POST GRADUATE DIPLOMA IN APPLIED STATISTICS (PGDAST)

Term-End Examination

June, 2018

00305

MSTL-001/S1 : BASIC STATISTICS LAB SET-1

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 raincoat manufacturing company wants to launch some new varieties in two States. The rainfall (in cm) in these States for the past 20 years is given below :

State A				State B			
Year	Rainfall	Year	Rainfall	Year	Rainfall	Year	Rainfall
1998	110	2008	105	1998	108	2008	155
1999	120	2009	115	1999	115	2009	148
2000	130	2010	125	2000	125	2010	139
2001	135	2011	130	2001	130	2011	145
2002	140	2012	135	2002	135	2012	156
2003	150	2013	145	2003	140	2013	160
2004	160	2014	155	2004	145	2014	162
2005	170	2015	165	2005	160	2015	146
2006	180	2016	175	2006	150	2016	150
2007	190	2017	185	2007	165	2017	145

Answer the following :

(a)   Which State has more average rainfall ?

(b)   Which State shows more consistent pattern of rainfall ?

(c)   Construct a suitable diagram to present the data.

(d)   Assuming normality, test whether the variability in rainfall in State A is more than that of State B at 1% level of significance.

4+6+5+10

2. (a) To motivate its sales executives, a company organised a three-day workshop. The company selected 20 sales executives randomly and collected data on the average productive sales calls in a day (in hours) before and after the training. The data collected are recorded in the following table :

Sales Executive	Productive Sales Calls	
	Before Training	After Training
1	6	8
2	4	4
3	5	8
4	8	8
5	4	4
6	2	5
7	3	5
8	5	5
9	2	6
10	7	8
11	8	8
12	5	6
13	5	7
14	4	4
15	6	8
16	4	4
17	2	3
18	2	4
19	6	6
20	4	5

Use $\alpha = 0.05$ to test whether there is a significant difference in the average number of productive sales calls before and after the training programme. *10*

(b)   To investigate the impact of the average time spent per day (in hours) on smart-phone by students on the marks obtained in an examination, a random sample of 15 students was taken and the data are reported in the following table :

S. No.	Marks	Time Spent on Smart-Phone
1	60	6
2	72	1
3	64	2
4	71	2
5	77	3
6	65	2
7	62	1
8	78	2
9	65	4
10	72	2
11	73	1
12	79	1
13	67	3
14	65	3
15	61	5

Compute the Spearman's rank correlation coefficient between marks obtained and time spent on smart-phone.   *15*

3. For ascertaining the productivity of different salesmen, a shoe manufacturing company randomly selected five showrooms and five salesmen from each of the showrooms. The average sales (in thousand rupees) from showrooms and the individual contribution of the five salesmen placed at different showrooms are given below :

Salesman	Showroom				
	1	2	3	4	5
1	55	72	45	85	50
2	56	70	50	88	49
3	58	68	55	89	45
4	60	70	42	90	42
5	62	73	41	91	40

For the above data, test whether there is a significant difference between the productivity due to

(a) Salesmen

(b) Showrooms

If there are significant differences, carry out pairwise comparisons. *25*

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