

POST GRADUATE DIPLOMA IN APPLIED STATISTICS (PGDAST)**Term-End Examination****June, 2016****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, hypothesis, interpretation, etc.

1. (a) The following data represents the electricity bills (in hundreds of ₹) during a particular month for a random sample of 50 three-bedroom apartments in New Delhi :

96	171	202	178	147	102	153	197	127	82
157	185	90	116	172	111	148	213	130	165
141	149	150	175	123	128	144	168	109	167
95	163	206	154	130	143	187	166	139	149
108	119	183	151	114	135	191	137	129	158

- (i) Form a continuous frequency distribution by computing suitable width.
- (ii) Draw the histogram.
- (iii) Form Cumulative and Relative frequency distributions. 5+6+4

- (b) A Local pizza restaurant and a branch of a National Chain are located across the street from a college campus. The local pizza restaurant advertises that it delivers to the dormitories faster than the National Chain. In order to examine whether this claim is valid, 10 pizzas from the Local pizza restaurant and 10 pizzas from the National Chain are ordered at different times. The delivery times (in minutes) are shown below :

Local Restaurant	National Chain
16	22
11	15
15	18
16	15
17	20
18	19
14	17
21	19
13	16
20	24

At 5% level of significance, is there any evidence that the

- (i) variances of the delivery times of the Local pizza restaurant and National Chain are equal ?
- (ii) mean delivery time for the Local pizza restaurant is less than that for the National Chain ? Assume that the delivery times are normally distributed.

10

2. (a) One of the major measures of the quality of service provided by any organization is the speed with which it responds to customer complaints. A large family-held departmental store selling furniture and flooring, including carpets, had undergone a major expansion in the past several years. In particular, the flooring department had expanded from 2 installation crews to an installation supervisor, a measurer, and 15 installation crews. A sample of 50 complaints concerning carpet installation was selected. The following data represents the number of days between the receipt of a complaint and the resolution of the complaint :

54, 5, 35, 137, 31, 27, 152, 2, 123, 81, 74, 27, 11, 19, 126, 110, 110, 29, 61, 35, 94, 31, 26, 5, 12, 4, 165, 32, 29, 28, 29, 26, 25, 1, 14, 13, 13, 10, 5, 27, 4, 52, 30, 22, 36, 26, 20, 23, 33, 68.

- (i) Compute the mean, median, first quartile and third quartile.
(ii) Compute interquartile range, variance, standard deviation and coefficient of variation.
(iii) Is the data skewed ? If so, how ? 2+4+4

- (b) A marketing manager of a company producing tyres was interested in knowing the comparative picture of the average life of various brands of tyres. An experiment was carried out in 4 cities in which the life of 4 brands of tyres (in thousands of kms) was estimated. The following data is collected :

City	Brand			
	Brand 1	Brand 2	Brand 3	Brand 4
City 1	40	39	51	45
City 2	30	31	40	48
City 3	46	48	56	50
City 4	36	35	50	55

Perform suitable tests to check whether significant differences at 5% level in tyres' mean life exist among the (i) cities, and (ii) brands. If there are significant differences among cities or brands, carry out pairwise comparisons.

15

3. (a) The following data represents the calories and fat (in grams) in 7 different types of iced coffee drinks :

Coffee type :	1	2	3	4	5	6	7
Calories :	240	260	350	350	420	510	530
Fat :	08	3.5	22	20	16	22	19

Draw the box-plots separately for calories and fat data. 5+5

- (b) Nine contestants were rated by two experts in a cooking show for coffee making. A rating on a 7-point scale (1 = extremely unpleasant, 7 = extremely pleasing) is given for each of four characteristics : taste, aroma, richness and acidity. The following data displays the summated ratings accumulated over all four characteristics :

Contestant	Expert	
	X	Y
A	24	26
B	27	27
C	19	22
D	24	27
E	22	25
F	26	27
G	27	26
H	25	27
I	22	23

Compute the rank correlation coefficient between the experts. 15