

This question paper contains 4 printed pages]

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S. No. of Question Paper : **1946**

Unique Paper Code : **2493010012**

Name of the Paper : **Research Methodology (DSE)**

Name of the Course : **B.Sc. (Hons.) Biochemistry (NEP)**

Semester : **VI**

Duration : **2 Hours**

Maximum Marks : **60**

(Write your Roll No. on the top immediately on receipt of this question paper.)

There are **6** questions.

Attempt *four* questions in all.

All questions carry equal marks.

Question No. **1** is compulsory.

The use of a simple calculator is allowed.

1. (A) Explain the following terms :

- (i) Creative Commons
- (ii) Impact factor
- (iii) Null Hypothesis
- (iv) Patent
- (v) Mode
- (vi) Regression
- (vii) Independent variable.

P.T.O.

(B) Justify the following statements :

- (a) Funding agencies play a vital role in advancing research and innovation.
- (b) Proper citation and referencing strengthen the credibility of research report.
- (c) A good hypothesis is the foundation of successful research study.
- (d) Measures of central tendency are important indicators of data distribution. 7,8

2. (A) What is h -index ? Explain its significance. Calculate h -index from the data shown below. A statistician wants to test the hypothesis $H_0 : \mu = 120$ using the alternative hypothesis $H_\alpha : \mu > 120$ and assuming that $\alpha = 0.05$. For that, he took the sample values as : $n = 40$, $\sigma = 32.17$ and $\bar{x} = 105.37$. Determine the conclusion for this hypothesis.

(B) What is h -index ? Explain its significance. Calculate the h -index from given data :

Research Article	Citations
1	65
2	38
3	27
4	19
5	91
6	7

7	8	
8	29	
9	14	
10	11	
11	18	
12	20	10,5

3. (A) What are the various methods of data collection ? Discuss the interview method in detail, including its merits and demerits.
- (B) What do you mean by the term correlation ? What are the different types of correlation ?
- (C) What do you mean by the terms : Standard deviation and Coefficient of variation. Find the coefficient of variation for the following data :

24, 26, 33, 37, 29, 31 6,4,5

4. (A) Discuss the following research designs :
- (i) Descriptive
 - (ii) Cohort
 - (iii) Case-control.
- (B) What role do visuals and graphs play in creating effective poster presentations ?
- (C) Explain why plagiarism constitutes both an ethical and legal offense. A PhD student submits a review article to their supervisor, which shows 55% plagiarism upon analysis. Is this within the acceptable range ? Name *two* software tools for plagiarism detection. 7.5,3,4.5

P.T.O.

5. Differentiate between the following pairs :

- (i) Exploratory and experimental research design
- (ii) Research article and review article
- (iii) Discrete series and continuous series coefficient of variation
- (iv) Primary and secondary data

(v) Random and non-random sampling 3×5=15

6. Write short notes on the following :

- (i) Regression analysis and its applications
- (ii) Intellectual Property Rights (IPR)
- (iii) Reference management software.

5,5,5