(i) Printed Pages : 4 Roll No. .....

(ii) Questions : 14 Sub. Code : 1 2 6 2 3

Exam. Code : 5 0 2 4

Bachelor of Commerce (FYUP) 4th Semester

(2056)

QUANTITATIVE TECHNIQUES & METHODS

Paper : NBCM403

Time Allowed : 3 Hours] **[Maximum Marks : 80**

SECTION—A

Note:— Attempt any **four** questions. Each question carries **5** Marks. 5×4=20

1. How quantitative techniques are useful in business?
2. Discuss the applications of LPP.
3. If the covariance between X and Y variables is 10 and the variances of X and Y are respectively 16 and 9, find the coefficient of correlation.
4. A card is drawn from a pack of 52 cards. What is its probability of being either black or a queen?
5. Find the missing figures in the following table:

X	5	10	15	20	25	30
Y	7	–	12	15	?	24

6. 5% defectives are produced in a process. Using Poisson distribution find the probability that in a sample of 100 items there is no defective and 5 defectives (e-5 = 0.007).

SECTION—B

Note :— Attempt any **two** questions. Each question carries **15** marks. 15×2=30

7. Write notes on the following:

   (i) Discuss the scope of Quantitative Techniques. 10

   (ii) Properties of Poisson distribution. 5

8. There are 3 economists, 4 engineers, 2 statisticians and 1 doctor. A committee of 4 is to be formed from among them. Find the probability that the committee:

   (i) consists of 1 of each member

   (ii) has at least one economist

   (iii) has a doctor as its member and 3 others.

9. Solve graphically the following LPP:

   Minimise $Z = 20X + 10Y$

   Subject to: $X + 2Y \leq 40$

   $3X + Y \geq 30$

   $4X + 3Y \geq 60$

   Where $X, Y \geq 0$

10. (A) What are the assumptions of Binomial Distribution? 5

(B) A set of 5 unbiased coins are tossed 3200 times and the number of heads observed at each throw is given below. Assuming the binomial distribution, calculate the expected frequencies. 10

No. of heads	0	1	2	3	4	5
Observed frequencies	90	560	1100	900	490	60

SECTION—C

Note :— Attempt any **two** questions. Each question carries **15** marks. 15×2=30

11. Write notes on the following:

(i) Explain the usage of interpolation and extrapolation in business. 5

(ii) Applications of correlation. 5

(iii) Regression equations and regression coefficients 5

12. Given N = 25, $\Sigma x = 125$, $\Sigma y = 100$, $\Sigma x^2 = 650$, $\Sigma y^2 = 460$, $\Sigma xy = 508$

One pair (5,10)was wrongly taken as (8,12). Find the correct coefficient of correlation.

13. With the help of the given data where r = 0.66

	X	Y
Arithmetic Mean	36	85
Standard deviation	11	8

Find two regression equations and estimate the value of X when Y = 75.

14. From the following table, find the number of workers earning between Rs. 30 and Rs. 40:

Earning (in Rs.)	15-20	20-30	30-45	45-55	55-70
No. of Workers	75	100	115	145	150