following statements are correct as regards the sampling distribution of the mean?

a) The mean of the sampling distribution of the mean can never be the same as the mean of the population
b) The sampling distribution of the mean is a normal distribution
c) The standard deviation of a sampling distribution is called standard error
d) The standard deviation of the sampling distribution of the mean is the same as the standard deviation of the population

421) Which two of the following statements are correct as regards the sampling distribution of mean?

a) Has a mean equal to the population mean
b) Is obtained by taking all possible samples of a fixed size n from a population noting the mean of each sample and classifying the means into a distribution
c) Is not necessarily a normal distribution
d) Is obtained by taking all possible samples of different sizes from a population, noting the mean of each sample and classifying the means into a distribution is obtained by taking all possible samples of different sizes from a population

422) If a finite population of size 256 has a mean 16, then the mean of the sampling distribution of the mean for samples of sizes 20 would be _____

423) Random samples of 50 items were drawn with replacement from a finite population. If variance 45, the standard error of the mean would be 0.918.

a) True	b) **False**

424) from a given finite population samples are drawn with replacement. If the sample size is increased from 40 to 60, the standard error would:

an analysis of the frequency with which a football team scores foals in a match show that probability of securing goals in match is as follows

Goals	0	1	2	3	4	5	More than 6
probability	0.10	0.25	0.20	0.15	0.20	0.05	0.05

The probability that the team will score a total of 5 goals in a two match series is

a) 0.17
b) 0.83
c) 0.82
d) 0.12

425) in order to decide whether to use z-test, which TWO of the following would need to be considered?

a) Size of population	b) size of sample
c) whether population variance is known or unknown	d) population mean

426) if sample of 50 athletes from the Olympic squad of a country had a mean weight of 80 kg with a standard deviation of 1.5kg. we can say with 95% confidence that the mean weight of all athletes in the squad is between (i) _____ and (ii) _____

a) 79.65 and 81,34	b) **79.58 and 80.42**
c) 80.42 and 90,45	d) 80.55 and 90.45

427) A batter scored following runs in eleven T20 matches played in a calendar year:

35, 15, 51, 28, 0, 3, 85, 45, 30, 0

The mode of his above scores is _____

428) Zafar has purchased a motor cycle worth Rs. 40,000 from his friend who has given him the following payment options.

a) pay Rs. 52,000 at the end of four years.
b) pay Rs. 12,000 annually at the end of next 4 years
c) pay the full amount now

Zain's cost of funds is 10 %

Match the following

Most beneficial	**Option (A)**

second most beneficial	**Option (B)**
third most beneficial	**Option (C)**

429) Rashid wants to obtain a bank loan. Bank a offers a nominal rate of 14% compounded monthly, Bank B offers a nominal rate of 14.5% compounded quarterly; and Bank c offers an effective rate of 14.75%

Arrange the given banks in terms of charging lower interest using drag and drop option

Bank A	**Sequence 1**
Bank B	**Sequence 2**
Bank C	**Sequence 3**

Chapter 1 & 2: Basic Mathematics.

430) Find the value of x and y:

$$\frac{(x+1)}{(y-1)} - \frac{4}{5}, \quad \frac{(x-5)}{(y-5)} = \frac{5}{8}$$

a) X=1, y=2	**b) X=15, y=21**
c) X=21, y=15	d) None of these

431) $13x-2 \le 3x-2 \le 5x-4$ find the value of "x"

Answer

$13x-2 \le 3x-2$

X=0

$3x-2 \le 5x-4$

X= 1

$13x-2 \le 5x-4$

X= - 1/4

432) Find the value of x:

$$\frac{(x+3)}{(x-2)} - \frac{8}{3} = \frac{(x+2)}{(x-1)}$$

a) {1/4, ½}	b) {13/4, 1/3}
c) {13/4, ½}	d) None of these

433) Given that (x-8) (x-3) = 2+2x, what are the roots of the equation?

a) 11 or 2	b) 6.5 or 4.5
c) 11 or –2	d) 6.5 or – 4.5

434) The quantitative relation between two amounts of same things is

a) Ratio	b) Proportion
c) Percentage	d) All of above

435) IF VC is 75,000 per unit than TC = ?

a) 75,000x	b) TC will also 75000
c) **75,000x + FC**	d) None of these

436) What is the definition of contribution?

a) Sale price – Cost	**b) Sales revenue- variable cost**
c) Sales revenue- Fixed cost	d) Sales revenue- total cost

437) Find slope of x, and intercept of x. 2x-y-9 =0

a) **0.5, 4.5**	b) 2, 4.5
c) 0.5, 9	d) 2, 9

438) Ten years ago the age of a father was four times of his son. Ten years hence the age of the father will be twice that of his son. The present ages of the father and the son are:

a) (50,20)	b) (60,20)
c) (55,25)	d) None of these

439) Four years ago the age of a father was thrice of his son. After 9 years the age of the father will be about twice that of his son. The present ages of the father and the son are:

a) 17years and 43 years	**b) 43 years and 17 years**
c) 39 years and 13 years	d) 52 years and 26 years

440) Seven years ago the age of a father was thrice of his son. After 7 years the age of the father will be about twice that of his son. The present ages of the father and the son are:

a) 21 years and 49 years	**b) 49 years and 21 years**
c) 30 years and 10 years	d) 50 years and 20 years

441) Seven years ago the age of a father was thrice of his son. After 5 years the age of the father will be about twice that of his son. The present ages of the father and the son are:

a) 21 years and 49 years	b) 49 years and 21 years
c) 30 years and 10 years	d) 50 years and 20 years

442) 4y=-3+2x find slope

a) 2	b) 3
c) 1/2	d) 3/2

443) Find the Equation of the line which passes through the intersection of 5x+2y=44 & 3x-y=22, and perpendicular to 9x+y-5=0

a. 9x-y-10=0 b. **9y-x-10=0** c. 9y-x = -10 d.x=-10+9y

Answer

By solving simultaneously equation 5x+2y=44 & 3x-y=22 we get value of x=8 and y=2

And by finding slope from equation 9x+y-5=0 we get slope = m =-9

Now slope of required equation can be determined by following formula

$m_1 \times m_2 = -1$

m=1/9

now by using formula

$y - y_1 = m(x - x_1)$

$y - 2 = 1/9(x - 8)$

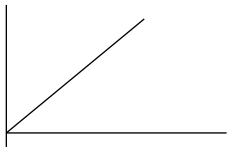
$9y - 18 = (x - 8)$

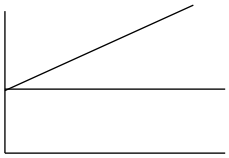
$9y - x - 10 = 0$

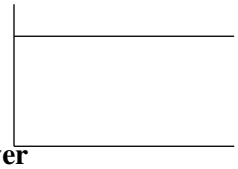
444) Define contribution

a) Difference of Sales and fixed cost	**b) Difference of Sales and Variable cost.**
c) Profit per unit	d) None of these

445) Which line represent fixed cost

a) 

b) 

c) 

d) None

Answer
Graph C is fixed cost

446) Point (-6,12) lies in which quadrant?

Answer 2nd quadrant

447) $\frac{x+1}{y+1}=\frac{4}{5}$ $\frac{x-5}{y-5}=\frac{1}{2}$ Find x and y

Answer
By solving simultaneously, we get
x=7, y=9

448) x+2y+3=0, which statement is wrong about this equation

a. this equation is representing the relationship between X and Y.

b. slope of y is -0.5 c. **Intercept of X is 3** d. None of these

449) $x^2 - 7x + 12 = 0$ find value of x.

a) 3 and - 4 b) 2 and 5 c) **4 and 3** d) None

450) 5x+2y-10=0, which of the following is true about the equation

a) slope = -2.5 b) Degree of equation is 1 c) **Both** d) None

451) 3x+2y-15=0, which of the following is true about the equation

a) slope = 1.5 b) **Degree of equation is 1** c) Both d) None

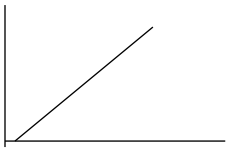
452) Which of the following is the equation of the straight line whose slope is -3 and y intercept is 4?

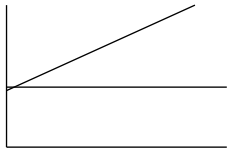
a) **3x+y=4**	b) x-4y=-3
c) -4x+y=-3	d) 4x+y=-3

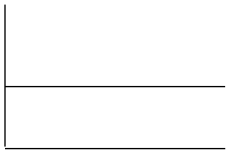
453) Which of the following is the equation of the straight line whose slope is 4 and y intercept is – 3?

a) -3x+y=-4	b) x-4y=-3
c) **-4x+y=-3**	d) 4x+y=-3

454) Which line represent mixed cost

a) 

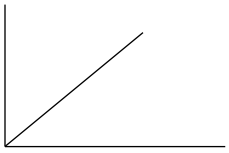
b) 

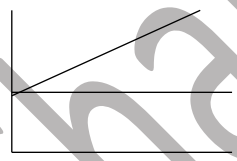
c) 

d) None

Answer
Option B

455) Which line represent variable cost

a) 

b) 

c) 

d) None

Answer
Option A

456) $\frac{x+1}{y+1} = \frac{4}{5}$ $\frac{x-5}{y-5} = \frac{1}{2}$ Find x and y

Can be solved on calculator

457) Which of the following are the properties of a parabolic (u shaped) curve?

a) Only maxima or minima can be found	b) Line of symmetry will pass through maxima or minima
c) It is related to quadratic equations only	**d) All of these**

458) Which line has infinite solution?

Answer
Overlapping equations have infinite solution
Example **2x+y = 20**
4x+2y=40

459) Which of the following have positive slope?

a) 2x+y=20	**b) X-2y=20**
c) 2x=-y+10	d) All of these

460) Which of the following have negative slope?

a) 2x+y=20	b) X-2y=20
c) 2x=-y+10	**d) Both a and c**

461) Which of the following have 0 slope?

a) y=20	b) X=20
c) 2x=y+10	d) None of these

462) Which of the following have infinite slope?

a) y=20	**b) X=20**
c) 2x=y+10	d) None of these

463) Which of the following has no solution?

a) x+y=20 2x-2y=40	b) x+y=20 x-y=20
c) x+y=20 2x+2y=10	d) x+y=20 2x+2y=40

464) x+2y+3=0, which statement is correct about this equation

a) slope of line is 1	b) slope of line is -1
c) degree of equation is 1	d) intercept of x axis is 3

465) $Y = 3x^2 + 5x - 3$

Above equation have graph

a) Linear	**b) Symmetric(parabolic)**
c) Both	d) None

466) U curve is related to?

a) Quadratic equation	b) Cubic equation
c) Linear equation	d) All of these

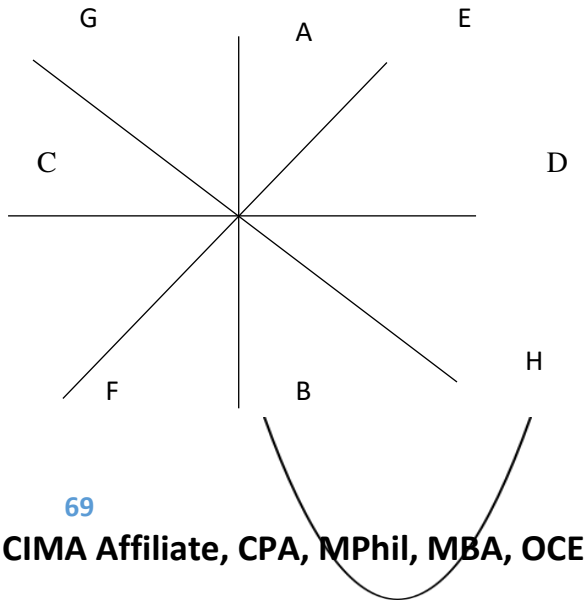
467) Find x, y, z

3x + 2y + 3y = 3
x + y + z = 12
x – y – z = 4

Answer
Can be solved on calculator x = 8, y = 33 , z = -29

468) Identify the negative slope

a) AB (Infinite Slope)
b) EF (positive Slope)
c) GH (Negative Slope)
d) CD (Zero Slope)



469) Following curve given

You are required to identify the correct option:

a) **Both ends are maximum & centre is minimum**
b) Both ends are minimum & centre is maximum
c) Values are not equidistant from centre
d) None of these

Answer

Correct is a

470) Following curve given

You are required to identify the correct option:

a) At both top edges x is maximum
b) At both top edges y is 0
c) At both top edges frequency f(x) is maximum
d) All of these

Answer

Correct is c

471) Which of the following is incorrect?

a) **Slope is always positive before and after point of inflection**.	b) Slope is positive before maxima but negative afterwards
c) Slope is negative before minima but positive afterwards	d) Slope is always constant before and after point of inflection

472) $x+10 = 11x^2 - x + 1$ Find x

(a) x = -1 x = 0.818 b) **x = 1** **x = -0.818**
(c) x = -1 x =-0.818 d) x = 1 x = 0.818

Answer

$x + 10 = 11x^2 - x + 1$
$11x^2 - x + 1 - x - 10 = 0$
$11x^2 - 2x - 9 = 0$
Solving simultaneously on calculator
We get x = 1 x =-0.818

473) Sajid and Hamid have some amount to invest in such a way that 1 time of Hamid and 7 times of Sajid's investment is 9 million and thrice of Hamid and twice of Sajid is 4 million Find investment of both respectively

a) 5 million & 5.05 million	b) 4 million each
c) 0.52 million &1.21 ,million	d) None of these

474) Sajid and Hamid have some amount to invest in such a way that sum of 5 time of Hamid and 3 times of Sajid's investment is 8 million and difference between 3 times of Hamid and twice of Sajid is 1 million find investment of both respectively.

a) 1 million & 1.05 million	**b) 1 million each**
c) 570,000 &1.25 million	d) None of these

475) Sajid and Hamid have some amount to invest in such a way that 3 times of Hamid and 2 times of Sajid's investment is 9 million and 1 time of Hamid and twice of Sajid is 4 million Find investment of both respectively

a) 2.5 million & 0.75 million	b) 2 million each
c) 1.5 million each	d) None of these

476) Sajid and Hamid have some amount to invest in such a way that 1 time of Hamid and 7 times of Sajid's investment is 9 million and 1 time of Hamid and twice of Sajid is 4 million Find investment of both respectively

a) 2 million & 1 million	b) 4 million each
c) 570,000 & 1.25 million	d) None of these

477) Sajid and Hamid have some amount to invest in such a way that sum of 5 time of Hamid and 3 times of Sajid's investment is 8 million and difference between 3 time of Hamid and twice of Sajid is 1 million Find investment of both respectively

a) 1 million each	b) 1.05 million & 1 million
c) 570,000 & 1.25 million	d) None of these

478) Hamid and Majid invest in a project. If sum of 4 time of Hamid and 5 times of Majid is 32 million and difference of 3 times of Majid and 2 times of Hamid is 6 million Find investment of both respectively

a) 3 million & 4 million.	b) 1.05 million & 1 million
c) 570,000 & 1.25 million	d) None of these

479) Find the value of x:

$$\frac{(x+1)}{(x-1)}=\frac{4}{5} \quad and \quad \frac{(x-1)}{(x+1)}=\frac{1}{2}$$

e) (9,5)	f) (-7,-9)
g) (7,9)	**h) (-9,3)**

480) $x^2+7x+12=0$ find the value of x.

a) (3,4)	b) (-3, 4)
c) (-3,-4)	d) (3,-4)

481) 9 years ago the age of father was thrice that of his son, after 7 years it is two times. Find the present ages of both

a) 33, 13	b) 39,19
c) 57, 25	d) None of these

482) Which of the following is not linear?

a) 2x+y=1	b) $2+\sqrt{2}y=3$
c) $(x+1)^2=2$	d) All of these

483) The equation of a line parallel to y-axis and at a distance of 4 units to the right of y-axis, is:

a) **X=4**	b) Y=4

c) X=4Y	d) Y=4X

Two lines having slope m_1 and m_2 are perpendicular if

a) $m_1 = m_2$	b) $m_1.m_2=1$
c) $m_1 \neq m_2$	d) **$m_1.m_2=-1$**

484) The y intercept of 3x-7y =-42

a) -7	b) -3
c) -42	d) **6**

Chapter 3: Mathematical Progression

485) In a G.P $a_5=24$, $a_{13}=39,936$, $a_{10}=?$

Answer

$a_5 = ar^4 = 24$

$a_{13} = ar^{12} = 39936$

By Dividing both equations we get

$$\frac{ar^{12}}{ar^4} = \frac{39936}{24}$$

$r^8 = 1664$

r=2.527226

now $a = a(2.527226)^4 = 24$

$a = 0.58835$

$a_{10} = ar^9 = 0.58835(2.527226)^9 = 2474.187$

486) Which one of the following is not from Geometric Progression?

a) **1000, 0**	b) 1,3,9
c) $\sqrt{5}$, $7\sqrt{5}$	d) $1/\sqrt{2}$,1, $\sqrt{2}$

487) Arithmetic progression a_1= ? , a_3=x+7 ,a_7=x+49

a. x+14 **b. x-14** c. x+3 d.x-11

488) Mr A has salary scale of 2000-250-25000 and Mr B has salary scale of 1500-360-80,000 find their total salary after 4 years and 10 months

Answer

Mr A

Here a=2,000 d=250 n=4 years and 10 months

First we will find salary of 4 years then salary of 10 months

$$S = \frac{n}{2}[2a + (n-1)d]$$

$$S = \frac{4}{2}[2(2000) + (4-1)250]$$

$$S = 9500 \times 12 = 114000$$

Now salary of 8 months in 5th year

Salary in 5th year will be 3000x10=30,000

So total collection of 4 years and 10 months is 114,000+30,000=144,000

Mr B

Here a=1,500 d=360 n=4 years and 10 months
First we will find salary of 4 years then salary of 10 months

$$S = \frac{n}{2}[2a + (n-1)d]$$

$$S = \frac{4}{2}[2(1500) + (4-1)360]$$

$$S = 8160 \times 12 = 97{,}920$$

Now salary of 8 months in 5th year
Salary in 5th year will be 2940x10=29,400
So total collection of 4 years and 10 months is 97,920+29,400=127,320

489) A person has monthly income of Rs. 1000 and his income increase by Rs. 50 of the previous month income. On which team his total salary will exceed 100,000.

a) 46th team b) **47th team**
c) 86th team d) 85th team

490) A person has Salary scale of 10000-100-20000

Find his total salary after 5 years and 8 months
Answer
Here a=10,000 d=100 n=5 years and 8 months
First we will find salary of 5 years then salary of 8 months

$$S = \frac{n}{2}[2a + (n-1)d]$$

$$S = \frac{5}{2}[2(10000) + (5-1)100]$$

$$S = 51000 \times 12 = 612000$$

Now salary of 8 months in 6th year
Salary in 6th year will be 10500x8=84,000
So total collection of 5 years and 8 months is 612,000+84,000=696,000

491) In an AP the 3rd term is x+7 and 7th term is x+49, the 1st term is:

a) x–7	b) x+7
c) x –14	d) x-49

492) The sum of the three numbers in A.P is 21 and the product of the first and third number of the sequence is 45. What are the three numbers?

a) **5,7,9**	b) 3,7,11
c) 9,5,7	d) Both a and c

493) Which term of the A.P. 24, 21, 18, ……. is the second negative term?

a) 8th	b) 9th
c) 10th	d) **11th**

494) Divide 25 into five parts in A.P. Such that the first and the last term are in the ratio 2:3. Then what will be its 10th term?

a) 11.5	b) **8.5**
c) 7.5	d) 9.5

495) Find the 15th term of the G.P. 3, 6, 12, 24, …, 12,288

a) 384	b) **49,152**
c) 15,360	d) 768

496) The two geometric means between the numbers 1 and 64 are:

a) 1 and 64	b) 2 and 16
c) **4 and 16**	d) 4 and 32

497) The sum of all odd numbers between 150 and 300 is:

a) 72,501	b) 34,421
c) 85,001	d) **16,875**

498) If the second term of G.P. is 2 and the sum of its infinite terms is 8, then its 5th term is:

a) ¼	b) ½
c) 2	d) 4

499) The sum of the three numbers in A.P is 21 and the product of the first and third number of the sequence is 45. What are the three numbers?

a) 5,7 and 9	b) 9,7 and 5
c) 3,7 and 11	d) **Both a and b**

500) If a rubber ball consistently bounces back ⅔ of the height from which it is dropped, what fraction of its original height will the ball bounce after being dropped and bounced four times without being stopped?

a) **16/81**	b) 16/27
c) 4/9	d) 37/81

501) If a line passes through (5, 3) and the x-intercept is half of the y-intercept. Write the equation in slope intercept form.

a) **Y=-2 x+13**	b) y=4-2x
c) y=-2x-4	d) y=2x+4

Chapter 4: Linear Programming

502) $2x + 7 < 5x - 3$

Which value of x will satisfy above

a) $x \geq 5$ b) $x \leq 7$ c) $x \leq 2$ d) None

Answer

$X \geq 5$

Put $x = 5$

$2(5)+7 \leq 5(5)-3$

$22 \leq 22$

503) $4x+3y \leq 9$, $2x+6y \leq 4$, while $x \leq 0$, $y \leq 0$ find redundant constraints.

a) $4x+3y \leq 9$	b) $2x+6y \leq 4$
c) Both equations	d) No equations

504) Draw feasible region of the following data

$X, Y \geq 1$

$X, Y \leq 4$

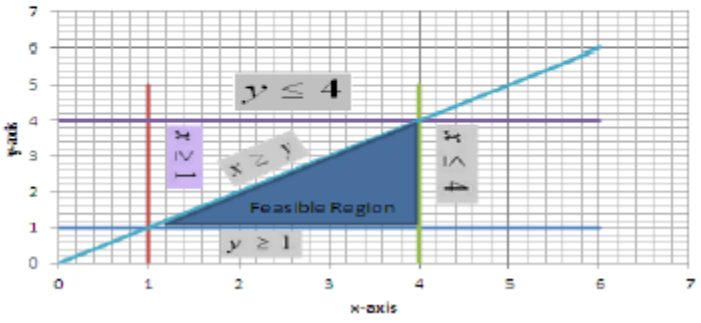
$X \geq Y$

Answer

Converting the given inequalities into equations, we get:

$x = 1$; $y = 1$; $x = 4$; $y = 4$ and $x = y$

With the help of above equations, the graph of given inequalities would be as follows:



505) Which of the following is a redundant constraint?

L_1 $5x + 3y \leq 9{,}000$

L_2 $3x + 2y \leq 8{,}400$

L_3 $x \leq 1{,}000$

L_4 $y \leq 1{,}000$

a) L-1 b) **L-2** c) L-3 d) none

Answer

First we will make points of each equation and draw the graph.

$5x + 3y \leq 9{,}000$ ($x = 0$ $y = 3{,}000$ $y = 0$ $x = 1{,}800$)

$3x + 2y \leq 8{,}400$ ($x = 0$ $y = 4{,}200$ $y = 0$ $x = 2{,}800$)

$z \leq 1{,}000$
$y \leq 1{,}000$
Hence L-2 $3x + 2y < 8{,}400$ is redundant constraint

506) A manufacturer makes two grades of concrete. Each bag of the high grade concrete contains 10 kg of gravel and 5 kg of cement, while each bag of low grade concrete contains 12 kg of gravel and 3 kg of cement. There are 1,920 kg of gravel and 780 kg of cement currently available. The manufacturer can make a profit of Rs. 1.20 on each bag of the high grade and Rs. 1.00 on each bag of low grade concrete. Then the number of bags of low grade, high grade and the maximum profit are respectively:

a) 60,120,240	b) 120,60,240
c) **60,120,204**	d) 120,60,204

507) A factory produced two products X and Y in two departments A(production) and B(packing). Capacity of each department is 1100 and 1420 hours respectively. The product X requires 4 hours in department A and 5 hours in department B, the product Y requires 7 hours in department A and 8 hours in department B. what are the constraints

a) 5x+4y≤1100 7x+8Y ≤1420 X,y≥0	b) 4x+5y≤1100 7x+8Y ≤1420 X,y≥0
c) 4x+7y≤1100 **5x+8Y ≤1420** **X, y ≥ 0**	d) None of these

508) A factory produced two products X and Y in two departments A(production) and B(packing). Capacity of each department is 1100 and 1420 hours respectively. The product X and product Y require 4 hours and 5 hours respectively in department A, while 7 hours and 8 hours respectively in department B. what are the constraints

a) 5x+4y≤1100 7x+8Y ≤1420 X,y≥0	**b) 4x+5y≤1100** **7x+8Y ≤1420** **X,y≥0**
c) 4x+7y≤1100 5x+8Y ≤1420 X, y ≥ 0	d) None of these

Chapter 5 and 6: Finance

509) Tahir took Rs 200,000 from Bank at 13.5% rate per year. What total amount he will have to pay after 5 years to Bank?

a) 335,000	b) 356,700
c) 337,500	d) None of these

510) Tina invested Rs 4000 per year (starting from 2nd year) @ 12% compounded annually for 8 years find the Present value of all those savings

Answer

It is a question of deferred annuity

$$P = R\left[\frac{1-(1+r)^{-n}}{r}\right](1+r)^{-k}$$

$$P = 4{,}000\left[\frac{1-(1+0.12)^{-8}}{0.12}\right](1+0.12)^{-1} = 17{,}741.5706$$

511) Tom and Jerry both invested same amount for 8 years. If Tom's rate of return is 9% and Jerry's rate is 10% compounded annually then find how much more Jerry will have after 8 years than Tom

e) 5.7%	f) 7.6%
g) 15.1%	h) 6.7%

Answer

Let investment is 100

Then by using difference formula

$$D = P\left[(1+r_1)^{n_1} - (1+r_2)^{n_2}\right]$$

$$D = 100\left[(1+0.10)^{8} - (1+0.09)^{8}\right] = 15.1$$

So percentage increase is $\frac{15.1}{100} \times 100 = 15.1\%$

512) A woman invested Rs 5000 every year for 10 years at 10% per annum, find total amount available to her after 10 years

Answer

$$So = R\left[\frac{(1+i)^n - 1}{i}\right] = 5000\left[\frac{(1+0.10)^{10} - 1}{0.10}\right] = 79{,}687.12$$

513) Suppose an amount of Rs. X is invested and he receives Four times of x interest rate is 10% compounded annually. How long it requires to be invested?

Answer

Date Given: P=X A=4X r=10% n=?

$$A = P(1+r)^n$$

$$4X = X(1+0.10)^n$$

n=14.545 years

14 years and 0.545*12=6.54 months Approximately

a. 14 years 6 month b. 11 year 6 month c. 12 year 3 month d. 13 years

514) Rizwan borrows Rs. 500,000 from his friend Qasid for the period of seven year and qasid receives 896,793Rs. If interest rate was 10% for the last four year find the interest rate of first 3 years?

Answer

$$896{,}793 = 500{,}000(1+r)^3(1+0.10)^4$$

By solving on calculator we get r=0.07=7%

a. 8% b. 12% **c. 7%** d. 5%

515) The company offers a bond of Rs. 200,000 for five years. the Company will pay Rs 300,000 at maturity date, interest rate is 8% , wheather this is feasible for the company alongwith reasons?

a. Yes, because Pv is greter than 200,000

b. No because Pv is greter than 200,000

c. on Break even d. None of these

516) Asim and Ali Company offers a bond of Rs. 200,000 for five years. the Company will pay Rs 300,000 at maturity date, interest rate is 8% , wheather this is feasible for the company?

a. Yes **b. No** c. on Break even d. None of these

517) A Mother wants Rs 300,000 after 3 years from now & Rs 500,000 after five years from now saperatly. if interest rate is 12% compounded quarterly , what would be the amount of installment to be deposited by her at the start of 1st , 8th and 13th Quarter?

Answer

First we will find installment required for 300,000

i=r/m=0.12/4=0.03 n=4×3=12

$$Sd = R\left[\frac{(1+i)^n - 1}{i}\right](1+i)$$

$$300{,}000 = R\left[\frac{(1+0.03)^{12} - 1}{0.03}\right](1+0.03) = 20522.9375$$

Now we will find installment required for 500,000

i=r/m=0.12/4=0.03 n=4×5=20

$$Sd = R\left[\frac{(1+i)^n - 1}{i}\right](1+i)$$

$$500{,}000 = R\left[\frac{(1+0.03)^{20} - 1}{0.03}\right](1+0.03) = 18{,}065.87747$$

So first and 8th installment will be =20522.94+18065.88=38,588.8

But 13th instalment will be only related to annuity of 500,000 ie = 18065.8

a. 38588.82, 38588.82, 18065.88 b. 30588.80, 30588.80, 18065.80

c. 38588.80, 20522.94, 18065.80 d.none of these

518) If present value of a unpaid bill of Rs. 650,000 reaches to 1,060,000 in 6 years, and interest rate in last four year charged at the rate of 10% compounded annually. So what interest should charge in first 2 years compounded annually?

a. 8.6 % b. 7.0 % **c. 5.54 %** d. 6.4 %

Answer

$$A = P(1+r)^n(1+r)^n$$

$$1{,}060{,}000 = 650{,}000(1+r)^2(1+0.10)^4$$

r=5.54%

519) Meena has invested Rs. 700,000 in an investment scheme. In return, she would receive Rs. 74,587 semi-annually in arrears, for the six years. She would not receive any amount afterwards. Find the nominal and effective rate of return of the scheme.

a) 8% and 8.16%	b) 8% and 9.16%
c) 8% and 10.16%	d) None

520) A person makes investment of Rs 8,000 now and in next two years at 10% compounded annually find his total investment at end of three years

a) Rs 29,000 b) Rs 28,000 c) 27,500 d) Rs 27,000

Answer

This is a question of Annuity Due as instalments are made at start of each year.

$$S_d = R\left(\frac{(1+r)^n - 1}{r}\right)(1+r)$$

$$S_d = 8000\left(\frac{(1+0.1)^3 - 1}{0.1}\right)(1+0.1) = 29{,}128$$

As no other option is given we will have to select the closest answer. Hence correct option will be A

521) If Rs. 200,000 is to grow to Rs. 649,464 in ten years' period, at what annual interest rate must it be invested, what is the effective rate of interest is compounded semi-annually?

a) **12.5%** b) 25% c). 26.56% d) 23.85%

Answer

We know that

$$A = P\left(1+\frac{r}{m}\right)^{mn}$$

$$649{,}464 = 200{,}000\left(1+\frac{r}{2}\right)^{2\times 10}$$

r = 12.13% compounded semi-annually

Now Effective rate

$$e = \left(1+\frac{r}{m}\right)^{m} - 1$$

$$e = \left(1+\frac{0.1213}{2}\right)^{2} - 1 = 12.5\%$$

522) A shopkeeper sold goods worth Rs.3.0 million during 2008. If he is able to increase his sale by 15% annually, what will be the sales in year 2024?

a 25 million b. about 28 million c. less than 30 million

d. **more than 28 million**

523) A company is considering whether to invest in a new item of equipment costing Rs. 45,000 to make a new product. The product would have a four-year life, and the estimated cash profits over the four-year period are as follows.

