

POST GRADUATE DIPLOMA IN APPLIED STATISTICS (PGDAST)**Term-End Examination****December, 2017**

00146

MSTL-001/S2 : BASIC STATISTICS LAB SET-2*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, interpretation, etc.

1. (a) A power bank manufacturing company manufactured a new fast charging power bank which is supposed to be better than the power bank of an old reputed brand. Thirty power banks of both the brands were tested to determine how long they would take to be charged. The results to the nearest minute, were recorded in the following table :

S. No.	Power Bank	
	Old	New
1	335	308
2	383	328
3	325	301
4	380	316
5	351	312
6	364	341
7	381	301
8	391	361
9	405	335

S. No.	Power Bank	
	Old	New
10	390	350
11	401	381
12	421	376
13	381	309
14	443	391
15	355	361
16	378	343
17	420	332
18	373	348
19	360	308
20	435	339
21	363	317
22	377	323
23	410	351
24	393	381
25	361	332
26	392	341
27	388	350
28	399	319
29	411	312
30	415	348

- (i) Which brand of power bank is more consistent ?
- (ii) Compute the suitable width of the class intervals for both brands and construct the continuous frequency distributions.
- (iii) Also, construct the histogram for both the brands and interpret the results.

4+8+6

- (b) A company conducted a survey a few years ago and found out that 15% of its employees have two sources of income. The company wants to cross verify this finding since the data is old. For this purpose, the company takes a random sample of 20 employees and obtains the following results :

Employee No.	Two Sources of Income
1	No
2	Yes
3	No
4	No
5	No
6	Yes
7	No
8	No
9	No
10	Yes
11	Yes
12	No
13	No
14	No
15	Yes
16	Yes
17	No
18	No
19	Yes
20	No

Test the hypothesis at 5% level of significance to check the company's claim.

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2. (a) The number of automobiles arriving at 4 toll gates were recorded for a 2-hour time period (10 AM to 12 Noon) for each of the six working days. The data are as follows :

Day	Gate 1	Gate 2	Gate 3	Gate 4
Mon	200	228	212	301
Tues	208	230	215	305
Wed	225	240	228	288
Thur	223	242	224	212
Fri	228	210	235	215
Sat	220	208	245	200

Determine whether the rate of arrival is same (i) at each toll gate, and (ii) during the six days or not, at 5% level of significance.

If not, carry out the pairwise comparisons.

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- (b) A company organised a training programme. After the first week, the company officials evaluated the training programme. The scores (out of 100) of 40 employees are presented below :

32	36	31	67	65	74	43
42	39	56	78	61	46	56
34	78	75	78	61	41	31
29	65	45	48	78	62	76
43	75	64	73	87	65	41
31	56	71	81	85		

Construct a box-plot and interpret it.

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3. (a) A researcher wants to know the difference in the saving pattern of people from two cities. One metro and the other, non-metro. He/she collects the data related to the amount saved monthly by different employees of central government in both the cities. The researcher took a random sample of size 35 from both the cities. The data collected for both the cities are given below :

Sample from the Metro City (in ₹ '000)								
10	11	12	12	11	12	10	8	12
12	11	9	10	9	9	11	11	10
10	11	8	10	10	10	3	11	9
7	12	12	7	5	12	8	10	

Sample from the Non-Metro City (in ₹ '000)								
15	14	17	16	15	14	15	14	13
13	17	15	14	14	11	15	14	17
13	15	16	17	18	13	14	17	17
14	15	16	18	16	15	17	15	

Test whether there is a significant difference in the saving pattern of the employees in the metro and non-metro cities.

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- (b) A researcher wants to know the degree of association between petrol and diesel prices. For this, he/she has selected a random sample of 10 months' price (in ₹) of petrol and diesel for the last 20 years. Compute the Spearman's rank correlation coefficient for the following data :

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Months	Petrol Price	Diesel Price
1	20	10
2	15	9
3	25	14
4	28	12
5	26	13
6	32	15
7	35	23
8	32	23
9	31	20
10	44	30
