

17MECC05 Statistical Methods

Part – A

(10x1/2 = 5)

Choose the correct answer

1. A study of the technique that can show whether and how strongly pairs of variables are related is called
a) statistics b) regression c) correlation d) index number
2. When the regression line is linear ($y = ax + b$) the regression coefficient
a) non-linear b) constant c) horizontal d) vertical
3. The observations that come from different individuals or groups is known as
a) cross-sectional data b) time series data
c) grouped data d) real data
4. Probability is
a) temporary action b) sample
c) normal distribution d) an event is likely to occur
5. The complete enumeration of a universe is
a) sampling b) all methods
c) census method d) sampling error
6. One of the following sources of data is not included as secondary data
a) Censes report b) RBI reports
c) News papers d) Direct Personal Investigation
7. A hypothesis is a
a) permanent statement b) normal distribution
c) tentative statement d) research statement
8. Test used to determine whether there is a significant association between the two variables is
a) Z test b) F - test
c) random test d) chi-square test
9. The sign test is used
a) to compare the sizes of two groups b) to compare more variables
c) to make suitable decision d) all the above
10. A special case of Pearson's chi-squared test is
a) median test b) mode test
c) mean test d) sample test

Part – B

(5 x 4 = 20)

Answer all questions

Answer should not exceed 200 words or one page

11. a) Bring out the features of correlation analysis

[or]

11.b) What are the uses of regression analysis?

12.a) What are uses of time series analysis?

[or]

12.b) Write a note on the applications of probability.

13.a) What are the advantages of sampling method?

[or]

13.b) What do you know about law of statistical regularity?

14.a) Explain about null and alternative hypothesis

[or]

14.b) Briefly write about type-I and type-II errors

15.a) Write a short note on Kendall test of concordance.

[or]

15.b) What are the applications of Spearman's rank correlation?

Part – C

(5 x 7 = 35)

Answer all questions

Answer should not exceed 600 words or there pages

16.a) From the following data calculate the coefficient of correlation

X	12	9	8	10	11	13	7
Y	14	8	6	9	11	12	3

[or]

16.b) Fit a straight line regression of Y on X from the following data.

X	0	1	2	3	4	5	6
Y	2	1	3	2	4	3	5

17.a) Explain the components of time series analysis.

[or]

17.b) A bag contains 7 red, 12 white and 4 green balls. What is the probability that
(a) 3 balls drawn are one of each colour? (b) 3 balls drawn are one of each colour?

18.a) A sample of size 400 was drawn and the sample mean was found to be 99. Test whether this sample could have come from a normal population with mean 100 and variance 64 at 5% level of significance.

[or]

18.b) Explain various methods of sampling

19.a) A survey of 200 families having three children selected at random gave the following results:

Male births	0	1	2	3
No. of families	40	58	62	40

Test the hypothesis that male and female births are equally likely at 5% level of significance.

[or]

19.b] Explain the applications of ANOVA in social science research

20.a] Discuss the importance of Kruskal – Wallis test [or]

20.b] A charter bus line has 48 passenger buses and 38 passenger buses. With X and Y denoting the number of miles traveled per day for the 48 passenger and 38 passenger buses, respectively, the bus company is interested in testing the equality of the two distributions:

$$H_0: F(z) = G(z)$$

The company observed the following data on a random sample of $n_1 = 10$ buses holding 48 passengers and $n_2 = 11$ buses holding 38 passengers:

X	104	253	300	308	315	323	331	396	414	452	
Y	184	196	197	248	260	279	355	386	393	432	450

Using the normal approximation to R, conduct the hypothesis test at the 0.05 level.
