



Nagarjuna Degree College
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34431

Reg. No.

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IV Semester B.Com. (Honours) Degree Examination,
September/October - 2022
COMMERCE
Fundamentals of Data Analysis
(CBCS Scheme Freshers 2019-20)

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Answers should be written in English only.

PART - A

Answer any FIVE questions. Each question carries TWO marks.

(5×2=10)

1.
 - a. What do you mean by an estimate?
 - b. What is meant by type I error?
 - c. Write any two advantages of Non - parametric tests.
 - d. What is meant by independent variable?
 - e. What do we mean by Nominal scale?
 - f. Write any two Properties of chi-square distribution.
 - g. What do you mean by Factor analysis?

PART - B

Answer any Three questions. Each question carries Five marks.

(3×5=15)

2. A sample of 100 units gave a mean of 7.4 kg and a standard deviation of 1.2 kg. Find 95% Confidence limits for the population mean.

[Z at 95% confidence level = 1.96].

3. It is claimed that a random sample of 100 tyres with a mean life of 15269 kms is drawn from a population of tyres which has a mean life of 15200 kms and a standard deviation of 1248 kms. Test the validity of the claim at 1% level of significance.

[Given critical value of Z at 1% level of significance for two tailed = 2.58

for Right tailed = 2.33

for Left tailed = -2.33]

[P.T.O.]



- 4. Discuss the conditions for the applications of chi - square test.
- 5. Write a short note on cluster analysis.

PART - C

Answer any **Three** questions. Each question carries **Fifteen** marks. (3×15=45)

- 6. i. A random sample of 700 units from a large consignment showed that 200 were damaged. Find 99% confidence limits for the proportion of damaged units in the consignment. [Z at 99% confidence level = 2.58].
- ii. A population of 1000 units has a standard deviation of 8. What should be the sample size to estimate average of the population if the permissible error is ±1.5? Given confidence level = 99% [Z at 99% confidence level = 2.58].
- 7. An insurance agent has claimed that the average age of policy holders who insure through him is less than the average for all agents, which is 30.5 years. A random sample of 100 policy holders who had insured through him gave the following age distribution.

| Age (years) | No. of persons |
|-------------|----------------|
| 16-20 | 12 |
| 21-25 | 22 |
| 26-30 | 20 |
| 31-35 | 30 |
| 36-40 | 16 |

Use the sample data to test his claim at 5% level of significance.

[Given critical value f Z at 5% level of significance for two tailed = 1.96
 for Right tailed = 1.645
 for Left tailed = - 1.645]

- 8. A company is interested in determining whether an association exists between the commuting time of their employees and the level of stress - related problems observed in the job. A study of 116 assembly-line workers reveals the following

| Commuting Time | Stress -- level | | | Total |
|----------------|-----------------|----------|-----|-------|
| | High | Moderate | Low | |
| < 20 mins | 9 | 5 | 18 | 32 |
| 20-50 mins | 17 | 8 | 28 | 53 |
| > 50 mins | 18 | 6 | 7 | 31 |
| Total | 44 | 19 | 53 | 116 |

At $\alpha = 0.01$ level of significance, is there any evidence of a significant relationship between commuting time and stress?

[χ^2 critical value at 1% level of significance for 3 degrees of freedom = 11.345
 for 4 degrees of freedom = 13.277].

- 9. Explain the procedure of using econometric model in hypothesis testing.