Year	Rs.
1	17,000
2	25,000
3	16,000
4	4,000

The project would also need an investment in working capital of Rs. 8,000, from the beginning of Year 1. The company uses a discount rate of 11% to evaluate its investments Using the NPV you have calculated at 11%, and the NPV at a discount rate of 15%, estimate the internal rate of return (IRR) of

the project.

a. 16.5% b.12.5% c. 8.03% d. **16.73%**

Answer

Using rate of 11 % we get PV of inflows as follows

$$PV\ of\ Inflows = \frac{17000}{(1+.011)} + \frac{25000}{(1+.011)^2} + \frac{16000}{(1+.011)^3} + \frac{4000}{(1+.011)^4} = 49{,}939.86$$

NPV at 11% = 49,939.86-45000 = 4,939.86

Using rate of 15 % we get PV of inflows as follows

$$PV\ of\ Inflows = \frac{17000}{(1+.015)} + \frac{25000}{(1+.015)^2} + \frac{16000}{(1+.015)^3} + \frac{4000}{(1+.015)^4} = 46{,}493.47$$

NPV at 11% = 46,493.47-45,000 = 1,493.47

Now using formula of interpolation

$$IRR = Lower\ Rate + \frac{High\ \ NPV}{High\ \ NPV - Low\ NPV}(High\ Rate - Low\ Rate)$$

$$IRR = 0.11 + \frac{4939.86}{4939.86 - 1493.47}(0.15 - 0.11) = 16.73\%$$

We will not use working capital outflow in this question as it is not related to the investment in machine. It is indirect expense of company like electricity expense or salaries of Labour etc.

524) Amount= Rs 2500, Interest=8% compounded monthly, find perpetuity.?

a). 377,500 b.) **375,000** c.) Indefinite d.) 26,800

Answer

$$P = \frac{R}{r} = \frac{2500}{0.08/12} = 375{,}000$$

525) Amount= Rs 2500, Interest=8%, find perpetuity.?

a). 31,250 b.) 32,150 c.) Indefinite d.) 26,800

Answer

$$P = \frac{R}{r} = \frac{2500}{0.08} = 31{,}250$$

526) Amount= Rs 3,000, Interest=8% comp quarterly, find perpetuity.?

a). 150,000 b.) 153,000 c.) Indefinite d.) none of these

Answer

$$P = \frac{R}{r} = \frac{3000}{0.08/4} = 150{,}000$$

527) The value of perpetuity for 8% compounded monthly on Rs 3,000 deposit per month is?

a) 250,000	**b) 450,000**
c) 350,000	d) 300,000

528) The value of perpetuity for 9% compounded monthly on Rs 9,000 deposit per month is?

a) 250,000	**b) 1,200,000**
c) 350,000	d) 300,000

529) Which of the following is true about perpetuity?

a) It has unlimited time series	b) It has no future value
c) Used to find purchase price of a share	**d) All of these**

530) A bank offers to pay 500,000 after 8 years if interest rate is 9% compounded annually then value of money to be paid to bank today will be?

a) 290,697.67	b) 250,933.14
c) 996,281.32	d)

531) Suppose an amount of Rs. X is invested in a bank @10% compounded annually rate. How long would it be invested if 3 times amount is required?

a) 10.5 years b) **11.52 years** c) 13.2 years d) None

532) Two companies made profits from investments in different projects:

	Year 1	**2**	**3**	**4**
Company A	98,000	95,000	150,000	-
Company B	85,000	90,000	70,000	80,000

Find the rate at which NPV of both companies will be same

a) 10% b) 20% c) 30% d) **none of these**

Answer

Equate Present value of both company's investments

$$\frac{98000}{(1+r)^1} + \frac{95000}{(1+r)^2} + \frac{150{,}000}{(1+r)^3} = \frac{85000}{(1+r)^1} + \frac{90{,}000}{(1+r)^2} + \frac{70{,}000}{(1+r)^3} + \frac{95{,}000}{(1+r)^4}$$

By solving on calculator we get required rate

533) Two companies made profits from investments in different projects:

	Year 1	**2**	**3**	**4**
Company A	75,000	85,000	90,000	-
Company B	60,000	90,000	55,000	45,000

Find the rate at which NPV of both companies will be same

a) 10% b) 20% c) 30% d) **none of these**

Answer

Equate Present value of both company's investments

$$\frac{75000}{(1+r)^1} + \frac{85000}{(1+r)^2} + \frac{90{,}000}{(1+r)^3} = \frac{60000}{(1+r)^1} + \frac{90{,}000}{(1+r)^2} + \frac{55{,}000}{(1+r)^3} + \frac{45{,}000}{(1+r)^4}$$

By solving on calculator we get required rate

534) Two companies made profits from investments in different projects:

	Year 1	Year 2	Year 3	Year 4
Company A	600,000	900,000	1,200,000	
Company B	600,000	750,000	850,000	900,000

Find the rate at which NPV of both companies will be same

a) 14.47% b) 14.60% c) **54.65%** d) 15.2%

Answer

Equate Present value of both company's investments

$$\frac{600,000}{(1+r)^1}+\frac{900,000}{(1+r)^2}+\frac{1,200,000}{(1+r)^3}=\frac{600,000}{(1+r)^1}+\frac{750,000}{(1+r)^2}+\frac{850,000}{(1+r)^3}+\frac{900,000}{(1+r)^4}$$

By solving on calculator we get required rate 54.647%

Hence correct option is C

535) Two companies made profits from investments in different projects:

	Year 1	Year 2	Year 3	Year 4
Company A	900,000	600,000	300,000	900,000
Company B	1,200,000	800,000	400,000	

Find the rate at which NPV of both companies will be same

a) 9.37% b) **18.58%** c) 20.45% d) 16.33%

Answer

Equate Present value of both company's investments

$$\frac{900,000}{(1+r)^1}+\frac{600,000}{(1+r)^2}+\frac{300,000}{(1+r)^3}+\frac{900,000}{(1+r)^4}=\frac{1,200,000}{(1+r)^1}+\frac{800,000}{(1+r)^2}+\frac{400,000}{(1+r)^3}$$

By solving on calculator we get required rate 18.58%

Hence correct option is B

536) A person invested some amount today @0.7% per month compounded for 10 years find his investment if he receives Rs 10 million.

a) 9.324 million	b) 4.13 million
c) **4.329 million**	d) None of these

Answer

$$A=P\left(1+\frac{r}{m}\right)^{mn}$$

here r/m =0.007 (as it is already divided by 12, no further division)

$10,000,000=P(1+0.007)^{10\times12}$

P=4,329,757

537) A person invested some amount today @1.8% per quarter for 10 years find his investment if he receives Rs 10 million.

a) 8.356 million	b) 4.13 million
c) **4.899 million**	d) None of these

Answer

$$A=P\left(1+\frac{r}{m}\right)^{mn}$$

here r/m =0.018 (as it is already divided by 4, no further division)

$10{,}000{,}000 = P(1+0.018)^{10\times4}$

P=4,898,790

538) Mr kamran invested some amount today @ 7.2% compounded quarterly for 10 years find his investment today if he receives Rs 10 million.

a) Rs 4,247,239	b) Rs 5,855,536
c) **Rs 4,898,791**	d) Rs 5,000,000

Answer

$$A = P\left(1+\frac{r}{m}\right)^{mn}$$

here r/m =0.018 (as it is already divided by 4, no further division)

$10{,}000{,}000 = P(1+0.018)^{10\times4}$

P=4,898,791

539) P=500,000 r=1.5% simple interest per month time =5 years find total amount

$$S = P(1+rt)$$

$$S = 500{,}000(1+1.5\%\times5\times12) = 950{,}000$$

540) If 500,000 is invested in a scheme @ 1.5% per month for 5 years then

a) He will get 150,000 per annum
b) He will get 75,000 per annum
c) He will get gain of Rs 450,000 after 5 years
d) All of these

Answer

$I = Prt$

$$I = 500{,}000\times0.015\times5\times12) = 450{,}000$$

As rate is monthly, so time will also be in months (5 years=60 months)

541) A person deposited Rs. 600,000 in a bank@9% simple interest for 3 years and 3 months. Calculate the amount of money he received at the end of period:

a) 793,939.425 b) 665,500 c) **775,500** d) 770,500

542) Ali and company bought a bond of Rs. 200,000 five-year age. The company received Rs. 300,000 at maturity., If interest rate us 85, whether the company is in profit?

a) yes b) **no** c) Data insufficient d None

543) If P.V of a bill of Rs. 500,000 reaches to 860,000 in 7 years, and interest rate charged in last 4 years is 10% compounded annually that what interest rate was charged in first 3 years, compounded annually

a) 5.52% b) 5.12% c) 6.25% d) 10%

544) A notes have face value of Rs. 90,000@8% compounded quarterly it will mature at 9.5 years, calculate amount of interest.

a) 56,114.9 b) 48,925.3 c) 12,345.2 d) **101,007**

545) Suppose an amount of Rs. X is invested in a bank @10% compounded annually rate. How long would it be invested if it becomes 3 times?

a) 10.5 years b) 11.52 years c) 13.2 years d) Noner3i

546) Two companies made different investments in different projects:

	Year 1	2	3	4
Company A	80,000	90,000	100,000	-
Company B	85,000	50,000	75,000	95,000

a) **17.88%** b) c) d)

547) A person deposited Rs. 600,000 in a bank@9% simple interest for 3 years and 3 months. Calculate the amount of money he received at the end of period:

a) 793,939.425 b) c) 775,500 d)

548) Ali borrowed 600,000 at some simple interest x for 2 years and 3 months and paid 40,000 in excess, find interest rate

a) 4.23%	b) **2.96%**
c) 29.6%	d) 0.29%

Answer

$I = Prt$

$$40{,}000 = 600{,}000 \times \frac{r}{100} \times \left(2 + \frac{3}{12}\right)$$

r = 2.963%

549) Ali borrowed 600,000 at some simple interest x for 2 years and 3 months and paid 400,000 in excess, find interest rate

a) 4.23%	b) 2.96%
c) **29.6%**	d) 0.29%

Answer

$I = Prt$

$$400{,}000 = 600{,}000 \times \frac{r}{100} \times \left(2 + \frac{3}{12}\right)$$

r = 29.63%

550) To increase Present value of project the rate should be adjusted

a) Upward	b) **Downward**
c) Depends on duration	d) Depends on rate

551) To increase Present value of project the rate should be adjusted

a) Upward or downward depending upon whether the required increase is less than or more than 10%	b) Upward or downward depending upon the project duration.
c) **Downward**	d) Upward

552) Given P=650,000 I=90,000 r= 9.5% t=?

a) **1.46 years(Approx.)**	b) 1.32 years
c) 1.15 years	d) None

553) Asif Borrowed Rs 100,000 and promised to pay Rs 1,000 each month to settle the obligation. If interest rate is 1.8% compounded monthly find the time required to settle the obligation.

a) 3 years	b) 4 years
c) 5 years	d) **9 years**

Answer

Using the formula of Present value of annuity

$$P = R\left[\frac{1-\left(1+\frac{r}{m}\right)^{-mn}}{\frac{r}{m}}\right]$$

$$100{,}000 = 1{,}000\left[\frac{1-\left(1+\frac{0.018}{12}\right)^{-12n}}{\frac{0.018}{12}}\right]$$

By solving on calculator we get n=9.0356 = 9 years approximately

554) You are given sum of annuity due of Rs 200,000 find the Sum of ordinary annuity if r = 12% compounded quarterly

Answer

$$S_d = S_o\left(1+\frac{r}{m}\right)$$

$$200{,}000 = S_o\left(1+\frac{0.12}{4}\right)$$

$$S_0 = \frac{200{,}000}{\left(1+\frac{0.12}{4}\right)} = 194{,}174.76$$

a) **194174.76**	b) 200,000
c) 206000	d) None of these

555) You are given following rates for different years

Year	Rate
2013	12%
2014	20%
2015	18%

Find the effective rate

Answer

Effective rate = $e = \sqrt[n]{(1+r_1)(1+r_2)(1+r_3)} - 1$

$$e = \sqrt[3]{(1+0.12)(1+0.20)(1+0.18)} - 1 = 0.166166 = 16.62\%$$

556) You are given following rates for different years

Year	Rate
2013	8%
2014	9%
2015	10%

Find the effective rate

Answer

Effective rate = $e = \sqrt[n]{(1+r_1)(1+r_2)(1+r_3)} - 1$

$$e = \sqrt[3]{(1+0.08)(1+0.09)(1+0.10)} - 1 = 0.08997 = 8.997\%$$

557) If nominal interest rate is 8% compounded monthly, find effective interest rate

Answer

$$e = \left(1 + \frac{r}{m}\right)^m - 1$$

$$e = \left(1 + \frac{0.08}{12}\right)^{12} - 1 = 8.30\%$$

558) If nominal interest rate is 8% compounded quarterly, find compounded monthly interest rate

Answer

$$\left(1 + \frac{e}{m1}\right)^{m1} = \left(1 + \frac{r}{m2}\right)^{m2}$$

$$\left(1 + \frac{e}{12}\right)^{12} = \left(1 + \frac{0.08}{4}\right)^{4}$$

e=7.95% compounded monthly

559) You are given the following data

R=x, i=10% n=5 Present value of Annuity Due is required

Answer

$$P = R\left[\frac{1-(1+i)^{-n}}{i}\right](1+i)$$

$$P = x\left[\frac{1-(1+0.1)^{-5}}{0.1}\right](1+0.1) = 4.169865x$$

560) An investment of 1.5 million is made in a business for 4 years and gain is 0.5 million find rate of gain

Answer

$$I = P\left[(1+r)^n - 1\right]$$

$$0.5 = 1.5\left[(1+r)^4 - 1\right]$$

$$r = 7.456\%$$

561) Hayyan invested Rs 400,000 in an investment scheme and got Rs 545,881 at the end of three years. Find effective rate, if interest was compounded monthly

a) 10.41%	**b) 10.92%**
c) 10%	d) None of these

562) Hayyan invested Rs 400,000 in an investment scheme and got Rs 545,881 at the end of three years. Find nominal rate, if interest was compounded quarterly

a) 10%	b) 10.92%
c) 10.5%	d) 11.01%

563) Ali borrowed Rs. 1,660,000 on first year he returned Rs. 80,000 and then he increases his instalment by 20% of the previous instalment every year.

In how many years he will be able to return the loan?

a) 9 years	b) 8 years
c) 10 years	d) None of these

564) A loan is borrowed of Rs 800,000 for 4 years and simple interest payable on loan is 650,000 find interest rate

a) 18.2%	b) 18.3%
c) 18.03%	**d) 20.3%**

565) GM and HM can be located through

a) Histogram	b) Bar graph
c) Ogive	**d) Cannot be located**

566) A data of absentees is given below

Name of employee	Ali	Ahmed	Tariq
Absentees	5	3	7

Find harmonic mean

a) 4.44	b) 4.34
c) 3.24	d) 4,24

567) Which of following pairs may have GM

a) (6 and -6)	b) 1000,000 and 0
c) $\sqrt{5}$ *and* $7(5)^{1/2}$	d) None of these

568) Which of following pairs may have GM

a) (6 and -6)	b) 1000,000 and 0
c) $\sqrt{5}$ *and* $7(5)^{1/2}$	d) None of these

569) Given Nominal rate 10% compounded monthly effective rate =?

a) 11.47%	b) 9.47%
c) 12.47	d) **10.47%**

Answer

$e = (1+\frac{r}{w})^m - 1 = (1+\frac{0.10}{12})^{12} - 1 = 10.47\%$

570) Question

S_o = 1,500,000 R = 80,000 r = 10% n =?

Answer

$So = R\left[\frac{(1+r)^n-1}{r}\right]$

$1{,}500{,}000 = 80{,}000\left[\frac{(1+0.10)^n-1}{0.10}\right]$

n = 11

571) Cash outflow = 2.5 million

Cash inflow = 0.2 m (1st year) 0.3 million (2nd) 2.9 m (3rd)

Find IRR

Answer

Year	0	1	2	3
Cash flows	(2.5)	0.2	0.3	2.9

At IRR P.V of inflows = P.V of outflows

$\frac{0.2}{(1+r)} + \frac{0.3}{(1+r)^2} + \frac{2.9}{(1+r)^3} = 2.5$

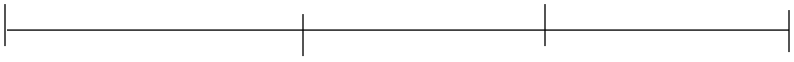
IRR = r = 11.7%

572) **Cash outflow** = 0.25 million

Cash inflow = 0.1 m (1st year) 0.15 million (2nd) 0.35 m (3rd)

Find IRR

Answer



Year	0	1	2	3
Cash flows	(0.25)	0.1	0.15	0.35

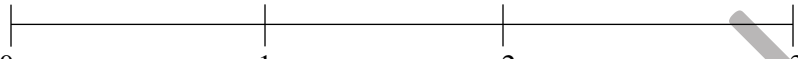
At IRR P.V of inflows = P.V of outflows

$$\frac{0.1}{(1+r)} + \frac{0.15}{(1+r)^2} + \frac{0.35}{(1+r)^3} = 0.25$$

IRR = r = 46.36%

573) Cash outflow = 3.0 million

Cash inflow = 1.0 m (1st year) 0.25 million (2nd) 2.25 m (3rd)
Find IRR



Year	0	1	2	3
Cash flows	(3.0)	1.0	0.25	2.25

$$\text{IRR} = \quad 3 = \frac{1.0}{(1+r)^1} + \frac{0.25}{(1+r)^2} + \frac{2.25}{(1+r)^3} = r = 6.845\%$$

574) Cash outflow = 2.0 million

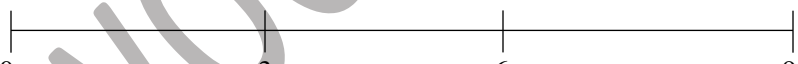
Cash inflow = 0.1 m (1st year) 0.2 million (2nd) 2.3 m (3rd)
Find IRR

Year	0	1	2	3
Cash flows	(2.0)	0.1	0.2	2.3

$$\text{IRR} = \quad 2 = \frac{0.1}{(1+r)^1} + \frac{0.2}{(1+r)^2} + \frac{2.3}{(1+r)^3} = r = 9.69\%$$

575) Cash outflow = 2,500,000

Cash inflow = 200,000 (3rd year) 290,000 (6th year) 2,900,000 (9th year)
Find IRR



Year	0	3	6	9
Cash flows	(2,500,000)	200,000	290,000	2,900,000

$$IRR = 2{,}500{,}000 = \frac{200{,}000}{(1+r)^3} + \frac{290{,}000}{(1+r)^6} + \frac{2{,}900{,}000}{(1+r)^9}$$

IRR=3.71857%

576) Cash flows received from investment of 3 million are 1,500,000, 1,700,000 and 2,300,000 for next 1,2 and 3 years respectively, what will be the rate of return on investment (IRR)

Year	0	1	2	3
Cash flows	(3,000,000)	1,500,000	1,700,000	2,300,000

$$IRR = 3{,}000{,}000 = \frac{1{,}500{,}000}{(1+r)^1} + \frac{1{,}700{,}000}{(1+r)^2} + \frac{2{,}300{,}000}{(1+r)^3}$$

IRR=34.50589%

577) Cash flows received from investment of 1 million are 120,000, 150,000 and 320,000 for next 1,2 and 3 years respectively, what will be the rate of return on investment (IRR)

Year	0	1	2	3
Cash flows	(1,000,000)	120,000	150,000	320,000

$$IRR = 1{,}000{,}000 = \frac{120{,}000}{(1+r)^1} + \frac{150{,}000}{(1+r)^2} + \frac{320{,}000}{(1+r)^3}$$

IRR= - 19.6971445%

578) If discount rate would increase, then present value of annuity will

a) Increase upward b) Decrease downward
c) Remain same d) None

Answer

Decrease (Down ward)

579) A company invested 3 million. Interest rate was 10%, 12% and 14% per year for first, second and third year respectively. Find NPV if cost of capital is 10%

a) 0.15 million	**b) 0.1656 million**
c) 0.10 million	d) 0

Answer

First we will find the future value of investment at given rate of interest

$$A = P(1+r_1)(1+r_2)(1+r_3)$$

$$A = 3(1+0.10)(1+0.12)(1+0.14)$$

A = 4.21344 million

Now discounting this value on the basis of cost of capital

$$P = \frac{A}{(1+r)^n} = \frac{4.21344}{(1+0.10)^3} = 3.1656$$

So NPV is PV of benefits – PV of cost

NPV = 3.1656 – 3 = 0.1656 million

580) Azam & Moazzam invested Rs 10 million each compounded quarterly for 5 years. After 5 year Azam has 20% more than Moazzam. Azam rate is 10%. Find rate of Moazzam.

a) 6.02% b) 6.12% c) 6.28% d) none of these

Answer

(Azam) > Moazzam

(Azam) = Moazzam+ 20% of Moazzam

(Azam) = 1.2(Moazzam)

$$10\left(1+\frac{0.10}{4}\right)^{4\times5} = 1.2\left[10\left(1+\frac{r}{4}\right)^{4\times5}\right]$$

$$16.3861644 = 12\left(1+\frac{r}{4}\right)^{4\times5}$$

$$1.3655137 = \left(1+\frac{r}{4}\right)^{4\times5}$$

$$\sqrt[20]{1.3655137} = \left(1+\frac{r}{4}\right)$$

$$1.015698481 = \left(1+\frac{r}{4}\right)$$

$$0.015698481 = \frac{r}{4}$$

$$4\times0.015698481 = r$$

Answer = r = 6.27939% = 6.28%

581) Azam & Moazzam invested Rs 10 million each compounded quarterly for 5 years. After 5 year Azam has 25% more than Moazzam. Azam rate is 10%. Find rate of Moazzam.

a) 5.25% b) 5.45% c) 5.29% d) none of these

Answer

(Azam) > Moazzam
(Azam) = Moazzam+ 25% of Moazzam
(Azam) = 1.25(Moazzam)

$$10\left(1+\frac{0.10}{4}\right)^{4\times5} = 1.25\left[10\left(1+\frac{r}{4}\right)^{4\times5}\right]$$

$$16.3861644 = 12.5\left(1+\frac{r}{4}\right)^{4\times5}$$

$$1.310893152 = \left(1+\frac{r}{4}\right)^{4\times5}$$

$$\sqrt[20]{1.310893152} = \left(1+\frac{r}{4}\right)$$

$$1.013627454 = \left(1+\frac{r}{4}\right)$$

$$0.013627454 = \frac{r}{4}$$

$$4\times0.013627454 = r$$

Answer = r = 0.0545098= 5.451% = 5.45%

582) Awais made an investment of Rs 1.2 million @ 12% compounded quarterly & Salman made investment of Rs 1.8 million @ 10% compounded annually. In how many years Awais's investment would exceed Salman's investment

b) 17.68 years b) 17 years c) **18 years** d) 16 years

Answer

(Awais) > Salman

First we will find the time at which both will be same

Amount of Awais's investment = Amount of Salman's investment

$$1.2\left(1+\frac{0.12}{4}\right)^{4n} = 1.8(1+0.10)^{4n}$$

Here n=17.68 years

So in 17.68 years both investment will be same, and any time above 17.68 years investment of Awais will exceed that of Salman

583) Cost of a project = 5 millions

Inflows 0.85 million (1st year)
1.5 million (2nd year)
5.2 million (3rd year)

Find IRR.

Answer

$$5 = \frac{0.85}{(1+r)^1} + \frac{1.5}{(1+r)^2} + \frac{5.2}{(1+r)^3}$$

IRR = r = 17.64%

584) A person has current savings of Rs. 500,000 and he also deposit 25,000 quarterly@12% compounded quarterly for 10 years. Find total amount.

Answer

$$\text{Total amount} = 25{,}000\left[\frac{(1+\frac{0.12}{4})^{4x10}-1}{\frac{0.12}{4}}\right] + 500{,}000\left(1+\frac{0.12}{4}\right)^{4x10}$$

585) If the discount rate is 10% then the present value of Rs X Payable Annually for 4 years is?

a) 3.12x	b) **3.17x**
c) 3.24x	d) 4.15x

Answer

Answer

$$P_o = R\left[\frac{1-(1+r)^{-n}}{x}\right]$$

$$= x\left[\frac{1-(1+10)^{-4}}{0.10}\right] = 3.17x$$

586) If the discount rate is 10% then the present value of Rs X Payable Annually (due) for 5 years is?

a) 4.12x	b) **4.17x**
c) 4.24x	d) 4.15x

Answer

Answer

$P_d = R\left[\frac{1-(1+r)^{-n}}{r}\right](1+r)$

$= x\left[\frac{1-(1+10)^{-5}}{0.10}\right](1.1) = 4.1698x$

587) Given

R = x discount rate = 9% comp. annually n = 4 Present Value of Annuity =??

Answer

Use PV of annuity

$P_o = x\left[\frac{1-(1+0.09)^{-4}}{0.09}\right] = 3.24x$

588) Following 3 options are available for an investment for 4 years.

i) 9.7% simple interest
ii) 9.3% compound quarterly
iii) 9.4% camp semi-annually

Which option is best?

Answer

Assume PV = 100 and find A under each option

i) A = 100 (1 + 0.097 x 4) = 138.8

ii) $A = 100\left(1+\frac{0.0963}{4}\right)^{4x4} = 144.446$

iii) $A = 100\left(1+\frac{0.094}{2}\right)^{2x4} = 144.40$

So option (ii) is better as it is giving highest answer.

589) Following 3 options are available for an investment for 10 years

i) 15% simple interest
ii) 10% compound annually
iii) 9% comp-semi-annually
iv) 8% comp-quarterly

Which option is best?

Answer

Assume PV = 100 and find A under each option

i) A = 100 (1 + 0.15 x 10) = 250

ii) $A = 100(1+0.10)^{10} = 259.37$

iii) $A = 100\left(1+\frac{0.09}{2}\right)^{2x10} = 241.17$

iv) $A = 100\left(1+\frac{0.08}{4}\right)^{4\times10} = 220.8$

So option (ii) is better as it is giving highest answer.

590) Initial investment is 170,000 @8% for 5 years find total amount

Answer

$A = P(1+r)^n = 170{,}000(1+0.08)^5 = 249{,}785.77$

591) PV=X find FV if rate =10% per year and time is 4 years

e) **1.4X**	f) 1.14X
g) 0.4X	h) 0.14X

592) Initial investment = 500,000 R = 25,000 m = 12 n = 10 year

Rate = 12 % compounded monthly Find total amount in 10 years

Answer

Total amount $= 25{,}000\left[\frac{\left(1+\frac{0.12}{12}\right)^{12x10}-1}{\frac{0.12}{12}}\right] + 500{,}000\left(1+\frac{0.12}{12}\right)^{12x10} = 7{,}401{,}160.68$

593) Initial investment = 500,000 R = 25,000 m = 12 n = 10 year

Rate = 5 % compounded monthly Find total amount in 10 years

Answer

Total amount $= 25{,}000\left[\frac{\left(1+\frac{0.12}{12}\right)^{12x10}-1}{\frac{0.12}{12}}\right] + 500{,}000\left(1+\frac{0.12}{12}\right)^{12x10} = 7{,}401{,}160.68$

594) Investment = R = X r = 9% n = 4 years S_o = Amount = ?

Answer

$S_o = R\left[\frac{(1+r)^n-1}{a}\right]$

$= x\left[\frac{(1+0.09)^4-1}{0.09}\right]$

So = 4.57x

595) Investment = R = X r = 9% n = 4 P.V = ?

Answer

So $P_o = x\left[\frac{1-(1+0.09)^{-4}}{0.09}\right] = 3.24x$

596) Investment = 2.0 million

Inflows = 100,000 (1st year)

= 200,000 (2nd year)

= 2,300,000 (3rd year)

Answer:

$2{,}000{,}000 = \frac{100{,}000}{(1+r)^1} + \frac{200{,}000}{(1+r)^2} + \frac{2{,}300{,}000}{(1+r)^3}$

IRR = r = 9.69%

597) R = 9% compounded monthly R = 3000 perpetuity =?

Answer:

$P_o = \frac{r}{r/m} = \frac{3{,}000}{\frac{0.09}{12}} = 400{,}000$

598) R = 8% compounded monthly R = 2,500 perpetuity =?

Answer:

$P_o = \frac{r}{r/m} = \frac{2{,}500}{\frac{0.08}{12}} = 375{,}000$

599) Ali deposited 200,000 for seven years in an investment scheme and got 300,000 at the end of maturity. If he received 8% interest compounded bi-monthly during the last three years at what rate of interest he requires to balance the amount during the first four year compounded bimonthly.

Answer

$A = P\ (1 + {}^{r}/_{m})^{mn} \qquad (1 + {}^{r}/_{m})^{mn}$

$300{,}000 = 200{,}000 \left(1 + \frac{0.08}{6}\right)^{6x3} \left(1 + \frac{r}{6}\right)^{6x4}$ [In case of bi-monthly m=6]

By solving on calculator

r = 4.2% compounded bi-monthly

600) Mr Shahid invested 300,000 for seven years in an investment scheme and got 500,000 at the end of maturity. If he received 8% interest compounded bi-monthly during the last three years at what rate of interest he requires to balance the amount during the first four year compounded bimonthly.

a) **6.84%**	b) 7.28%
c) 5.28%	d) 8%

Answer

$A = P\left(1 + {}^{r1}/_{m}\right)^{mn1}(1 + {}^{r2}/_{m})^{mn2}$

$500{,}000 = 300{,}000 \left(1 + \frac{0.08}{6}\right)^{6x3} \left(1 + \frac{r}{6}\right)^{6x4}$ [In case of bi-monthly m=6]

By solving on calculator

r = 6.84% compounded bi-monthly

601) Present value of a certain amount @7% for 7 years is X". what will be the present value of same amount for 5 years.

a) 1.14x b) 1.1449x c) 1.4049x d) $\sqrt[x]{1.449x}$

Answer

A = P(1+rt)

= x(1+0.07x2)

= 1.14x

602) r = 10% n = 4 R = x P_o =?

Answer

$P_o = R\left[\frac{1-(1+r)^{-n}}{x}\right]$

$= x\left[\frac{1-(1+10)^{-4}}{0.10}\right] = 3.16x$

603) r = 10% n = 5 R = x PV of annuity due=?

Answer

$P_o = R\left[\frac{1-(1+r)^{-n}}{x}\right](1 + r)$

$= x\left[\frac{1-(1+10)^{-5}}{0.10}\right](1 + 0.10) = 4.17x$

604) What is the effect in NPV if discount rate is increased?

Answer
NPV will decrease

605) Initial investment = 9 million and it continuously decreased 10% over lifetime. Find total sum

Answer
Sum of infinite series formula will be used.

$S_\infty = \frac{a}{(1-r)}$

$S_\infty = \frac{9}{(1-0.9)} = 90$ million

606) A person made an investment of Rs 900,000 and received Rs 750,000 more after 4 years and 10 months find rate compounded annually?

