

# UKA TARSADIA UNIVERSITY

B.Pharm. (2nd Semester)

Subject :030020205-Biostatistics

Time : 2:30 pm to 5:30 pm

Duration : 3 Hours

Date : 09/12/2013

Max. Marks : 70.

## Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks allocated to that question.
5. Draw diagrams/figures whenever necessary.

## SECTION - 1

### Q-1 (A) Do as directed.

[07]

- I) Define population.
- II) What is sampling without replacements explain with example?
- III) Define data organization.
- IV) Write two disadvantage of nonparametric test.
- V) What do you mean by 5% level of significance?
- VI) Define null hypothesis.
- VII) Find sample mean of sample data 12, 34, 45, 23, 12, 14.

### Q-1 (B) Answer the following in brief. (Any 4)

[08]

- I) Explain sampling error with example.
- II) Write advantages and disadvantages of sampling.
- III) State difference between Diagram and Graphs.
- IV) How pie chart is useful in pharmaceutical analysis.
- V) Consider the following hypothesis test  $H_0: \geq 20$ ,  $H_1: < 20$ , A sample of 50 provided a sample mean of 19.4. The population S.D is 2. Compute the value of the test statistic.
- VI) Write difference between small sample test and Large sample test.

### Q-2 Answer the following.

[10]

- A) Write short note on stratified random sampling.

**OR**

- A) Explain bar chart with appropriate pharmaceutical example.
- B) In a random sample of 500 persons from Maharashtra, 200 are found to be consumer of vegetable oil. In another sample of 400 persons from Gujarat, 200 are found to be consumer of vegetable oil. Discuss whether the data reveal a significant difference between Maharashtra and Gujarat so far as production of vegetable oil consumer is concerned

**OR**

- B) 10 oil tins are taken at random from an automatic filling machine. The mean weight of the tins is 14.5 kg and standard deviation is 0.50 kg. Does the sample mean differ significantly from the intended weight of 15 kg?

### Q-3 Answer the following in detail. (Any 2)

[10]

- A) What is multistage sampling? Explain Sampling distribution with example.
- B) For random sample of 10 animals fed on diet A, the increase in weight in a certain period were 10, 6, 16, 17, 13, 12, 8, 14, 15, 9. For another random sample of 5 animals, fed on diet B, the increase in 21, 23, 10, 17, and 20. Check whether the estimates of the population variance from the samples are significantly

different or not?

C) Write short note on the Wilcoxon signed-rank test

## **SECTION – 2**

**Q-4 (A) Do as directed.**

**[07]**

- I) Interpret the coefficient of correlation  $r = -0.35$ .
- II) If  $b_{xy} = -0.5$  and  $b_{yx} = -1.5$  then find  $r$ .
- III) What do you mean by experimental design?
- IV) Write two merits of parallel experimental design.
- V) Write any two disadvantages of statistical quality control.
- VI) Define R chart.
- VII) State Product moment formula for Karl Pearson's coefficient of correlation.

**Q-4 (B) Answer the following in brief. (Any 4)**

**[08]**

- I) What is the difference between correlation and regression?
- II) If regression coefficients  $b_{xy} = 0.35$ ,  $b_{yx} = 1.35$ , Mean of  $x = 3.5$  and mean of  $y = 4.5$  then find both the regression line  $x$  on  $y$  and  $y$  on  $x$ .
- III) Write merits and demerits of cross over experimental design.
- IV) Explain Wash-out period with example.
- V) How C-Chart is useful in pharmacy?
- VI) Explain statistical quality control advantageous with example.

**Q-5 Answer the following.**

**[10]**

- A) Explain scatter diagram method with example.

**OR**

- A) Find coefficient of correlation for the data of drug X and blood pressure Y given below

X	14	23	35	46	57	47	43	44
Y	20	13	23	34	43	32	12	12

- B) What is regression? Find both the regression from the data given below

	X	Y
Mean	32.5	37
Variance	16	25
Coefficient of correlation	0.56	

**OR**

- B) Explain X bar chart with pharmacy related example.

**Q-6 Answer the following in detail. (Any 2)**

**[10]**

- A) Find Spearman's coefficient of correlation from the data given below

A	15	20	25	24	23	12	11
B	23	45	34	67	54	21	22

- B) Explain two-way cross over and three-way cross over experimental design with example.
- C) What is sigma chart? Explain the process of sigma chart with illustrative example.