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Roll No

BP-801T/PY-801-CBGS

B.Pharmacy VIII Semester (PCI Scheme)/ (Non-PCI Scheme)

Examination, June 2020

Choice Based Grading System (CBGS)

Biostatistics and Research Methodology

Time : Three Hours

Maximum Marks : 75

Note: i) Attempt any five questions out of Eight questions.

ii) All questions carry equal marks.

1. a) Find the Mean, Median and Mode of the following data:
2, 4, 7, 1, 6, 9, 5, 4, 4, 3, 4
- b) Define Range and Standard deviation. Find the Standard Deviation of the data:
1.24, 5.19, 1.62, 9.54, 2.63, 4.25, 5.34
2. a) The monthly rate for a certain disease is 7 in 1000. What is the probability for just 2 deaths on account of this disease in a group of 400? Given that $e^{-2.8} = 0.06$.
- b) The Height of 10 males of a given locality are found to be 70, 67, 62, 68, 61, 68, 70, 69, 64, 66 inches. Is it reasonable to believe that the average height is 64 inches? Test at 5% significance level for 9 degree of freedom. (Given $t_{0.05} = 1.83$ for 9 d.f.)

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- 3. a) What do you mean by Research? Explain experimental design techniques.
- b) Discuss various phases in designing clinical trial with examples.
- 4. a) What is meant by regression modelling? Explain hypothesis testing in simple and multiple regression models.
- b) Explain Blocking and Confounding the 2^k factorial design in two blocks.
- 5. a) What do you mean by factorial design? Write some advantages of factorial design.
- b) Write short note on central composite design.

- 6. a) Find the Karl Pearson's coefficient of correlation from the following data:

x	2	4	4	7	5
y	8	8	5	6	2

- b) Define the following:
 - i) Null hypothesis and Alternative hypothesis
 - ii) Error I-Type and Error-II type
 - iii) Sampling and Essence of sampling
- 7. a) For the given data

	x	y
Arithmetic Mean	36	85
Standard Deviation	11	8

Correlation coefficient between x and y is 0.66. Find two regression lines of-

- i) y on x
- ii) x on y

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- b) Explain the following
- i) Cohorts studies
 - ii) Report writing and presentation of data
8. a) The table below shows the hours of relief provided by two analgesic drugs in 12 patients suffering from arthritis. Is there any evidence that one drug provides longer relief than the other. Use Wilcoxon Rank Sum test to solve

Drug A	2.0	3.6	2.6	2.6	7.3	3.4	14.9	6.6	2.3	2.0	6.8	8.5
Drug B	3.5	5.7	2.9	2.4	9.9	3.3	16.7	6.0	3.8	4.0	9.1	20.9

Given that P-Value, $P = 0.012$

- b) Write short note on ANOVA (Analysis of Variance).