Answer

$$A = p(1+r)^n$$

$$1{,}650{,}000 = 900{,}000(1+r)^{4.833}$$

r = 13.36% compounded annually

607) A person made an investment of Rs 900,000 and received Rs 750,000 more after 4 years and 10 months find simple interest rate?

Answer

$I = Prt$

$$750{,}000 = 900{,}000r4.8333$$

r = 17.24%

608) What are the qualities of perpetuity?

a) used to find purchase price of share
b) used to find value of maintenance fund
c) Used to find initial deposit required for pension scheme
d) **All of these**

609) From perpetuity we cannot find

a) Present Value	b) **Future value**
c) Both	d) None of these

610) Ali has 500,000 now and he also invest 25,000 every year at bank@18% per annum for 5 years, find total amount available to him after 5 years.

a) Rs 1,322,734.122	b) Rs 1,127,689.98
c) Rs 1,234,123.987	d) None of these

611) Find rate of discount at which inflows of both companies would be same

	Year 1	**Year 2**	**Year 3**	**Year 4**
Company A	958,000	875,000	960,000	768,000
Company B	1,155,000	986,000	1,060,000	-

a) 8.27%	b) 8.13%

c) 19.31%	**d) 31.25%**

612) 2,500 8% perpetuity monthly?

613) 3,000 9% perpetuity monthly?

614) Mr. Ali borrows Rs.1600 for one year from a loan company. He is given only Rs.1560 and is expected to repay the Rs.1600 at the end of one year. What is the simple discount rate? Give the simple discount rate as a percent.

a) 3.5%	b) **2.5%**
c) 3.9%	d) 3.2%

615) Calculate the net present value of a project which requires an initial investment of Rs. 243,000 and it is expected to generate a cash inflow of Rs. 50,000 each month for 12 months. Assume that the salvage value of the project is zero. The target rate of return is 12% per annum.

a) **Rs 319,754**	b) Rs.419,754
c) Rs.319,123	d) Rs.219,744

616) Find the IRR of an investment having initial cash outflow of Rs. 213,000. The cash inflows during the first, second, third and fourth years are expected to be Rs. 65,200, Rs. 96,000, Rs. 73,100 and Rs. 55,400 respectively.

a) 11.25%	b) 12.15%
c) 13.12%	d) **14.67%**

617) A piece of equipment cost a certain factory Rs. 600,000. If it depreciates in value, 15% the first year, 13.5 % the next year, 12% the third year, and so on, what will be its value at the end of 10 years, all percentages applying to the original cost? (Hint: Arithmetic Progression)

a) 200,000	b) 405,000
c) **105,000**	d) 650,000

618) Mr Ahmed plans on retiring on his 60th birthday. He wants to put the same amount of funds aside each year for the next twenty years -- starting next year -- so that he will be able to withdraw Rs 50,000 per year for twenty years once he retires, with the first withdrawal on his 61st birthday. Ahmed is 20 years old today. How much must he set aside each year for his retirement if he can earn 10% on his funds?

a) 2,135.26	b) 1,500.23
c) **1,104.75**	d) 1,401.14

619) Ali purchased a new car and made a down payment of Rs. 50,000. He is further required to pay Rs. 30,000 at the end of each quarter for five years. The cash purchase price of the car, if the quarterly payment include 12% interest compounded quarterly is

a) Rs 498,324.25	b) **Rs 496324.25**
c) Rs 497,324.25	d) Rs 499,324.25

620) What is the present value of X Limited's share which is expected to earn Rs 5.60 every month, if money is worth 4% p.m.?

a) Rs 138.61	b) Rs 69.31
c) **Rs 140**	d) None of these

621) A loan was repaid in 7 annual installments of Rs.168 each. If the rate of interest be 10% per annum, compounded annually, the sum borrowed was:

a) Rs 850.1	b) **Rs 817.9**
c) Rs 1593.8	d) Rs 936.3

622) An amount of Rs. 3000 is due in 5 years from now. If the interest rate is 6% compounded semi-annually, what is the present value?

a) **2,232.28**	b) 2,553.35
c) 2,487.26	d) 2,264.26

623) A company wishes to replace a machine in five years' time at an estimated cost Rs. 30,000. The company can earn interest of 15% per annum on money invested in a fund. How much must be invested at the end of each of five years in order to have sufficient funds to replace the machine

a) 4806	b) **4449**
c) 4080	d) 5520

624) Mr. Akbar intends to create an endowment fund to provide for a yearly pension of Rs. 4,000 every year. If the fund is invested in high yielding securities at 7.5% compound interest, the amount of endowment will be

a) 43,333	b) 35,333
c) **53,333**	d) 33,333

625) Jameel invested a certain sum of money in a simple interest bond whose value grew to Rs.300 at the end of 3 years and to Rs. 400 at the end of another 5 years. What was the rate of interest in which he invested his sum?

a) 12%	b) **8.33%**
c) 6.67%	d) 6.25%

626) A man borrows Rs. 12500 from a bank at 20% compound interest. At the end of every year, he pays Rs.2000 as part repayment. How much does he still owe to the bank after 3 such installments?

a) Rs.15,600	b) Rs.12,864
c) Rs.12000	d) **None of these**

627) Mrs. Ahmed bought a sewing machine by paying Rs. 50each month for 10months, beginning from now. If money is worth 12% compounded monthly, what was the selling price of the machine on cash payment basis?

a) 411.22	b) 256.22
c) 715.33	d) **478.30**

628) A research foundation was established by a fund of Rs. 500,000 invested at rate that would provide 20,000 payments at the end of each year forever. What interest rate was being earned on fund?

a) 5%	b) 3%
c) **4%**	d) 6%

629) The nominal interest rate compounded semi-annually deposits of Rs.500 will accumulate to Rs.6000 in 5 years. The rate of interest is: (Hint: sum of annuity)

a) 7%	b) 8%
c) **7.98%**	d) 7.42%

630) To find out the total compound interest accrued on a sum of money after 5 years, which of the following information's given in the statements P and Q will be sufficient?

Statement P: The sum was 20000,
Statement Q: The total amount of simple interest on the sum after 5 years was 4000.

a) Only P is sufficient	b) Only Q is sufficient
c) Either P or Q is sufficient	d) **Both P and Q are needed.**

631) When Interest is being calculated on Principal and accumulated interest, the situation is called_____

a) **Compound interest**	b) Simple interest
c) Both a and b	d) None of these

632) Which one of the following is incorrect about perpetuity?

a) It is used to find stock price	b) Used in pension schemes
c) In perpetuity We find present value	d) **In perpetuity We find Future value**

633) Which one of the following is CORRECT about perpetuity?

a) Perpetuity is special kind of annuity that never ends	b) It is impossible to find the future value of perpetuity
c) It is impossible to find the present value of perpetuity	d) **Both A and B**

634) A person invests Rs 8000 per year at the start of year @10% compounded annually for 5 years, find his total investment at the end of 5 years.

a)	b)
c)	d)

635) Rate of interest compounded annually which gives the same amount of interest as obtained by nominal rate compounded over number of conversion periods is:

a) Equivalent Rate	b) **Effective Rate**
c) Nominal Rate	d) Exponential Rate

636) An annuity of Rs. 500 payables at the end of each quarter amounts to Rs 24,983.75 in 7 years. What is the nominal rate of interest if Interest is compounded quarterly?

a) 0.04	b) 0.05
c) **0.16**	d) 0.25

637) Calculate the net present value of a project which requires an initial investment of Rs. 243,000 and it is expected to generate a cash inflow of Rs. 50,000 each month for 12 months. Assume that the salvage value of the project is zero. The target rate of return is 12% per annum.

a) Rs 319,754	b) Rs 419,754

c) Rs 319,123	d) Rs 219,744

638) Miss Naheed plans on retiring on her 60th birthday. She wants to put the same amount of funds aside each year for the next twenty years -- starting next year -- so that she will be able to withdraw Rs. 50,000 per year for twenty years once she retires, with the first withdrawal on her 61st birthday. She is 20 years old today. How much must she set aside each year for her retirement if she can earn 10% on her funds?

a) Rs 2135.26	b) **Rs 1104.75**
c) Rs 1500.23	d) Rs 1401.14

639) Find the IRR of an investment having initial cash outflow of Rs. 213,000. The cash inflows during the first, second, third and fourth years are expected to be Rs. 65,200, Rs. 96,000, Rs. 73,100 and Rs. 55,400 respectively.

a) 11%	b) 12%
c) 13.12%	d) **14.67%**

640) Mr. Ali borrows Rs. 1,600 for one year from a loan company. He is given only Rs. 1,560 and is expected to repay the Rs.1600 at the end of one year. What is the simple discount rate? Give the simple discount rate as a percent.

a) 3.5%	b) **2.5%**
c) 3.9%	d) 3.2%

641) The rate at which a sum of money becomes four times of itself in 15 years at simple interest will be:

a) 15%	b) 17.5%
c) **20%**	d) None of these

642) If a sum of money is invested for the same period of time, which of the following will yield maximum amount of interest?

a) **8.4% compounded semi-annually**	b) 8.3% compounded quarterly
c) 8.2% compounded monthly	d) 8.1% compounded daily

643) A building society offers a low start mortgage of Rs. 40,000with 10 annual repayments starting one year from the loan being taken out. The interest rate applying throughout will be 11 % per annum, but the repayments will only be Rs. 5000 per annum for the first five years. What equal annual payments will be required in each of the last 5 years of mortgage?

a) 5815	b) 7710
c) **9812**	d) 11810

644) Shahid (Pvt.) Ltd has deduced the net present value of potential investment project at two discount rates. The relevant data are as follows:

Discount Rate	**Net Present Value**
20%	60
30%	(120)

645) What is the approximate internal rate of return of the project=?

a) 20%	b) **23.3%**

c) 26.6%	d) 30%

646) Mr. Raheel intends to create an endowment fund to provide for a yearly pension of Rs. 5000 every year. If the fund is invested in high yielding securities at 12.5% compound interest, the amount of endowment fund will be:

a) 39500	b) **40000**
c) 40500	d) Cannot be determined

647) Basit took a certain amount as a loan from a bank at the rate of 8% per annum simple interest and give the same amount to Ahmad as a loan at the rate of 12% per annum simple interest. If at the end of 12 years, he made a profit of Rs. 320 in the deal, what was the original amount?

a) 2000	b) 3000
c) 4000	d) **None of these**

648) At what nominal rate compounded monthly will a principal accumulate to the same amount as at 8% compounded quarterly?

a) **7.95%**	b) 8.05%
c) 7.94%	d) 8.06%

649) How much a father invests at the rate of 4.3% now so as to receive Rs. 50,000 at the time of marriage of his newly born daughter who is expected to be solemnized after 20 years?

a) 19000	b) 18622
c) 15000	d) **21554**

650) The difference between the interests received from two different banks on Rs. 500 for 2 years is Rs.2.50. The difference between their rates is:

a) 1%	b) 0.5%
c) **0.25%**	d) 2.5%

651) The compound interest on a sum for 2 years is Rs. 832 and the simple interest for the same sum for the same period is Rs. 800.The difference between the compound interest and the simple interest for 3 years will be:

a) Rs. 48	b) Rs. 66.56
c) **Rs. 98.56**	d) None of these

652) A sum of Rs. 12000 deposited at compound interest becomes double after 5 years. After 20 years it will become:

a) Rs. 120,000	b) **Rs. 192,000**
c) Rs. 124,000	d) Rs. 96,000

653) Mr. X took a loan at 10% p.a S.I. After 4 years, he returned the principal along with interest. If he returns in all Rs. 3500, what is the principal amount?

a) 3250	b) **2500**
c) 3150	d) 2100

654) What is the PV (today) of perpetuity if next year's cash flow is expected to be Rs 2,398 and the discount rate is constant at 12%?

a) **19983.33**	b) 30983.33
c) 20983.33	d) 21983.33

655) There is 60% increase in an amount in 6 years at simple interest. What will be the compound interest of Rs. 12,000 after 3 years at the same rate?

a) **3972**	b) 2160
c) 3120	d) 6240

656) Farhan borrowed Rs. 100,000 for one year at 12% annual interest compounded monthly. The loan is to be paid in equal instalments. The amount of each instalment, principal repayment in first instalment and total interest paid during the year are:

a) 8884.86, 6618.32, 7884.86	b) 7884.86, 8884.86, 6618.32
c) 7895.61, 6618.32, 4213.23	d) **8884.86, 7884.86, 6618.32**

657) Mrs Ali plans on retiring on her 60th birthday. She wants to put the same amount of funds aside each year for the next twenty years -- starting next year -- so that she will be able to withdraw Rs. 50,000 per year for twenty years once she retires, with the first withdrawal on her 61st birthday. Carol is 20 years old today. How much must she set aside each year for her retirement if she can earn 10% on her funds?

a) Rs 425,678.19
b) Rs 63,274.35
c) Rs 1,104.75
d) Rs

Solution

PV60 = Rs. 50,000 (PV annuity factor for N=20, i=10%)
PV60 = Rs. 50,000 (8.5136)
PV60 = Rs. 425,678.19
Because she will stop making payments on her 40th birthday (first is on her 21st birthday, last is on her 40th birthday), we must calculate the balance in the account on her 40th birthday:
PV40 = PV60 / (1 + 0.10)20 = Rs. 63,274.35
Then, we need to calculate the deposits necessary to reach the goal:
FV40 = PV40 = Rs. 63,274.35
N = 20
i = 10%
FV = CF (FV annuity factor for N=20, i=10%)
Rs. 63,274.35 = CF (FV annuity factor for N=20, i=10%)
Rs. 63,274.35 = CF (57.2750)
CF =payment = Rs. 1,104.75 per year

658) Have I got a deal for you! If you lend me Rs 60,000 today, I promise to pay you back in twenty-five annual installments of Rs 5,000, starting five years from today (that is, my first payment to you is five years from today). You can earn 6% on your investments. Will you lend me the money?

a) No, you will not lend
b) Yes, you will lend
c) Date is incomplete
d) Both options are same

Solution

This is a deferred annuity problem
CF = Rs. 5,000 n = 25 i = 6%

PV_4 = Rs. 5,000 (PV annuity factor for n=25 and i=6%)
PV_4 = Rs. 5,000 (12.7834)
PV_4 = Rs. 63,916.78
PV_0 = Rs. 63,916.78 / $(1 + 0.06)^4$ = Rs. 50,628.08

You probably shouldn't lend the money under these terms. If you lend me Rs 60,000, I am repaying you using terms such that the value of my repayment is Rs 50,628.08.

659) A loan company is willing to lend you Rs. 10,000 today if you promise to repay the loan in six monthly payments of Rs. 2,000 each, beginning today. What is the effective annual interest rate on Trust Worthy's loan terms?

a) b)
c) d)

Use the present value of an annuity due to approach this problem (because the first payment is today).
PV = Rs. 10,000
CF = Rs. 2,000
N = 6
PV annuity due = CF (PV annuity factor for N=6, i=?)(1 + i)
Rs. 10,000 = Rs. 2,000 (PV annuity factor for N=6, i=?)(1 + i)
5 = (PV annuity factor for N=6, i=?)(1 + i)
Through trial error using the tables for N=6 such that the factor multiplied by 1+ i is equal to 5,
i = 8%
precise answer for i= 7.9308%
EAR = $(1 + 0.079308)^{12}$ - 1 = 149.89%

660) Carol Calc plans on retiring on her 60th birthday. She wants to put the same amount of funds aside each year for the next twenty years -- starting next year -- so that she will be able to withdraw Rs. 50,000 per year for twenty years once she retires, with the first withdrawal on her 61st birthday. Carol is 20 years old today. How much must she set aside each year for her retirement if she can earn 10% on her funds?

a) 2135.26 b) **1104.75**
c) 1500.23 d) 1401.14

661) The nominal interest rate compounded semi-annually deposits of Rs.500 will accumulate to Rs.6000 in 5years. The rate of interest is:

a) 7% b) 8%
c) **7.98%** d) 7.42%

662) The indebtedness at any time in amortization is called

a) Principal Repayment b) Opening balance
c) Closing Balance d) **Outstanding balance**

663) An annuity of Rs. 500 payable at the end of each quarter amounts to Rs 24,983.75 in 7 years. What is the nominal rate of interest if Interest is compounded quarterly?

a) 0.04 b) 0.05
c) **0.16** d) 0.25

664) Find the IRR of an investment having initial cash outflow of Rs. 213,000. The cash inflows during the first, second, third and fourth years are expected to be Rs. 65,200, Rs. 96,000, Rs. 73,100 and Rs. 55,400 respectively.

a) 11%
b) 12%
c) 13.12%
d) **14.67%**

665) Calculate the net present value of a project which requires an initial investment of Rs. 243,000 and it is expected to generate a cash inflow of Rs. 50,000 each month for 12 months. Assume that the salvage value of the project is zero. The target rate of return is 12% per annum.

a) **Rs.319,754**
b) Rs.419,754
c) Rs.319,123
d) Rs.219,744

666) Mr. Bogambo borrows Rs.1600 for one year from a loan company. He is given only Rs.1560 and is expected to repay the Rs.1600 at the end of one year. What is the simple discount rate? Give the simple discount rate as a percent.

a) 3.5%
b) **2.5%**
c) 3.9%
d) 3.2%

667) A building society offers a low start mortgage of Rs. 40,000with 10 annual repayments starting one year from the loan being taken out. The interest rate applying throughout will be 11 % per annum, but the repayments will only be Rs. 5000 per annum for the first five years. What equal annual payments will be required in each of the last 5 years of mortgage?

a) 5815
b) 7710
c) **9812**
d) 11810

668) Mr. Raheel intends to create an endowment fund to provide for a yearly pension of Rs. 5000 every year. If the fund is invested in high yielding securities at 12.5% compound interest, the amount of endowment fund will be:

a) 39500
b) **40000**
c) 40500
d) Cannot be determined

669) Shahid (Pvt.) Ltd has deduced the net present value of potential investment project at two discount rates. The relevant data are as follows:

Discount Rate	**Net Present Value**
20%	60
30%	(120)

What is the approximate internal rate of return of the project=?

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c) 26.6%	d) 30%

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a) **19983.33**	b) 30983.33
c) 20983.33	d) 21983.33

671) Farhan borrowed Rs. 100,000 for one year at 12% annual interest compounded monthly. The loan is to be paid in equal instalments. The amount of each instalment, principal repayment in first instalment and total interest paid during the year are:

a) 8884.86, 6618.32, 7884.86	b) 7884.86, 8884.86, 6618.32
c) 7895.61, 6618.32, 4213.23	d) **8884.86, 7884.86, 6618.32**

672) A debt of Rs. 12000 is to be amortized by equal payments at the end of every six months for 3 years. If the interest charged is 6% compounded semi-annually, find the outstanding loan after the 4th payment?

a) 4500.59	b) **4238.67**
c) 4327.59	d) 4651.26

673) Rs 2,500 invested on 1st January 1985 had grown to be worth Rs 61,482 on 31st December 1999. The equivalent annual compound growth rate (to 2 decimal places) is

a) 23.80%	b) 25.70%
c) 57.29%	d) 63.95%

674) Find the compound amount and compound interest when Rs. 450,000 are invested for 3 years and 2 months at 6% compounded semi-annually?

a) Rs 552,250 and Rs 102,250	**b) Rs 542,696 and Rs 92,696**
c) Rs 500,000 and Rs 50,000	d) None of these

675) Find the compound amount and the compound interest on Rs. 200,000 invested for 3 years and 4 months at 6% compounded semiannually.

a) Rs 43,586 and Rs 243,585	b) Rs 23,456 and Rs 223,456
c) Rs 12,456 and Rs 212,456	d) None of these

676) An investor places Rs 8,000 into an investment for ten years. The compound rate of interest earned is 8% for first four years and 12% for the last 6 years. At the end of the ten years the investment (to the nearest Rs) is worth.

a) Rs 61,320	**b) Rs 21,483**
c) Rs 21,517	d) Rs 26,854

677) Walter invested Rs 5,000 in a bank deposit account which pays interest of 9% per annum, added to the account at the end of each year. He made one withdrawal of Rs 1,500 at the end of 3 years. What was the balance in the account at the end of 5 years, to the nearest Rs?

a) Rs 5,285	**b) Rs 5,911**
c) Rs 6,193	d) Rs 6,399

678) An equipment currently costs Rs 4,000. The rate of inflation for next three years is expected to be 8% per annum, then 10% for the following 2 years. The price of the equipment is expected to increase in line with inflation. The price, to the nearest Rs, after 5 years will be

a) Rs 5,760	b) Rs 5,800
c) Rs 6,097	d) Rs 6,155

679) A credit card company charges its customers compound interest @ rate of 2.25% per month. The equivalent annual percentage rate, to 1 decimal place, is….

a) 27%	b) 27.7%
c) 30.6%	d) 34.5%

680) A bank offers depositors a nominal interest rate of 10% per annum, with interest added their accounts quarterly. The effective annual percentage rate, to 1 decimal place, is

a) 8.2%	b) 8.3%
c) 10.4%	d) 11.10%

681) Raheel invests Rs 700 on 1 January each year, starting in 2000. Compound interest of 10% is credited on 31 December each year. To the nearest Rs, the value of his investment on 31 December 2009 will be

a) Rs 10,456	b) Rs 11,156
c) Rs 12,272	d) Rs 12,972

682) Sara took a loan of Rs. 1200 with simple interest for as many years as the rate of interest. If she paid Rs. 432 as interest at the end of the loan period, what was the rate of interest?

a) 3.6	b) **6**
c) 18	d) Cannot be determined

683) How much a father invests at the rate of 4.3% now so as to receive Rs. 50,000 at the time of marriage of his newly born daughter who is expected to be solemnized after 20 years?

a) 19,000	b) 18,622
c) 15,000	d) **21,554**

684) A non-interest bearing note of Rs. 3000 is due in 5 years from now. If the note is discounted now at 6% compounded semi-annually, what will be the compound discount?

a) 525.25	b) 646.46
c) 700.00	d) **767.72**

685) A debt of Rs. 12000 is to be amortized by equal payments at the end of every six months for 3 years. If the interest charged is 6% compounded semi-annually, find the outstanding loan after the 4^{th} payment?

a) 4500.59	b) **4238.67**
c) 4327.59	d) 4651.26

686) The least number of complete years in which a sum of money put out at 20% compound interest will be more than doubled is:

a) 3	b) **4**
c) 5	d) 6

687) The indebtedness at any time in amortization is called

a) Principal Repayment	b) Closing Balance
c) Opening balance	d) **Outstanding balance**

688) If the discount rate is 10% then present value of x received at the end of each year for next 4 years is equal to:

e) 3.5X	f) 4.17X
g) **3.79X**	h) 5X

689) If the discount rate is 9% then find the present value of "X" which is paid in equal annual installments for next five years?

e) 4.641X	f) 0.3158X
g) **3.89X**	h) 0.2155X

Chapter 7 and 8 : Averages and Dispersion

690) Define raw data

a) The data collected in large volumes	b) Result of sampling enquiries or census
c) The data collected in surveys	d) **All of these**

691) Average

a) Summarize the concentration of a set of data	b) **Measures the concentration of a set of data**
c) Measures the scatterness of a set of data	d) None of these

692) If classification is done according to differences in time, classification is called:

a) Qualitative	b) Spatial
c) Quantitative	d) **Temporal**

693) The model letter of the word "STATISTICS" is:

a) S	b) T
c) **Both a and b**	d) None of these

694) Following data is given find mean and SD

36,26,19,5,4

a)	b)
c) Mean=18, SD=12.28	d)

695) Following data is given find coefficient of variation. 36,26,19,5,4

a) 146.58%	b)
c)	**d) 68.22%**

696) Find ∑f and median?

Stem	**Leaf**
2	3,4,6
3	7,8,9,9
4	7,6,5,5,5,2,2,6,6,9
5	7,7,8,9,9
6	1,2,3,6

Answer

Stem	**Leaf**	**Frequency**
2	3,4,6	3
3	7,8,9,9	4
4	7,6,5,5,5,2,2,6,6,9	10
5	7,7,8,9,9	5
6	1,2,3,6	4
		∑f **=26**

Median is middle value

$$Median = \frac{n+1}{2} thValue = \frac{26+1}{2} = 13.5th value$$

$$Median = \frac{13thValue + 14th value}{2} = \frac{46+46}{2} = 46$$

a. 26,46 b. 27,39 c. 39,37.5 d. 46,27

697) Find median of values 30,15,20

a) 30	b) 15
c) 20	d) None of these

698) Relation between two qualitative variables is

a) Rate	**b) Ratio**
c) Proportion	d) All of these

Rate compares two quantities of different units. Eg km/hr, miles/sec,

Ratio compares two quantities of same units eg men to women ratio

699) Consider the following stem and leaf display and choose the wrong statement

Stem	**Leaf**
3	0,2,
4	1,3,5
5	**….**
6	0,5,
7	1,2,3,5
8	0,2,
9	0,8

1. Its mean is 58
2. It has median 71
3. Its range is 68

a) Statement I only	b) Statement I I
c) Statement I, II,III	**d) Statement II and III**

700) Find lower and upper quartile from the following data

19,19,25,25,25,20,21,21,28

a) Q1 = 19.5 & Q3 = 25	b) Q1 = 19 & Q3 = 25.5
c) Q1 = 19.5 & Q3 = 25.5	d) Q1 = 19 & Q3 = 25

701) 21,22,21,22,27,22,28,27,27,28,28,28 Find Mode

a. 28 b. 27 c. 21 d. 21

702) 15,16,23,23,23,25,25,25,27,27,27,28,28,28,28,28,29,29,29,29 Find Mode

a) 29	b) 27
c) 28	d) 23

703) A cricketer score in a cricket series as 51,15,0,3,85,15,51,38. Find mode

a) 51	b) 15
c) 51 & 15	d) No mode in data

704) A production process consists of consumption of the following material in Kg's:

49, 50, 38, 60, 75 of materials A, B, C, D. E respectively. How many angle difference between C & D in pie chart?

a. 25.12% b. **29.12%** C.38.15 d. none of these

Answer

$$\frac{60-38}{272}\times 360^{o} = 29.12\%$$

705) The quantity which expresses the standard deviation as a percentage of mean is Called:

a. Z-score b. **Co-efficient of variation** c. Co-efficient of dispersion d. None of these

706) In positive skewed distribution, the Median is ____ than Mean

a. **Less** b. More c. Equal d. None of these

707) A data has Mode=1850 and mean = 1450. You are required to find whether data is

a) Positively skewed	**b) Negatively skewed**
c) Normal	d) None of these

708) The chart which is used to compare relation between whole and its components is

a) Component bar chart	b) Pie chart
c) Both a and b	d) None of these

709) If date one has mean $\overline{X} = 50$ and date two has mean $\overline{Y} = 75$ and a constant 3 is added to both of these data then their means will?

a) Increase by 3 times	**b) Increase by 3 units**
c) Decrease by 3 times	d) Decrease by 3 units

710) What is the definition of raw data?

a) The data collected in surveys	b) Data often collected in large volumes
c) Results of sampling enquiries or census.	**d) All of these**

711) What is the definition of sampling?

a) a process or method of drawing a representative group of individuals or cases from a particular population	b) a process of arranging population
c) a process of finding probabilities	d) all of these

712) The graph obtained by joining the mid points of the tops of adjacent rectangles in histogram is called?

e) Frequency polygon	f) Ogive
g) Pie Chart	h) Histogram

713) Which of the following is correct about median?

a) There can be more than one median in a data	b) Median will be affected by increase or decrease in extreme values
c) It divides the data in two equal parts in terms of values	d) All of these

714) Following data is given. Find lower and upper quartile

19,19,25,25,25,20,21,21,28

a) Q1=19 and Q3=25	b) Q1=19.5 and Q3=25.5
c) Q1=19.5 and Q3=25	d) Q1=19 and Q3=25.5

715) Ogive is?

e) Cumulative frequency curve	f) Frequency distribution curve
g) Both A and B	h) None of these

716) True about ogive diagram.

a. **cumulative frequency polygon** b. we can calculate mean from it

c. it can be in three types. d. none of these

717) The sums of deviations taken from 10, 20, 30 and 40 are -56, -20, 0 and 60 respectively. If distribution is treated as normal or symmetric, what is mode of the distribution?

a. 20.5 b. **30.0** c. 15.5 d. more than 30.0

(Hint: property of A.M and normal distribution)

718) Which the of the following is used to represent grouped frequency distribution

a) Pie chart b) **Histogram** c) Simple Bar chart d) All of these

719) What is true about mean?

a) Mean is usually a data value
b) Mean is unaffected by extreme values
c) **Mean is best average to describe data**
d) All of these

720) Following discrete data is given

X	**F**
4	8
5	9
6	10
7	7
8	6

Find mean, median, mode

Answer

X	F	Fx	Cf
4	8	32	8

5	9	45	17
6	10	60	27
7	7	49	34
8	6	48	40
	40	**234**	

Mean=234/40 = 5.85

Median = 40/2 th value = 20th value = 6

Mode = most frequent value = 6

721) Find harmonic mean from the following data

X	F
0----9	2
10---19	3
20---29	4
30---39	3
40---49	2

Answer

X	F	F/x
4.5	2	4/9
14.5	3	6/29
24.5	4	8/49
34.5	3	2/23
44.5	2	4/89
	14	**1893/2000**

Harmonic mean =14/(1893/2000) = 14.79

722) Mean of 35 values is 68, mean of 15 values is 54, find the mean of remaining 20 values

Answer

Using combined mean formula

$$\overline{Xc} = \frac{n_1 \overline{X}_1 + n_2 \overline{X}_2}{n_1 + n_2}$$

$$68 = \frac{15 \times 54 + 20 \times \overline{X}_2}{35}$$

$$\overline{X}_2 = 78.5$$

723) Which of the following is correct for Bar graph?

a) It Can be used for the continuous distribution.
b) It Can be vertical
c) It Can be horizontal.
d) Both Vertical and Horizontal

724) Mean of 38 values is 62, mean of 10 values is 57, find the mean of remaining 28 values

Answer

Using combined mean formula

$$\overline{Xc} = \frac{n_1 \overline{X}_1 + n_2 \overline{X}_2}{n_1 + n_2}$$

$$62 = \frac{10 \times 57 + 28 \times \overline{X}_2}{38}$$

$$\overline{X}_2 = 63.786$$

725) 10 readings of temperature are given below

-20, -18, -17, -15, -2, -12, -8, -5, -4, -12

Which of the following is true about the above data?

a) Variance can't be calculated as all the values are negative
b) Variance can be positive or negative
c) Variance must be at least 0
d) Variance of this data is negative

726) Find harmonic mean of 78, 79, 80

a) 79.99 b) 79.01 c) **78.99** d) 78.23

727) Following data is given:

2,10,15,25,18,3.5,16,45,50,25,45,40,.2,40,3,42,45,13,17,18,25,15,22,23,25,39,8,12,25,16,18,40,32,3.5,33,36,29,26,22.

Find mean and median

a) 22 & 22.425 b) **22.425 & 22** c) 21 & 23 d) none of these

Answer
Mean = 22.425, median 22

728) Salaries of 6 employees are given below you are required to find median

40,000 50,000 55,000, 44,000, 25,000, 30,000

a) 44,000	b) 40,000
c) **42,000**	d) 55,000

729) A student calculated mean and standard deviation of a data of 10 values as 104 and 4 respectively. Later on it was discovered that he has used some incorrect values as given below in table.

