

F.T.D.I.I.S
(1st term)

2006

quantitative method

SPRING

Marks : 100

- Instructions :-
- 1) Attempt any THREE questions
 - 2) Figures to the right indicate full marks
 - 3) Calculators are allowed
 - 4) Use of statistical table is allowed.

- Q.1 a) i) Define stug's formula for finding no of classes and width of class-intervals. 4
ii) Rewrite the following frequency distribution using exclusive type of class intervals.

C.I.	f _i
6 - 12	4
13 - 19	6
20 - 26	10
27 - 33	3
34 - 40	1

- b) Define (i) Arithmetic mean for grouped data. 4
(ii) Geometric mean

- c) Prepare frequency table for the following marks scored by 30 students. in a test. 6

45	50	48	58	65	58	53	53
55	58	55	61	59	71	57	56
65	78	56	64	64	45	52	
70	75	70	56	66	56	50	

Take class-intervals as 40-45, 45-50, -----, etc.

Draw Histogram for the above data and hence find mode graphically. 6

- d) i) Give requirements of good measure of central tendency.
ii) If average I.Q. of 52 students of class A is 15.2 and average I.Q. of 60 students of class B is 10.5 . find average I.Q. of the students of both the class taken together.

- Q.2 a) What are quartiles ? 8
Find Median, Q1 and Q2 for the following data.

Earnings in Rs.	No. of employees
800 - 1000	15
1000 - 1200	25
1200 - 1400	50
1400 - 1600	30
1600 - 1800	15
1800 - 2000	5

What are the steps to find Pearson's coefficient of skewness ? 6

- c) Explain minimal property of mean deviation with example.
 Find variance and standard deviation for the following data. 6
 $X : 10, 12, 13, 8, 7, 6, 15, 20, 18, 20, 15, 12.$
- Q.3** a) Define (i) sample space 4
 ii) Impossible event
 iii) Certain event
 iv) Independent events.
- b) i) Write Multiplication Theorem of probability . 4
 If three coins are tossed simultaneously, what is the probability of getting
 i) 2 heads
 ii) all tails
- c) What is Regression ? 6
 The following data gives expenditure on clothes (x) and expenditure on entertainment (y)
 Average $\bar{x} = 300$
 Average $\bar{y} = 100$
 standard deviation $\sigma_x = 20$
 standard deviation $\sigma_y = 15$
 correlation coefficient $r = 0.75$
 Write lines of regression of x on y and that of y on x.
- d) Define correlation coefficient between following x and y. 6
 Find correlation coefficient between following x and y
 $x : 3 \quad 7 \quad 4 \quad 2 \quad 1 \quad 4 \quad 2 \quad 8$
 $y : 11 \quad 15 \quad 9 \quad 4 \quad 6 \quad 3 \quad 8 \quad 3$
- Q.4** a) Marks of 25 students in Mathematics (x) and Economics (y) are given below -
 (50, 53), (60, 70), (40, 60), (45, 58), (52, 48),
 (56, 60), (52, 72), (48, 58), (45, 45), (48, 70),
 (53, 54), (72, 60), (70, 58), (54, 54), (55, 60),
 (48, 51), (52, 70), (53, 63), (54, 71), (71, 72),
 (65, 63), (72, 60), (52, 54), (55, 55), (61, 51).
- i) Prepare Bivariate frequency table by taking class intervals 40-50, 50-60, -----, etc. 8

- ii) Write marginal distribution of x and marginal distribution of y.
 - iii) Write conditional distribution of x when y takes value in between 50-60.
- b)** A committee of 5 is to be formed from 6 boys and 7 girls. In how many ways this can be done if 6
- i) exactly one girl is to be included ?
 - ii) 3 boys and 2 girls is to be included
 - iii) No girl is to be included.
- c)** What is Harmonic mean ? 4
 A train covers distance of 200 km at the rate at 130 km / hr and returns at the rate at 90 km / hr. What is the average speed of the train during whole journey ?
- d)** Define empirical relation between Mean, Mode & Median. 2
- Q.5 a) Fill in the blanks.** 5
- i) Probability of a certain event is _____.
 - ii) If coefficient of skewness is -1.5, so the distribution is _____ skewed.
 - iii) Value of second quattile Q2 is same as _____.
 - iv) A distribution which is flatter than the normal curve is called as _____ kurtic.
 - v) The value of correlation coefficient r always lies between _____ and _____ .
- b)** Town A : 70% were male. 20% were female literate. male illiterate were 30% 7
 Town B : 65% were illeterate females. literate males were 20% . Total males were 30% . Tabulate the above information. (Assume population of each town to be 100)
- c)** The following are some particulars of the distribution of weights of boys and girl in a class - 5
- | | Boys (X) | Girls (Y) |
|-------------|----------|-----------|
| Number | 60 | 80 |
| Mean weight | 55 | 48 |
| Variance | 12 | 8 |
- Find the standard deviation of the combined data of boys and girls. Which distribution is more consistant ?
- d)** Explain finding qualities and median graphically. 3