

- (A)
- (ii) Calculate Karl Pearson's correlation coefficient from the following data.

Income	125	137	156	112	107	136	123	108
Expenditure	78	89	96	69	59	79	68	61

- (iii) What is statistical quality control?
- Discuss x and R charts with suitable diagram.

4. Answer any one : **14x1=14**

- (i) From the bivariate data given below
- (a) obtain the regression line of y on x and predict y when $x = 10$. 7
- (b) Obtain the regression line of x on y and predict x when $y = 8.5$. 7
- (ii) Write the conditions to apply chi-square test. Describe one tailed and two tailed tests with suitable diagram. 5+9=14

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63/2 (SEM-1) MCO 104

2024

COMMERCE

Paper : MCO-104

Business Statistics

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Choose the correct option: **1x6=6**

- (i) If A is any event, then -
- (a) $P(A) < 1$ (b) $0 < P(A) < 1$
- (c) $P(A) > 0$ (d) $0 < P(A) < 1$
- (ii) If all the points of a scatter diagram give rise to a straight line going upward from left to right, then it is called..... correlation.
- (a) Positive (b) Negative
- (c) Zero (d) Linear
- (iii) The regression equation of y on x and the regression equation of x on y intersect at the point :
- (a) $(x, -y)$ (b) $(-x, y)$
- (c) $(0, 0)$ (d) (x, y)

Contd.

(iv) Which measurement of inequality is most sensitive to changes in the middle of the distribution?

- (a) Geini coefficient
- (b) Lorsenz curve
- (c) Mean logarithmic duration
- (d) Deviation

(v) Which of the following is a point estimation method?

- (a) Maximum likelihood estimation (MLE)
- (b) Boyes Estimation
- (c) Interval Estimation
- (d) Regression Estimation

(vi) What is the primary purpose of hypothesis testing?

- (a) To estimate population parameters
- (b) To test the significance of a relationship
- (c) To determine the direction of relationship
- (d) To make inferences about a population.

2. Answer the following questions: 2x5=10

- (i) Define Compound Event.
- (ii) What are Equally Likely Events?
- (iii) What are Regression Coefficients?
- (iv) Define Lorenz Curve.
- (v) What is the purpose of the Central Limit theorem (CLT) in estimation.

3. Answer the following Questions (Any six) 5x6=30

- (i) Mention any six importance of probability theory in business and commerce.
- (ii) Geive any six differences between Correlation and Regression.
- (iii) State any six purposes of Regression analysis in business.
- (iv) What are the limitations of Extinction Coefficient in measuring income inequality
- (v) Discuss briefly the uses of Lorenz Curve in the measuring income inequality.
- (vi) Explain in brief the importance of probability in statistical analysis.
- (vii) Explain the difference between a point estimator and an interval estimator.
- (viii) Explain the differences between null and alternative hypothesis.
- (ix) Describe in brief the importance of hypothesis testing in real world applications.

4. Answer any two Questions: 10x2=20

- (i) Two dice are rolled simultaneously. Find the probability of getting -
 - (i) a doublet (ii) the sum of the numbers of two dice is 8 (iii) the sum of the number of the two dice is 9 but one of the dices must show 3. (iv) sum of numbers on the two dice is at least 10. (v) sum is neither 7 nor 11.