

QP CODE: D2BST2503	(Pages: 2)	Reg. No :
		Name :
SECOND SEMESTER FYUGP EXAMINATION, APRIL 2026		
(Regular/Improvement/Supplementary)		
Discipline Specific Core (DSC) Courses - Minor		
STA2MN107 : Statistical Inference I		
(Credits: 4)		
Time: 2 Hours	Maximum Marks: 70	
Section A		
Answer the following questions. Each carries 3 marks (Ceiling: 24 marks)		
1. Write any three properties of normal distributions.	BL1	CO1
2. State the null hypothesis for testing the equality of 2 population proportion.	BL1	CO3
3. What is the sampling distribution of sample variance?	BL1	CO3
4. What is the test statistics used in paired t-test?	BL1	CO3, CO4
5. What is the degrees of freedom of $2 \times k$ contingency table?	BL1	CO5
6. Define Poisson distribution.	BL2	CO1
7. A random sample of size 16 has 53 as mean and the sum of squares of the deviation taken from the mean is 150. Can the sample be regarded as arisen from the population with mean 56. Consider the problem and write null, alternative hypothesis and best critical region.	BL3	CO3
8. Which type of error occurs when you fail to reject a false null hypothesis? How is its probability denoted?	BL2	CO3
9. What is the Difference between Chi-Square test of goodness-of-fit and Chi-Square test of independence?	BL1	CO3
10. Define null hypothesis and alternative hypothesis with example.	BL3	CO1, CO3
Section B		
Answer the following questions. Each carries 6 marks (Ceiling: 36 Marks)		
11. If moment generating function of binomial distribution is $(\frac{1}{3} + \frac{2}{3}e^t)^{10}$. Write its type of symmetry and kurtosis.	BL3	CO1
(PTO)		

12.	A die is thrown 10000 times and a throw of 3 or 4 is considered as a success. Suppose that 6240 throws of 3 or 4 have been made. Do you think that the die is unbiased? Test at 5% level of significance.	BL3	CO3														
13.	The demands for refrigerators in a certain city are found to vary from day to day. In a sample study, the following data was obtained. Test at 5% level of significance whether the demand for refrigerator depends on the days of the week. <table border="1"><tr><td><i>Days</i></td><td><i>mon</i></td><td><i>tue</i></td><td><i>wed</i></td><td><i>thu</i></td><td><i>fri</i></td><td><i>sat</i></td></tr><tr><td><i>No. of refrigerator in demanded</i></td><td>115</td><td>126</td><td>120</td><td>110</td><td>125</td><td>124</td></tr></table>	<i>Days</i>	<i>mon</i>	<i>tue</i>	<i>wed</i>	<i>thu</i>	<i>fri</i>	<i>sat</i>	<i>No. of refrigerator in demanded</i>	115	126	120	110	125	124	BL3	CO3
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<i>No. of refrigerator in demanded</i>	115	126	120	110	125	124											
14.	What are the charecteristics of student's t distribution?	BL1	CO2, CO3														
15.	Distinguish between one tailed and two tailed tests.	BL2	CO3														
16.	Write the testing procedure of t-test for equality of two population mean.	BL1	CO3														
17.	Two diets tested for weight loss gives the following sample statistics. Diet A : n=20 , mean loss = 5.2 kg, SD = 1.1 Diet B :n=20, mean loss = 4.5 kg, SD = 1.3 Test the difference at the 1% level.	BL2	CO3														
18.	A new stereo needle was introduced into the market claiming that the average life is 190 hours with standard deviation of 21 hours. This claim came under severe criticism that a random sample of 64 needles was selected and found that they have an average life of 191 hours. Is the claim of the manufacturer justified?	BL3	CO3														

Section C

Answer any one question. Each carries 10 marks (1 x 10 = 10 Marks)

19.	Consider the following 2×2 contingency table	BL3	CO5																
<table border="1"> <tr> <th></th><th>B_1</th><th>B_2</th><th><i>Total</i></th></tr> <tr> <th>A_1</th><td>7</td><td>6</td><td>13</td></tr> <tr> <th>A_2</th><td>1</td><td>8</td><td>9</td></tr> <tr> <th><i>Total</i></th><td>8</td><td>14</td><td>22</td></tr> </table>					B_1	B_2	<i>Total</i>	A_1	7	6	13	A_2	1	8	9	<i>Total</i>	8	14	22
	B_1	B_2	<i>Total</i>																
A_1	7	6	13																
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Apply χ^2 test and test at 5% level of significance to test whether the two attributes A and B are independent.																			
20.	Find the distribution function of number of heads in a coin tossing experiment, when 3 unbiased coins are tossed together.	BL3	CO1																

CO : Course Outcome

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