

No. of Printed Pages : 7 **MSTL-001(Set-II)**

**POST GRADUATE DIPLOMA IN
APPLIED STATISTICS (PGDAST)**

Term-End Examination

December, 2024

MSTL-001 : BASIC STATISTICS LAB

Time : 3 Hours

Maximum Marks : 50

Note : (i) Attempt any *two* questions.

(ii) Solve the questions in Microsoft Excel.

(iii) Use of “Formulae and Statistical Tables
Booklet for PGDAST” is allowed.

(iv) Mention necessary steps, hypotheses,
interpretations, etc.

1. (a) A sample of 50 bulbs was selected to check the life span of the bulbs. The data on the life span of bulbs are recorded in the following table :

$$5 \times 3 + 3 = 18$$

Table : Life span of bulbs

S. No.	Life of Bulb (in hours)	S. No.	Life of Bulb (in hours)
1	1265	26	1225
2	1125	27	1054
3	1230	28	1100
4	1060	29	1161
5	1233	30	1037
6	988	31	1283
7	1246	32	1212
8	1090	33	1038
9	1013	34	1130
10	956	35	1001
11	964	36	1112
12	1117	37	1120
13	1146	38	1148
14	1242	39	966
15	1103	40	1167
16	1184	41	1145
17	1065	42	1086
18	972	43	1027
19	1231	44	929

20	1120	45	1174
21	1149	46	924
22	1059	47	1049
23	1217	48	1054
24	1150	49	1228
25	1047	50	1140

- (i) Compute class-intervals of suitable width and construct continuous frequency distribution.
- (ii) Compute the mean, median, first quartile and third quartile.
- (iii) Compute variance and coefficient of variation.
- (iv) Compute skewness.
- (b) The cooking oil preferences of 75 families in three regions I, II and III are recorded in the following table :

Table : Cooking oils preferences of families in three regions.

Cooking oil	Number of families		
	I	II	III
Soybean	10	9	11
Fortune	12	11	10

Sunflower	15	17	18
Olive	10	12	10
Ghee	17	16	20
Others	11	10	06

Draw the multiple bar diagram and pie chart to compare their preferences. 7

2. (a) Two teachers were asked to rank their 10 students according to the student's response in the classroom. The ranks submitted by the teachers are given in the following table : 10

Student No.	Teacher 1	Teacher 2
1	6	1
2	9	10
3	2.5	3.5
4	6	7
5	4	5
6	6	2
7	8	8
8	10	9
9	2.5	3.5
10	1	6

Find the coefficient of correlation and write how well the teacher's agreed in their responses.

- (b) A random sample of 25 female workers were recorded to study the variation in blood pressure of female workers in government offices. The obtained data is recorded in the following table : 7+8

Table : Blood pressures of female/workers (in mm/Hg)

128	116	126	119	120
115	112	119	122	109
127	113	122	113	115
112	104	127	125	110
127	128	120	116	104

Assuming that the blood pressure is normally distributed test the hypothesis that the average blood pressure of the female workers is greater than 120 mm/Hg. Also test whether the variation in the blood pressure is less than 5 mm/Hg.

3. The waiting time for 20 candidates to appear in an interview at four companies (X, Y, Z and W) are given in the following table : 25

Table : Waiting time (in minutes)

Company X	Company Y	Company Z	Company W
19	05	21	10
28	25	21	06
08	13	20	18
13	08	19	30
29	23	27	28
05	29	06	14
10	08	17	12
20	13	13	15
09	20	08	20
23	18	23	08
19	18	22	13
14	24	22	28
11	22	07	26
08	09	22	22
09	29	12	09
08	12	05	29
29	06	28	22
05	28	22	16
09	24	08	21
23	11	12	05

Draw Box plots for each company data. Also, assuming that the waiting time is normally distributed in each company and the variances of all waiting time distributions are approximately equal :

- (i) Formulate the null and alternative hypotheses.
- (ii) Is there enough evidence that the average waiting time for a candidate to appear in an interview at four companies is equal at 5% level of significance ?

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