Exam.Code:0014
Sub. Code: 0828

2071
Bachelor of Commerce
Fourth Semester
BCM-406: Quantitative Techniques and Methods

Time allowed: 3 Hours Max. Marks: 80

NOTE: *Attempt four short answer type questions from Section–A. Attempt two questions each from Section B and C respectively.*

x-x-x

Section – A

I. Attempt any four of the following:-

a) Discuss in brief a few important statistical techniques used in business.

b) Three screws are drawn as random from a lot of 10 screws containing 4 defectives. Find the probability that all the three screws drawn are non-defective assuming that screws are drawn (i) with replacement (ii) without replacement

c) The mean and standard deviation of a binomial distribution are 2 and 1 respectively. Calculate n, p and q.

d) Discuss the utility of interpolation and extrapolation to a business man.

e) Coefficient of rank correlation between x and y is found to be 0.8. If the total of squares of rank differences is 33. Find the number of students.

f) If $\overline{X} = 45, \sigma_x = 2.5, \overline{Y} = 60, \sigma_y = 2.2 \& r = 0.75$

Estimate the (i) value of y when x = 35

(ii) value of x when y = 20 (4x5)

Section - B

II. a) Explain (i) Dependent and independents events

(ii) Complementary events

b) Properties of binomial distribution

c) Importance of normal distribution (3x5)

III. If 5% of the items produced by a factor are defective, use Poisson distribution to find the probability that in a sample of 100 items (i) now is defective (ii) 5 items will be defective (given $e^{-5} = 0.007$) (15)

P.T.O.

IV. The mean of a normal distribution is 20 and 9% of the values exceed 25. Find the SD of the distribution (area under normal curve between $z = 0$ and $z = 1.34$ is 0.41) (15)

V. Draw the graph of the following inequalities

$x + 2y \leq 8$

$3x + y \leq 12$

$x + y \leq 5$

and $x \geq 0,\ y \geq 0$

Also indicate the common region. (15)

Section - C

VI. Estimate the number of candidates who scored 48 but not more than 50 marks from the following:-

Marks upto	45	50	55	60	65
No. of candidates	447	484	505	511	514

(15)

VII. a) Discuss the various types of correlation.

b) In a study of fertility patterns a random sample of ten newly married couples were asked the number of children they desired to have (x). Twenty years later all ten couples were asked the number of children they actually had (y). The results are given below:-

Couple	1	2	3	4	5	6	7	8	9	10
Desired children	0	1	2	1	0	3	4	2	2	1
Actual children	0	2	1	3	1	3	4	2	1	2

Find the coefficient of correlation between the desired number of children (x) and the actual number of children (y). (5,10)

VIII. Obtain the regression equation of Y on X for the following data:-

X(age)	66	38	56	42	72	36	63	47	55	45
Y (Blood Pressure)	145	124	147	125	160	118	128	128	150	124

Also estimate the blood pressure of a man whose age is 50 years. (15)

IX. Explain the following:-

a) When does the need to interpolate or extrapolate arise?

b) Properties of correlation coefficient

c) What is the relationship between correlation and regression coefficient (3x5)

x-x-x