THIRD SEMESTER FYUGP EXAMINATION, NOVEMBER 2025

Discipline Specific Core (DSC) Course - Minor

STA3MN205 : Inferential Statistics

(Credits: 4)

Time: 2 Hours   Maximum Marks: 70

Section A

Answer the following questions. Each carries 3 marks (Ceiling: 24 marks)

1.	What is a hypothesis? What is a statistical hypothesis?	BL1	CO1
2.	Define F statistic.	BL1	CO2
3.	Define the Chi-Square Goodness of Fit test. Give the test statistic and critical region.	BL2	CO3
4.	State the assumptions of ANOVA.	BL2	CO5
5.	What is a test statistic?	BL1	CO1, CO2
6.	Are type I error and α same? Explain.	BL2	CO1
7.	Find z such that $P(Z > z) = 0.0764$.	BL2	CO4
8.	What is the purpose of a one-sample t-test?	BL2	CO3
9.	When should you use ANOVA instead of a t-test?	BL2	CO5
10.	Define standard normal distribution. Give its mean and variance.	BL1	CO4

Section B

Answer the following questions. Each carries 6 marks (Ceiling: 36 Marks)

11.	What is meant by best test and best critical region?	BL2	CO1
12.	The heights of adult men in a certain population are normally distributed with a mean of 175 cm and a standard deviation of 8 cm. a) What proportion of men are taller than 185 cm? b) What percentage of men are between 170 cm and 180 cm tall?	BL3	CO4
13.	A researcher wants to compare the average test scores of students taught using two different methods. Group A (n=20): mean = 75, SD = 8 Group B (n=25): mean = 78, SD = 6 Test at α=0.05 is there a significant difference in the means? **(PTO)**	BL3	CO3

14.	Explain One way classification of data.	BL2	CO5
15.	A diet program was tested on 12 people. The average weight loss was 3.2 kg with a standard deviation of 1.8 kg for the differences (Before − After). At the 1% significance level, test if the diet program was effective.	BL3	CO3
16.	Write down the steps in testing of hypothesis.	BL1	CO1
17.	Find the Z-values that separate the middle 80% of the standard normal distribution.	BL2	CO4
18.	Given the following contingency table of two variables A (2 levels) and B (3 levels): 		B1	B2	B3	Row Total
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A1	10	20	30	60
A2	20	15	5	40
Col Total	30	35	35	100 | Perform a Chi-Square Test of Independence at 5% significance level and conclude if A and B are independent.	BL3	CO3

Section C			
Answer any one question. Each carries 10 marks (1 x 10 = 10 Marks)			
19.	Discuss the properties of normal distribution.	BL1	CO4
20.	A university psychologist measures test anxiety scores of students from three departments: Science: 15, 18, 16, 19, 17 Arts: 22, 20, 21, 23, 24 Commerce: 19, 20, 18, 21, 20 Use one-way ANOVA to determine if test anxiety differs by department.	BL3	CO5

CO : Course Outcome

BL : Bloom's Taxonomy Levels (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)