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SARDAR PATEL UNIVERSITY

BBA (GENERAL) SEMESTER-IV EXAMINATION

Monday, 24 February 2014
10.30 am - 12.30 pm
UM04CBBA06: STATISTICS FOR MANAGEMENT-II

Total Marks: 60

Q.1 [A] Explain: Population, Sample, Sampling and non-sampling error [04]

[B] Write advantages of sampling. [05]

[C] Explain systemic sampling. Write merits and limitations of it. [06]

OR

Q.1 [A] What is SRS? List out the methods it. Explain any one of them. [05]

[B] Explain stratified sampling. Write merits and limitations of it. [05]

[C] Explain Cluster sampling. Write merits and limitations of it. [05]

Q.2 [A] What is testing of hypothesis? Explain: One-tailed test, two-tailed test, Type I error and Type II error. [05]

[B] The mean height of 50 male students who showed above average participation in college athletics was 68.2 inches with standard deviation of 2.5 inches; while 50 male students who showed no interest in such participation had a mean height of 67.5 inches with a standard deviation of 2.8 inches. Test hypothesis that male students who participated in college athletics are taller than other male students. Use 5 % level of significance. [05]

[C] The mean produce of wheat of a sample of 100 fields is 210 lbs. per acre with a standard deviation of 10 lbs. Another sample of 150 fields gives the mean of 220 lbs. with a standard deviation of 12. Test whether there is any significant difference between the mean yields of crops in the two samples. Use 5 per cent level of significance. [05]

OR

Q.2 [A] It is claimed that a random sample of 100 tyres with a mean life of 15269 kms is drawn from a population of tyres which has a mean life of 15200 kms and a standard deviation of 1248 kms. Test the validity of the claim at 5% level of significance. [05]

[B] An investigation of the relative merits of two kinds of flashlight batteries showed that a random sample of 100 batteries of brand A lasted on the average 36.5 hours with a standard deviation of 1.8 hours, while a random sample of 80 batteries of brand B lasted on the average 36.8 hours with a standard deviation of 1.5 hours. Use a level of significance of 0.05 to test whether the observed difference between the average life times is significance. [05]

[C] The mean yield of two sets of plots and their variability are as given below. Examine   **[05]** whether the difference in the variability in yields is significant at 5% level of significance.

	Set of 40 plots	Set of 60 plots
Mean yield per plot	1258 lb.	1243 lb.
S.D. per plot	34	28

Q.3 [A] What is t-test? Write its applications. Also write two differences between small   **[05]** sample and large sample test.

[B] A soap manufacturing company was distributing a particular brand of soap through   **[05]** a large number of retail shops. Before a heavy advertisement campaign, the mean sales per week per shop was 140 dozen. After the campaign, a sample of 26 shops was taken and mean sales was found to be 147 dozens with standard deviation 16. Can you consider the advertisement effective? Use 5% level of significance.

[C] A certain stimulus administered to each of 12patients resulted in the following   **[05]** pressure:

$$5, \ 2, \ 8, \ -1, \ 3, \ 0, \ -2, \ 1, \ 5, \ 0, \ 4, \ 6$$

Can it be concluded that the stimulus will in general be accompanied by an increase in blood pressure? [Given for 11 d.f., $t_{0.05} = 2.201$].

OR

Q.3 [A] The nicotine content in milligrams of two samples of tobacco were found to be as   **[07]** follows:

Sample-A	24	27	26	21	25	
Sample-B	27	30	28	31	22	36

Can it be said that two samples come from normal populations having the same mean? [Use 5% level of significance].

[B] An IQ test was administered to 5 persons before and after they were trained. The   **[08]** results are given below:

IQ before training	110	120	123	132	125
IQ after training	120	118	125	136	121

Test whether there is any change in IQ after the training programme. [Use 1% level of significance].

Q.4 [A] What is analysis of variance? Explain one way and two ways ANOVA.   **[04]**

[B] Suppose that, in a public opinion survey answers to the question- (a) do you drink? **[05]** (b) Are you in favor of local option on sale of liquor? Were as given in the following table.

Question (b)	Question (a)		Total
	Yes	No	
Yes	56	31	87
No	18	06	24
Total	24	37	111

Can you infer that opinion on local option is dependent on whether or not an individual drink? [Use 5% level of significance].

[C] A trucking company wishes to test the average life of each of the four brands tyres. **[06]** The company uses all brands on randomly selected trucks. The records showing the lives (thousands of miles) of tyres are as given in table. [Use 1% level of significance].

Brand-1	Brand-2	Brand-3	Brand-4
20	19	21	15
23	15	19	17
18	17	20	16
17	20	17	16
	16	16	

OR

Q.4 [A] The time taken by workers in performance a job by method-I and method-II is given **[06]** below:

Method-I	20	16	26	27	23	22	
Method-II	27	33	42	35	32	34	38

Do the data show that the variances of time distribution from population from which these samples are drawn do not differ significantly? [Use 5% level of significance].

[B] Five doctors each test five treatments for a certain disease and observe the number **[09]** of days each patient takes to recover. The results are given in table.

Doctors	Treatments				
	I	II	III	IV	V
A	10	14	23	18	20
B	11	15	24	17	21
C	9	12	20	16	19
D	8	13	17	17	20
E	12	15	19	15	22

Discuss the difference between:

(a) the Doctors and

(b) the Treatments. Use level of significance 5%.

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