

## End-Semester Examination: Statistics for Decision Making - 1

Time: 2 Hr.s

Date: 23<sup>rd</sup> Nov. 2022

- Note: 1. Answer as much as you can. Maximum you can score is 50  
2. Use of Calculator, Statistical Tables allowed

1. The operator of a certain machine suspected that the number of defectives produced in the machine in a shift has a relation with the speed of the machine. He collected data for 12 days which is as follows:

M/c Speed	No. of Defectives
14.2	9
11.9	6
15.9	12
18.4	12
9.1	6
14.9	9
16.4	11
10.2	7
14.1	10
16.7	9
11.6	8
12.0	7
15.4	10
12.6	8
13.8	9
15.6	10

- Plot a Scatter Diagram to explore the relationship, and offer your comments.
- Find the Correlation Coefficient.
- Work out the Regression Line.
- Find out the R-square.
- Using the Regression Line, Estimate that, if the machine is run at a speed of 15.5, what will be the No. of Defectives in that shift.

[20]

2. Suppose it is known that, in the evening hours, the Mysore Road traffic constitutes of the following:

Type of Vehicle	% of Traffic
Car	15
2 Wheeler	34
Auto	6
Govt. Bus	9
Private Bus	11
Small Truck	10
Large Truck	5
Ambulance	1
Cycles	4
Other Vehicles	5

If on a particular day, you happen to go to the Mysore Road in the evening, Simulate what are the next 12 vehicles you are likely to see there.

[Show Steps]

[10]

3. The following is the data on height of 30 students (in Cm.):

166.5	165.5	165.1	169.2	164.1	165.7
170.2	167.5	168.4	165.9	167.1	168.1
166.8	162.9	167.8	161.2	167.5	164.9
166.4	162.1	168.0	165.0	166.1	167.7
163.6	165.6	165.6	162.1	168.8	164.2

Find out The Mean, Standard Deviation, Mean Deviation, Skewness and Kurtosis.

*[Show Calculations]*

[15]

4. Find the Table values for:

- a) Upper 10% value for "Z" distribution
- b) Lower 5% value for "Chi-square" distribution with 6 d.f.
- c) Upper 2.5% value for "Chi-square" distribution with 10 d.f.
- d) Upper 1% value for "t" distribution with 15 d.f.
- e) Upper 1% value for "F" distribution with 7,10 d.f.

[5]

5. State and briefly explain different methods for generating Random Numbers

[10]

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