

2031

M.Com. (M.E.F.B.) First Semester  
FB-104: Tools for Business Research

Time allowed: 3 Hours

Max. Marks: 80

**NOTE:** Attempt five questions in all, selecting atleast two questions from each Unit.

X-X-X

**UNIT - I**

1. In two sets of variables X and Y with 50 items each, the following data were obtained-

Mean X=10,  $\sigma_x=3$ , Mean Y=6,  $\sigma_y=2$ ,  $r=0.3$ ,  $N=50$

However, on subsequent verification it was found that one value of X(=10) and one value of Y(=6) were inaccurate and hence weeded out. With the remaining 49 pairs of values, how is the original value of correlation coefficient affected. (16)

2.a) Fit the Poisson distribution in the following data and calculate the theoretical frequencies:

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

Given:  $e^{-0.5} = 0.60657$

(8)

b) In a box, there are 5 red, 3 blue and 2 white balls. Three balls are chosen randomly with replacement. Find the probability that---

i) all three balls are red.

ii) no ball is red.

iii) at least one ball is red.

iv) balls are either red or blue. (8)

3. What do you mean by sampling? Explain the probability and non-probability methods of sampling. (16).

4. i) Find out the regression coefficients of X and Y and Y on X from the following data given below-

$\Sigma X=50$ , Mean X=5,  $\Sigma Y=60$ , Mean Y=6,  $\Sigma XY=350$ , Variance of X=4, Variance of Y=9. (12)

ii) In a sample of 1000 workers, the mean weight is 45kg with a standard deviation of 15 kg. Assuming the normality of the distribution, find the number of workers weighing between 40 and 60 kg. (4).

5). Write short note on following---

i) What do you mean by Standard Error and its utility in Research? (8)

ii) The results of a given selection test exercise are summarized below—

a) Cleared with distinction= 10 percent

b) Cleared without distinction= 60 percent

c) Those who failed. = 30 percent.

It is known that a candidate fails if he/she obtains less than 40 percent marks, while one must obtain at least 75 percent marks in order to pass with distinction. Determine the mean and standard deviation of the distribution of marks assuming the same to be normal. (8).

**P.T.O.**

(2)

**UNIT – II**

Q 6.) Explain the following;

- a) Null hypothesis and Alternative hypothesis
- b) Type I and Type II Errors
- c) One Tail and two tail test
- d) Acceptance and Rejection Region.

(16)

Q.7. i) In 324 throws of a six -faced dice, odd points appeared 180 times .Would you say that the dice is fair at 5% level of significance? (6)

ii) A group of patients treated with Medicine A have weights 42,39,48,60,41 kgs. In the light of the above data, test the mean weight of the population is 48 kg. test at 5% level of significance. (10)

Q.8. i) The following figures relate to the number of units produced per shift by two workers A and B for a number of days-----

A	19	22	24	27	24	18	20	19	25		
B	26	37	40	35	30	30	40	26	30	35	45

Can it be inferred that A is more stable worker as compared to B at 5% level of significance. (12)

ii) Discuss the usefulness of F-test (4)

Q.9 i) The following data were collected from two cities as regard the starting stipend paid to new management trainees. Do the data give evidence that the stipend paid in city B is significantly more than that in city A? test at a significance level of 1%. (12)

ii). Explain the usefulness of F-test.

Q.10 i) Explain the use of computers and statistical packages for statistical analysis. (8)

ii) A wholesaler manufacturer of screw has noticed that on an average 2% of screw are defective. A random sample of 400 screws were examined for the proportion of defective screws. Find the probability that the proportion of defective screws lies between 0.01 to 0.03. (8).

X-X-X