

**PARUL UNIVERSITY**  
**FACULTY OF PHARMACY**  
**B.Pharm. Summer 2018-19 Examination**

**Semester: 2**  
**Subject Code: 08101155**  
**Subject Name: Applied Biostatistics**

**Date: 11/04/2019**  
**Time: 2:00 pm to 5:00 pm**  
**Total Marks: 75**

**Instructions:**

1. Figures to the right indicate full marks.
2. Make suitable assumptions wherever necessary.

**Q.1 Essay type Questions. (Any 2 out of 3) (10 marks each) (20)**

1. Explain Lottery Method and Random number tables method.
2. What Correlation ? Explain positive or negative correlation.
3. What is Hypothesis & Test of Hypothesis ? Explain Types of Errors in Testing of hypothesis.

**Q.2 Short Essay type Questions. (Any 7 out of 9) (5 marks each) (35)**

1. Compute Correlation the correlation coefficient between X and Y using following data

X	2	4	5	6	8	11
Y	18	12	10	8	7	5

2. A random sample of 20 tablets from a batch gives mean active ingredient content 42mg and standard deviation of 6 mg. Test the hypothesis that the population mean is 44 mg. ( $t(19,0.05)=2.09$ )
3. Two sample of size 8 & 7 gives sum of squares of deviation from their respective means equal to 35 & 22 respectively. Test the hypothesis that populations have same variance. ( $F(7,6,0.05)=4.21$ )
4. In cross breeding experiment with plant of certain species 20 off springs were classified into 4 classes with respect to the structure of their leaves as follows :

Class	I	II	III	IV	Total
Frequency	21	127	40	52	240

According to theory the probabilities of off springs in four classes should be in the ratio 1:9:3:3. Are theses data consistent with theory ? ( $\text{Chi-square}(3,0.05)=7.82$ )

5. The data given below :

Variable	Mean	Standard deviation	Coefficient of correlation
X	40	5	r = 0.8
Y	30	4	

Find the equations for two lines of regression.

6. A group of 5 patient treated with medicine A weight 48,42,41,39,60 kgs. A second group of 7 patients from same hospital treated with medicine B weight 62,69,68,38,42,64,56 kgs. Do you agree with the claim that the medicine B increases the weight significantly grater than medicine A ? ( $t(10,0.05)=2.23$ )
7. "Time to Sleep" for control and two doses of experimental compound(min)

Control	8	1	9	-	9	6	3	15	1	7	Total
Rank(R1)	22	3.5	24.5	-	24.5	15	10	28	3.5	18.5	149.5
Low doses	10	5	8	6	7	7	15	1	15	7	-
Rank(R2)	26	13	22	15	18.5	18.5	28	3.5	28	18.5	191
High doses	3	4	8	1	1	3	1	6	2	2	-
Rank(R3)	10	12	22	3.5	3.5	10	3.5	15	7.5	7.5	94.5

Using Kruskal- Wallis Test, Test the average "time to sleep" differs for at least two of the three treatment groups(Control, Low doses, High doses)at least 5 % of level of significance and 2 degree of freedom.( $\text{Chi-square}(2,0.05)=5.99$ )

8. An I.Q. test to administered for 5 medical representative before and after they were trained. The results are given below :

I.Q. before training	110	120	123	132	125
I.Q. after training	120	118	125	136	127

Test whether there is any change in I.Q. after the training program.

9. The equations for two line of regression are  $y = 2.25x - 58$  ,  $x = 0.25y + 35.5$ . Find (1) means of X & Y (2) Coefficient of correlation between X & Y.

**Q.3 Answer in short. (2 marks each)**

**(20)**

1. Write four advantages of Sampling.
2. Define Standard Error.
3. In ANOVA table If MSC = 5.60, MSE = 2.03 then F = \_\_\_\_\_
4. The value of correlation coefficient(r) lies between \_\_\_\_\_. If  $r = 0$  then two variables are \_\_\_\_\_
5. What is level of significance ?
6. Write Methods of correlation.
7. In F – test,  $n_1 = 8$ ,  $n_2 = 7$  then degree of freedom is \_\_\_\_\_ and \_\_\_\_\_
8. What are advantages of Non-Parametric Test ?
9. Mode of first seven natural number is \_\_\_\_\_
10. If pulse rate of 12 individuals are 58,66,70,74,80,86,90,100,79,96,88,97 then Range = \_\_\_\_\_