7. (a) Evaluate the importance of residual analysis following curve fitting. 5

(b) Discuss techniques for linearizing nonlinear relationships observed in experimental data. 5

(c) Discuss the application of multiple linear regression in the interpretation of data. 5

8. (a) Outline the methods for identifying and segregating chemical waste in a laboratory setting. 5

(b) Describe the method for safe disposal of chemicals in sanitary sewer system. 5

(c) Describe a standard procedure for handling emergency chemical spills involving toxic substances. 5

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[This question paper contains 4 printed pages]

Your Roll No. : .....

Sl. No. of Q. Paper : **5896** **I**

Unique Paper Code : 2173550007

Name of the Paper : DSE : Research Methodology for Chemists

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

Semester : VI

Time : 3 Hours ***Maximum Marks : 90***

Instructions for Candidates :

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

(b) Answer any **six** questions from the total of eight provided in the question paper.

(c) Answer **all** parts of a question together.

1. Write short notes on any **three** of the following : 5×3=15

(a) Chemical abstracts

(b) Beilstein database

(c) Writing ethics for scientific publications

(d) Plagiarism

2. (a) Discuss in detail the types of information sources : primary, secondary, and tertiary. Give suitable examples for each. 5

(b) Describe the role and importance of E-consortiums. UGC Infonet, E-journals, and E-books in supporting academic and scientific research. 5

(c) What is Google Scholar ? Explain its features, search techniques, and its utility in chemical and allied research fields. Compare it briefly with Scopus. 5

3. (a) What is the historical significance of print resources in libraries, and how have they contribute to research and education ? 5

(b) Explain how discussion groups and online communities benefit researchers. 5

(c) Discuss the relevance of TOC alerts and Hot Articles in keeping researchers updated. 5

4. (a) What are ChemIndustry and ChemSpider ? Discuss their uses. 5

(b) What is the h-index ? Discuss with an example. 5

(c) Explain the significance of reviews in scientific research. 5

5. (a) Outline the essential safety protocols for the transportation of hazardous chemicals. 5

(b) Outline the safe practices that must be followed when working with gases under high and low pressure. 5

(c) Describe the standard laboratory procedure involved in the recovery and reuse of chemicals. 5

6. (a) Discuss the application of linear fitting techniques in the data interpretation. 5

(b) Discuss the concept of an investigative approach in the context of data collection. 5

(c) Explain the common abuses and misconceptions associated with the correlation coefficient (r). 5