

Exam. Code : 103204

Subject Code : 1129

B.A./B.Sc. 4th Semester

QUANTITATIVE TECHNIQUES—IV

Time Allowed—3 Hours]

[Maximum Marks—100

Note :— Attempt **FIVE** questions in all. Question No. 1 is compulsory and attempt **ONE** question from each of **FOUR** units.

1. (i) Distinguish between multiple and partial correlation coefficient.
- (ii) Explain modified exponential curve.
- (iii) Explain the term probability density function.
- (iv) Explain mutually exclusive and independent events.
- (v) What do you mean by mathematical expectation ?
- (vi) Define normal distribution.
- (vii) What is Beta distribution ?
- (viii) Define standard error of estimate.
- (ix) Define sampling units.
- (x) Explain subjective sampling. 10×2=20

UNIT—I

2. Find the multiple linear regression equation of x_1 or x_2 and x_3 from the data relating to three variables given below :

$$x_1 : \quad 4 \quad 6 \quad 7 \quad 9 \quad 13 \quad 15$$

$$x_2 : \quad 15 \quad 12 \quad 8 \quad 6 \quad 4 \quad 3$$

$$x_3 : \quad 30 \quad 24 \quad 20 \quad 14 \quad 10 \quad 4 \quad 20$$

3. (a) Discuss the shapes and methods of fitting a Comperz curve.
- (b) Fit a non linear trend of the form $Y = a + bx + cx^2$.

Given the following data :

$$x : \quad 0 \quad 1 \quad 2 \quad 3 \quad 4$$

$$y : \quad 1.0 \quad 1.5 \quad 1.5 \quad 2.5 \quad 3.5$$

10, 10

UNIT—II

4. (a) Two groups each of three children contain respectively two boys and one girl and one boy and two girls. One child is drawn at random from each group. Calculate the probability that :
- (i) both will be boys
- (ii) one boy and the other girl.

- (b) Three machines A, B, C produce respectively 50 percent, 30 percent and 20 percent of the total output of a factory. The percentages of defective output of these machines are respectively 3 percent, 4 percent and 5 percent. If an item is selected at random and is found to be defective. What is the probability that this item is from machine A ?

10,10

5. (a) Define moment generating function and discuss its main properties.
- (b) From the following data find of the first four moments about mean :

x :	100-120	120-140	140-160	160-180	180-200
f :	16	22	36	18	8

10,10

UNIT—III

6. Describe the main properties of Gamma distribution.
7. (a) Find the mean and variance in case of Binomial distribution.
- (b) Derive the properties of Poisson distribution.

10,10

UNIT—IV

8. (a) What is standard error and discuss its utility.
(b) How a simple random sample, with and without replacement is drawn ? Explain. 10,10
9. (a) What are the chief merits of census enumeration ?
What conditions are best suited to census enumeration.
(b) Explain the features of a good sample. 10,10

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