Incorrect values	Correct values
6	4
8	9

You are required to find correct mean and standard deviation.

e) **Mean 103.9 & SD= 6.041**	f) Mean 113.9 & SD= 6.041
g) Mean 113. & SD= 4.041	h) Mean 103. & SD= 4.04

730) Median = 49.67 Q3 = 60 Q1 = 39.

What will be the shape of distribution?

a) Symmetric b) **positively showed**

c) Negatively showed d) None

731) What is true about Histogram?

a) **Set of rectangles** b) Heights are proportionate to frequency
c) Both A and B b) None of these

732) What is true about Histogram?

a) Set of rectangles b) Area is proportionate to frequency
c) **Both A and B** b) None of these

733) Which of the following statement is not true about continuous variable?

a) Ages of students in a class
b) Ages of people in Pakistan
c) Height of all the students in world
d) None of these

734) Which the of the following is used to represent grouped frequency distribution

a) Pie char b) **Histogram** c) Simple Bar chard) All of these

735) What is true about mean?

a) Mean is usually a data value
b) Mean is unaffected by extreme values
c) **Mean is best average to describe data**
d) All of these

736) Find harmonic mean of 78, 79, 80

a) 79.0 b) 79.01 c) **78.99** d) 78.23

737) Which of the following is used to represent grouped frequency distribution?

a) Histogram	b) Frequency polygon
c) Ogive	d) **All of these**

738) The frequency distribution of a group of persons according to age is given

Age	<1	1-4	5-9	10-19	20-29	30-39	40-59	60-79
persons	5	10	11	12	22	18	8	7

Find mean median

Answer

Classes	**Frequency**	**X**	**Fx**	**CB**
0-1	5	0.5	2.5	**0-0.5**
1-4	10	2.5	25	**0.5-3.5**
5-9	11	7.0	77	**3.5-9.5**
10-19	12	14.5	174	**9.5-19.5**
20-29	22	24.5	539	**19.5-29.5**
30-39	18	34.5	621	**29.5-39.5**
40-59	8	49.5	396	**39.5-59.5**
60-79	7	69.5	486.5	**59.5-79.5**
	93		**2321**	

Mean = 2321/93 = 24.96

$$\textbf{Median} = l + \frac{h}{f}\left(\frac{n}{2} - c\right) = 19.5 + \frac{10}{22}(46.5 - 38) = 23.364$$

739) Variance can never be

a) 0	b) Positive
c) Negative	d) Both a and b

740) NPV is high when

a) Rate is low	b) Rate is high
c) Does not depend on rate	d) None of these

741) Following data is given for two sales department of a multinational company

Department	Sales force	Revenue	SD
A	200	10 million	25000
B	150	36 million	80000

In your opinion which department is more consistent?

Answer

Coefficient of Variation of Department A $= \frac{SD}{\overline{X}} \times 100 = \frac{25{,}000}{10{,}000{,}000/200} \times 100 = 50\%$

Coefficient of Variation of Department B $= \frac{SD}{\overline{X}} \times 100 = \frac{80000}{36000000/150} \times 100 = 33.33\%$

Hence Department B is more efficient

742) Following data is given for two sales department of a multinational company

Department	Sales force	Revenue	SD
A	200	25 million	250000
B	250	36 million	80000

In your opinion which department is more consistent?

Answer

Coefficient of Variation of Department A $= \frac{SD}{\overline{X}} \times 100 = \frac{250000}{25000000/200} \times 100 = 200\%$

Coefficient of Variation of Department B $= \frac{SD}{\overline{X}} \times 100 = \frac{80000}{36000000/250} \times 100 = 55.55\%$

Hence Department B is more efficient

743) Following data is given

2,4,6,8,10,11,12,13,15,17,18,20,22,23,25,26,28,30,32,34,36,38,39,40,42,43,45,47,48,49

You are required to find that how many values fall in the range of $\overline{X} \pm \sigma$

a) 18	b) 19
c) 17	d) 20

744) Following data is given

2,4,6,8,10,11,12,13,15,17,18,20,22,23,25,26,28,30,32,34,36,38,39,40,42,43,45,47,48,49

You are required to find that what percentage of values fall in the range of $\overline{X} \pm \sigma$

a) 60%	b) 40%
c) 65%	d) Both a and c

745) Following data is given

2,4,6,8,10,11,12,13,15,17,18,20,22,23,25,26,28,30,32,34,36,38,39,40,42,43,45,47,48,49

You are required to find that how many values fall in the range of $\overline{X} \pm 2\sigma$

a) All values	b) 25 vales
c) 22 values	d) None of these

746) You are given the following equation

$$y = x^2 + 2x + 7$$

Which of the following is correct?

a) It is a linear equation	b) Its slope is 2
c) Its coefficient of x^2 is 1	d) Both b and c

747) You are given the following equation

$$y = x^2 + 2x + 7$$

Which of the following is correct?

a) It is a quadratic equation	b) Its slope is 2x+2
c) Its coefficient of x^2 is 1	**d) All of these**

748) How much would Akram invest to get 10 million after 10 years if rate 1.8% compounded per year?

a) 8.37 million approx.	b) 8.36 million approx.
c) 8 00 million approx.	d) None of these

749) How much would Akram invest to get 10 million after 10 years if rate 2.1% compounded per year?

a) 8.37 million approx.	b) 8.36 million approx.
c) 8.12 million approx.	d) None of these

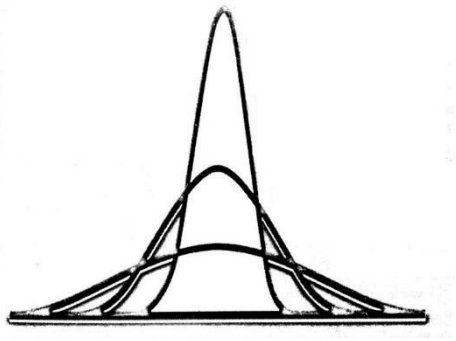
750) which is correct

e) $\mu \pm 1\sigma$ shows flatter curve

f) $\mu \pm 2\sigma$ highest position

g) $\mu \pm 3\sigma$ smooth

h) None of these



751) In box and whisker plot how much area is covered in the box

a) 25%	**b) 50%**
c) 75%	d) 100%

752) In box and whisker plot how much area is covered before the median (Q2).

a) 25%	**b) 50%**
c) 75%	d) 100%

753) In box and whisker plot how much area is covered in whisker (hinge) before the box

a) 25%	b) 50%
c) 75%	d) 100%

754) In box and whisker plot how much area is covered in whisker (hinge) after the box

a) 25%	b) 50%
c) 75%	d) 100%

755) In box and whisker plot how much area is covered from Q1 to maximum value

a) 25%	b) 50%
c) 75%	d) 100%

756) The lower and upper quartile of a normal distribution are 20 and 40 find median

a) **30**	b) 32
c) 25	d) Data is incomplete

757) The lower and upper quartile of a normal distribution are 20 and 40 find mode

a) **30**	b) 32
c) 25	d) Data is incomplete

758) The lower quartile and median of a normal distribution are 20 and 40 find upper quartile

a) **60**	b) 50
c) 30	d) Data is incomplete

759) The mean and upper quartile of a normal distribution are 20 and 30 find lower quartile

a) **10**	b) 50
c) 30	d) Data is incomplete

760) For a data set, median is 49.27 and Q1 and Q2 are 37.21, 61.33 respectively. Determine if they are:

a) Positively Skewed	b) Negatively Skewed
c) **Symmetric**	d) None of these

761) If frequency is negatively skewed show the relation between mean median and mode.

a) Mean>Median>Mode	b) **Mean<Median<Mode**
c) Mean=Median=Mode	d) All of these are true.

762) Performance of two randomly selected players is given bellow:

Player A (runs / inning)	85	12	75	43	9	49
Player B (wickets / inning)	4	3	1	1	0	2

Performance of which player is more consistent?

a) **Player A**	b) Player B
c) Both are same	d) Insufficient data

763) Performance of two randomly selected players is given bellow:

Player A (runs / inning)	85	102	7	13	9	49
Player B (wickets / inning)	4	3	1	1	0	2

Performance of which player is more consistent?

a) Player A	b) **Player B**
c) Both are same	d) Insufficient data

764) If frequency distribution is skewed to left tail (negatively skewed) then show the relation between mean, median and mode

a) Mean=median=mode	b) **Mean<median<mode**
c) Mean>median>mode	d) median <Mean<mode

765) If frequency distribution is skewed to right tail (positively skewed) then show the relation between mean, median and mode

a) Mean=median=mode	b) Mean<median<mode
c) **Mean>median>mode**	d) median <Mean<mode

766) If frequency distribution is symmetrical then show the relation between mean, median and mode

a) **Mean=median=mode**	b) Mean<median<mode
c) Mean>median>mode	d) median <Mean<mode

767) Data given

Classes	Frequency
46-50	15
51-55	25
56-60	105
61-65	170
66-70	180
71-75	150
76-80	80
81-85	60
86-90	48

Find Standard Deviation and variance

i) 9.17 and 69.00 b) **9.17 and 84.02** c) 3.03 and 9.17 d) 84.02 and 9.17

Answer

Classes	Frequency	X	Fx	Fx^2
46-50	15	48	720	34560
51-55	25	53	1325	70225
56-60	105	58	6090	353220
61-65	170	63	10710	674730
66-70	180	68	12240	832320
71-75	150	73	10950	799350
76-80	80	78	6240	486720
81-85	60	83	4980	413340
86-90	48	88	4224	371712
Sum	**833**		**57479**	**4036177**

$$Variance = \frac{\Sigma fx^2}{\Sigma f} - \left(\frac{\Sigma fx}{\Sigma f}\right)^2$$

$$Variance = \frac{4036177}{833} - \left(\frac{57479}{833}\right)^2 = 84.0192 \approx 84.02$$

$$S\tan dard\ \ deviation = \sqrt{Variance} = \sqrt{84.02} = 9.166 \approx 9.17$$

As standard deviation is asked first then variance so answer should be 9.17 and 84.02.
Hence correct option should be **B**

768) Find H.M

Class	**F**	**Fx**	$\frac{\mathbf{f}}{\mathbf{x}}$
0-9	2	4.5	4/9
10-19	3	14.5	6/29
20-29	4	24.5	8/49
30-39	3	34.5	2/23
40-49	2	44.5	4/89
			0.9465

769) Data given

Find mean, median and mode

X	F	fx	c.f
4	8	32	8
5	9	45	17
6	10	60	27
7	7	49	34
8	6	48	40
	40	234	

Answer

Mean = $\frac{\Sigma x}{n} = \frac{234}{40} = 5.85$

Median = $\frac{\Sigma f}{2} = \frac{40}{2}$ = 20th value = 6

Mode = Most frequent value = 6

770) Find H.M

Class	F	Fx	$\frac{\mathbf{f}}{\mathbf{x}}$
0-9	2	4.5	4/9
10-19	3	14.5	6/29
20-29	4	24.5	8/49
30-39	3	34.5	2/23
40-49	2	44.5	4/89
			0.9465

Answer

H.M = $\frac{\Sigma f}{\Sigma \frac{f}{x}} = \frac{14}{0.9465066} = 14.79$

771) Bar chart

a) Is used for discrete data	b) Show data horizontally
c) Show data vertically	**d) Both b and c**

772) Which graph can be used to find

i) Median Answer is ogive
ii) Mode Answer is Histogram

773) What are the specifications/characteristics of ogive?

Answer
Cumulative frequency and C.B are used
Median, quartiles deciles & percentiles can be determined from Ogive

774) Correlation between weight and salary

Answer
"0" zero

775) Stem & leaf display is given, find median

Answer = 71

776) Which of the following is correct?

a) A distribution having mean = μ and S.D = σ is showing high steepness
b) A distribution having mean = μ and S.D = 2 σ is showing high dispersion
c) A distribution having mean = μ and S.D = $\frac{1}{2}$ σ show low steepness

Answer
Correct is option b

777) Following data is given 5, 10, 13, 17, 20, 25, 30, 33, 35, 40. If all of the values are increased by 20% then what will be the revised mean and S.D.

Answer
Original mean = 22.8
Original S.D = 11.0616
Now 20% increase will impact on both
Mean and S.D (as this is change of scale).
New mean = 1.2(22.8) = 27.36
S.D = 1.2(11.0616) = 13.27

778) If values are increased by 20% then which of the following will change.

a) Mean only b) S.D only
c) both mean and S.D d) None of these

Answer
As this is change of scale so both will change [correct option (c)

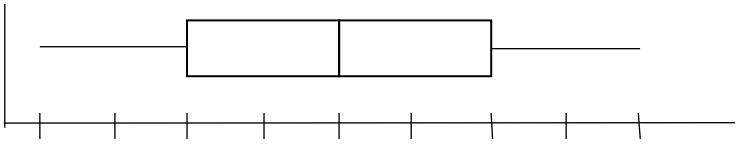
779) Following data is given

	No. of employees	Total Salary	St. Deviation
Company A	200	25,000,000	25,000
Company B	150	36,000,000	8,000

In your opinion which company is more stable?

a) Company A	**b) Company B**
c) Both companies are same	d) Cannot be determined

780) Following Box and whisker plot is given



The above box & Whisker plot show that distribution is

a) Positively skewed b) Negatively skewed
c) Symmetrical d) None of these

Answer

Depends on the length of box. ie if right sided box is lengthy then positively skewed and if left sided box is lengthy then negatively skewed. And if both boxes have same length then it is symmetrical.

781) Mean of total 38 values is 62

Mean of first 10 values is 57
Find mean of remaining 28 values

Answer

$\bar{x}_l = \frac{n_1 \bar{x}_{1+} n_2 \bar{x}_2}{n_1+n_2}$,

$62 = \frac{10x57+28\bar{x}_2}{10+28}$

Mean = 63.786

782) Following data is given 3, 6, 9, 6, 3 Find C.V

Answer

$\bar{x}$= 5.4 S.D = 2.45

C.V = $\frac{S.D}{\bar{x}}$ x 100 = $\frac{2.45}{5.4}$ x 100 = 41.57%

783) $3x^2 - 6x - 9 = 0$ Find x =?

a) **x = 3**
b) x = 1
c) x = 2
d) x = 4

784) Following data is given

W	Salary A	Salary B
5	10,000	8,000
3	15,000	10,000
2	20,000	12,000
1	30,000	20,000

Find weighted mean of both

Answer

W	Salary A	Salary B	WA	WB
5	10,000	8,000	50,000	40,000
3	15,000	10,000	45,000	30,000
2	20,000	12,000	40,000	24,000
1	30,000	20,000	30,000	20,000

11			165,000	114,000

A $\bar{x}w = \frac{\sum WA}{\sum W} = \frac{\sum WA}{11} = 15{,}000$

B $\bar{x} = \frac{\sum WA}{\sum W} = \frac{114{,}000}{11} = 10{,}363.63$

785) Following data of salaries of Managers is given

W	Manager A	Manager B
	Rs '000'	Rs '000'
5	75	75
5	75	80
2	40	20
1	35	35

Find weighted mean of both

a)	51.2 and 52.25	b)	64 and 64
c)	**54.23 and 50.08**	d)	46 and 47

Answer

W	Salary A	Salary B	WA	WB
5	75	75	375	375
5	75	80	375	240
2	40	20	80	40
1	35	35	35	35
13			**705**	**690**

$$\overline{X}_A = \frac{\Sigma WX_A}{\Sigma W} = \frac{705}{13} = 54.23$$

$$\overline{X}_B = \frac{\Sigma WX_B}{\Sigma W} = \frac{690}{13} = 50.08$$

786) Following data is given

5,10,13,17,20,25,30,33,35,40

If all the values are increased by 20% then find the mean and SD of revised values.

Answer

Mean of given data = 22.8

Standard deviation =11.0616

Revised mean = 22.8+20% of 22.8=27.36

Revised Standard deviation =11.0616+20% of 11.0616=13.27392

787) If all the values are increased by 20% then which of the following will change?

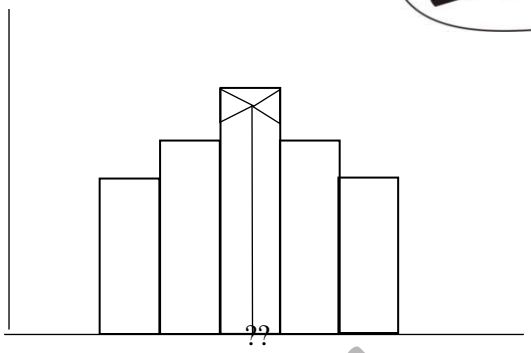
a)	Mean only	b)	SD only
c)	**Both mean and SD**	d)	None of these

788) What are the properties of variance?

Answer

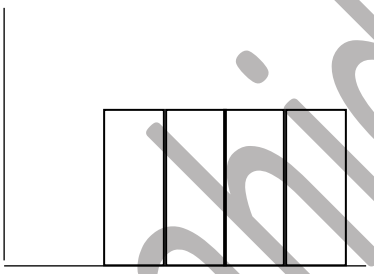
a) Variance of constant is 0
b) Variance is independent of change of origin
c) Variance is affected by square times of change of scale
d) Variance cannot be negative even if all the values in a data are negative

789) What the following graph is showing?



Answer
Mode

790) What following graph is showing?



a) Data is symmetrical
b) Data is positively skewed
c) Data is balanced
d) Data is constant

791) Find Harmonic mean of 7,8,9

a) 7.916	b) 8
c) 7.5	d) None of these

792) Which of the following graph represent grouped frequency distribution?

a) Pie chart	**b) Histogram**
c) Simple bar chart	d) All of these

793) The scale on y-axis of ogive is

a) Frequency	b) Midpoint
c) Cumulative frequency	d) None of these

794) Following are the marks obtained by 7 students in a test. 29, 82, 53, 37, 74, 42, 68. What is Semi-Inter Quartile Range?

a) **18.5**	b) 55.5
c) 37	d) None of these

795) For the data having: mean = 87, median = 92, variance = 64 Find Co-efficient of skewness.

a) 0.625	b) 21.125
c) **– 1.875**	d) 75.5

796) What % of observations lie above P_{20}?

a) 20	b) **80**
c) 30	d) 40

797) In histogram what does y-axis represent?

a) Class limits	b) Class height
c) **Frequency**	d) Range of data

798) Which of the following cannot be determined through ogive?

a) Median	b) Percentile
c) Quartiles	d) **Mode**

799) Find mean and SD from the following data.

Classes	1---10	11----20	21---30	31---40	41---50	51---60
Frequency	3	5	7	10	6	4

a) **Mean=31.57 and SD=14.33**	b)
c)	d)

800) The relative frequency distribution and cumulative relative frequency of the middle number group respective is:

Class interval	1.5-1.9	2.0-2.4	2.5-2.9	3.0-3.4	3.5-3.9	4.0-4.4	4.5-4.9
F	2	1	4	15	10	5	3

a) 0.375,55%	b) 55% 0.375
c) 0.55 37.5%	d) **0.375,0.55**

801) Mean of 10 observations is 7.5. if 2.5 is deducted from each observation and then it is multiplied by 2. Mean of new observation is:

a) **10**	b) 20
c) 15	d) 5

802) The median of a given frequency distribution is found graphically with the help of:

a) Histogram	b) Pie Chart
c) Frequency curve	d) **Ogive**

803) Find geometric mean for following distribution:

Marks	0−30	30−50	50−80	80−100
No. of Students	20	30	40	10

a) **43.29**	b) 45.36
c) 47.26	d) 41.26

804) Calculate harmonic mean for the data given below:

Marks	30−39	40−49	50−59	60−69	70−79	80−89	90−99
f	2	3	11	20	32	25	7

a) 60.3	b) **69.6**
c) 65.1	d) 75.6

805) Terrier and SFP are two stocks traded on the New York Stock Exchange. For the past seven weeks you recorded the Friday closing price (dollars per share):

Terrier: 32 35 34 36 31 39 41

SFP: 51 55 56 52 55 52 57

Which stock is more stable?

a) Terrier	b) **SFP**

c) Both are not stable	d) Both are stable

806) If the laboratory technician A completes 40 analyses with a standard deviation of 5 and technician B completes 160 analyses per day with standard deviation of 15, find which employee shows less variability.

a) Technician A	b) **Technician B**
c) Both are same	d) Data is insufficient

807) When any value in the data is negative

a) Geometric Mean becomes zero	b) Harmonic Mean becomes zero
c) Hypergeometric Mean becomes zero	d) **None of the above**

808) Which mean is least affected by extreme values?

a) Arithmetic Mean	b) Harmonic Mean
c) **Geometric Mean**	d) All of the above

809) The following stem and leaf display shows the number of units produced in a day:

3	8
4	-
5	6
6	0,1, 3, 3, 5, 5, 9
7	8, 6, 7, 7, 2, 0, 3
8	5, 9
9	0, 0, 1, 5, 6
10	3, 6

What is the middle value?

a) **76**	b) 77
c) 85	d) 79

810) The following stem and leaf display shows the number of units produced in a day:

4	0,1,2,3,4,4
5	1,2,3,4,5,5,6
6	0,3,4,6,6,7,8,9
7	1,2,3,5,5,5,5,7,8,9
8	6,7,8,9

What is the middle value?

a) **66**	b) 77
c) 85	d) 79

811) Types of dispersion which measures the variation present among the values with same unit or square of units of variable?

a) **Absolute Dispersion**	b) Relative Dispersion

c) Binomial Dispersion	d) None of the above

812) Kaleem determines the coefficient of determination as 86%. This means that the variation explained by the variable was:

a) **86%**	b) 14%
c) 84%	d) 15%

813) Which of the following is not affected by Extremely Large or Extremely small values of data?

a) A.M	b) H.M
c) **Median**	d) None of these

814) By Joining the midpoints of the rectangles of histogram, we get graph of:

a) Relative frequency curve	b) **Frequency curve (polygon)**
c) Ogive	d) All of these

815) The stem and leaf display constructed from weight(kg) of 15 persons is given below:

STEM	LEAF
4	5, 2, 3
5	4, 7, 4, 8, 9, 5
6	6, 2, 3, 1
7	5, 7

Find Median:

a) 58.5	b) **58**
c) 59	d) 5.5

816) The stem and leaf display constructed from weight(kg) of 15 persons is given below:

STEM	LEAF
1	3,5,9
3	1,3,5,5,8,9
5	1,6,7,9,9
8	1,2,4,4,5,9

Find Mean and Median:

a) **52.5 and 53.5**	b) 58 and 50
c) 51 and 59	d) 51 and 55

817) Following are the marks obtained by 7 students in a test. 29, 82, 53, 37, 74, 42, 68. What is Semi-Interquartile Range?

a) 18.5	b) 37
c) 55.5	d) None of these

818) Standard deviation expressed as a percentage in terms of mean is:

a) Co-efficient of skewness	b) **Co-efficient of variation**

c) Co-efficient of correlation	d) None of these

819) If the standard deviation of the values 2, 3, 6, 7, 12 is 3.52 then standard deviation of 6, 7, 10, 11, 16 will be:

a) 7.52	b) 0.48
c) **3.52**	d) None of these

820) Which of the following is affected by change of origin as well as scale?

a) A.M	b) G.M
c) H.M	d) **All of these**

821) The amount of milk produced by a Cow is:

a) Quantitative variable	b) Discrete variable
c) **Continuous variable**	d) Qualitative variable

822) The arrangement of data into classes according to the size and magnitude is

a) Frequency	b) **Frequency distribution**
c) Relative frequencies	d) All of these

823) An ogive is

a) Graph of frequency curve	b) Graph showing linear relationship
c) **Graph of cumulative frequency distribution**	d) Graph of DE cumulative frequency distribution

824) The stem and leaf display of 15 observations is:

Stem	Leaf
1	8, 2
2	7, 1, 5, 3, 5, 9
3	6, 0, 4, 2
4	6, 1, 3

Find mode

a) 2	b) 5
c) **25**	d) 46

825) Which of the following statement is true?

a) Variance is equal to S.D	b) Variance is greater than S.D
c) Variance is less than S.D	d) **All are true in different situations**

826) G.M can be located graphically by:

a) Frequency curve	b) Cumulative frequency curve
c) Histogram	d) **None of these**

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c) 37	d) None of these

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Classes	1---10	11----20	21---30	31---40	41---50	51---60
Frequency	3	5	7	10	6	4

a) **Mean=31.57 and SD=14.331**	b)
c)	d)

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Class interval	1.5-1.9	2.0-2.4	2.5-2.9	3.0-3.4	3.5-3.9	4.0-4.4	4.5-4.9
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a) 0.375,55%	b) 55% 0.375
c) 0.55 37.5%	d) **0.375,0.55**

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c) 15	d) 5

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Marks	0−30	30−50	50−80	80−100
No. of Students	20	30	40	10

a) **43.29**	b) 45.36
c) 47.26	d) 41.26

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Marks	30−39	40−49	50−59	60−69	70−79	80−89	90−99
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What is the middle value?

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a) Relative frequency curve	b) **Frequency curve**
c) Ogive	d) All of these

847) Which of the following Statement(s) is/are correct?

a) Ogives are used to find Median	b) Cumulative Frequency is used to construct the Ogives
c) Ogives are obtained from joining the midpoint of histogram	d) **Both A and B**

848) Compute Harmonic mean of Following Marks obtained in Math

	Amjad	Sidra	Nazia
Subject Math	69	65	59

a) **64.06**	b) 64.33
c) 63.20	d) 71.0

849) The stem and leaf display constructed from weight(kg) of 15 persons is given below:

STEM	LEAF
4	5, 2, 3
5	4, 7, 4, 8, 9, 5
6	6, 2, 3, 1
7	5, 7

Find Median:

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c) 59	d) 5.5

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a) Co-efficient of skewness	b) **Co-efficient of variation**
c) Co-efficient of correlation	d) None of these

852) If the standard deviation of the values 2, 3, 6, 7, 12 is 3.52 then standard deviation of 6, 7, 10, 11, 16 will be:

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c) **3.52**	d) None of these

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Find mode

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c) **25**	d) 46

858) Which of the following statement is true?

a) Variance is equal to S.D	b) Variance is greater than S.D
c) Variance is less than S.D	d) **All are true in different situations**

859) G.M can be located graphically by:

a) Frequency curve	b) Cumulative frequency curve
c) Histogram	d) **None of these**

860) The mean of 200 items is 48 and the standard deviations is 3. The sum of squares of all items is

a) **462,600**	b) 9600
c) 600,462	d) 426,600

861) The following stem and leaf display shows the number of units produced in a day:

Stem	Leaf
3	8
4	0
5	6
6	0,1,3,3,5,5,9
7	0,2,3,6,7,7,8
8	5,9
9	0,0,1,5,6
10	3,6

What is the range?

a) 22	b) 0
c) **68**	d) 65

862) The weights (in kgs) of 5 girls are 47, 48, 49, 50, 51. Find coefficient of variation.

a) 41	b) 49
c) **2.89**	d) 8.29

863) When calculating the average rate of debt expansion for a company, the correct mean to use is:

a) Arithmetic Mean	b) Weighted Mean
c) **Geometric Mean**	d) All of the above

864) Co-efficient of variation is affected by the change of:

a) Origin	b) Scale
c) Origin and scale	d) **All of these**

865) For the data having:

mean = 87, median = 92 and variance = 64

Find Co-efficient of skewness.

a) 0.625	b) **– 1.875**
c) 21.125	d) 75.5

866) If a clock strikes once at 1 O'clock, thrice at 3 O'clock and so on and again once at one O' clock and so on, then how many times will the bell be struck in the course of 2 days?

a) 78	b) 156
c) 288	d) **312**

867) The arithmetic mean of profits earned by two subsidiaries A and B of a company is Rs. 10 million whereas the geometric mean is Rs. 8 million. Find the profit earned by subsidiary A.It is known that subsidiary A earns more profit than subsidiary B

a) **Rs 16 million**	b) Rs 4 million
c) Rs 20 million	d) Rs 15 million

868) The S.D of X is 5.What will be the Variance of Y if $Y = \frac{3x+10}{2}$

a) 37.5	b) 100
c) **56.25**	d) 7.5

869) The weights of 5 students are 47, 48, 49, 50, and 51. Find coefficient of variation:

a) 1.41%	b) 49%
c) **2.89%**	d) 8.29%

870) A frequency distribution has Q_1=10, Q_2=20 and Q_3=40. The distribution is:

a) Symmetric	b) **Positively skewed**
c) Negatively skewed	d) None of these

871) The combined mean of 3 groups is 12 and combined mean of first two groups is 3. If the first, second and third groups have 2, 3, and 5 items respectively, then mean of third group is:

a) 10	b) **21**
c) 12	d) 13

872) The quartile deviation of 8 numbers is 20. If each number is increased by 5, the quartile deviation will

a) **Remain Same**	b) Increase by 5
c) Decrease by 5	d) None of these

Chapter 9 : Index number

The following data represents the average monthly take-home salary of the employees of an organization:

Year	**2005**	**2006**	**2007**	**2008**
Pay (Rs.)	12,350	13,500	14,800	16,500
Price Index	110.1	122.3	137.6	160.2

873) Compute the real wages for each of the above years.

a) 11217, 11038, 10766, 10300	b) 11217, 11038, 10756, 10330
c) 11217, 11138, 10756, 10300	**d) 11217, 11038, 10756, 10300**

Answer

Year	**Pay**	**Price index**	**Real Wages =(PAY/index)100**
2005	12350	110.1	(12350/110.1)100=11217.08
2006	13500	122.3	(13500/122.3)100=11038.43
2007	14800	137.6	(14800/137.6)100=10755.81
2008	16500	160.2	(16500/160.2)100=10299.63

874) Compute the amount of pay needed in 2008 to provide buying power equal to that enjoyed in 2006.

a) 10,300	b) 17,864
c) 17,684	d) None of these

Answer

In order to have same buying power in 2008 as they had in 2006, the pay in 2008 should be

$$Pay\ in\ \ 2008 = \frac{Pay\ of\ 2006}{index\ \ of\ 2006} \times index\ of\ 2008$$

$$Pay\ in\ 2008 = \frac{13500}{122.3} \times 160.2 = 17683.57$$

875) If the current year's weighted index is 5% higher than the base year and Fisher's Ideal Index Number is 250, find out the Laspeyre's Price Index Number and Paasche's Price Index Number.

a) 243 and 256	**b) 244 and 256**
c) 243 and 255	d) None of these

Data for questions following 3 questions

Year	2005	2006	2007	2008	2009	2010
Wages (Rs)	11,000	12,000	13,500	14,800	16,500	19,000
Real Wages(Rs)	11,000	10,800	11,300	11,100	10,550	10,900

876) Compute the price index for the years 2006 to 2010, rounded to one decimal place, taking 2005 as the base year.

a) 100, 111, 119, 133, 157, 175, 191	b) 100, 111, 119, 133, 157, 174, 192
c) 100, 111, 120, 133, 157, 174, 191	**d) 100, 111, 119, 133, 157, 174, 191**

877) The formula for buying power is:

a) $\frac{\text{Real wages}}{\text{Wages}}$	b) $\frac{\text{Wages}}{\text{Real wages}}$
c) $\frac{100}{\text{index}}$	**d) Both "a" and "c"**

878) If the price index for the year 2011 is 191.2, calculate the amount of wages whose buying power would be the same as that of year 2007?

a) Rs 17,352	b) Rs 18,192
c) Rs 21,600	d) None of these

Answer

Wages= (13,500/119.5)*191.2=21,600

Data for questions following two questions

Commodity	**Prices (Rs.)**			**Quantity (Kg.)**	
	2010	**2011**	**2012**	**2010**	**2011**
Alpha	64	75	80	270	276
Beta	40	45	41	124	118
Gamma	18	21	20	130	121
Eta	58	68	56	185	267

879) Calculate Fisher Price Index for the year 2011

a) 116.7	b) 116.5
c) 116.6	d) None of these

880) If Fisher Price Index for 2012 is 110.7, calculate Paasche's Price Index for year 2012 using 2010 as base:

a) 112.27	**b) 109.15**
c) 116	d) None of these

881) Laspeyre's index number?

