[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 9213 **J**

Unique Paper Code : 2173550007

Name of the Paper : DSE: Research Methodology for Chemists

Name of the Course : **B.Sc. (Prog.) Analytical Chemistry**

Semester : VI

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Answer any **six** questions from the total of **eight** provided in the question paper.
3. Answer **all** parts of a question together.

1. Write short notes on **any three** of the following : (5×3=15)
   (a) TOC alerts.
   (b) Hot articles.
   (c) E-consortium with example.
   (d) Monograph.

2. (a) Discuss the significance of journal metrics such as Impact Factor, H-index, and Citation Index. How do these metrics affect research quality and journal ranking? (5)
   (b) Explain good ethical practices in scientific writing. Discuss the importance of proper' citation, writing ethics, and methods to avoid plagiarism, with suitable examples. (5)
   (c) What is ScienceDirect? Explain its features, search techniques, and its utility in chemical and allied research fields. Compare it briefly with Scopus. (5)

3. (a) What-are preprint servers? Discuss their advantages and limitations. (5)
   (b) Distinguish between reviews and research articles. (5)
   (c) What is journal access? Briefly explain open and subscription-based access models. (5)

P.T.O.

4. (a) What are the key differences between primary and secondary information sources? (5)

   (b) Discuss the advantages of discussion groups and online communities for researchers. (5)

   (c) What is the impact factor? How is it calculated? (5)

5. (a) Analyze the role of descriptive statistics in summarizing experimental outcomes. (5)

   (b) Describe the application of the scientific method in the design of experiments. (5)

   (c) Evaluate the significance of using protective apparel during experimental activities. (5)

6. (a) Discuss the ventilation standards necessary for laboratories, handling hazardous gases. (5).

   (b) Define SI units and explain their importance in scientific measurements, providing relevant; examples. (5)

   (c) Summarize the emergency response procedures for managing a chemical fire in a laboratory. (5)

7. (a) Explain safe practices for the storage of waste chemicals prior to disposal. (5)

   (b) Discuss the significance of curve fitting in the analysis of experimental data. (5)

   (c) Outline the first aid procedures for chemical exposure to the eyes in a laboratory. (5)

8. (a) Identify key precautions to consider when interpreting regression analysis results. (5)

   (b) Describe first aid measures for incidents involving exposure to corrosive chemicals. (5)

   (c) Analyze the impact of outliers on the mean and median of a data set, and explain the concepts and applications of standard deviation and variance. (5)

(100)