

(i) Printed Pages: 4

Roll No.

(ii) Questions : 14

Sub. Code :

0	8	2	8
---	---	---	---

Exam. Code :

0	0	1	4
---	---	---	---

Bachelor of Commerce 4th Semester

1059

QUANTITATIVE TECHNIQUES AND METHODS

Paper : BCM-406

Time Allowed : Three Hours]

[Maximum Marks : 80

SECTION—A

Note :— Attempt any four questions.

1. What are the important functions of quantitative techniques ? 5
2. It is given that 3% of fountain pens manufactured by a foreign based company are defective. Using Poisson distribution, find the probability that a sample of 100 pens will contain :
 - (a) no defective
 - (b) exactly one defective. 5
3. Find the probability of getting an odd number on the first dice or a total of 8 in a single throw of two dice. 5
4. From the following data find out the missing values :

Year	1980	1981	1982	1983	1984	1985
Values	17	24	—	38	—	49

5

5. Discuss the various properties of Coefficient of Correlation. 5
6. You are given the following information about Advertisement and Sales :

Item	Advertisement (X)	Sales (Y)
Mean	20	100
S.D.	5	12

Coefficient of Correlation = 0.8

Find the value of Y when X = 5. 5

SECTION—B

Note :— Attempt any two questions.

7. A box of nine gold gloves contains two left-handed and seven right handed gloves :
- If two gloves are randomly selected from the box without replacement, what is the probability that (a) both gloves are right handed, (b) one left-handed and one right-handed glove ?
 - If three gloves are selected without replacement, what is the probability that all of them are left-handed ?
 - If two gloves are randomly selected with replacement, what is the probability that they would both be right-handed ? 5,5,5
8. Write short notes on :
- Importance of Binomial distribution
 - Properties of Poisson distribution
 - Importance of Normal distribution. 5,5,5

9. In a sample 1000 items, the mean weight is 45 kg with standard deviation 15 kg. Assuming normal distribution, estimate number of students with weight between 40 kg to 60 kg. 15

10. (a) Solve graphically :

$$\text{Max. } Z = X_1 - 2X_2 + 3X_3$$

subject to :

$$-2X_1 + X_2 + 3X_3 = 2$$

$$2X_1 + 3X_2 + 4X_3 = 1$$

$$X_1, X_2, X_3 \geq 0$$

- (b) What is linear programming ? Discuss its assumptions. 10,5

SECTION—C

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

11. By using suitable method, find the number of workers earning between 30 and 40 :

Earning (in Rs.)	15—20	20—30	30—45
No. of Workers	73	97	110
Earning (in Rs.)	45—55	55—70	
No. of Workers	183	140	

15

12. Calculate the Coefficient of Correlation by Karl Pearson's method between density of population and death rate :

Cities	A	B	C	D	E	F
Area (In square miles)	150	180	100	60	120	80
Population (In '000)	30	90	40	42	72	24
No. of deaths	300	1440	560	840	1224	312

15

13. The equation of two lines of regression obtained in a correlation analysis are :

$$2X + 3Y - 8 = 0$$

$$X + 2Y - 5 = 0$$

Find r and standard deviation of X if variance of $X = 12$.
15

14. Write short notes on :

- (a) Uses of interpolation and extrapolation
- (b) Properties of Regression coefficients
- (c) What would be lines of regression if $r = +1$, $r = -1$ and $r = 0$?
5,5,5