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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?

[  $\chi^2$  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.