2002 price	**2000 price**	**2000 quantity**	**PnQo**	**PoQo**
123	112	50	6150	5600
244	220	40	9760	8800
301	290	35	10535	10150
			26445	**24550**

Answer

$$Laspeyer\ Index = \frac{26445}{24550} \times 100 = 107.71$$

882) What is true about Paasche's index?

a) It overstates inflation	b) Quantity has to be calculated every year.
c) Paasche's index understates inflation because consumers react to price increase.	**d) Both B and C**

883) In Laspeyre price index what value is to be changed every year.

a) Price	b) Quantity
c) Both	d) None of these

884) If the Fisher index is 10% more than the Laspeyre's index and base year index is 109.5, find Paasche's index.

a. 115.6 b. 96.5 c. 100.51 d. **132.5**

885) Find chain index

Year	Price
20x1	49
20x2	53
20x3	58
20x4	68

Answer

Year	Price	Chain Index (Answer)
20x1	49	-
20x2	53	(53/49)x100=108.16
20x3	58	(58/53)x100=109.43
20x4	68	(68/58)x100=117.24

886) Find Paasche Price Index for given data taking Jan 1 20XX as base year to compare the prices and quantitates of Dec 1 20XX for per kg of products having prices respectively?

January 1 20XX		December 1 20XX	
Prices for Product	Quantity Per Kg	Prices for Product	Quantity Per Kg
10.49	13.1	17.99	14.2
4.99	17.3	7.49	18.2
7.39	48.9	9.39	59.2

Also find what is change occur in prices in % for Jan 1 20XX to Dec 1 20XX is?

a) 139.925 and change in prices 52.47%	b)
c)	d)

887) Find chain index

Price Index (Question)	Chain Index (Answer)
100	-
108.7	$\frac{108.7}{100}$ x 100 = 108.7
110	$\frac{110}{108.7}$ x 100 = 101.2
115	$\frac{115}{110}$ x 100 = 104.55

120	$\frac{120}{115}$ x 100 = 104.35

Formula for chain index

$= \frac{\text{Current year index}}{\text{Previous year index}}$

888) Find Index Number

2002		2003	
Price	**Qty**	**Price**	**Qty**
10	20	15	22
12	22	17	25

Find quantity index using 2002 as base

i) Laspeyre method

ii) Paasche method

Answer

2002		2003					
Price	**Qty**	**Price**	**Qty**	$\mathbf{P_oQ_n}$	$\mathbf{P_oQ_o}$	$\mathbf{P_nQ_o}$	$\mathbf{P_nQ_o}$
10	20	15	22	220	200	330	300
12	22	17	25	300	264	425	374
				520	464	755	674

Answer:

Laspeyre quantity index = $\frac{\sum P_oQ_n}{\sum P_oQ_o} \times 100 = \frac{520}{464} \times 100 = 112.07$

Paasche quantity index = $\frac{\sum P_nQ_n}{\sum P_nQ_o} \times 100 = \frac{755}{674} \times 100 = 112.02$

889) What is effect of Paasche index on inflation

Answer

It understates inflation

890) The following data represents the average monthly take-home salary of the employees of an organization:

Year	2005	2006	2007	2008
Pay (Rs.)	12,350	13,500	14,800	16,500
Price Index	110.1	122.3	137.6	160.2

Compute the real wages for each of the above years.

a) 11217, 11038, 10766, 10300	b) 11217, 11038, 10756, 10330
c) 11217, 11038, 10756, 10300	d) 11217, 11138, 10756, 10300

891) The following data represents the average monthly take-home salary of the employees of an organization:

Year	2005	2006	2007	2008
Pay (Rs.)	12,350	13,500	14,800	16,500
Price Index	110.1	122.3	137.6	160.2

Compute the real wages for the year 2005.

A. 11,038.43 B. **11,217.08** C 10,755.81 D None of these

892) The following data represents the average monthly take-home salary of the employees of an organization:

Year	2005	2006	2007	2008
Pay (Rs.)	12,350	13,500	14,800	16,500
Price Index	110.1	122.3	137.6	160.2

Compute the amount of pay needed in 2008 to provide buying power equal to that enjoyed in 2006.

A. Rs. **17,683.57** B. Rs. 16,387.42 C. Rs. 19,264.27 D. None of these

893) Laspeyre index----------inflation?

a) understate b) overstate c) both d) none

Answer

Overstate

894) Find chain index from the following data

2012	**2013**
106	100
100	102
100	108

a)	b)
c)	d)

895) In Laspeyre price index what value is to be changed every year

a) **Price**	b) Quantity
c) Both	d) None

896) Laspeyre price index shows prices of

a) Base year	b) **Current year**
c) Both	d) None

897) Why we find it difficult to calculate Paasche index

a) Base year	b) **Current year**
c) Both	d) None

898) Which of the following has to be calculated every year for Paasche price index in addition to current year prices, which make it difficult to calculate compared to Laspeyre index

a) Numerator	b) Denominator
c) **Both**	d) None

899) Which of the following has to be calculated every year for Paasche price index in addition to current year prices, which make it difficult to calculate compared to Laspeyre index

a) Prices	b) **Quantities**
c) Both	d) None

900) The only new information that has to be collected each year in the calculation of Laspeyre index is

a) **Price of items**	b) Quantities of items
c) Both	d) None

901) Why Laspeyre price index is used more than the Paasche price index?

a) Because quantities of base year has to be collected to construct Paasche index	b) Because more information has to be collected to construct Laspeyre index.
c) Because less information has to be collected to construct Paasche index	d) **Because more information has to be collected to construct Paasche index**

902) Laspeyre price index tends to overstate inflation, this is because

a) Both prices and quantities of current year are used for inflation.	b) Both prices and quantities of base year are used as numerator for inflation.
c) **Consumers reacts to price increases by changing what they buy**	d) All of these

903) Which of the following does not change in the calculation of Laspeyre index every year?

a) Numerator	b) **Denominator**
c) Both	d) None

904) Laspeyre price index fails to account for the following fact that

a) **People will buy less of those items which have risen in prices more than others.**	b) People will buy more of those items which have risen in prices more than others.
c) It is based on quantities bought in current year instead of base year.	d) All of these

905) _____ index is based on most recent quantities purchased

a) Laspeyre	b) **Paasche**
c) Fisher	d) Marshal

906) The income of the person in 2004 is Rs. 250,000 and cost of living index for that class of persons is 237.5. What is the real income?

a) 593,750	b) **105,263.16**
c) 1,052.63	d) None of these

907) $\Sigma PnQo = 2322 \quad \Sigma PnQn = 2569 \quad \Sigma PoQo = 1970 \quad \Sigma PoQn = 2170$

The price index by using Paasche formula is?

a) 117.8	b) 118.09
c) **118.39**	d) All of these

908) Calculate the Laspeyres and the Paasche Price Index of travel costs for January 2000. If your weekly travel costs were train fares to and from work, and bus fares to and from the town center. The cost and number per week are as follows:

	Price Jan 99	Qty Jan 99	Price Jan 00	Qty Jan 00
Train Fare	1.85	10	2	6
Bus Fare	0.75	4	1	4

a) **111.6 and 113.5**	b) 123.6 and 142.55
c) 102.3 and 106.9	d) 101.1 and 103.2

909) The relation between purchasing power of money and consumer price index is:

a) Direct	b) **Inverse**
c) Can be a or b depending upon situation	d) All of these

910) The barometer of commerce is:

a) Standard Deviation	b) Co efficient Of variation
c) **Index Number**	d) None of the above

911) Below is the price of product X per kg in the respective years. If you use chain index number for comparing prices, what is the chain indices of year 1979?

Years	1974	1975	1976	1977	1978	1979
Price	18	21	25	23	28	30

a) 155.68	b) 166.68
c) 175.68	d) 107.14

Chapter 11 and 12: Probability

912) When a coin tossed for 8 times then _____ distribution can be used

a) Poisson	b) **Binomial**
c) Normal	d) Chi-square

913) Given P(A)=1/3, P(B)=1/4. Suppose that the two events "A" & "B" are independent events, then the probability of at least one of them is?

a) 6/12	b) ½
c) **a and b**	d) None

914) The number of ways in which four books of AFC can be arranged on a shelf is:

a) 8 ways	b) 12 ways
c) 16 ways	d) **24 ways**

915) The life of electric Tube Lights follows normal distribution with mean life of 3,000 hours and standard deviation of 200 hours. What is the probability that a Tube Light has life more than 3,400 hours?

a) 0.4772	b) 0.0040
c) 0.4960	d) **0.0228**

916) In a binomial distribution if n = 4 and p = 1/2, then median is:

a) 4	b) **2**
c) 1	d) None of these

917) An Event that cannot be split into further events is known as:

a) Complex	b) Mixed
c) **Simple**	d) Composite

918) A coin is tossed 3 times, all possible outcomes are

a) 6	**b) 8**
c) 3	d) 9

919) A coin is tossed 3 times, all possible outcomes are

a) HHH, HHT, HTH, THH, TTH, THT, HHT, TTT	b) HHH, HHT, HTH, THH, TTH, THT, HTH, TTT
c) HHH, HHT, HTH, THH, TTH, THT, HTT, TTT	d) HHH, HTT, HTH, THH, TTH, THT, HTT, TTT

920) If two dice are rolled, what is the probability that either the sum of the two will be seven or at least one of the dice will show the number 5

a) 18/36	b) 6/36
c) 15/36	d) 12/36

921) Two dices are rolled what is the probability that at least one 6 appears.

a) 11/36	b) 15/36

c) 12/36	d) 10/36

922) A coin is tossed 3 times find the probability that at least 1 head appears

Answer
This question can be solved by binomial distribution
P(head)=0.5 and P(tail)=0.5 n=3

$$P(X \geq 1) = 1 - P(X = 0) = 1 - {}^{3}C_{0}(0.5)^{0}(0.5)^{3} = 1 - \frac{1}{8} = \frac{7}{8}$$

923) If 75% peoples use cellular phones and 15% use PTCL and 10% use both then find the probability that a person selected at random use both

a) 0.10	b) 0.75
c) 0.15	d) 1.00

924) If 50% peoples use cellular phones and 40% use PTCL and 20% use both then find the probability that a person selected at random use neither

a) 10%	b) 70%
c) 30%	d) 90%

925) You are given 20 true false questions and required to find the probability of at-most 4 correct.

a) 0.0059	b) 0.2645
c) 0.2145	d) 0.1325

926) You are given 20 true false questions and required to find the probability of atleast 4 correct.

a) 0.9987	b)
c)	d)

927) 50% people use cellular mobile and 40% people use landline and 20% people use both. Find the probability that a person selected at random use neither.

a) 10%	**b) 30%**
c) 70%	d) 90%

928) A dice is rolled 5 times. What is the probability that exactly 2 "fours" appear?

a) 0.1125 b) **0.1608** c) 0.1305 d) 0.2315

(Hint: use binomial distribution)

929) Find Euler number (Napier number)

a) 1.2323 b) **2.718281** c) 0.526 d) 10

930) Find the value of pie (π)

a) 3.141592	b) 3.15432
c) 3.76545	d) 3.148767

931) Find 0!

a) 0 b) **1** c) 10 d) 100

932) There are 2 red balls, 2 green and 3 blue balls in a bag. It two balls are drawn at random. What is the probability that none is blue?

a) 0.2857 b) c) d)

933) There are 14 flowers in a bouquet 3 are Roses, 5 Tulips and 6 Jasmine. If 5 flowers are selected find the probability that 2 roses, 2 Tulips and Jasmine are selected.

a) $^3/_5$ b) $\frac{90}{1001}$ c) $^3/_5$ d) none

Answer

$$P(X=x)=\frac{{}^3C_2\times{}^5C_2\times{}^6C_1}{{}^{14}C_5}=\frac{90}{1001}$$

934) Following numbers are given 1, 2, 5, 6, 8, 9 you are required to make a 3 digit number which is divisible by 5. How many arrangements are possible?

Answer:
A number can only be divisible by 5 if the last digit is 5. So last digit is fix but 10^{th} place and 100^{th} place digit can be any from remaining 5 digits.
Answer: 4 x 5 x 1 = 20 ways

935) In how many ways word BINOMIAL can be written.

a) 40320 b) **20160** c) 1440 d) None

936) In how many way word BINOMIAL can be written if vowel words are together:

a) 2880 b) **1440** c) 20160 d) None

937) 80% people use UPS ;50% use generator ;20% use both ;find the prabability that people don't use both.

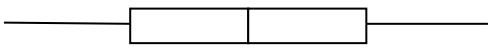
Answer

	Use UPS	**Don't use UPS**	**Total**
Use Generator	20%	50-20=30%	50%
Don't use Generator	(80-20)=60%	(50-60)=-10%	(100-50)=50%
Total	80%	20%	100%

As probability is -10%, it is impossible

a. 10% b. 80% c. 30% **d. none of these**

938) Consider the following box plot:



03 56 80 110

If the distribution is considered to be normally distributed with s.d 10. What is the probability of at least 49.

a. 25.80% b. 38.29% c. 88.56% d. **75.80%**

Answer

Here mean = 56 SD = 10 $P(X \geq 49)$=?

$$Z = \frac{X - \mu}{\sigma} = \frac{49 - 56}{10} = -0.7$$

Area from table 0.75804=**75.804%**

939) Which of the following is not true of the normal distribution?

a. the measures of central tendency (mean, mode, and median) are equal in value

b. the curve approaches the x-axis gradually on either side of the mean

c. the curve is bell-shaped

d. **the curve is asymmetrical**

940) The area under the normal curve between μ- 3.5σ and μ+ 1.0σ is

a. 0.3413 b. 0.5 c. **0.8411** d. 0.8477

941) Binomial distribution does not carry the characteristics

a. **trails are dependent**

b. fixed number of trails.

c. Probability will remain same in all trails

d. probability can be distributed in success or failure

942) There are 12 runners in marathon and all runners have equal chance of winning. What is the probability that a person may win a bet on the race if he has to correctly select the top 3 runners and the order they finish in?

e) 1/1320	f) 1/1728
g) 3/1728	h) 1/12

Answer

Total outcomes = 12P3 = 1320

Probability = 1/1320

943) In how many ways word "CORRECT" can be arranged:

a) 5040 b) 2520 c) **1260** d) None

Answer

No of ways = 7!/2!x2! = 1260

944) In a bakery store there are 3 cakes of pineapple; 4 cakes of chocolate and 2 cakes of strawberry and 1 is without cream. 2 cakes are purchased by a customer. Find the probability that both are chocolate cakes.

a) **2/15** b) 2/10 c) 3/15 d) 4/10

Answer

$$P(both\ chocolate\ cakes) = \frac{{}^4C_2 \times {}^6C_0}{{}^{10}C_2} = 2/15$$

945) A problem in statistics is given to three students A, B,C whose chances of solving are ½, ¾,1/4 respectively. What is the probability that problem will be solved

e) 3/32	f) 29/32
g) 3/7	h) ½

Answer

Problem will be considered as solved if anyone or more of the students will solve it.

P(Problem solve)=P(A solve or B solve or C solve)=1-P(none solve)

P(A)=1/2

	A	**B**	**C**
Solve the problem	**1/2**	**¾**	**¼**
Not solve	**1/2**	**¼**	**¾**

$$P(Solve) = 1 - P(\overline{A} \cap \overline{B} \cap \overline{C}) = 1 - \frac{1}{2} \times \frac{1}{4} \times \frac{3}{4} = 1 - \frac{3}{32} = \frac{29}{32}$$

Correct option is B

946) There are total 25 eggs in a bag out of which 3 are defective, if two are randomly chosen find the probability that both are defective

a) 1/100	b) 10/100
c) 10%	d) None of these

Answer

$$P(both\ defective) = \frac{{}^{3}C_{2} \times {}^{22}C_{0}}{{}^{25}C_{2}} = 1/100$$

947) There are total 25 keyboards out of which 3 are defective. A sample of 5 is selected, what is the probability that exactly 2 are defective?

Answer

$$\frac{{}^{3}C_{2}\ {}^{22}C_{3}}{{}^{25}C_{5}} = 2/23 = 0.08695$$

a. 0.5632 b. 0.7386 c. 0.1256 **d. 0.08695**

948) There are seven balls in a box containing 2 red, 2 green and 3 blue; two balls are drawn, what is the probability that none is blue?

Answer

$$\frac{{}^{3}C_{0} \times {}^{4}C_{2}}{{}^{7}C_{2}} = 2/7$$

949) The word is "BINOMIAL" in how many ways word can be written from these alphabets?

Answer

$$\frac{8!}{2!} = 20160$$

950) If dice is rolled five times. What is the probability that exactly 2 "Even" appears?

Answer

Here n=5, p=3/6 q=3/6 P(X=2)=?

$$P(X=2) = {}^{5}C_{2}(3/6)^{2}(3/6)^{3} = 5/16 = 0.3125$$

951) Find 1!

a) 1	b) 0
c) Not possible	d) None of these

952) A bucket of flowers contains 3 Roses, 5 Tulips, 6 Jasmine 5 flowers are Selected; what is probability of 2 Roses, 2 tulips, 1 Jasmine?

Answer

$$\frac{{}^{3}C_{2}\,{}^{5}C_{2}\,{}^{6}C_{1}}{{}^{14}C_{5}} = 90/1001 = 0.08991$$

953) From the word "BINOMIAL", find permutations that how many word can be made with no vowel together?

Answer

Permutation with no vowel together = Total. Permutation-permutation with vowel

$$\frac{8!}{2!} - \frac{5! \times 4!}{2!} = 20160 - 1440 = 18720$$

You are given the following data

	Light smoker	**Smoker**
Men	50	200
Women	60	10

954) Find the probability that a person selected is man or light smoker

a) 31/32	b) 27/32
c) 1/32	d) None

955) Find the probability that a person selected is woman or light smoker

a) 3/8	b) 5/8
c) 1/7	d) 2/7

956) Find the probability that a person selected is a smoker man

a) 5/8	b) 1/8
c) 3/8	d) 2/8

957) If a man is selected Find the probability that he is a smoker

a) 4/5	b) 2/5
c) 1/5	d) 3/5

958) A T.V channel conducted a poll regarding construction of dams in Pakistan. 80% people was in support of construction. 10% were against and 10% were undecided. A sample of 10 persons is taken. What is the probability that atleast 8 will support the construction?

a) 0.3413 b) **0.6778** c) 0.6345 d) 0.7512

Answer

Given P = 0.80 q = 0.20 n=10

Using binomial distribution

$$P(X \geq 8) = P(X = 8) + P(X = 9) + P(X = 10)$$

$$P(X \geq 8) = {}^{10}C_8 (0.8)^8 (0.2)^2 + {}^{10}C_9 (0.8)^9 (0.2)^1 + {}^{10}C_{10} (0.8)^{10} (0.2)^0$$

$$P(X \geq 8) = 0.3020 + 0.2684 + 0.1074 = \frac{3389}{5000} = 0.6778$$

959) A T.V channel conducted a poll regarding construction of dams in Pakistan. 75% people was in support of construction. 15% were against and 10% were undecided. A sample of 10 persons is taken. What is the probability that atleast 8 will support the construction?

a) **0.5256** b) 0.2440 c) 0.3515 d) 0.75

Answer

Using binomial Distribution

p = 0.75 q= 0.25 n=10

$$P(X \geq 8) = P(X = 8) + P(X = 9) + P(X = 10)$$

$$P(X \geq 8) = {}^{10}C_8 (0.75)^8 (0.25)^2 + {}^{10}C_9 (0.75)^9 (0.25)^1 + {}^{10}C_{10} (0.75)^{10} (0.25)^0$$

$$P(X \geq 8) = 0.0563 + 0.1877 + 0.281567 = 0.5256$$

960) A and B are two mutually exclusive events and P(A) = 0.4 and P(B) 0.3 Find P(AUB)

a) 0.58 b) **0.70** c) 0.4 d) 0.3

961) There are 25 phones in an exchange room of which 3 are defective. A sample of 5 phones is selected. Find the probability that exactly 2 are defective:

a) **2/23** b) 2/25 c) 2/22 d) None

Answer

$$P(both\ are\ defective) = \frac{{}^{3}C_2\ {}^{22}C_3}{{}^{25}C_5} = 2/23 = 0.08695$$

962) A and B are two mutually exclusive events and P(A) = 0.4 and P(B) 0.3 Find P(AUB)

a) 0.58 b) **0.70** c) 0.4 d) 0.3

Answer

963) There are 25 phones in an exchange room of which 3 are defective. A sample of 5 phones is selected. Find the probability that exactly 2 are defective:

a) 2/23 b) 2/25 c) 2/22 d) None

964) Which of the following is the property of bell-shaped distribution?

a) Asymptotic b) Unimodal c) symmetrical d) **All of these**

965) In a group of 12 international referees, there are three from Africa, four from Asia and five form Europe. To officiate at a tournament, three referees are chosen at random from the group. Find the probability that:

i) A referee is chosen from each Continent.
ii) Two referees are chosen from Asia.
iii) All the three referees are chosen from the same Continent.

Answer

Sample space of having three out of 12 = $^{3}C_{1} = 220$

i) Probability of having one referee from each Continent:

$$\frac{^{3}C_{1}\times{}^{4}C_{1}\times{}^{5}C_{1}}{^{12}C_{3}} = \frac{60}{220} = \frac{3}{11}$$

ii) Probability of having 2 referees from Asia =

$$\frac{^{4}C_{2}\times{}^{8}C_{1}}{^{12}C_{3}} = \frac{48}{220} = \frac{12}{55}$$

iii) All three referees from same Continent

$$(\frac{^{3}C_{3}}{^{12}C_{3}}) + (\frac{^{4}C_{3}}{^{12}C_{3}}) + (\frac{^{5}C_{3}}{^{12}C_{3}}) = \frac{1}{220} + \frac{4}{220} + \frac{10}{220} = \frac{15}{220} = \frac{3}{44}$$

966) Among 18 members of a cricket club, there are 2 wicket keepers and 5 bowlers. In how many ways can a team of 11 members be chosen so as to include only one wicket keeper and at least three bowlers?

Answer

Keepers	Bowlers	Others	Total
2	5	11	18

No of ways one keeper and at least 3 bowlers:
= One keeper, 3 bowlers and 7 others + one keepers, 4 bowlers and 6 others + one keepers, 5 bowlers and 5 others

$$= C_1^2.C_3^5.C_7^{11} + C_1^2.C_4^5.C_6^{11} + C_1^2.C_5^5.C_5^{11}$$
$$= 2 + 10\times 330 + 2\times 5\times 462 + 2\times 1\times 462$$
$$= 6600 + 4620 + 924 = 12144$$

967) Out of 12 eggs in a refrigerator, 2 are rotten. From these 12 eggs, 4 egg are selected at random to make a cake. What are the probabilities that:

(i) Exactly one is rotten.
(ii) At least one is rotten.

Answer

Good	Rotten	Total
10	2	12

Number of eggs chosen = 4

i) P(1 rotton and 3 good eggs) = $\frac{{}^{2}C_1 \times {}^{10}C_3}{C_4^{12}} = \frac{2\times 120}{495} = \frac{240}{495}$

ii) P(at least one rotton) = P(1 rotton and 3 goods) + P(2 rotton and 2 good)

$$= \frac{{}^{2}C_1 \times {}^{10}C_3}{C_4^{12}} + \frac{{}^{2}C_2 \times {}^{10}C_2}{C_4^{12}} = \frac{240}{495} + \frac{45}{495} = \frac{285}{495}$$

968) The Board of Directors of a company consists of 8 men and 4 women. A 4 members' committee is to be chosen at random from the Board:

(i) What is the probability that all 4 members of the committee will be women?
(ii) What is the probability that all 4 members of the committee will be men?

Answer

Men	Women	Total
8	4	12

n(s) = 12C4 = 495

i) A = all four members will be men:
n(A) = 8C4 . 4C0 = 70

$$P(A) = \frac{n(A)}{n(S)} = \frac{70}{495} = 0.1414 \text{ Ans}$$

ii) B = all four members will be women:
n(B) = 4C4.8C0 = 1

$$P(B) = \frac{n(B)}{n(S)} = \frac{1}{495} = 0.002 \text{ Ans}$$

969) Among a transport department's 16 trucks, 5 emit excessive amount of smoke. If eight of the trucks are randomly selected inspection, what is the probability that this sample will include at least 4 of the trucks, which emit excessive amount of smoke?

Answer

P(Atleast 4 defective) = $\frac{{}^{5}C_4 \times {}^{11}C_4 + {}^{5}C_5 \times {}^{11}C_3}{{}^{16}C_8} = \frac{1815}{12870} = \frac{11}{78} = 0.141$

970) A coin is tossed 3 times find the probability of 1 head

Answer 3/8

971) 3 dices are rolled find the probability that atleast one 3 number dice appears

Answer

Here n=3, p=1/6 q=5/6

$$P(X \geq 1) = 1 - P(X = 0) = 1 - 3C_0 (1/6)^0 (5/6)^3 = 0.4213$$

972) Following data is given

Goal	0	1	2	3	4	5	>5
P(X=x)	0.05	0.2	0.15	0.15	0.3	0.05	0.1

Find the probability that there would be total 5 goals in two matches

e) 0.17	f) 0.83
g) 0.84	h) 0.12

Answer

5 goals in 2 match can be scored in following order

(vii)	0 goals in first match and 5 goals in second match	0.05*0.05=0.0025
(viii)	1 goals in first match and 4 goals in second match	0.2*0.3=0.06
(ix)	2 goals in first match and 3 goals in second match	0.15*0.15=0.0225
(x)	3 goals in first match and 2 goals in second match	0.15*0.15=0.0225
(xi)	4 goals in first match and 1 goals in second match	0.3*0.2=0.06
(xii)	5 goals in first match and 0 goals in second match	0.05*0.05=0.0025

Total probability is 0.17

973) In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?

a) 159	b) 194
c) 205	**d) 209**

Answer

We may have (1 boy and 3 girls) or (2 boys and 2 girls) or (3 boys and 1 girl) or (4 boys).

Required number of ways

$$6C1\times 4C3+6C2\times 4C2+6C3\times 4C1+6C4\times 4C0=209$$

974) A normal distribution has mean 5.03 and standard deviation 0.03 then find the probability of values between 5 to 5.06

Answer

$$Z=\frac{x-\mu}{\sigma}=\frac{5.0-5.03}{0.03}=-1.00 \quad Area=0.3413$$

$$Z=\frac{x-\mu}{\sigma}=\frac{5.06-5.03}{0.03}=1.00 \quad Area=0.3413$$

Now total area is 0.3413+0.3413=0.6826

975) How many 3-digit numbers can be formed from the digits 2, 3, 5, 6, 7 and 9, which are divisible by 5 and none of the digits is repeated?

a) 5	b) 10
c) 15	**d) 20**

Answer

Since each desired number is divisible by 5, so we must have 5 at the unit place. So, there is 1 way of doing it.

The tens place can now be filled by any of the remaining 5 digits (2, 3, 6, 7, 9). So, there are 5 ways of filling the tens place.

The hundreds place can now be filled by any of the remaining 4 digits. So, there are 4 ways of filling it.

Required number of numbers = (1 x 5 x 4) = 20.

976) A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one black ball is to be included in the draw?

a) 32	b) 48
c) 64	d) 96

Answer
We may have (1 black and 2 non-black) or (2 black and 1 non-black) or (3 black).
Required number of ways = (3C1 x 6C2) + (3C2 x 6C1) + (3C3)
=64.

977) In how many different ways can the letters of the word 'DETAIL' be arranged in such a way that the vowels occupy only the odd positions?

a) 32	b) 48
c) 36	d) 60

Answer
There are 6 letters in the given word, out of which there are 3 vowels and 3 consonants.
Let us mark these positions as under:
(1) (2) (3) (4) (5) (6)
Now, 3 vowels can be placed at any of the three places out 4, marked 1, 3, 5.
Number of ways of arranging the vowels = 3P3 = 3! = 6.
Also, the 3 consonants can be arranged at the remaining 3 positions.
Number of ways of these arrangements = 3P3 = 3! = 6.
Total number of ways = (6 x 6) = 36.

978) In how many ways the word **CORRECT** be arranged

e) 360	f) 480
g) 720	**h) 1260**

Answer
$$\frac{7!}{2!\times 2!} = 1260$$

979) In how many different ways can the letters of the word '**LEADING'** be arranged in such a way that the vowels always come together?

a) 360	b) 480
c) 720	d) 5040

Answer
The word 'LEADING' has 7 different letters.
When the vowels EAI are always together, they can be supposed to form one letter.
Then, we have to arrange the letters LNDG (EAI).
Now, 5 (4 + 1 = 5) letters can be arranged in 5! = 120 ways.
The vowels (EAI) can be arranged among themselves in 3! = 6 ways.
Required number of ways = (120 x 6) = 720.

980) Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?

a) 210	b) 1050
c) 25200	d) 21400

Answer
Number of ways of selecting (3 consonants out of 7) and (2 vowels out of 4)

= (7C3 x 4C2)
= 210.
Number of groups, each having 3 consonants and 2 vowels = 210.
Each group contains 5 letters.
Number of ways of arranging
5 letters among themselves = 5!
= 5 x 4 x 3 x 2 x 1 = 120.
Required number of ways = (210 x 120) = 25200.

981) How many 3-digit numbers can be formed from the digits 2, 3, 5, 6, 7 and 9, which are divisible by 5 and none of the digits is repeated?

a) 5	b) 10
c) 15	**d) 20**

Answer
Since each desired number is divisible by 5, so we must have 5 at the unit place. So, there is 1 way of doing it.
The tens place can now be filled by any of the remaining 5 digits (2, 3, 6, 7, 9). So, there are 5 ways of filling the tens place.
The hundreds place can now be filled by any of the remaining 4 digits. So, there are 4 ways of filling it.
Required number of numbers = (1 x 5 x 4) = 20.

