

PARUL UNIVERSITY
FACULTY OF PHARMACY
B.Pharm. Winter 2019-20 Examination

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

Date: 20/11/2019
Time: 02:00 pm to 5:00 pm
Total Marks: 75

Instructions:

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

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

- Find the mean, median and mode of the following data

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Students	4	6	10	20	10	6	4

- Ten competitors in a musical contest were ranked by the three judges A,B and C in the following order:

Rank of A	1	5	4	8	9	6	10	7	3	2
Rank of B	4	8	7	6	5	9	10	3	2	1
Rank of C	6	7	8	1	5	10	9	2	3	4

- A random sample is selected from each of the three makes of ropes and their breaking strengths are measured with the following results:

1	21,23,19,24,25,23
2	19,21,20,18,22,20,
3	15,10,13,14,11,15

Construct an ANOVA table and test whether the breaking strengths of the ropes differ significantly at 5% level of significance.

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

- Eight items of a sample have the following values:

47, 50, 52, 48, 47, 49, 53, 51

Does the mean of the 8 observations differ significantly from the assumed population mean of 48? Use 5% level of significance.

- The following table shows the observed and expected frequencies in tossing a die 120 times.

Test the hypothesis that the die is fair, using a significance level of 0.05

Die face value	1	2	3	4	5	6
Observed Frequency	25	17	15	23	24	16
Expected Frequency	20	20	20	20	20	20

- Two random samples are drawn from two normal populations and the following results are obtained:

Sample 1: 98,94,97,98,97,100

Sample 2: 89,99,94,99,92,96

Obtain the estimates of the variance of the populations and test whether the two populations have the same variance.

- Below are given the figures of production of a sugar factory

Year	2003	2004	2005	2006	2007	2008	2009
Production	80	90	92	83	94	99	92

Fit a straight line trend to these figures.

5. An I.Q. test was administered to 10 medical representatives before and after they were trained. The results are given below:

Before	110	120	123	132	125
After	120	118	125	136	127

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

6. Compute the coefficient of variation using the following data:

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	3	8	15	16	6

7. Find the coefficient of correlation between X & Y for the following data:

X	43	44	36	38	47	40	41	54	37	46
Y	74	76	60	68	79	70	71	94	65	78

8. Consider the sample size of 5, with data values 10, 20, 12, 17 and 16. Compute the variance and standard deviation.

9. Obtain the equation of the line of regression of Y on X using the data given below.

Estimate the blood pressure when the age is 45 years

Age in years (X)	1	2	3	4	5	6
Blood Pressure(Y)	3	15	6	20	9	25

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

(20)

1. Null Hypothesis and Alternative Hypothesis
2. Parameter and statistics
3. If the mean of 5 observation 7, 8, 10, x, 5 is 9, then find the value of x.
4. Type-1 and Type-2 Errors
5. Find the mode of the following data: 1,2,4,6,5,7,8,9,10,1,5,6,11,9,8,7,12,8,7,6,4,2,11,12,5,9.
6. one-tail test and two-tail test
7. Level of significance.
8. Degree of freedom
9. Line of regression.
10. Write down the names of sampling methods.