

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BCom DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – COMMERCE (BUSINESS ANALYTICS)

APPLIED BUSINESS STATISTICS - III

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

1. Which method is commonly used to estimate the parameters of a regression model?
 - a) Maximum likelihood
 - b) Least squares
 - c) Bayesian estimation
 - d) Ordinary differential equations
2. What is extrapolation?
 - a) Estimating values outside the range of a dataset
 - b) Estimating values within the range of a dataset
 - c) Finding the median of a dataset
 - d) Calculating averages
3. What is the primary purpose of statistical quality control?
 - a) To improve product design
 - b) To ensure products meet quality standards
 - c) To reduce production costs
 - d) To increase sales
4. ISO 9001:2000 is primarily focused on which aspect?
 - a) Environmental management
 - b) Quality management systems
 - c) Financial management
 - d) Supply chain management
5. In reliability engineering, what is the goal of using hazard rates?
 - a) To increase production speed
 - b) To reduce operational costs
 - c) To enhance understanding of failure processes
 - d) To predict market trends

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a If you have a dataset with an R-squared value of 0.75, how much of the variability in the dependent variable is unexplained?
- OR
- b From the following data, show the regression equations X on Y and Y on X by normal equations.

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

Cont...

- 7 a Identify the Newton's methods of forward and backward differences.
OR
b Apply the Lagrange interpolation method.
- 8 a A quality control manager uses an R-chart and collects the following ranges from five samples: 2, 3, 4, 2, 5. Test for the average range?
OR
b A company produces 1,000 items and finds 10 defective. Compare the defect rate?
- 9 a Classify the benefits of implementing TQM.
OR
b Categorize the challenges do organizations face when implementing TQM?
- 10 a Criticize the scope of reliability engineering.
OR
b Explain the concept of hazard rate and its importance in reliability.

SECTION -C (30 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 6 = 30)

- 11 a. Summarize the lines of two regression for the following data and calculate the coefficient of correlation. Also obtain the value of Y when X = 10.

X	1	2	3	4	5
Y	10	20	15	25	30

OR

- b. From the following information, show the expected value of Y when X = 10.

	X	Y
Mean	7.6	14.80
Standard deviation	3.6	2.5
Co-efficient of correlation is	0.99	

- 12 a. Choose the advantages of using interpolation methods.
OR
b. Select the role of the Lagrange basis polynomials in interpolation.
- 13 a. A factory records the following daily output (in units): 100, 105, 98, 110, and 95. Calculate the variance.
OR
b. A quality control inspector finds that 5 out of 100 sampled products are defective. Test for the p-value and the defect rate?
- 14 a. Analyse the future trends in TQM.
OR
b. Categorize the ISO 9001:2000 quality management standard.
- 15 a. Explain the significance of reliability standards and certifications.
OR
b. Choose the methods used for reliability testing.

Z-Z-Z

END