982) There are 50 currency notes of Rs 1000 and 50 currency notes of Rs 500 in a Safe. If 4 notes are selected randomly with replacement, then find the probability that total amount obtained is Rs 3,000

a) 0.3750	b) 0.1525
c) 0.75	d) 0.5

Answer

As selection is with replacement, so events become independent hence now we will use binomial distribution

Here p=0.5 q=0.5 n=4

Let X denote the event that 2 notes of Rs 500 selected and 2 notes of Rs 1000 selected

P(X= 2)=?

$P(X=x)={}^{n}C_{x}(p)^{x}(q)^{n-x}$

$P(X=2)={}^{4}C_{2}(0.5)^{2}(0.5)^{4-2}$ =0.375=3/8

983) There are 65 currency notes of Rs 1000 and 35 currency notes of Rs 500 in a Safe. If 4 notes are selected randomly find the probability that total amount obtained is Rs 3000

a) 0.3156	b) 0.1526
c) 0.3052	d) 0.2056

Answer

Using hyper-geometric distribution

Rs 1000 currency notes=65 Rs 500 currency notes 35 total notes=100

P(sum not less than 3000)=1-P(sum less than 3000)=1-(sum 2500+sum 2000)

$$\frac{^{65}C_2 \times ^{35}C_2}{^{100}C_4} = 0.3156$$

984) There are 65 currency notes of Rs 1000 and 35 currency notes of Rs 500 in a Safe. If 4 notes are selected randomly find the probability that total amount obtained is not less than Rs 3000

a) 0.8782	b) 0.3156
c) 0.3052	d) 0.1215

Answer

Using hyper geometric distribution

Rs 1000 currency notes=65 Rs 500 currency notes 35 total notes=100

P(sum not less than 3000)=1-P(sum less than 3000)=1-(sum 2500+sum 2000)

$$P(X = x) = 1 - \frac{^{65}C_1 \times ^{35}C_3 + ^{65}C_0 \times ^{35}C_4}{^{100}C_4} = 1 - \frac{1241}{10185} = \frac{8944}{10185} = 0.878154 \approx 0.8782$$

985) There are 65 currency notes of Rs 1000 and 35 currency notes of Rs 500 in a Safe. If 4 notes are selected randomly find the probability that total amount obtained is less than Rs 3000

a) 0.1218	b) 0.8782
c) 0.3156	d) 0.1587

Answer

Using hyper geometric distribution

Rs 1000 currency notes=65 Rs 500 currency notes 35 total notes=100

P(sum less than 3000)

$$P(X = x) = \frac{^{65}C_1 \times ^{35}C_3 + ^{65}C_0 \times ^{35}C_4}{^{100}C_4} = \frac{1241}{10185} = 0.1218$$

986) There are 65 currency notes of Rs 1000 and 35 currency notes of Rs 500 in a Safe. If 4 notes are selected randomly find the probability that total amount obtained is at least Rs 4000

a) 0.1727	b) 0.1218
c) 0.3152	d) 0.8782

Answer

Using hyper geometric distribution

Rs 1000 currency notes=65 Rs 500 currency notes 35 total notes=100

P(sum at least 4000)= P(All Rs 1000 Currency notes are selected)

$$P(X = x) = \frac{{}^{65}C_4 \times {}^{35}C_0}{{}^{100}C_4} = 0.1727$$

987) Two dices are rolled find the probability that atleast 1 "six" appear

a) 1/6	b) 2/6
c) 12/36	**d) 11/36**

988) Two dices are rolled find the probability that exact 1 "six" appear

a) 1/36	b) 2/6
c) 11/36	**d) 10/36**

989) Two dices are rolled find the probability that "six" appear on first dice only

a) 1/6	b) 2/6
c) 11/36	d) 10/36

990) Mean of a certain normal distribution is 5.0 and SD is 0.03 you are required to find the probability of 5.0 ± 0.03

a) **68.268%**	b) 34.13%
c) 95.15%	d) 100%

Answer

We know that

Area between $\mu \pm \sigma$ is 68.268%

So the above range 5.0 ± 0.03 is basically equal to $\mu \pm \sigma$

991) Mean of a certain normal distribution is 5.0 and SD is 0.03 you are required to find the probability of $5.0 + 0.03$

a) 68.268%	b) **34.13%**
c) 95.15%	d) 100%

Answer

We know that

Area between $\mu \pm \sigma$ is 68.268%

But in this question only one sided area from mean is required

So the above range $5.0 + 0.03$ is basically equal to $\mu + \sigma$

Hence area of one side will be 34.13%

992) Mean of a certain normal distribution is 5.0 and SD is 0.03 you are required to find the probability of $5.0 - 0.03$

a) 68.268%	b) **34.13%**
c) 95.15%	d) 100%

Answer

We know that

Area between $\mu \pm \sigma$ is 68.268%

But in this question only one sided area from mean is required

So the above range $5.0 - 0.03$ is basically equal to $\mu - \sigma$

Hence area of one side will be 34.13%

993) Mean of a certain normal distribution is 5.0 and SD is 0.03 you are required to find the probability of $5.0-0.06$

a) 68.268%	b) **47.725%**
c) 95.15%	d) 100%

Answer

We know that

Area between $\mu \pm 2\sigma$ is 95.45%

But in this question only one sided area from mean is required

So the above range $5.0-0.06$ is basically equal to $\mu - 2\sigma$

Hence area of one side will be 47.725%

994) Mean of a certain normal distribution is 5.0 and SD is 0.03 you are required to find the probability of 5.0 ± 0.06

a) 68.268%	b) 47.725%
c) **95.45%**	d) 100%

Answer

We know that

Area between $\mu \pm 2\sigma$ is 95.45%

So the above range 5.0 ± 0.06 is basically equal to $\mu \pm 2\sigma$

995) In a normal distribution mean=5.05 and SD =0.02 find the probability of a value less than 5.0

Answer

$$Z = \frac{x-\mu}{\sigma} = \frac{5.0-5.05}{0.02} = -2.5 \qquad Area = 0.4938$$

Required Area=0.5-0.4938=0.0062

996) In a normal distribution mean=5.05 and SD =0.02 find the area between 5.00 and 5.06

Answer

$$Z = \frac{x-\mu}{\sigma} = \frac{5.0-5.05}{0.02} = -2.5 \qquad Area = 0.4938$$

$$Z = \frac{x-\mu}{\sigma} = \frac{5.06-5.05}{0.02} = 0.5 \qquad Area = 0.1915$$

Required Area=0.4938+0.1915=0.6853

997) Mean of a certain normal distribution is 5.0 and SD is 0.03 you are required to find the probability of 5.0 ± 0.09

a) 68.268%	b) 47.725%
c) 95.45%	d) **99.73%**

Answer

We know that

Area between $\mu \pm 3\sigma$ is 99.73%

So the above range 5.0 ± 0.09 is basically equal to $\mu \pm 3\sigma$

998) A telephone operator receives on average 2 calls in 3 minutes. Find the probability of receiving more than or equal to 4 calls in 9 minutes

a) **0.8488**	b) 0.8425
c) 0.1512	d) None of these

Answer

$\mu = 2 calls \ \ (in\ 3\ \text{min}\ utes)$

We will redefine the mean

$\mu = \frac{2}{3} \times 9 = 6 calls \ \ (in\ 9\ \text{min}\ utes)$

Now using Poisson distribution formula

$P(X \geq 4) = 1 - \left[(P(X=0) + (P(X=1) + (P(X=2) + (P(X=3)\right]$

$P(X \geq 4) = 1 - \left[\frac{e^{-6} \times 6^0}{0!} + \frac{e^{-6} \times 6^1}{1!} + \frac{e^{-6} \times 6^2}{2!} + \frac{e^{-6} \times 6^3}{3!}\right]$

$P(X \geq 4) = 1 - \left[0.002479 + 0.0148725 + 0.044617 + 0.089235\right]$

$P(X \geq 4) = 1 - 0.1512 = 0.8488$

999) During peak hours a center receives 4 calls per 30 minutes. What is the probability of getting 3 or more calls in an hour?

a) **0.9862**	b) 0.8425
c) 0.1512	d) None of these

1000) Ahmad received 4 calls in five minutes on average. What is the probability that more than 3 calls will be received in 10 minutes?

a) 0.9862	b) 0.8425
c) **0.9576**	d) None of these

1001) 5 digits are given 2, 3, 4, 7, 8. Find the probability that 5-digit number will be made such that 7 is first number and 8 is last number.

Answer

Favourable = 1 x 1 x 2 x 3 x 1 = 6

All possible outcomes = 5 = 120

P(x) = $\frac{6}{120} = \frac{1}{20}$

1002) In a test there are 20 questions. All questions are selected are MCQs with 4 choices. All 20 questions are selected find the probability that 4 are correct.

Answer

This is a Binomial distribution question

n = 20 P = $\frac{1}{4} = 0.25$ Q = $\frac{13}{4} = 0.75$ P(x=4) =?

P(x=4) = 20C4.$(0.25)^4$ $(0.75)^{16}$ =

= 0.1897

1003) There are 12 CNG kits out of which 4 are defective. if 4 Kits are selected at random then find the probability that at least 3 are defective

$P(x\geq 3) = P(x=3) + p(x=4)$

$$\frac{{}^4C_3 \times {}^8C_1 + {}^4C_3 \times {}^8C_1}{{}^{12}C_4} = \frac{1}{15}$$

1004) While coming and from a department store a consume pass through one out of 12 cash counters C_1 to C_2 (All haring same probability) then his bill is verified by one of 3 officers (with same probabilities) v_1, v_2, v_3, then he embarks 1 of two elevators E_1, E_2 and is twice likely to embark on E_2 as E_1.

Find the probability a consumer will pass through C_6 or C_{12} verified by V_1 and embark on E_2.

a) $\frac{1}{27}$ b) $\frac{1}{54}$ c) $\frac{5}{6}$ d) $\frac{2}{3}$

Answer

$P(C_6 \text{ or } C_{12}) \times (V_1) \times (E_2)$

$= \left(\frac{1}{12} + \frac{1}{12}\right) \times \left(\frac{1}{3} \times \frac{2}{3}\right) = 1/27$

1005) A 5-digit pin code is required which should start with 7 at first digit and 8 as last digit. You can choose any number from 0 to 9. Repetition of number is also allowed.

Find the probability of such code

Answer

No. of ways = 1 x 10 x 10 x 10 x 1 = 100 ways

All possible ways = 10 x 10 x 10 x 10 x 10 = 100,000

Probability $= \frac{\text{Favourable outcomes}}{\text{All possible outcomes}} = \frac{1000}{100{,}000} = \frac{1}{100}$

1006) There are 6 digits 1,3,4,5,7,9. A three-digit number is to be made from these numbers which should be divisible by 2. (No repetition of numbers). Find all possible ways.

Answer

All possible ways = 4x5x1 = 20 ways

So total no. of options is 20

1007) You have 6 values 1,3,5,7,9 and 11. How many 3-digit codes can be made (Without replacement).

a) 20	**b) 120**
c) 12	d) 360

Answer

All possible ways = 6x5x4 = 120 ways

So total no. of options is 120

1008) An (NAC) institute select 30 doctors and give them a medicine to test and give feedback, each doctor selects 50 patients and apply that medicine to them. You are required to determine the sample size for NAC?

a) 30	b) 50
c) 1500	d) None of these

Answer

Sample size = No of doctors X No of patients = 30x50 = 1500

1009) A dice is rolled 3 times, what is the probability that 3 will appeal at least 2 times.

n = 3 $p = {}^{1}/_{6}$ $q = {}^{5}/_{6}$ $p(x \geq 2) = 3$

Answer

$P(x \geq 2) = p(x=2) + p(x=3)$

$= 3_{c_2}\left(\frac{1}{6}\right)^2\left(\frac{5}{6}\right)^1 + 3_{c_3}\left(\frac{1}{6}\right)^3\left(\frac{5}{6}\right)^0 = \frac{5}{72} + \frac{1}{216} = \frac{2}{27}$

1010) A committee is to be made of 4 members from a total of 13 people of which 5 from Punjab, 2 from Baluchistan, 4 from Sindh and 2 from KPK, what is the probability that committee contain none from Punjab?

a. 6.8% b. 0.7 % c. 9.8% d.None of these

Answer

$$\frac{{}^{5}C_0 \times {}^{8}C_4}{{}^{13}C_4} = 14/143 = 0.0979 = 9.8\%$$

1011) Two dices are rolled find the probability that atleast one 6 appeal

Answer $\frac{11}{36}$

1012) What is the probability of getting at least one six in a single throw of three unbiased dice?

a) 94/216	b) 90/216
c) **91/216**	d) 84/216

1013) When two dice are thrown simultaneously, what is the probability that the sum of the two numbers that turn up is less than 11?

a) 11/23	b) 14/23
c) **11/12**	d) 12/14

1014) An income tax officer has received 10 files numbered from 1 to 10. On the direction of the director, the income tax officer selected one file for inspection. The probability that the selected file number is a multiple of 5 or multiple of 3 is:

a) 50%	b) ½
c) **Both a and b**	d) 80%

1015) What is the probability that a two-digit number selected at random will be a multiple of '3' and not a multiple of '5'?

a) 4/15	b) 8/15
c) 2/15	d) 6/12

1016) After studying Mr. X's family history, a doctor determines that the probability of any child born to this couple having a gene for disease X is 1 out of 4. If Mr. X has three children, what is the probability that exactly two of the children have the gene for disease X?

a) 12%	b) 14%
c) 13%	d) 15%

1017) On any given day, the probability that the entire family of Mr.Y eats dinner together is 2/5. Find the probability that, during any 7-day period, family front has each dinner together at least six times

a) 0.1255	b) **0.0188**
c) 0.1386	d) 0.2624

1018) Suppose that you have a bag filled with 50 marbles, 15 of which are green. What is the probability of choosing exactly 3 green marbles if a total of 10 marbles are selected?

a) 0.2045	b) 0.2615
c) **0.2979**	d) 0.1568

1019) Three missiles are fired at a target. If the probability of hitting the target are 4/5, 5/10 & 6/10 respectively & if all the missiles are fired independently. The probability that at least two missiles will hit to the target is:

a) 40%	b) **7/10**
c) 0.9	d) 0.1

1020) Among 18 members of a cricket club, there are 2 wicket keepers and 5 bowlers.In how many ways can a team of 11 members be chosen so as to include only 1 wicket keeper and at least 3 bowlers?

a) 2,000	b) 12,458
c) 12,222	d) **12,144**

1021) On a single toss of a pair of fair dice, what is the probability that a sum of 7 appears and both dice show a number less than 4?

a) 2/36	b) 1/36
c) **0**	d) 1

1022) A specialist shop attracts five customers per day. There is an independent probability of 1/3 that any one customer will make a purchase. The probability that the shop will make at most one sale in a day is:

a) 16/243	b) 85/243
c) 48/243	d) **112/243**

1023) Among a company's 16 trucks, 5 emit excessive amount of smoke. If eight of the trucks are randomly selected for inspection, what is the probability that this sample will include at least 4 of the trucks, which emit excessive amount of smoke?

a) 0.2458	b) 0.3625
c) 0.2170	d) **0.1410**

1024) A firm of Chartered Accountants has two vacancies for trainee students and is trying to recruit CAF passed students. In the past, 40% of students who were offered the training contract have not reported to join. If 2 students are offered training contract, what is the probability that at least one will join?

a) 0.12	b) **0.84**
c) 0.15	d) 0.56

1025) The probability that a car will have a flat tyre while driving through Kalma Chowk Underpass is 0.00006. What is the probability that at least 2 out of 10,000 cars passing through underpass will have a flat tyres?

a) **0.1219**	b) 0.6625
c) 0.2156	d) 0.2315

1026) In one day a department manufactures four products, each of which has an independent chance of 20% being faulty. The probability that at least three products are not faulty is:

a) 0.1024	b) 0.5120
c) **0.8192**	d) 0.2456

1027) In which distribution the probability of success remains constant from trial to trial?

a) Hyper geometric distribution	b) **Binomial distribution**
c) Sampling distribution	d) Frequency distribution

1028) During a T20 cricket match Mr. X scored 47 runs in six overs with the help of five fours, four sixes and three singles. If a TV channel were to show two of his scoring shots during its News Update and the shots were to be selected on random basis, find the probability that on both the shots Mr. X had scored different runs?

a) **47/66**	b) 23/66
c) 15/23	d) 74/666

1029) A binomial distribution may be approximated by a Poisson distribution if:

a) n is small and p is large	b) n is large and p is large
c) **n is small and p is small**	d) none of these

1030) An unbiased dice with faces marked 1, 2, 3, 4, 5 and 6 is rolled four times. Out of four face values obtained, the probability that the minimum value is not less than 2 and maximum value is not greater than 5 is:

a) 1/81	b) 80/81
c) **16/81**	d) 65/81

1031) Out of the numbers 1 to 120, a number is selected at random. What is the probability that it is divisible by 8 or 10?

a) 10%	**b) 20%**
c) 15%	d) 25%

1032) In a group of students 50% of the students were taking statistics subject, 30% economics and 10% both the subjects. What is the probability that a student was taking neither statistics nor economics?

a) **30%**	b) 90%
c) 70%	d) None of these

1033) When a coin tossed for 8 times then _____ distribution can be used

a) Poisson	b) Hypergeometric
c) Normal	d) **Binomial**

1034) The mean sales of all the different branches of METRO store is Rs. 100,000 with a standard deviation of Rs. 30,000. The probability of shops; the sales of which is in between Rs. 110,000 and Rs. 120,000 is:

a) 0.2486	b) **0.1193**
c) 0.1293	d) 0.3779

1035) If 20% of the bulbs manufactured by a company are defective. What is the average number of defective bulbs in a batch of 400 bulbs?

a) 320	b) **80**
c) 64	d) 8

1036) 10 applicants consisting of 4 MScs, 3 MBAs, 3 CAs, candidates applied for 4 vacancies. If the vacancies are filled at random. What is the probability that only 2 CA candidates will be selected?

a) 3/210	b) 200/210
c) **3/10**	d) 105/210

1037) An unprepared students go for test. There are 10 questions having 4 options in test. Find the probability that atleast 1 is correct.

a) 0.999	b) 0.99
c) 1	**d) 0.9437**

1038) An unprepared students go for test. There are 10 true false questions in test. Find the probability that atleast 1 is correct.

a) 0.999	b) 0.99
c) 1	d) 0

1039) There are total 57 eggs in a basket out of which 36 are defective. If 4 eggs are selected from the box find the probability that only 1 is defective

a) 1/11	b) 2/15
c) 4/33	d) None of these

1040) A company Manufacture 25 Bulbs out of which 3 are defective on average, if a random sample of 5 Bulbs is selected from it. What is the probability that it contains exactly 2 Defective Bulbs?

a) 1/11	b) 2/15
c) 2/23	d) None of these

1041) A mobile service provider offers the following options to its customers

Call metering	1 sec	20 sec	30 sec	60 sec
Fixed monthly charges	0 with no free minutes	Rs 300 with 300 free Minutes	Rs 1,000 Rs for 1,000 free Minutes	
GPRS package	0 with no GPRS	Rs 300 Rs for 300 MB download limit	Rs 500 for 500 MB download limit	

In how many ways can a customer select a service package? (01 mark)

a) 10	b) 12

c) 36	d) 144

1042) A mobile service provider offers the following options to its customers

Call metering	1 Min	2 Min	3 Min	4 Min
Call package	300 Rs for 300 Min	400 Rs for 400 Min	500 Rs for 500 Min	
GPS package	300 Rs for 300 MBs	400 Rs for 450 MBs	450 Rs for 500 MBs	

In how many ways can a customer select a service package? (01 mark)

b) **36** b) 144 c) 16 d) none of these

Answer

No of ways = call metering option x call package options x GPS package options

No of ways = 4x3x3=36

Correct option is A

1043)

Call metering	1 Min	2 Min	3 Min	4 Min
Call package	300 Rs for 300 Min	400 Rs for 400 Min	500 Rs for 500 Min	
GPS package	300 Rs for 300 MBs	400 Rs for 450 MBs	450 Rs for 500 MBs	
SMS package	500 per month	750 per month	1000 per month	

If a customer wants to choose one of these package, then find the number of ways available to him

b) 36 b) **108** c) 120 d) none of these

Answer

No of ways = call metering option x call package options x GPS package options

No of ways = 4x3x3x3=108

Correct option is B

1044) The probability of the vowel pattern in the word "STATISTICS" is:

a) 3/10	b) 0.3
c) 0	d) **A and B but not C**

1045) If the two quartiles of a normal distribution are 14.6 and 25.4 respectively, what is the standard deviation of the distribution?

a) 6	b) **8**
c) 9	d) 10

1046) From an industrial area 70 companies were selected at random and 45 of them were planning for expansion next year. Find 95% confidence limits for the proportion of companies planning for expansion.

a) 0.35, 0.57	b) 0.35, 0.75
c) **0.53, 0.75**	d) 0.45, 0.57

1047) From an industrial area 70 companies were selected at random and 45 of them were planning for expansion next year. Find 95% confidence limits for the proportion of companies not planning for expansion.

a) 0.35, 0.57	b) 0.35, 0.75
c) 0.53, 0.75	d) **0.25, 0.47**

1048) In one day a department manufactures four products, each of which has an independent chance of 20% being faulty. The probability that at least three products are not faulty is:

a) 0.1024	b) 0.5120
c) **0.8192**	d) 0.2456

1049) Three cards are drawn at random one by one with replacement from a pack of 52 cards. What is the probability that all are aces?

a) 1/5746	b) **1/2197**
c) 3/4	d) One of these

1050) A committee of four (4) people is to be appointed from three(3) officers of the production department, four(4) offices of the purchase department, two(2) officers of the sales department & one(1) chartered accountant. The probability that in the committee, there must be one from each category is:

a) 24/210	b) 4/35
c) 0.1143	d) **All of the above**

1051) A shipment of 20 similar laptop computers to a retail outlet contains 3 that are defective. If a school makes a random purchase of two of these computers. The probability of at least one defective, keeping in view that the probability changes from one trial to another trial is:

a) 27/95	b) 54/190
c) 0.2842	d) **All of the above**

1052) The probability of a high jumper clearing 1.8m on any jump is 0.6. What is the probability of his clearing 1.8m in precisely three out of seven jumps?

a) 0.006	b) **0.194**
c) 0.273	d) 0.290

1053) Suppose that you have a bag filled with 50 marbles, 15 of which are green. What is the probability of choosing exactly 3 green marbles if a total of 10 marbles are selected?

a) 0.2045	b) **0.2979**
c) 0.2615	d) 0.1568

1054) The arithmetic mean of the upper and lower limits of the confidence interval for population mean is equal to:

a) **Sample mean**	b) Population mean
c) Population standard deviation	d) Sample standard deviation

1055) When two coins & one dice are rolled together, all possible outcomes are

a) 6	b) 2
c) 36	d) **24**

1056) On any given day, the probability that the entire family of Mr.Y eats dinner together is 2/5. Find the probability that, during any 7-day period, family front has each dinner together at least six times.

a) 0.1255	b) 0.1386
c) **0.0188**	d) 0.2624

1057) The maximum temperature on first June in a certain locality has been recorded and observed as normally distributed over years. About 15% of the time, it has exceeded 30°C and about 5% of the time it has been less than 20°C. The mean & variance which are the two parameters of the normal distribution respectively are:

a) 26.12 and 18.17	b) **26.12 & 13.84**
c) 24.27 & 13.84	d) 18.17 & 27.16

1058) For two coins, the probability of no head is:

a) 0	b) ¼
c) 0.25	d) B and c but not a

1059) What is the probability that a two-digit number selected at random will be a multiple of '3' and not a multiple of '5'?

a) **4/15**	b) 2/15
c) 8/15	d) 6/12

1060) A gambler plays a game of chance 150 times. On each play, he has a probability of 0.45 of winning. What is the approximate probability of his winning between 62 and 70 times?

a)	b)
c)	d)

1061) 10 applicants consisting of 4 ACMAs, 3 MBAs, 3 CAs, candidates applied for 4 vacancies. If the vacancies are filled at random. What is the probability that only 2 CA candidates will be selected?

a) 3/210	b) 6/210
c) **3/10**	d) None of these

1062) The mean sales of all the different branches of ALFATAH store is Rs. 100,000 with a standard deviation of Rs. 30,000. The probability of shops; the sales of which is in between Rs. 110,000 and Rs. 120,000 is:

a) 0.2486	b) 0.1293
c) **0.1193**	d) 0.3779

1063) Automobiles are randomly distributed with an average spacing of 1000 feet along a highway. The probability that atleast two cars are present in 1000 feet interval selected at random is:

a) 0.4642	b) **0.2642**
c) 0.3642	d) 0.1642

1064) An orderly arrangement of things is called:

a) Combination	b) **Permutation**
c) Probability	d) Sample space

1065) The number of ways in which four books of AFC can be arranged on a shelf is:

a) 8 ways	b) 16 ways
c) 12 ways	d) **24 ways**

1066) Given P(A)=1/3, P(B)=1/4. Suppose that the two events "A" & "B" are independent events, then the probability of either "A: or "B" is equal to:

a) 6/12	b) 1/2
c) **A and B**	d) None of these

1067) A Secretary makes 2 errors per page on the average. What is the probability that on the next page she makes no error?

a) 0	b) 0.2704
c) **0.1352**	d) 0.0676

1068) The probability of hitting a target is 4/5. If a person takes three trials. What is the probability that the target is hit at least once?

a) 48/125	b) 1/125
c) **124/125**	d) 120/125

1069) The life of electric Tube Lights follows normal distribution with mean life of 3,000 hours and standard deviation of 200 hours. What is the probability that a Tube Light has life more than 3,400 hours?

a) 0.4772	b) 0.4960
c) 0.0040	d) **0.0228**

1070) After studying Mr. X's family history, a doctor determines that the probability of any child born to this couple having a gene for disease X is 1 out of 4. If Mr. X has three children, what is the probability that exactly two of the children have the gene for disease X?

a) 12%	b) 13%
c) **14%**	d) 15%

1071) A firm of Chartered Accountants has two vacancies for trainee students and is trying to recruit CAF passed students. In the past, 40% of students who were offered the training contract have not reported to join. If 2 students are offered training contract, what is the probability that at least one will join?

a) 0.12	b) 0.15
c) **0.84**	d) 0.56

1072) In which distribution the probability of success remains constant from trial to trial

a) Hyper geometric distribution	b) **Binomial distribution**
c) Binomial distribution	d) Frequency distribution

1073) The probability of the consonant pattern in the word "STATISTICS" is:

a) **7/10**	b) 0.3
c) 0	d) a and b but not c

1074) The average life of a certain type of motor is 10 years, with a standard deviation of 2 years. If the manufacturer is willing to replace only 3% of the motors that fail, how long a guarantee should he offer? Assume that the lives of the motors follow a normal distribution.

a) 5.5 years	b) **6.24 years**
c) 4.52 years	d) 7.62 years

1075) Mean = 0 and standard deviation = 1 in _____ distribution.

a) Normal	b) Binomial
c) **Standard normal**	d) Poisson

1076) The probability of hitting a target is 4/5. If a person takes three trials. What is the probability that the target is hit at least once?

a) 48/125	b) 61/125
c) **124/125**	d) 12/125

1077) A person has 3 suites and 2 ties. In how many ways can he wear a suit and a tie?

a) 9	b) 8
c) **6**	d) 3

1078) A bag contains 6 red and 8 green balls. If two balls are drawn without replacement, then what is the probability that one is red and other is green.

a) 15/91	b) 91
c) **48/91**	d) 28/91

1079) A card is drawn from a Pack of 52 cards. What is the probability that it is Queen or red card?

a) 26/52	b) 30/52
c) 28/52	d) 2/52

1080) The scores made by employees are normally distributed with a mean of 600 and standard deviation of 100. If top 10% are considered for promotion. What score must an employee make in order to get promotion?

a) 765	b) **728**
c) 796	d) 472

1081) Indian cricket team losses twice as often as it wins. What is the probability that in 5 next matches, India wins 3 matches?

a) 80/243	b) 10/320
c) 11/16	d) **40/243**

1082) If a binomial distribution is negatively skewed:

a) P=1/2	b) P<1/2
c) **P>1/2**	d) P=q

1083) In a normal distribution mean is 50 and 8% of observation are more than 64.1. What is the variance of distribution?

a) 10	b) 20
c) **100**	d) 400

1084) Twenty sheets of aluminum alloy were examined for surface flaws. The frequency of the number of sheets with a given number of flaws per sheet was as follows:

Number of flaws	Frequency
0	4
1	3
2	5
3	2
4	4
5	1
6	1

What is the probability of finding a sheet chosen at random which contains 3 or more surface flaws?

a) 0.20356	b) 0.30125
c) **0.40396**	d) 0.51263

1085) In Normal distribution which of the following is correct?

e) Area under the Curve is 1 as 100%	f) Flat the curve higher standard deviation
g) The Curve is obtained by Mean(μ) and Standard deviation (σ)	h) **all are correct**

1086) A group of items chosen from a larger number without regard for their order is called _____.

a) Permutation	**b) Combination**
c) Addition law	d) Multiplication law

1087) There are 10 balls in a bag each ball carrying a different number from 1 to 10. Three balls are selected at random from the bag and not replaced before the next draw is made. How many possible combinations are there?

a) 720	b) 20
c) 120	d) 540

1088) Five students from AFC class of 10 are to be chosen to attend a competition. One must be the head boy. How many possible teams are there?

a) 126	b) 120
c) 142	d) 24

1089) An item is made in three stages. At the first stage, it is formed on one of four machines, A, B, C, or D with equal probability. At the second stage it is trimmed on one of three machines, E, F, or G, with equal probability. Finally, it is polished on one of two polishers, H and I, and is twice as likely to be polished on the former as this machine works twice as quickly as the other. What is the probability that an item is either formed on A or trimmed on F?

a) 1/2	b) 1/3
c) 1/4	d) 1/5

1090) A large batch of items comprises some manufactured by process X and some by process Y. There are twice as many items from X as from Y in a batch. Items from process X contain 9% defectives and those from Y contain 12% defectives. If an item is taken at random from the batch and found to be defective. What is the probability that it came from Y?

a) 0.1	**b) 0.4**
c) 0.04	d) 0.14

1091) There are seven balls in a box out of which 2 are red, 2 green and 3 blue; two balls are drawn, what is the probability that none is blue?

a) 2/7	b) 1/9
c) 3/8	d) 1/3

Answer

$$\frac{{}^{3}C_{0}\times{}^{4}C_{2}}{{}^{7}C_{2}} = 2/7$$

1092) If 20% of the bulbs manufactured by a company are defective. What is the average number of defective bulbs in a batch of 400 bulbs?

a) 320	b) 64
c) **80**	d) 8

1093) In a Poisson distribution; $P(X=2)=\frac{e^{-5}(5)^{2}}{2!}$, the variance is:

a) 2	b) – 5
c) **5**	d) None of these

Chapter 10 : Correlation and Regression

1094) Find regression equations and tell which is best from a and b category to regression equation which one is best from c and d according to regression equation

Town	Aay	Bee	Cee	Dee
Police	190	180	250	200
number of crimes	145	160	130	125

a. Aay and Bee b. Bee and Dee **c. Aay and Dee** d. Cee and Dee

1095) Find regression equations and tell which is best from a and b category to regression equation which one is best from c and d according to regression equation

Town	Aay	Bee	Cee	Dee	Gee	Jay	Kay	Pee
Police	120	150	230	225	156	150	130	160
number of crimes	95	110	90	55	90	150	130	110

Regression Line of crimes over Police =y = 175.286-0.433x

a) Aay is more efficient than Bee	b) Dee is more efficient than Gee
c) Kay is more efficient than Pee	**d) Both a and b**

Answer

Putting the values of x (police) in regression equation to find the expected crime ($\hat{Y}$) and comparing with actual crimes (y) to find efficiency of police

Town	Police(x)	Crimes (y)	$\hat{Y}$ **=175.286-0.433x**	Efficiency
Aay	120	95	=175.286-0.433(120)=123.326	$\frac{123.326-95}{123.326}=22.97\%$
Bee	150	110	=175.286-0.433(150)=110.336	$\frac{110.336-110}{110.336}=0.305\%$
Cee	230	90	=175.286-0.433(230)=75.696	$\frac{75.696-90}{75.696}=-18.9\%$
Dee	225	55	=175.286-0.433(225)=77.861	$\frac{77.861-55}{77.861}=29.36\%$
Gee	156	90	=175.286-0.433(156)=107.738	$\frac{107.738-90}{107.738}=16.46\%$
Jay	150	150	=175.286-0.433(150)=110.336	$\frac{110.336-150}{110.336}=-35.95\%$
Kay	130	130	=175.286-0.433(130)=118.996	$\frac{118.996-130}{118.996}=-9.25\%$
Pee	160	110	=175.286-0.433(160)=106.00	$\frac{106-110}{106}=-3.77\%$

From about data Aey is more efficient than Bee, and Dee is more efficient than Gee but Kay is less efficient than Pee. **So correct option is D (both a and b)**

1096) $\sum x=1,239$, $\sum y=79$, $\sum xy= 17,233$, $\sum x^2=568,925$, $\sum y^2 =293$ n=100 find line 'y on x' and 'x on y' and their point of intersection?

