

313307

25226

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks**1. Attempt any FIVE from the following :****10**

- (a) Find the k , if the mean of the following observation is 2.5 :

1, 2, 3, 2, 3, k , 1, 3, 1, 2, 3, 5

- (b) Find the median of the following data :

40, 52, 47, 28, 45, 36, 47, 50

- (c) Find the Covariance of the following data :

x	1	2	3	4	5
y	2	3	4	6	10

- (d) Find the coefficient of covariance for the following data :

x	12	13	25	39
y	67	45	32	21

- (e) If the coin is tossed three times, then find the probability of getting exactly two tails.



(f) Given :

X	10	15	20
F(X)	14	18	28

Estimate $f(12)$ using Newton's forward difference interpolation formula.

(g) Define :

- (i) Random Sampling
- (ii) Non-random Sampling

2. Attempt any THREE of the following :

12

(a) Solve the median marks for the following distribution :

Classes	0-10	10-20	20-30	30-40	40-50
Frequency	2	12	22	8	6

(b) The daily earning of 12 workers in a factory are 25, 24, 23, 32, 40, 27, 30, 20, 25, 10, 15, 45. Find the median and mode.

(c) Find the Q_3 (Upper quartile) for the data :

33, 18, 24, 11, 59, 47, 61, 72

(d) Define Karl's Pearson's coefficient of skewness and evaluate it for the data where median is 70 and the standard deviation is 10.

3. Attempt any THREE of the following :

12

(a) From the following data calculate the standard deviation :

Weekly Expenditure below	02	10	15	20	25
No. of students	06	16	28	38	46

(b) Draw a histogram for the following frequency distribution :

Weight in gm	10-15	15-20	20-25	25-35	35-55	55-70	70-75
No. of items	4	8	7	10	12	15	4

- (c) Find the regression lines for the following data :

X	6	2	10	4	8
Y	9	11	5	8	7

- (d) For 10 observations on price (x) and supply (y), the following data were obtained $\Sigma x = 130$, $\Sigma y = 220$, $\Sigma x^2 = 2288$, $\Sigma y^2 = 5506$, $\Sigma xy = 3467$. Obtain the line of reflection of y on x and estimate the supply when the price is 16 units.

4. Attempt any THREE of the following :

12

- (a) Find the equation of regression of Y on X for the following data :

X	52	63	45	36	72	65	47	25
Y	62	53	51	25	79	43	60	33

- (b) Explain the Correlation and its types.
- (c) If two dice are rolled simultaneously, then find the probability that sum of the number is 6 or 10.
- (d) A bag-I contains 4 white and 6 black balls. While another bag-II contains 4 white and 3 black balls. One ball is drawn at random from one of the bags and it is found to be black. Find the probability that it was from bag-I.
- (e) An insurance company insured 2000 scooter drivers, 4000 car drivers and 6000 truck drivers. The probability of accident are 0.01, 0.03 and 0.15 respectively. One of the person meets with an accident. Calculate the probability that he is scooter driver.

5. Attempt any TWO of the following :

12

- (a) A graph of the function is passing through the points (0,5), (1,9), (2,15), (3,23) and (4,33). Using Newton's forward interpolation formula, find the function $y = f(X)$.
- (b) Given the square of the integers in the following table find the value of $(13)^2$ using extrapolation :

X	3	5	7	9
Y	9	25	49	81

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- (c) The following table gives the number of accidents in a district during a week. Apply χ^2 test to find whether the accident are uniformly distributed over the week.

Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
No. of Days	13	12	11	9	15	10	14	84

6. Attempt any TWO of the following :

12

- (a) In a malaria campaign in a certain area, quinine was administered to 812 persons out of total population of 3248. The number of fever cases is shown below :

Treatment	Fever	No Fever	Total
Quinine	140	30	170
No Quinine	60	20	80
Total	200	50	250

- (b) The population of a town in decennial census is given below. Estimate the population for the year 1955.

Year	1921	1931	1941	1951	1961
Population (in thousands)	46	66	81	93	101

- (c) From the following data find whether there is any significant liking in the habit of taking soft drinks among the categories of employees in an institute :

Employee (B) Soft Drinks (A)	Clerks	Teacher	Officer	Total
Pepsi	10	25	65	100
Fanta	15	30	65	110
Fruti	50	60	30	140
Total	75	115	160	350