(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

(2053)

QUANTITATIVE TECHNIQUES AND METHODS

Paper : BCM-406

Time Allowed : Three Hours] [Maximum Marks : 80

Note :—Attempt **FOUR** short answer type questions from Section A. Attempt **TWO** questions each from Sections B and C respectively.

SECTION—A

(Attempt any **FOUR** questions.)

1. What do you mean by Quantitative Techniques ? Discuss its importance in business. 5

2. From a Standard pack of 52 cards one card is drawn at random. Find the probability that it is either a red or a king. 5

3. Discuss the various properties of binomial distribution. 5

4. Interpolate the average number of children born per mother aged 30-34 :

Age of mother (in years)	15-19	20-24	25-29	30-34	35-39	40-44
Average number of children born	0.7	2.1	3.5	?	5.7	5.8

5

5. The coefficient of rank correlation between marks in Statistics and Mathematics obtained by a certain group of students is 0.8. If the sum of squares of the differences in marks is given to be 33, find the number of students in the group. 5

6. The lines of regression of Y on X and X on Y are respectively :

$$Y = X + 5$$

and $16X - 9Y = 94$

Find the value of coefficient of correlation. 5

SECTION—B

(Attempt any **TWO** questions.)

7. Explain :

(a) (i) Equally likely cases and mutually exclusive events.

(ii) Simple and compound events.

(b) Importance of Poisson distribution.

(c) Properties of Normal distribution. 3×5

8. Find a Poisson distribution of the following data and calculate the theoretical frequencies :

Death	0	1	2	3	4
Frequency	122	60	15	2	1

($e^{-0.5} = 0.60657$) 15

9. Net Profit of 400 companies is normally distributed with a mean profit of Rs. 150 lakhs and a Standard Deviation of Rs. 20 lakhs. Find the number of companies whose profits are :

(i) Less than 128

(ii) More than 175 and

(iii) Between 100 and 138. 15

10. Draw the graph of following inequalities :

$15X + 6Y \leq 300$

$5X + 4Y \leq 120$

$X + 2Y \leq 50$

and $X \geq 0$, $Y \geq 0$.

Also indicate the common region. 15

SECTION—C

(Attempt any **TWO** questions.)

11. Calculate correlation between age of the students and their playing habits :

Age	15	16	17	18	19	20
No. of Students	250	200	150	120	100	80
Regular Players	200	150	90	48	30	12

15

12. From the following results, obtain the two regression equations and estimate the yield, when the rainfall is 29 cms and the rainfall, when the yield is 600 kgs.

	Yield in kgs (X)	Rainfall in cms (Y)
Mean	508.4	26.7
S.D.	36.8	4.6

Coefficient of correlation between yield and rainfall is + 0.52. 15

13. Estimate the number of employees in a firm who earns more than Rs. 1,200 but not more than Rs. 2,400.

Income (in Rs.)	No. of Employees
More than 500	600
More than 1000	550
More than 1500	425
More then 2000	275
More than 2500	100
More than 3000	25

15

14. Write notes on the following :—

(a) What are the assumptions underlying interpolation and extrapolation ?

(b) Various types of coefficient of correlation.

(c) Why do we need two regression lines to find the value of two variables X and Y ? 5,5,5