Answer

Line y on x

$$Y = a + bx$$

$$b = \frac{n\Sigma XY - (\Sigma X)(\Sigma Y)}{n\Sigma X^2 - (\Sigma X)^2} = \frac{100 \times 17233 - 1239 \times 79}{100(568925) - (1239)^2} = 0.02936 = 0.03$$

$$a = \overline{Y} - b\overline{X}$$

$$a = \frac{79}{100} - b(\frac{1239}{100}) = 0.4262$$

$$So\, line\, Y\, on\, X\, is$$

$$Y = 0.4262 + 0.03X$$

Line X on Y

$$X = a + bY$$

$$b = \frac{n\Sigma XY - (\Sigma X)(\Sigma Y)}{n\Sigma Y^2 - (\Sigma Y)^2} = \frac{100 \times 17233 - 1239 \times 79}{100(293) - (79)^2} = 70.48957 = 70.49$$

$$a = \overline{X} - b\overline{Y}$$

$$a = \frac{1239}{100} - 70.48957(\frac{79}{100}) = -43.2968 = -43.3$$

So line X on Y is

$$X = -43.3 + 70.49Y$$

Point of intersection $(\overline{X}, \overline{Y})$

$$\overline{X} = \frac{1239}{100} = 12.93$$

$$\overline{Y} = \frac{79}{100} = 0.79$$

Hence Point of intersection is (12.93, 0.79)

a. **12.93, 0.79** b. 7.8, 1.38 c. 9.38, 0.98 d. None

1097) r = 0.6 bxy=1.2 find byx

a) 0.3 b) 0.2 c) 3.33

1098) Co –efficient of rank of correlation?
{x= 80,35,25,12,7}, y= {12,14,17,22,36}

a.) **-1.00** b.) -0.80 c.) -0.12 d. None of these

Answer

X	Y	Rank-x	Rank-y	$d^2=(x-y)^2$
80	12	1	5	$(1-5)^2=16$
35	14	2	4	$(2-4)^2=4$
25	17	3	3	$(3-3)^2=0$
12	22	4	2	$(4-2)^2=4$
7	36	5	1	$(5-1)^2=16$
				Sum = 40

Now rank correlation = r = $1-\frac{6\Sigma d^2}{n(n^2-1)}$

$$r=1-\frac{6\Sigma d^2}{n(n^2-1)}=1-\frac{6(40)}{5(5^2-1)}=1-\frac{240}{120}=1-2=-1.00$$

1099) Following data is given, Find Rank correlation

X	Y	d^2
1	1	0
3	2	1
3	3	0
5	4	1
4	5	1
4	6	4
		$\sum d^2 = 7$

Answer

$$r = 1-\frac{6\left(\Sigma d^2+Tx+Ty\right)}{n(n^2-1)}$$

$$1-\frac{6(7+1.0)}{6(6^2-1)}=0.7714$$

$$where\ Tx=\frac{t^3-t}{12}=\frac{(2)^3-2}{12}+\frac{(2)^3-2}{12}=0.5+0.5=1.0$$

1100) Following data is given, Find Rank correlation

X	Y	d^2
1	1	0
2	5	9
3	6	9
4	4	0
5	5	0
6	3	9

		$\sum d^2 = 27$

Answer

$$r = 1 - \frac{6\left(\Sigma d^2 + Tx + Ty\right)}{n(n^2 - 1)}$$

$$1 - \frac{6(27 + 0 + 0.5)}{6(6^2 - 1)} = 0.2271$$

Where $Ty = \frac{t^3 - t}{12} = Ty = 0.5$

1101) Following data is given, Find Rank correlation

X	Y	d^2
1	1	0
2	5	9
3	4	1
4	6	4
5	5	0
6	3	9
		$\sum d^2 = 23$

Answer

$$r = 1 - \frac{6\left(\Sigma d^2 + Tx + Ty\right)}{n(n^2 - 1)}$$

$$= \quad 1 - \frac{6[23 + 0 + 0.5]}{6(36 - 1)} \qquad r = 0.32857$$

Where $Ty = \frac{t^3 - t}{12} = Ty = 0.5$

1102) Following data is given, Find Rank correlation

X	Y	d^2
1	2	1
2	1	1
3	7	16
4	5	1
5	4	1
6	6	0
7	8	1
8	3	25
		$\sum d^2 = 46$

Answer

$$r = 1 - \frac{6\left(\Sigma d^2\right)}{n(n^2 - 1)}$$

$$1 - \frac{6(46)}{8(8^2 - 1)} = 0.4524$$

1103) Co –efficient of rank of correlation of the following data is?

x= 68, 20, 75, 86, 45

y= 94, 28, 62, 63, 65

a) 0.055	b) -1.00
c) 0.508	**d) 0.2**

1104) r =? $\sum XY = 28,480$ $\sum x=360$ $\sum X^2=20,400$

$\sum Y^2=43,175$ n = 8 $\bar{x}=45$ $\bar{y}=71.125$

(Hint: $\bar{x}$, $\bar{y}$ Given multiply with n to find $\sum x$, $\sum y$)

a) 0.8599	b) 0.8929
c) 0.6725	d) 0.9878

1105) If y on x is y=16-1.5x, then every increase in x, y would be

a) Increased by 16	b) Increased by 16-1.5
c) Decreased by 1.5	d) None of these

1106) r=0.8 means that

a) 80% variation in y due to x	b) 20% variation in y due to x
c) 64% variation in y due to x	d) 36% variation in y due to x

1107) Following regression lines are given

Regression line x on y (x+2y=3)
Regression line y on x (x+4y=10)
Find both slopes

a) b_{xy}= -2 and b_{yx}= -1/4	b) b_{xy}= -2 and b_{yx}=-4
c) b_{xy}= 2 and b_{yx}=4	d) none of these

1108) Find r from the following regression lines

Regression line x on y (x+2y=3)
Regression line y on x (x+4y=10)

a) -0.7071	b) 0.707
c) 1	d) Impossible

1109) Following regression lines are given

Regression line x on y (x+2y=3)
Regression line y on x (x+4y=10)
Find r^2

a) 0.5	b) -0.5
c) 0.25	d) 1

1110) Following regression lines are given

Regression line x on y (x+2y=3)
Regression line y on x (x+4y=10)
Find explained variation

a) 50% in x due to y	b) -50% in y due to x

c) **50% in y due to x**	d) All of these

1111) Following regression lines are given

Regression line x on y (x+2y=3)
Regression line y on x (x+4y=10)
Find $\overline{X}$ *and* $\overline{Y}$

a) -4 and 3.5	b) 1 and 2
c) 2 and 4	d) Impossible to find in given data

1112) Regression line y=2+3x is given. You are required to find the change in y due to 1-unit increase in x

a) Y will increase 3 units	b) Y will increase 5 units
c) Y will increase 2 units	d) Y will decrease 3 units

1113) (variation in y due to x) $r^2 = 55\ \%$ find r if both b_{xy} *and* b_{yx} are negative

Answer

$r = \pm\sqrt{0.55} = -0.7416 = -74.16\%$ **(as both regression coefficients are negative**

1114) $r^2 = 0.83$ find r if both $b = 3.24$ *find* d

Answer

$r^2 = b \times d$

0.83=3.24xd

d=0.2562

1115) Find spaceman's rank correlation between two innings from the data given below:

Batsman	**A**	**B**	**C**	**D**	**E**	**F**	**G**
Innings 1	29	32	45	19	65	0	7
Innings 2	30	36	62	25	20	6	3

a) -0.61 b) 0.61 c) 0.55 d) -0.55

1116) $\sum(x-\bar{x})(y-\bar{y}) = 13$ $s_x^2 = 2$ $s_y^2 = 5.2$ r = 0.8 n=??

a) 3 b) 4 c) **5** d) 6

$$r = \frac{\Sigma(X-\overline{X})(Y-\overline{Y})}{\sqrt{\Sigma(X-\overline{X})^2}\sqrt{\Sigma(Y-\overline{Y})^2}}$$

$$0.8 = \frac{13}{\sqrt{\Sigma(X-\overline{X})^2}\sqrt{\Sigma(Y-\overline{Y})^2}}$$

$$\sqrt{\Sigma(X-\overline{X})^2}\sqrt{\Sigma(Y-\overline{Y})^2} = 0.8 \times 13 = 10.4$$

$$\Sigma(X-\overline{X})^2\Sigma(Y-\overline{Y})^2 = (10.4)^2 = 108.16$$

1117) Find the coefficient of correlation between x and y if:

Regression line of x on y is: 5x – 4y + 2 = 0

Regression line of y on x is: x – 5y + 3 = 0

a) 0.4	b) 0.6
c) 0.8	d) 1.0

1118) $\Sigma(X-\overline{X})(Y-\overline{Y})=956, \quad Sx=21.5, \quad Sy=10.61, \quad r=0.524 \quad find \quad n=?$

a) 8	b) 7
c) 9	d) 10

Answer

$$r=\frac{\Sigma(X-\overline{X})(Y-\overline{Y})}{n.Sx.Sy}$$

$$0.524=\frac{956}{n\times 21.5\times 10.61} \qquad n = 8$$

1119) If r^2 is positive, then r will be?

a) Positive	b) Negative
c) May be positive or negative	d) None of these

1120) Following equations are given

X+2Y+5=0

X+3Y−10=0

Find coefficient of correlation

b) 0.8165 b) **– 0.8165** c) 1.2247 d) -1.2247

1121) From following information given, find coefficient of correlation.

X	3	5	8	11	9
Y	1	0	4	0	1

a. **r= 0.038** b. r= 0.082 c. r=0.018 d. r= none of these

1122) Which of the following is incorrect about Co efficient of determination?

a. Range from 0 to +1 b. square of "r"

c. **Range from 0 to -1** d. explains the contribution of independent in dependent

1123) Which of the following is correct about Co efficient of determination?

a. Range from 0 to -1b. square root of "r"

c. **Range from 0 to +1** d. All of these

1124) If two variables are independent, then correlation will be:

a) **0** b) 1 c) -1 d) Perfect

1125) If bxy = 1.44 r = 0.6 fixed byx = ?

a) 0.11 b) 0.15 c) 0.25 d) 0.30

1126) A computer operator calculated the correlation coefficient from 7 pairs (x, y) and obtained the following sums:

$\sum x = 476,\ \sum y = 483,\ \sum xy = 32{,}864\quad \sum x^2 = 32{,}396\quad \sum y^2 = 33{,}359$

It was later discovered at the time of checking that he had copied down two pairs as (70, 72) and (71, 69) while the correct pairs were (60, 70) and (70, 65). Obtain correct value of correlation coefficient.

(a) r = - 0.24 b) r = 0.32 c.) r = -0.52 d. None of these

1127) $n = 10,\quad \Sigma(X - \overline{X})^2 = 180$ variance of u=3x+10 would be

Answer

First we will find variance of x

$$S^2 = \frac{\Sigma(X - \overline{X})^2}{n} = \frac{180}{10} = 18$$

Variance is affected by change of scale but not by change of origin

Variance of U= $(3)^2$(variance of X) = 9(18)=162

a) Same	**b) 162**
c) 64	d) 172

1128) If Variances of X & Y are 16 and 25. And X has 49% influences in the variation of Y then find out the slope of "X"

a. 0.87 b. 1.56 c. **0.56** d. 0.82

Answer

$$r^2 = \frac{S_{xy}^{\ 2}}{S_x^{\ 2} \times S_y^{\ 2}}$$

$$0.49 = \frac{S_{xy}^{\ 2}}{16 \times 25}$$

$$S_{xy}^{\ 2} = 0.49 \times 16 \times 25 = 196$$

$$S_{xy} = \sqrt{196} = 14$$

Now slope of line x on y= $b_{xy} = \frac{S_{xy}}{S_x^{\ 2}} = \frac{14}{25} = 0.56$

Data for following two questions

Below is the list of averages of batsmen (rounded to whole number) in ODI and Test matches.

Batsman	A	B	C	D	E	F	G	H	I	J
ODI Average	33	42	31	46	36	35	24	39	40	45
Test Average	44	50	38	42	31	44	31	35	41	49

1129) Find the coefficient of correlation for averages in ODI and Test matches

a) 0.601	**b) 0.605**
c) 0.425	d) 0.1125

1130) Interpret your result.

a) Strong correlation	b) Average
c) Weak	**d) Above average**

1131) If r= 0.5624 and bxy = 2.523 then find byx

Answer

$$r = \sqrt{b_{xy} \times b_{yx}}$$

$$0.5624 = \sqrt{2.523 \times b_{yx}}$$

byx = 0.1253

1132) There is 25% deviation in y due to x. coefficient of correlation is?

a) +0.5 b) -0.5 c) both a & b d) None

Answer

Correlation could be both $\pm$ 0.5 so correct option should be c.

1133) If $r^2 = 0.25$ then what is its meaning?

a) It means correlation is 25%
b) It means correlation is 5%
c) It means correlation is 50%
d) It means correlation is 75%

1134) Correlation b/w Car weight & reliability r = - 0.30

Correlation b/w Car weight & maintenance cost r = +0.7

Which of the following statements are true?

a) Heavier cars tend to be less reliable
b) Heavier cars tend to cost more to maintain
c) Car weight is related more strongly to reliability than to maintenance cost
d) **Both (a) and (b)**

1135) Correlation b/w Car weight & reliability r = 0.30

Correlation b/w Car weight & maintenance cost r = 0.7

Which of the following statements are true?

a) Heavier cars tend to be less reliable
b) **Heavier cars tend to cost more to maintain**
c) Car weight is related more strongly to reliability than to maintenance cost

d) Both (a) and (b)

1136) $\sum x = 172$ $\sum y = 613$ $\sum x^2 = 4119$ $\sum xy = 12{,}865$

n = 10 byx =?

Answer

$byx = \frac{n\sum xy - (\sum x)(\sum y)}{n\sum x^2 - (\sum x)^2} = \frac{10(12{,}865) - (172)(613)}{10(4119 - (172)^2} = 2$

1137) $\sum X = 475$ $\sum Y = 326$ $\sum X^2 = 4119$ $\sum Y^2 = 12{,}865$

n = 10 $\sum XY$=?

Answer

1138) In a scatter diagram, if the points follow closely a straight line of positive slope, the two variables are said to have:

a) No correlation	b) Perfect correlation
c) High positive correlation	d) High negative correlation

1139) Which of the following correct about scatter diagram?

Answer

a) Perfect correlation (if all the points lie on the line of regression)
b) Perfect –ve correlation (if all the points lie on the line of regression sloping downward)
c) +ve correlation (if scatter diagram shows increasing trend on right side)
d) -ve correlation (if scatter diagram shows decreasing trend on right side)

1140) How many of the following statement(s) is(are) correct?

1. correlation can be determined b/w more than 2 variables
2. More than 2 variables can be drawn on scatter diagram
3. If plotted dots are close to the regression line than it means strong correlation

a) only 1
b) (1 and 2)
c) only 3
d) All of these

Answer

Only statement 3 is correct

1141) Properties of scatter diagram

a) Graphical representation of relation b/w independent and dependent variables
b) It is only used for 2 variables
c) Independent variable is usually x
d) Dependent variable is usually y

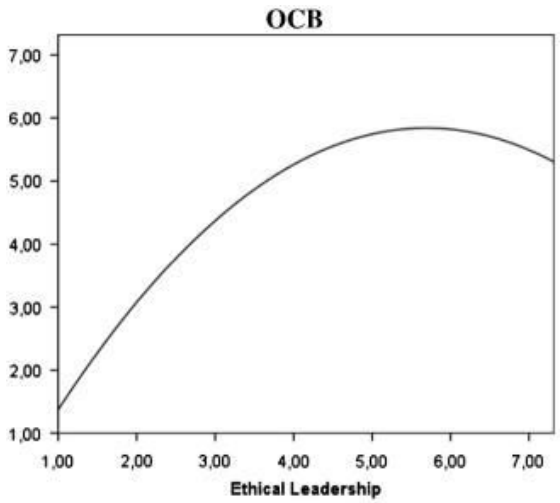
1142) If r range from +0.9 to +1.00 then which of the following is correct

a) there is strong correlation b) there is high correlation
c) there is perfect correlation d) None of these

Answer

Strong correlation

1143) Which of the following is true about the diagram?



a) Perfect (100%) positive correlation
b) Perfect (100%) Negative correlation
c) positive correlation
d) Negative correlation

Remarks

It is a curvilinear correlation in reality

1144) If all points lie on scatter line of least square, then error will be

a) 1	b) e
c) standard error	**d) 0**

1145) $\Sigma(X-\overline{X})^2=50,\quad \Sigma(Y-\overline{Y})^2=106,\quad \Sigma(Y-\overline{Y})(X-\overline{X})=-67$

Find coefficient of correlation

a) 0.9203	b) **–0.9203**
c) –0.2903	d) 0.2903

1146) $\overline{X}=6,\ \overline{Y}=10,\ \Sigma XY=293,\ \Sigma X^2=266,\ n=6,\ \Sigma Y^2=706$

Find coefficient of correlation

a) 0.9203	**b) –0.9203**
c) –0.2903	d) 0.2903

1147) $\overline{X}=6,\ \overline{Y}=10,\ \Sigma XY=293,\ \Sigma X^2=266,\ n=6,\ \Sigma Y^2=706$

Find coefficient of correlation

a) 0.9203	**b) –0.9203**
c) –0.2903	d) 0.2903

1148) Y = 1.96x + 15 (y on x), X = 0.45y + 7.16 (X on Y). Find Co-efficient of determination.

a) 0.94	b) 0.9983
c) **0.88**	d) 0.5569

1149) If the Co-efficient of determination is equal to 1, then correlation Co-efficient is:

a) Must be equal to 1	b) Any value between – 1 and + 1
c) **Either – 1 or + 1**	d) Must be – 1

1150) In regression, the sum of the residuals is always:

a) **0**	b) >0
c) <0	d) All of these

1151) In a simple linear regression equation, the number of independent variable is/are:

a) **1**	b) 2
c) 3	d) All of these

1152) The manager of an educational computer facility would like to develop a model to predict the number of device calls per annum for interactive terminals based upon the age of the terminal. A sample of 10 terminals was selected. The data follows

Terminal	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
No. of service class (x)	3	4	3	5	5	7	8	10	10	12
Age (years) (y)	1	1	2	2	3	3	4	4	5	5

a) **0.7 and 0.092**	b) 0.7 and 0.91
c) 0.9 and 0.7	d) 0.7 and 1.7

1153) In a study of relationship between family income and the amount of a firm's product consumed by the family, a sample of 15 families yielded the following results.

n=15, $\sum x=80$, $\bar{y} = 4 = 79$, $\sum xy=400$, $\sum x^2=600$, $\sum y^2 = \sum x^2/2$ find coefficient of determination.

a) 0.784	b) **0.6156**
c) – 0.784	d) – 0.6156

1154) A university administrator studied the relationship between the cost of operating an academic department and the total student-hours of teaching and supervision undertaken in the department for 11 departments for the most recent academic year. The results are summarized below:

X= no. of student-hours (in thousands)

Y= cost (Rs in thousands)

$n = 11,\ n\Sigma X^2 - (\Sigma X)^2 = 16{,}810{,}000 \quad \Sigma X = 7{,}040 \quad n\Sigma Y^2 - (\Sigma Y)^2 = 8{,}910{,}000 \quad \Sigma Y = 4{,}235$

$n\Sigma XY - (\Sigma X)(\Sigma Y) = 924550$. The two regression coefficients are

a) **0.104 and 0.055**	b) 1.04, 0.75
c) 0.89, 0.55	d) 0.55, -0.87

1155) For the following table, the correlation between x and y and the correlation co-efficient between x and z are:

x	2	4	6	8	10
y	10	15	20	25	30
Z	40	36	32	28	24

Select one:

a) $r_{xy} = 1$ $r_{xz} = -1$	b) r_{xy} & r_{xy} are perfectively correlated
c) r_{xy} is perfect positive &	d) **All of these**

r_{xz} is perfectively negative	

1156) The formula of regression coefficient of line X on Y.

a) $\frac{\Sigma(X-\overline{X})\Sigma(Y-\overline{Y})}{\Sigma(Y-\overline{Y})^2}$	b) $\frac{S_{xy}}{S^2{}_y}$
c) $\frac{n\Sigma XY-(\Sigma X)(\Sigma Y)}{n\Sigma Y^2-(\Sigma Y)^2}$	d) **All of these**

1157) In the regression line of X on Y, which of the following is/are co

a) $\Sigma X=\Sigma\hat{X}$	b) $\overline{X}=\overline{\hat{X}}$
c) $\Sigma X-\Sigma\hat{X}=0$	d) **All of the above**

1158) Given:

$\Sigma(X-\overline{X})^2=170$, $\Sigma(Y-\overline{Y})^2=140$ and $\Sigma(X-\overline{X})\Sigma(Y-\overline{Y})=92$

The coefficient of correlation and coefficient of determination are respectively:

a) 0.3564, 0.8	b) **0.597, 0.3564**
c) 0.9, 0.3	d) 0.8, 0.64

1159) The value of r^2 for a particular situation is 0.36. What is the coefficient of correlation?

a) 0.6	b) – 0.6
c) 0.06	d) **±0.6**

1160) The data in the following table gives the annual percentage increase in sales revenue of Chilli Milli in response to the increase in advertising expenditure:

Annual percentage increase in advertising expenditure	**Annual percentage increase in sales revenue**
1	1
3	2
4	4
6	4
8	5
9	7
11	8
14	9

What is the coefficient of correlation?

a) **0.9770**	b) 0.9545
c) 0.0455	d) 0.0230

1161) *If* $\hat{y} = 20 - 3x$ *and* $\hat{x} = 4 - 0.25y$ *then* $r_{xy} = ?$

a) 0.75	b) – 0.75
c) **– 0.87**	d) 0.87

1162) If two variables x and y have perfect positive correlation and b_{xy}=2/3 then b_{yx} is?

a) – 3/2	b) **3/2**
c) –2/3	d) 2/3

1163) The correlation between daily travelling and number of marriages is:

a) Positive	b) Negative
c) No correlation	d) **Zero Correlation**

1164) A biologist assumes that there is a linear relationship between amount of fertilizer supplied to tomato plants and the subsequent yield of tomatoes obtained.

Eight tomato plants of the same variety were selected at random and treated weekly with a solution in which x grams of fertilizer was dissolved in a fixed quantity of water. The yield, y kilograms of tomatoes was recorded.

PLANT	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
x	1	1.5	2	2.5	3	3.5	4	4.5
y	3.9	4.4	5.8	6.6	7	7.1	7.3	7.7

Estimate the yield of a plant treated weekly with 3.2 grams of fertilizer

a) **6.7**	b) 7.6
c) 3.9	d) 8.2

1165) The data in the following Table gives the Market Share of product Television Advertising Expenditure:

X = Advertising Expenditure	15	17	13	14	16
Y = Market Share	23	25	21	24	26

Estimate Market Share when advertising Expenditure is 20:

a) 28	b) **28.8**
c) 26.5	d) 25.6

1166) If r_{xy} = 0.9 then r_{uv} will be=?, if u=-2x, v= 7-3y

a) **0.9**	b) –0.9
c) –1.8	d) 1.8

1167) If b_{yx} = 1.5 then b_{xy} will be:

a) Less than -1	b) **Less than 1**
c) Both a & b	d) None of these

1168) Y = 45 – 3X is the regression line of y on x. What number of units is expected to increase in 'Y' if 'X' is decreased by Two units?

a) **6**	b) 7
c) 8	d) 9

1169) Compute correlation coefficient from the following results

$\overline{X} = 50, \quad S^2{}_x = 8.41, \quad S^2{}_y = 2.25 \quad S_{xy} = 3.96$

a) 0.94	b) 0.95
c) **0.91**	d) 0.96

1170) If the Co-efficient of determination is equal to 1, then correlation Co-efficient is:

a) Must be equal to one	b) **Either – 1 or + 1**
c) Any value between – 1 and + 1	d) Must be – 1

1171) A regression analysis between sales (in Rs. 1,000) and advertising (in Rs. 1,000) resulted in the following least squares line Y = 80 + 5x, this implies that:

a) **As advertising increases by Rs. 1,000, sales increases by Rs. 5,000**	b) As advertising increases by Rs. 1,000, sales increases by Rs. 80,000
c) Advertising increases by Rs. 5, sale increases by Rs. 80	d) None of these

1172) The unknown value of dependent variable can be estimated on the basis of given value of independent variable by using:

a) Scatter Diagram	b) Least square regression line
c) **Both a and b**	d) None of these

1173) The two regression lines obtained from a set of data 5X+3Y=15 and 4X+2Y=10.Find mean values of X and Y

a) **0,5**	b) 3,2
c) 4,3	d) 2,5

1174) The regression line Y=5+2X.Which of the following is true?

a) Rate of change in X per unit of Y=5	b) Rate of change in X per unit of Y=2
c) **Rate of change in Y per unit of X=2**	d) Rate of change in Y per unit of X=5

1175) If the two variables have perfect positive correlation, then

a) $b_{yx} = b_{xy}$	b) $b_{yx} > b_{xy}$
c) $b_{yx} < b_{xy}$	d) $\mathbf{b_{yx} = 1/b_{xy}}$

1176) The following data relate to age of employees in an organization and number of days they reported sick during a period of six months:

Age in years	21	31	33	36	41	47	53	56	59	63
No. of Sick days	2	3	1	4	5	7	6	5	9	8

What is the coefficient of correlation?

a) 0.129	b) 0.663
c) **0.871**	d) 0.187

1177) In the following table are recorded data showing the test scores made by salesman on an intelligence test and their weekly sales:

Salesman	I	II	III	IV	V	VI	VII	VIII	IX	X

Test score (x)	45	75	55	65	85	55	95	45	65	65
Weekly sales (y)	3.5	7.0	5.5	6.0	5.5	3.0	6.5	4.0	5.5	4.0

The most probable weekly sales if a salesman makes a score of 80 is:

a) **5.95**	b) 3.65
c) 2.97	d) 7.6

1178) The square root of the co efficient of determination gives us the exact:

a) **Coefficient of correlation**	b) Absolute deviation
c) Variance	d) None of these

1179) Given the sum of the squares of the differences of the first and second ranks for 10 residents of C.A, AFC-3 comes to be 218. The rank correlation is:

a) 0.23	b) **– 0.32**
c) – 0.23	d) 0.32

1180) For 9 observations on supply (x) and price (y), following data was obtained

$$\Sigma(Y-127)=12,\quad \Sigma(Y-127)^2=1006\quad \Sigma(X-90)=-25,\quad \Sigma(X-90)^2=301\quad \Sigma(X-90)(Y-127)=469$$

The estimated value of supply when the price is Rs 125/- comes to be:

e) **87.79**	f) 78.79
g) 79.87	h) 79.78

1181) if the coefficient of correlation between x and y is -0.75 the SD of y is 5 and $\Sigma(x-\bar{x})(y-\bar{y})=-15$. The value of SD of x would be:

e) **4**	f) 16
g) 5	h) 6

1182) For $r^2 = 0.6$ the explained variation in dependent variable due to independent variable is:

e) **0.6**	f) 0.4
g) 0.36	h) 0.16

1183) If the regression line is a perfect estimator of the dependent variable then which of the following is false.

e) Co – efficient of determination is one	f) Co – efficient of correlation is zero
g) All the data points fall on regression line	h) None of these

Data for following 5 questions

In an effort to reduce crimes, the Superintendent Police of Far Town has requested the Inspector General to increase police strength in his town. He has gathered information from other towns of the city and submitted the following details to support his request:

Towns	Bee	Cee	Dee	Gee	Jay	Kay	Pee	Tee
Police Strength	150	170	250	270	170	120	110	220
No. of crimes/month	170	110	50	40	90	210	188	60

1184) Determine the regression equation. (Assuming that ratio of police strength to total number of people is same in all towns)

a) $y = 308.62 - 1.0623x$	b) $y = 308.62 - 0.0623x$
c) $y = 310.62 - 1.0623x$	d) $y = 308.62 - 1.623x$

1185) Determine the coefficient of correlation

a) 0.94	**b) – 0.94**
c) 0.93	d) – 0.93

1186) Interpret the results of co-efficient of correlation

a) Strong direct relation between strength of police and crime rate.	**b) Strong inverse relation between strength of police and crime rate.**
c) Average direct relation between strength of police and crime rate.	d) Average inverse relation between strength of police and crime rate.

