

**INSTRUCTIONS:**

- I. Figures to the right indicate maximum marks
- II. Start each answer on a fresh page.
- III. Non scientific, non programmable calculator allowed.
- IV. Graph paper will be provided on request

**1. Answer the following [5x2=10 Marks]**

- i. A's chance of solving a problem is  $\frac{1}{3}$  and B's chance of solving it is  $\frac{1}{5}$ . What is the chance that both are able to solve the problem while trying independently?
- ii. Write any two advantages of simple random sampling
- iii. Explain types of correlation using scatter diagram
- iv. Find mean and median of -5,-3,0,-1,-2,-3
- v. Find  $P(A \cap B)$  if  $P(A) = \frac{2}{3}$ ,  $P(B/A) = \frac{3}{7}$

**2. Fill in the blanks [10 Marks]**

- i. 3 coins are tossed. The probability that at least one head turns up= \_\_\_\_\_
- ii. Median of raw data for odd observations is given by \_\_\_\_\_ observation
- iii. Range= \_\_\_\_\_
- iv. The relation between variance and standard deviation is \_\_\_\_\_
- v. If with increase in value of x, value of y also increases then x and y are \_\_\_\_\_ correlated
- vi. The relationship between coefficient of correlation and coefficient of correlation is \_\_\_\_\_
- vii. Two cards are drawn from a pack of 52 cards. The probability that one is a diamond and one is a heart is \_\_\_\_\_
- viii. If A and B are independent events then  $P(A/B) =$  \_\_\_\_\_
- ix. A hypothesis based on experience, or prior assumption or the one that is believed to be true is \_\_\_\_\_
- x. Area of the normal curve corresponding to type I error is \_\_\_\_\_

**3. Answer any two of the following****[10 marks]**

- A. For the following bivariate data, find
- Coefficient of regression
  - Coefficient of correlation
  - Equation of lines of regression

X	5	7	8	9	11
y	4	6	5	2	3

- B. A random sample size of 500 has sample proportion of  $p=0.15$ . can we say that it is drawn from a population with proportion  $P=0.2$  at 5% l.o.s?
- C. The probability that a person will react to a drug is 0.001. out of 2000 individuals checked, find the probability that
- Exactly 3
  - More than 2 individuals get a reaction  
(take  $e^{-2}=0.135$ )

**4. Answer any two of the following****[10 marks]**

- A. Write a short note on
- Cluster sampling
  - Stratified sampling
- B. The following figures give the experience in years and commission in thousand Rs per month of 6 salesmen. Find the Karl Pearson's coefficient of correlation

Salesmen	A	B	C	D	E	F
Experience in years	3	2	3	4	1	2
Commission in thousand Rs	4	4	5	3	8	6

- C. Draw more than ogive for the following data

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students	5	6	10	15	25	22	11	7

**5. Answer any two of the following****[10 marks]**

- A. The weekly wages of 1000 workers are normally distributed with mean Rs 900 and standard deviation Rs 50. Estimate the no. of workers whose weekly wages will be
- Between 900 and 1000
  - Between 800 and 1000
  - More than 1050
  - Less than 850

Z	1	2	3
P	0.3413	0.4772	0.4987

- B. The sales of two stores in a week are as follows. Find which of the stores has consistent sales.

weekdays	1	2	3	4	5	6
Store I sales in thousands	50	30	40	60	20	50
Store II sales in thousand	90	80	40	10	10	20

- C. In a partially destroyed laboratory record of correlation data, only following results are legible.

i. Variance of  $x=9$

ii. Regression equations are

$$8x - 10y + 66 = 0$$

$$40x - 18y = 214$$

Find mean of  $x$  and  $y$  and standard deviation of  $y$

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