

Attempt FIVE Questions in all, Section-A is Compulsory. Select any TWO Questions from Section-B, and TWO from Section-C. All questions carry equal marks.

### SECTION-A

1- Briefly explain any TEN of the following:

2x10

- |   |   |
|---|---|
| i) Define Classification.                         | ii) Define Frequency Distribution.      |
| iii) Give name of various averages.               | iv) Define the term Skewness.           |
| v) What is method of Least Square?                | vi) Define Simple Index Number.         |
| vii) Define Mutually Exclusive Event.             | viii) Define Sampling with replacement. |
| ix) Define Linear Equation and its standard form. | x) Define the Column Matrix.            |
| xi) Define Compound Interest.                     | xii) What is an annuity?                |

### SECTION-B

2- For the following data obtain: a) Harmonic Mean b) Geometric Mean c) Coefficient of Variation 5.5,10

Weekly Wages	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79	80 – 89	90 – 99
No. of Workers	6	10	11	12	32	18	8

3- The grade of a class of students on a mid term report (x) and final examination (y) are as follows:

12,5,3

X	75	55	71	74	81	90	96	99	65
Y	84	60	75	40	50	85	90	90	70

- a) Compute the Correlation Coefficient between x and y.  
b) Find the equation of regression line of y on x, also calculate the value of y when x = 75.
- 4- A population consists of 2, 4, 6, 8 and 10. Draw all possible samples of size 2 with replacement. Find the mean of each sample. Find the mean and variance of the sampling distribution of means and compare it with the mean and variance of the population.

4,4,4,6,2

5- a) The random variable x has the following probability distribution:

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X	4	5	6	7	8
P (X = x)	0.1	0.4	0.2	0.2	0.1

Find mean of X.

- b) The following table gives the distribution of 200 school children according to physical defect and speech defect. Do the data suggest association between physical defect and speech defect? Use 5% level of significance.

4,4,2

Speech Defect	Physical Defect		
	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
S <sub>1</sub>	34	22	24
S <sub>2</sub>	25	14	21
S <sub>3</sub>	21	24	15

### SECTION-C

6- a) Solve the following equation by any appropriate method:  $\sqrt{5x+4} - \sqrt{3x+1} = 1$

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b) Find x and y from the following set of equation:

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$$4x - 2y = 50$$

$$5y - x = 10$$

7- a) The 54<sup>th</sup> and 4<sup>th</sup> terms of an A.P are -61 and 64 respectively. Show that the common difference is  $-\frac{5}{2}$  and 23<sup>rd</sup> term is 16.5.

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b) Value of machinery depreciates at the rate of 5% per year. What will be the value of machinery at the end of 10<sup>th</sup> year? If it is Rs. 2,50,000 now.

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8- a) Solve the following system of equations by using matrices:  $2x + y = 25$

$$x - y = 5$$

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b) If  $A = \begin{bmatrix} 2 & -3 & 5 \\ K & 4 & 6 \\ 2 & 0 & 8 \end{bmatrix}$  is a singular matrix then find K.

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9- a) A house is rented for Rs. 9,000 per month, with each month rent payable in advance. If the interest rate is 12% compounded monthly and the rent is deposited in an account, what will be the amount of rent for two years?

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b) A person borrowed Rs. 3,000 at 8% per annum compound interest compounded annually. How much must be repay in all at the end of 4 years?

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