Bachelor of Commerce 4th Semester

1048

QUANTITATIVE TECHNIQUES AND METHODS

Paper–BCM-406

Time Allowed : Three Hours]   **[Maximum Marks : 80**

Note :–   Attempt any **four** questions from Section-A and **Two** questions each from Section-B and Section-C.

SECTION–A

Note :— Attempt any **four** questions

1. How Quantitative Techniques are useful in business ?   5

2. From a pack of playing cards, two cards are drawn without replacement. Find the probability that first card is a King and the *Second is not a King.*   5

3. A large retail store has discovered that 5 percent of its sales receipts contain some form of human error. Out of the next 1,000 sales made, the credit manager wants to know the probability that more than 60 errors will be made.   5

4. The table gives the normal weight of a baby during the first six months of life :

Age (in months)	0	2	3	5	6
Weight (in lbs)	5	7	8	10	12

5

Find the weight of baby at the first and fourth months.

5. What do you mean by correlation ? Discuss its various types.

5

6. If

	X	Y
Arithmetic Mean	36	85
Standard Deviation	11	8

and r_{xy} = 0.66.

Find the regression equation of X on Y and also estimate value of X when Y = 70. 5

SECTION–B

Note :— Attempt any **two** questions.

7. (a) A bag contains 10 white as well as black balls. A person draws 6 balls and finds that 3 balls are white and other three are black. Find the probability that the number of white balls in the bag is the same as the number of black balls.

(b) What do you mean by:

(i) Mutually Exclusive Events and

(ii) Exhaustive Events ? 10,5

8. In a shipment of 25 hard disks, six are defective. If five of the disks are selected at random, what is the probability that :

   (i) exactly one is defective

   (ii) at least one is defective

   (iii) at least two are defective ? 5,5,5

9. (a) Discuss the various properties of Poisson distribution.

   (b) The first proof of 200 pages of a book containing 560 pages shows the following distribution of the number of printing errors :

No. of errors in a page	0	1	2	3	4	5	Total
No. of pages	112	63	20	3	1	1	200

   Fit a Poisson distribution. 5,10

10. A scooter company manufactures two scooters A and B. Model a requires 15 man-hours for assembly, 5 man-hours for painting and finishing and one man-hour for checking and testing. Model B requires 6 man-hours for assembly, 4 man-hours for painting and finishing and 2 man-hours for checking and testing. There are 300 man-hours available in the assembly shop, 120 man-hours in painting and finishing shop and 50 man-hours are available in checking and testing division Express this using linear inequalities and draw the graph. 15

SECTION–C

Note :— Attempt any **two** questions.

11. Estimate the number of persons whose daily income is between Rs. 28 and does not exceed Rs. 35 from the following data :

Income in Rs. :	10 to 19	19 to 28	28 to 38	38 to 49	
No. of persons :	50	60	200	315	15

12. (a) Two supervisors ranked as follows 12 workers under them in order of efficiency :

Worker	1	2	3	4	5	6	7	8	9	10	11	12
Supervisor-I	5	6	1	2	3	8½	8½	4	7	11	10	12
Supervisor-II	5½	5½	2	2	2	9	7	4	8	10½	12	10½

(b) The rank Correlation between X and Y of N = 10 is found to be 0.5. Find the sum of squares of differences of ranks.

10,5

13. Find out from the following distribution of total population coefficient of correlation between age and blindness :

Age	No. of Persons ('000)	Blind
0-10	100	55
10-20	60	40
20-30	40	40
30-40	36	40
40-50	24	36
50-60	11	22
60-70	6	18
70-80	3	15

15

14. If $\sigma_x^2 = 9$ and Regression equations are $8X-10Y + 66 = 0$ and $40X-18Y = 214$

Find : (i) Mean values of X and Y

(ii) σ_y

(iii) r_{xy}.

5,5,5