

**III. Short answers (Answer seven out of nine questions) 5x7=35**

1. Calculate median for the following data: 5

Class	0-10	11-20	21-30	31-40	41-50	51-60
Frequency	48	62	130	105	58	52

2. Compute arithmetic mean by shortcut method for the following data. 5

Wages in Rs	10-20	20-40	40-50	50-70	70-80	80-100
No of persons	5	15	25	35	12	8

3. Name various software used in biostatistics. Explain the features of anyone. 1+4=5
4. What is Karl Pearson's Correlation Coefficient? Explain how to Calculate Karl Pearson's Coefficient of Correlation. 1+4=5
5. What are the different steps involved in report writing and presentation of data. 5
6. Write a note on the designing of clinical trials. 5
7. Define optimization. Mention and discuss any two types of applied optimization methods. 4+1=5
8. Define and explain factorial design with advantages and disadvantages. Explain how factorial design is different from RSM. 4+1=5
9. What is historical design? Write various steps in historical design. 2+3=5

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**2023/EVEN/13/38/BP-801/018**

**B Pharm Even Semester Examination, September, 2023**

**PHARMACEUTICAL SCIENCES**

**(8th Semester)**

**Course No: BP-801T**

(Biostatistics and Research Methodology- Theory)

FM: 75

Time: 3 Hours

*The figures in the right margin indicate full marks for the question*

**I. A. Multiple Choice questions 1x10=10**

1. In testing the hypothesis we use different levels of significance to test  $H_0$ , in most situations level of significance is not given then we have to use;
- (i) 1% (ii) 2%
- (iii) 5% (iv) 10%
2. A variable which has some chance or probability of its occurrence is known as
- (i) Simple variable (ii) Qualitative variable
- (iii) Quantitative variable (iv) Random variable
3. The mode of the following series is \_\_\_\_\_.  
3,5,8,5,4,5,9,3.
- (i) 3 (ii) 5
- (iii) 4 (iv) 0

Turn Over

4. Which is used to compare the variability of two or more than two series?
- Mean
  - Standard deviation
  - Coefficient of variation
  - Mean deviation
5. What is the maximum similarity limit as prescribed by the UGC Plagiarism Regulation Act 2018?
- 8%
  - 10%
  - 15%
  - 90%
6. What is the first step of research?
- Formulation of hypothesis
  - Identification of problem
  - Data collection
  - Data analysis
7. Literature review helps to-
- Bring clarity and focus to a research problem
  - Improve the research methodology
  - Broaden your knowledge base in your research area
  - All of the above
8. Combined effect of variables is demonstrated by-
- Response
  - Factor
  - Level of factor
  - Interaction

9. How many experiments are to be conducted in the case of Factorial design having 4 factors and 3 levels?
- 12
  - 64
  - 81
  - 48
10. Which step of historical research involves criticism of data?
- Step 1
  - Step 2
  - Step 3
  - Step 4

**I. B. Objective type 2x5=10**

- Differentiate unconstrained from constrained optimization parameters.
- Define OVAT and DOE.
- Explain primary data. Give its limitations.
- Define sample and population.
- What do you mean by power of a study?

**II. Long answers (Answer two out of three questions) 10x2=20**

- What is hypothesis testing? What are the main points that should be considered while formulating the hypothesis? Write the types of statistical hypothesis. Discuss the basic concepts concerning the testing of hypothesis. 10
- Define and classify research. What is the need and purpose of research? Discuss about the different types of plagiarism occasionally encountered in research report. 3+3+4=10
- What is Research Surface Methodology (RSM)? Discuss various steps involved in RSM. 2+8=10

**Turn Over**