1187) Determine the coefficient of determination

a) 88%	b) –88%
c) 86%	d) –86%

1188) Using the above regression equation, determine whether police of Jay town is more efficient than police of Pee town.

a) Jay town police is more efficient than Pee town police	b) Pee town police is more efficient than Jay town police
c) Both are same in performance	d) None of these

Answer

X	Y	X^2	Y^2	XY
150	170	22,500	28,900	25,500
170	110	28,900	12,100	28,700
250	50	62,500	2,500	12,500
270	40	72,900	1,600	10,800
170	90	28,900	8,100	15,300
120	210	14,400	44,100	25,200
110	188	12,100	35,344	20,680
220	60	48,400	3,600	13,200
$\sum X = 1,460$	$\sum Y = 918$	$\sum X^2 = 290,600$	$\sum Y^2 = 136,244$	$\sum XY = 141,880$

$\bar{x} = \frac{1460}{8} = 182.5$ $\bar{y} = \frac{918}{8} = 114.75$

$$b = \frac{n\sum xy - \sum x \sum y}{n\sum x^2 - \left(\sum x\right)^2}$$

$$b = \frac{8(141,880) - (1,460)(918)}{8(290,600) - (1,460)^2}$$

$$b = \frac{1,135,040 - 1,340,280}{2,324,800 - 2,131,600} = \frac{-205,240}{193,200} = -1.0623$$

$a = \bar{y} - b\bar{x}$
$= 114.75 - (-1.0623)(182.5)$
$= 114.75 + 193.87$
$= 308.62$

$y = a + bx$
$y = 308.62 - 1.0623x$

From the above calculated regression equation we can say that for each policeman added, crime goes down by almost one per month.

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{\left(n\sum x^2 - \left(\sum x\right)^2\right)\left(n\sum y^2 - \left(\sum y\right)^2\right)}}$$

$$r = \frac{8(141,480) - (1,460)(918)}{\sqrt{\left(8(290,600) - (1,460)^2\right)\left(8(136,244) - (918)^2\right)}}$$

$$r = \frac{1,135,040 - 1,340,280}{\sqrt{(2,324,800 - 2,131,600)(1,089,952 - 842,724)}}$$

$$r = \frac{-205,240}{\sqrt{(193,200)(247,228)}} = \frac{-205,240}{\sqrt{47,764,449,600}} = \frac{-205,240}{218,550.79} = -0.9391$$

The above calculated coefficient of correlation indicates that there is strong inverse relationship between strength of police and rate of crime. We can say that as the number of policemen increases, the crime decreases.

Coefficient of determination = $= (-0.9391)^2 = 0.88 = 88\%$

88% variation in the rate of crime is explained by proportionate strength of police and remaining 12% by other factors.

Town	Estimated crimes as per equation determined in (a)	Actual Crimes	%age of actual to estimated crimes
Jay	308.62 − 1.0623(170) = 128.03	90	70.30%
Pee	308.62 − 1.0623(110) = 191.77	188	98.03%

Hence Jay town police is more efficient than the police of Pee town, provided other factors in both the towns remain constant.

Chapter 13,14 & 15: Sampling, Estimation & Hypothesis

1189) What would change in standard error, if the sample size is decreased from 75 to 40?

Answer

$$SE = \frac{1}{\sqrt{40}} = 0.1581$$

$$SE = \frac{1}{\sqrt{75}} = 0.11547$$

$$change = \frac{0.1581 - 0.11547}{0.11547} = 36.93\%$$

a. Increase by 36.93% b. increase by 29.73% c. Increase by 32.81% d. Increase by 29.73%

1190) A sample of 50 DVD has a population mean is 720. The sample mean is 700, find the s.d if level of significance is 1%.

$$Z = \frac{X - \mu}{\sigma / \sqrt{n}}$$

$$2.575 = \frac{700 - 720}{\sigma / \sqrt{50}}$$

$$\sigma = 54.92$$

a. **+54.92** b. -54.92 c. both d. None of these

1191) level of significance is also referred as

a. **probability of Type I error** b. Probability of type II Error

c. Probability of acceptance area d. probability of other than rejection area

1192) Define hypothesis

Answer

An assumption about certain characteristics of a population. If it specifies values for every parameter of a population, it is called a simple hypothesis; if not, a composite hypothesis. If it attempts to nullify the difference between two sample means (by suggesting that the difference is of no statistical significance), it is called a null hypothesis.

1193) Define inferential statistics

Answer

It makes inferences about populations using data drawn from the population. Instead of using the entire population to gather the data, the statistician will collect a sample or samples from the millions of residents and make inferences about the entire population using the sample.

1194) Which of the following is used to draw conclusion about population on the basis of sample

a) Null hypothesis	b) Alternative hypothesis
c) **Inferential statistics**	d) Normal distribution

1195) If mean is at center and frequency is distributed evenly throughout data, then data is

a) Positively skewed	b) Negatively skewed
c) **Normally distributed**	d) Balanced

1196) If peak of a histogram is at center and frequency is distributed evenly throughout data, then data is

a) Positively skewed	b) Negatively skewed
c) **Normally distributed**	d) Balanced

1197) If the peak of the histogram is in the middle and the frequencies on either side are similar to each other, then distribution is said to be

a) **Normal**	b) Balanced
c) Binomial	d) Symmetrical

1198) "Recent bomb blasts in capital cities will decrease 10% votes of PMLN"

The above statement expresses

a. **null hypothesis** b. inferential statistics. c. hypothesis testing d. None of these

1199) Which distribution is more accurate while testing the difference of proportions in larger samples

a. **z-test** b. student's distribution c. chi-square d. probability distribution

1200) A business researcher wanted to evaluate the eating habits of England residents from a rural site, such mothers which have less than 3 babies. The sampling used for this purpose is called

a. stratified b. **cluster** c. systematic d. Quota Sampling

1201) A pharmaceutical company survey in rural area and brief their teams to collect the sample by interviews from only those mothers who have less than 3 babies. The sampling used for this purpose is called

1202) a. stratified b. **cluster** c. systematic d. Quota Sampling

1203) "the machine is working properly with the same average output level as given is last year"

The above statement represents:

a. statistical hypotheses b. **null hypothesis** c. alternate hypothesis d. b or c

1204) A survey is made in Karachi on 100,000 people regarding the daily consumption level of water:

a) 100,000 people is sample and Karachi city is population

1205) A company has 250 employees and issue 200 forms to its employees to give feedback on its products but only 180 employees gave feedback. What is sample size

a) 250	**b) 200**
c) 180	d) None of these

1206) A company has 250 employees and issue 200 forms to its employees to share the views about its new remuneration package, only 150 employees return forms and 80 support the package. What is sample size of the company?

a) 80	**b) 200**
c) 150	d) All employees

1207) A sample size is reduced from 75 to 40, standard error word:

a) Decrease b) increase c) Remain same d) None

1208) Degree of freedom exist in

a) t-test b) Goodness
c) **Both A and B** b) None of these

1209) T-test depends on which of the following:

a) Population size b) **Sample size**
c) Population variance b) Population standard deviation

1210) If a = 0.05 what will be the value of z from table in a two tail test

a) 2.33 b) 1.645 c) 1.96 d) 2.58

1211) What will be the effect of change in sample size from 75 to 40 in standard error.

a) increased by 10.5% b) decreased by 36.93%
c) increased by 36.93% d) decreased by 38.12%

1212) A sample has been taken from normally distributed population and sample mean has been found to be 62. The upper confidence limit of 95% for population mean is 84.60, population variance is known to be 2401. What is sample size

a) **18**	b) 20
c) 25	d) 17

Answer

Population SD= $\sigma = \sqrt{2401} = 49$

$$Z = \frac{\bar{x} - \mu}{\sigma / \sqrt{n}}$$

$$1.96 = \frac{62 - 84.6}{49 / \sqrt{n}}$$

n=18

1213) In a Rice mill the bags of rice has mean weight of 5.05 kg and standard deviation of 0.02 kg. if a bag is selected at random then find the probability that its weight is below 5 kg

a) 0.62	b) **0.0062**
c) 0.4938	d) None of these

Answer

$$Z = \frac{x - \mu}{\sigma}$$

$$Z = \frac{5.0 - 5.05}{0.02} = -2.5$$

Area from table for Z=-2.5 is 0.4938

So required area is 0.5-0.4938=0.0062

1214) A significance level of 0.01 means that?

a) **1% level of increasing rejection of null Hypothesis**
b) 1% probability of incorrectly acceptance of null Hypothesis
c) 99% confidence that null Hypothesis is false
d) None of these

1215) A significance level of 0.05 means:

a) there is no more than 95% chance that the null hypothesis is false.
b) If null hypothesis is rejected, there is maximum chance of 5% that the decision may be wrong.
c) if the null hypothesis is accepted, there is atleast 5% chance that the decision may be wrong.
d) None of these

1216) The probability of rejecting the true hypothesis is

a) Type 1 error	b) Level of significance
c) **Both a and b**	d) None of these

1217) A survey is made in Karachi on 100,000 people regarding the daily consumption level of water:

a) 100,000 people is sample and Karachi city is population

Following data is relevant for 6 questions

A sociologist was researching the question. Is there any relationship between the level of education and social activities of an individual? She decided on three level of education attended or completed university, attended Off completed college, and attended or completed secondary school or less. Each individual kept a record of his or her social activities. The sociologist divided them into above-average frequency, average frequency and below-average frequency. These data are shown in table: α=0.05

Education	Above average	Below average	Average
University	10	10	20
College	30	50	80
Secondary school	*20*	60	120

1218) What is the name of this table?

a) Two way table	b) Frequency table
c) Stem and leaf table	d) **Contingency table**

1219) State null hypothesis

a) **Independent attributes**	b) Dependent attributes
c) Parallel attributes	d) None of these

1220) State alternative hypothesis

a) Independent attributes	b) **Dependent attributes**
c) Parallel attributes	d) None of these

1221) What is the tabulated value of test statistic?

a) 11.143	b) **9.488**
c) 1.96	d) 1.645

1222) What is the calculated value of test statistic?

a) **9.49**	b) 2.45
c) 1.35	d) 45

1223) Normal distribution is used when

a) Sample size is below 30	b) Sample size is above 30
c) SD of population is unknown	d) **None of these**

1224) If population standard deviation $\sigma = 12.5$ and value of n=70 then standard error of mean is?

Answer

$$\sigma_{\bar{X}} = \frac{\sigma}{\sqrt{n}} = \frac{12.5}{\sqrt{70}} = 1.494$$

1225) Which of the following test is used for μ

a) Z test	b) Goodness of fit test
c) T test	**d) Both a and c**

1226) A sample of size 16 yielded a mean of 10. The population mean is known to be 12.what is the expected value of sampling distribution of mean $\mu_{\bar{X}}$

a) 16	b) 10
c) **12**	d) Data is incomplete

Answer

As we know population mean = mean of sample means (expected value of sampling distribution of mean so mean of sample means (expected value of sampling distribution of mean=12

1227) A sample of size 3 is taken from population having 10 units with replacement if sample observations are 1,3,5 then what is standard error of mean

a) 1.63	b) 2.5
c) 1.22	d) **1.1547**

Answer

First we will find sample SD to be used as point estimate in place of σ(population SD)

$$\bar{X} = \frac{\Sigma X}{n} = \frac{1+3+5}{3} = \frac{9}{3} = 3$$

X	$(X-\bar{X})^2$
1	4
3	0
5	4

	8

$$s = \sqrt{\frac{\Sigma(X-\overline{X})^2}{n-1}} = \sqrt{\frac{8}{3-1}} = 2$$

Now standard error

$$S\tan dard\ error = \sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} = \frac{s}{\sqrt{n}} = \frac{2}{\sqrt{3}} = 1.1547$$

1228) Find the tabulated value of 97%confidence interval

a) 2.33	b) 2.58
c) **2.17**	d) 2.07

1229) Find the tabulated value of 92% confidence interval

a) 2.33	b) 2.58
c) **1.75**	d) 2.07

1230) Find the tabulated value of 88% confidence interval

a) 1.55	b) 1.56
c) 1.65	d) **1.555**

1231) With a sample of size 900, standard error is 3. What should be sample so that we could be 95% confident that population mean is within 4 units of sample mean

a) **1945**	b) 2000
c) 1804	d) 1250

Answer

First we will find population SD

$$S\tan dard\ error = \sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$$

$$3 = \frac{\sigma}{\sqrt{900}}$$

$$\sigma = 3 \times 30 = 90$$

Now sample size

$$n = \left(\frac{Z \times \sigma}{e}\right)^2 = \left(\frac{1.96 \times 90}{4}\right)^2 = 1944.81 = 1945$$

1232) You are given $\overline{X} = 80$, $\sigma = 7.2$, CI=95% n=50

Find 95% confidence interval of population mean

a) **78 -----82**	b) 79------81
c) 76-----84	d) 75-----85

1233) You are given following data

$$\Sigma X^2 = 1850, \quad \Sigma X = 160 \quad n = 16$$

Find standard error

a) 1.02	b) 4.08

c) 1.04	d) 5.33

Answer

First we will find sample SD to be used as point estimate in place of σ (population SD)

$$s = \sqrt{\frac{1}{n-1}\left(\Sigma X^2 - \frac{(\Sigma X)^2}{n}\right)} = \sqrt{\frac{1}{15-1}\left(1850 - \frac{(160)^2}{16}\right)} = 4.0825$$

Now standard error

$$S\tan dard\ error = \sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} = \frac{s}{\sqrt{n}} = \frac{4.0825}{\sqrt{16}} = 1.02062$$

1234) $\sum(x - \bar{x})^2 = 700$ n = 50

i) Find standard deviation

ii) Find standard error

Answer

i) S.D = $\sqrt{\frac{\sum(x-x)^2}{n}} = \sqrt{\frac{700}{50}} = 3.7417$

ii) S.E = $\frac{SD}{\sqrt{n}} = \frac{3.7417}{\sqrt{50}} = 0.52915$

1235) There are Total 10,000 car buyers in a city

Suzuki buyers = 2500 Corolla buyers = 2500

Liana = 2500 Honda = 2500

400 car buyers are selected, 100 from each category.

This is an example of

a) Simple random sampling	b) Systematic sampling
c) **Stratification**	d) Cluster sampling

1236) Sample size increase from 40 to 75 find change in standard error.

Answer

Let σ = 1

S.E = $\frac{\sigma}{\sqrt{n}} = \frac{1}{\sqrt{40}} = 0.1581$, S.E = $\frac{\sigma}{\sqrt{n}} = \frac{1}{\sqrt{75}} = 0.1154$

Change = 0.1581 – 0.1154 = 0.04264

% age change = $\frac{0.04264}{0.1581} = 26.97\%$

1237) Intelligence of students between two cities can be tested by which of the following

i) χ^2 - test ii) Z-test iii) t-test iv) none

Answer

χ^2 - test

1238) n = 300 male = 109

Find 95% confidence interval of male students in college

Answer

$P = p + z\sqrt{\frac{pq}{n}}$ $p = 0.3633$ $q = 0.6367$

$= \frac{109}{300} + 1.96\sqrt{\frac{0.3633 \times 0.6367}{300}}$

$= 0.3633 + 0.054$

$= 30.9\%$--------41.73%

1239) Properties of χ^2 distribution are?

a) Mean > Mode b) Mean = Mode
c) Mean < Mode d) None

Answer

As χ^2 distribution is positively skewed distribution so here Mean > Mode

1240) A medicine company claims that average alcohol in their medicine is 0.767 ml. In order to test the claim a sample of 45 units is selected having average alcohol content of 0.78mg and S.D = 0.02 test the claim at r = 0.05

i) Find calculates value
ii) Find critical value
iii) Whether Ho is accepted or rejected
iv) One tail test or two tail test

Answer

Ho $\mu \leq 0.767$mg

H1 $\mu > 0.767$ mg

$\alpha = 0.05$

$Z = \frac{\bar{x}-m}{6/\sqrt{n}} = \frac{0.78-0.767}{\frac{0.02}{\sqrt{45}}} = 4.36$

Calculated value of Z = 4.36

Critical value of z at $\alpha = 0.05$ is 1.645

Conclusion

We rejected Ho as calculated value fall in critical region.

1241) Continuity correction is used in which of the following?

a) Binomial b) hypergeometric c) Poisson d) Normal

Answer

Normal

1242) Yates correction is used in which of the following?

a) Binomial b) Normal c) Poisson d) chi-square

Answer

Chi-square

1243) Which of the following is not expected to be normally distributed?

a) Height of men with age 20 years	b) Age of students in a class
c) **Age of entire population in country**	d) Both b and c

1244) What are the properties of X^2

Answer

a) Positively skewed distribution
b) Ranges from 0 to +∞
c) Mean> mode
d) One sided test is conducted
e) Used to test variance of population and independence of attributes

1245) A college management wants to assess the intelligence of class students, for this purpose which of the following distribution will be used?

a) T-test	b) Z-test
c) **X^2 test**	d) Anova test

1246) To test similarity between two same or different variables which of the following test is used

a) Z-test	b) t-test
c) **X^2 test**	d) Z test and X^2 test

1247) T-test is used regarding

a) Population Mean	b) Sample mean
c) Population Standard deviation	d) **Sample Standard deviation**

1248) In a sample of 700 people in a city 313 are found men. You are required to construct a 95% confidence interval of all the men in a city.

Answer

$P = p + z\sqrt{\frac{pq}{n}}$ $\quad p = 313/700 = 0.4471$ $\quad q = 1-0.4471=0.6367$

$$= 0.4471 \pm 1.96\sqrt{\frac{0.4471 \times 0.6367}{700}}$$

1249) A finite population of size 324 have mean 18, a sample of size 25 is selected, find mean of sampling distribution

a) 25	b) 324
c) **18**	d) 3.6

1250) Given population mean 0.676 and standard deviation 0.06. A sample of 16 values is selected and average was found to be 0.70 test the hypothesis at α=5% you are required to find which of the following statement(s) is/are wrong

(i) Null hypothesis = $H_0 = 0.70$
(ii) Alternative hypothesis = $H_1 \neq 0.70$
(iii) Level of significance = 0.05
(iv) Calculated value of test statistic = 1.6
(v) Critical value from table is 1.96

a) (i) and (ii) only	b) (i), (ii) and (iii) only
c) All are correct	d) All are incorrect

1251) Given population mean 0.676 and standard deviation 0.06. A sample of 16 values is selected and average was found to be 0.70 test the hypothesis at α=5% you are required to find which of the following statement(s) is/are correct

(i) Null hypothesis = $H_0 = 0.676$
(ii) Alternative hypothesis = $H1 \neq 0.676$
(iii) Level of significance = 0.05
(iv) Calculated value of test statistic = 1.6
(v) Critical value from table is 1.96

a) (i) and (ii) only	b) (i), (ii) and (iii) only
c) All are correct	d) All are incorrect

1252) What is considered when choosing between z and t-distribution?

a) Sample size	b) Population size
c) Whether population variance is known and unknown	**d) Both sample size and Whether population variance is known and unknown**

1253) T- distribution is used when

a) Sample size is <30	b) Sample size is >30
c) Sample size is <30 & σ is unknown	d) Sample size is <30 σ & is known

1254) Sampling is used to test hypothesis about

a) Sample mean	**b) Population mean**
c) Sample standard deviation	d) None of these

1255) A distribution with histogram at the center and similar values before and after it, is called

a) Symmetric distribution	**b) Balanced distribution**
c) Binomial distribution	d) Normal distribution

1256) A pharmaceutical company claims that amount of alcohol in a particular drug is 0.706mg. a sample of size 38 is selected to test the claim and its mean = 0.705mg and standard deviation is 0.02mg. level of significance is 0.05. which of the following statement is/are correct?

Statement 1: calculated value of test statistics is 0.308

Statement 2: tabulated value is 1.96

Statement 3: claim is accepted

a) 1,2	b) 2,3
c) 1,3	**d) All are correct**

1257) Intelligence of students of two colleges can be compared by

a) Normal distribution	b) Sampling distribution
c) Chi-square distribution	d) T-distribution.

1258) A sample size is increased from 10 to 100 standard error is decreased by

a) 68.38%	b) 36.62%

c) 27.65%	d) None of these

1259) How many samples of size 3 can be drawn without replacement from a population of size 5?

a) 12	b) **10**
c) 15	d) 25

1260) Which sampling provides separate estimates for population mean for different groups and also an overall estimate?

a) Simple random sampling	b) Systematic sampling
c) **Stratified random sampling**	d) Judgement sampling

1261) The arithmetic mean of the upper and lower limits of the confidence interval for population

a) **Sample mean**	b) Population standard deviation
c) Population mean	d) Sample standard deviation

1262) If you want to test the claim that automobile is driven on the average more than 20,000 km per year. The null and alternative hypothesis will be:

a) $\mu = 20{,}000 \quad \mu \neq 20{,}000$	b) $\mu = 20{,}000 \quad \mu > 20{,}000$
c) $\mu > 20{,}000 \quad \mu \neq 20{,}000$	d) $\mu = 20{,}000 \quad \mu < 20{,}000$

1263) If it is known that the 95% confidence limits to population mean are 48.04 and 51.96, what is the value of the population variance when the sample size is 100?

a) 1	b) **100**
c) 10	d) Can't be determined

1264) The maximum speed limit on a busy road is 60 km/h. Congestion results in much slower actual speeds. A random sample of 57 vehicles gave an average speed of 23.2 km/h with a standard deviation of 0.3 km/h. What are the upper and lower limits of the confidence interval for the mean speed, given a confidence level of 95%?

a) **(23.12-----23.28)**	b) (22.12----21.28)
c) (20.12-----23.28)	d) (23.12----20.28)

1265) When population is heterogeneous, best suitable method for sampling is:

a) Cluster Sampling	b) Quota Sampling
c) **Stratified Sampling**	d) Systematic Sampling

1266) The process of making an interval based on sample observations containing unknown value of the population parameter with a known probability is called:

a) Point Estimation	b) **Interval Estimation**
c) Stratified Sampling	d) Random Sampling

1267) Cluster sampling is an example of:

a) Random sampling	b) **Probability Sampling**
c) Non Random Sampling	d) Non probability sampling

1268) In a binomial distribution

a) Mean =Variance	b) Mean < Variance
c) Mean >= Variance	d) **Mean > Variance**

1269) The standard deviation of a binomial distribution depends on:

a) Probability of success	b) No. of trials
c) Probability of failure	d) **All of the above**

1270) With a sample size of 900, the standard error is 3. What should be the sample size so that we could be 95% confident that the population mean is within 4 of the sample mean?

a) 90	b) **1945**
c) 1235	d) 1250

1271) If we take 1 person randomly from any group and then take 1 person after every 3 people in the list, then what kind of probability sampling is this?

a) **Systematic**	b) Stratified
c) Multiphase	d) Cluster

1272) A random sample of 100 units gave a mean of 74.8kg and S.D=8kg. find the upper limit of 95% confidence interval for population mean

a) 73.232	b) 76.368
c) 87.344	d) None of these

1273) The maximum speed limit on a busy road is 60 km/h. Congestion results in much slower actual speeds. A random sample of 57 vehicles gave an average speed of 23.2 km/h with a standard deviation of 0.3 km/h. What are the upper and lower limits of the confidence interval for the mean speed, given a confidence level of 95%?

a) **(23.12-----23.28)**	b) (22.12-----21.28)
c) (20.12-----23.28)	d) (23.12-----20.28)

1274) Definition of cluster sampling, quota sampling & systematic sampling

Answer
Read study text chapter 17

1275) Cluster sampling is an example of:

a) Random sampling	b) Non Random Sampling
c) **Probability Sampling**	d) Non probability sampling

1276) Confidence interval for estimating population mean when population SD is unknown and n<30 is?

a) $\overline{X} \pm Z_{\alpha/2}\left(\frac{\sigma}{\sqrt{n}}\right)$	b) $\overline{X} \pm t_{\alpha/2(n-1)}\left(\frac{\sigma}{\sqrt{n}}\right)$
c) $\overline{X} \pm Z_{\alpha/2}\left(\frac{S}{\sqrt{n}}\right)$	d) $\overline{X} \pm t_{\alpha/2(n-1)}\left(\frac{s}{\sqrt{n}}\right)$

1277) With a sample size of 900, the standard error is 3. What should be the sample size so that we could be 95% confident that the population mean is within 4 of the sample mean?

a) 90	b) 2
c) 1945	d) None of these

1278) A sample of 4 observations 2, 4, 6, 8 is drawn from a population. What is the standard error?

a) 1.12	b) 1.29
c) 2.236	d) 1.25

1279) Which of the following is continuous distribution?

a) Z-distribution	b) T-distribution
c) Chi-square distribution	d) **All of these**

1280) The probability of rejecting a True hypothesis:

a) Level of significance	b) Level of confidence
c) Type-I error	d) **Both (a) and (c)**

1281) With a sample size of 900, the standard error is 3. What should be the sample size so that we could be 95% confident that the population mean is within 4 of the sample mean?

a) 90	b) 20
c) **1945**	d) None of these

1282) Formulate null and alternate hypothesis from the statement "On the average the children attend their school within 2 km of their homes in villages of Punjab:

a) $Ho: \mu = 2 \quad \& \quad Ha: \mu \neq 2$	b) $Ho: \mu \geq 2 \quad \& \quad Ha: \mu < 2$
c) $Ho: \mu \leq 2 \quad \& \quad Ha: \mu > 2$	d) $Ho: \mu < 2 \quad \& \quad Ha: \mu > 2$

1283) For a population consisting of heterogeneous groups, which sampling technique is more reliable?

a) Simple random sampling	b) Systematic Sampling
c) **Stratified Random Sampling**	d) None of these

1284) Chi Square distribution is used to test the hypothesis concerning:

a) The independence of two attributes	b) Goodness of Fit
c) Population mean for large sample size	d) **(a)and (b) but not (c)**

1285) From an industrial area 70 companies were selected at random and 45 of them were planning for expansion next year. Find 95% confidence limits for the proportion of companies planning for expansion:

a) 0.35, 0.57	b) 0.35, 0.75
c) **0.53, 0.75**	d) 0.35, 0.77

1286) Which sampling provides separate estimates for population mean for different groups and also an overall estimate?

a) Simple random sampling	b) Systematic sampling
c) **Stratified random sampling**	d) Judgement sampling

1287) A candidate for mayor in a large city believes that he appeals to at least 10 percent more of the women voters than the men voters. He hires the services of a poll-taking organization, and they find that 62 of 100 women interviewed support the candidate, and 69 of 150 men support him. At the 0.05 significance level, is the hypothesis accepted or rejected?

a) accept null hypothesis H_o	b) reject null hypothesis H_o
c) data is incomplete	d) none of these

Answer:

Let P1 denotes proportion of female voters, and

P2 denotes proportion of male voters

Null HypothesisH_0 : P_1-$P_2 \leq 0.1$ (less than or equal to 10% women voters than men)

Alternative hypothesis H_1 : P_1-P_2 > 0.1 (10% more women voters than male) (***CLAIM***)

Test statistics $$Z = \frac{p_1 - p_2 - (P_1 - P_2)}{\sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}} = \frac{(0.62 - 0.46) - (0.10)}{\sqrt{\frac{(0.62)(0.38)}{100} + \frac{(0.46)(0.54)}{150}}} = 0.95$$

The critical value of |Z| at 5% level of significance is 1.96 which is more than the calculated value of |Z| = 0.95, the null hypothesis is accepted and concluded that less than or equal to 10% female voters appeals as compared to men.

z = 0.95; accept the null hypothesis $H_o : p_1 - p_2 \leq 0.10$

1288) If you want to test the claim that automobile is driven on the average more than 20,000 km per year. The null and alternative hypothesis will be:

a) $\mu = 20{,}000 \quad \mu \neq 20{,}000$	b) $\mu > 20{,}000 \quad \mu \neq 20{,}000$
c) **$\mu = 20{,}000 \quad \mu > 20{,}000$**	d) $\mu = 20{,}000 \quad \mu < 20{,}000$

1289) If the hypothesis does not completely specify the value of all the parameters, then it is called:

a) **Composite Hypothesis**	b) Null Hypothesis
c) Alternative Hypothesis	d) Simple Hypothesis

1290) The probability of rejecting a True hypothesis:

a) Level of significance	b) Level of confidence
c) Type-I error	d) **Both (a) and (c)**

1291) If we increase the level of significance, the range of acceptance region is:

a) Increased	b) **Decreased**
c) No change	d) None of these

1292) A population has a mean of 75 and a standard deviation of 10. Samples of size 20 are chosen and the sample means recorded. What is the standard deviation of the sample means?

a) 10	b) 75
c) **2.24**	d) None of these

1293) Samples of size 81 are taken from a population of size 500 with mean 10 and standard deviation 3. Find the standard deviation of the sample means.

a) **0.31**	b) 0.33
c) 0.92	d) 3

1294) As population size increases, the value of the finite population standard deviation of the sample mean

a) Decreases	b) **Gets closer to the infinite population standard deviation of the sample mean**
c) Both a and b	d) Increases

1295) The admissions office at a college reported that this year's freshman class had an average SAT score of 1103 with a standard deviation of 95. What is the probability that a sample of 40 students from this year's freshman class had an average score greater than 1120?

a) **0.1292**	b) 0.3708
c) 0.6292	d) 0.8707

1296) 40% of the employees at a large corporation are female. A sample of 50 employees is taken and gender is recorded. What is the probability of a sample proportion of females in the sample between .35 and .45?

a) 0.0693	b) 0.2649
c) **0.5284**	d) 0.72

1297) If the expected value of a point estimator is equal to the population parameter, then the point estimator is known as consistent

a) True	b) **False**
c) Depends on circumstances	d) No discrete conclusion can be drawn

1298) A study of voting chose 663 registered voters at random shortly after an election. Of these, 72% said they had voted in the election. Election records show that only 56% of registered voters voted in the election. Which of the following statements is true about the boldface numbers?

a) 72% is a parameter and 56% is a statistic.	b) 72% is a sample and 56% is a population.
c) **56% is a parameter and 72% is a statistic.**	d) 72% and 56% both are parameter

1299) The Gallup Poll has decided to increase the size of its random sample of voters from about 1500 people to about 4000 people right before an election. The Poll is designed to estimate the proportion of voters who favor a new law banning smoking in public buildings. The effect of this increase is to

a) **Reduce the variability of the estimate.**	b) Have no effect since the population size is the same.
c) Increase the variability of the estimate.	d) Reduce the bias of the estimate.

1300) A box contains 57 calculators out of which 36 are defective, if 4 calculators are selected from the box then find the probability that all are defective

a) 0.8509	b) 0.01515
c) **0.1491**	d) None of these

1301) 50% people use cellphone for writing notes, 40% people use paper, 20% people use both. If a person is selected at random find the probability that he use neither for taking notes

a) 10%	b) **30%**
c) 20%	d) 60%

1302) A person has current savings of Rs. 500,000 and he also deposit 20,000 every year @10% compounded annually for 10 years. Find total amount after 10 years

Answer

Total amount = $20{,}000\left[\frac{(1+0.10)^{10}-1}{0.10}\right] + 500{,}000\,(1+0.10)^{10} = 1{,}615{,}619.722$

1303) Standard deviation of 10 values is 12, if A.M is 246 then find sum of squared observations.

a) 606.6	b) 60660
c) **606600**	d) 6.066

Answer

$$S = \sqrt{\frac{\Sigma X^2}{n} - (\overline{X})^2}$$

$$12 = \sqrt{\frac{\Sigma X^2}{10} - (246)^2}$$

$\Sigma X^2 = 606{,}600$

1304) A population is normally distributed with mean 6000 and standard deviation of 400, if a value is randomly selected find the probability that value is above 6800.

a) **0.0228**	b)
c)	d)

Best of Luck