POST GRADUATE DIPLOMA IN APPLIED STATISTICS (PGDAST)

Term-End Examination

December, 2018

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 hypotheses, interpretation, etc.

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1. A mobile manufacturing company was distributing a particular type of model, say model A, through a large number of retail stores. These stores also sell another famous brand of mobile, say, model B. The manager of this company wants to compare the popularity of the newly launched mobile (model A) with that of model B. For this purpose, a random sample of 50 stores were selected and sales of both the models were recorded as given below :

Store No.	Model A	Model B
1	154	412
2	278	404
3	212	161
4	314	234
5	428	204
6	318	254
7	456	112
8	312	278
9	101	438
10	321	206
11	109	476
12	278	312
13	128	482

14	180	441
15	378	342
16	478	206
17	375	262
18	435	189
19	367	245
20	207	330
21	367	245
22	274	315
23	230	399
24	187	416
25	261	272
26	471	189
27	277	234
28	481	175
29	440	125
30	377	315
31	260	334
32	383	132
33	263	455

34	374	220
35	245	173
36	434	390
37	206	448
38	366	360
39	290	164
40	414	212
41	333	166
42	373	411
43	354	221
44	279	245
45	194	385
46	367	311
47	294	280
48	430	400
49	267	240
50	206	445

(i)   Which model is more consistent in sales ?

(ii) Compute suitable width of the class-interval for both sets of mobiles.

(iii) Construct the continuous frequency distribution for both mobiles.

(iv) Test whether the average sales of model A is more than that of model B at 5% level of significance.   (6 + 3 + 6 + 10)

2. (a) Ten contestants were rated by two judges in a singing reality show. A rating on a 7-point scale (1 = extremely unpleasant, ..., 7 = extremely pleasing) is given for each of the five characteristics fixed by judges. The following data display the summated rating of all five characteristics :   18

Contestant	Judge	
	1	2
A	29	31
B	32	32
C	24	27
D	29	32
E	27	30
F	31	32
G	32	31
H	30	32
I	27	28
J	30	29

Compute the rank correlation coefficient.

(b) A random sample of 100 families each in three regions I, II and III were selected and the cooking oil preference of these families are recorded in the following table :

Cooking Oil	Number of Families		
	I	II	III
Sunflower	26	16	26
Soyabean	18	13	12
Olive	19	17	18
Mustard	12	6	16
Gee	18	28	12
Other	7	20	16

Draw a suitable diagram to compare the cooking oil preference in these three regions.

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3. An experiment was conducted to test the effect of six types of fertilizers (A, B, C, D, E and F) on the yield (in kg) of potatoes. In this regard, experimental field was divided into five homogeneous blocks. The yields obtained are reported in the following tables :

Block 1

F	B	E
331	286	312
C	D	A
311	280	177

Block 2

D	F	A
292	323	185
C	B	E
294	278	322

Block 3

F	C	A
313	266	182
E	D	B
319	284	258

Block 4

C	B	E
291	253	328
A	D	F
193	233	319

Block 5

B	A	C
301	192	326
D	F	E
295	346	327

Analyse the design at 5% level of significance by assuming that the effect of each fertilizer and each block in the yield of potatoes are approximately normally distributed with equal variances. Also do pairwise analysis, if needed.   25