In Semester Assessment-2
SE (Semester-IV)
Statistical Decision Making

Branch: AI_ML **Date: 21/03/2022**
Timing: 10:30 am to 11:00 pm
Duration: 30 min **Maximum Marks: 10**
Instructions –

1. All questions are compulsory
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.
6. Tables of **t-test, F-test,Chi-square test** are uploaded for the reference.
7. Scan the answer sheet in sequence and upload the Pdf. Pdf should be named as SE_Branch_Division_ Roll No_Subject abbreviation_Student Name

Subjective Questions:

Q2 (a) Can vaccination be regarded as preventive measure of small pox as evidenced by the following data of 1482 persons exposed to small pox in a locality. 368 in all were attacked of these 1482 persons and 343 were vaccinated and of these only 35 were attacked. Refer the following table:

	Vaccinated	Not Vaccinated	Total
Attacked	35	333	368
Not Attacked	308	806	1114
Total	343	1139	1482

[5 marks]

OR

Q2 (b) The height of 6 randomly chosen sailors in inches are 63, 65, 68, 69, 71 and 72. Those of 9 randomly chosen soldiers are 61, 62, 65, 66, 69, 70, 71, 72 and 73. Test whether the sailors are on the average taller than soldiers. [5 marks]

Q3 (a) A truck company wishes to test the average life of each of the four brands of tyre. The company uses all brands on randomly selected trucks. The records showing the lives of tyres (in thousands of miles) are given as-

Brand 1	20	23	18	17	
Brand 2	19	15	17	20	16
Brand 3	21	19	20	17	16
Brand 4	15	17	16	18	

Test the hypothesis that the average life for each brand of tyres is the same at 1% level of significance. [5 marks]

OR

Q3 (b) A factory is to introduce a new product which will be assembled from a number of components. Three different designs are considered and 4 employees are asked to compare their speed of assembly. The trial is carried out one morning and each of the four employees assembled design A from 8:30 to 9:30 am, design B from 10:00 to 11:00 am and design C from 11:30 to 12:30 pm. The number of products completed by each of the employee is shown in the following table. Carry out two factor analysis of variance and test at 5% level of significance for difference between designs and between employees.

	Employee			
Design	**1**	**2**	**3**	**4**
A	**17**	**4**	**38**	**8**
B	**21**	**6**	**52**	**20**
C	**28**	**9**	**64**	**22**

[5 marks]