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5 SEM TDC DSE CHM (CBCS) 3 (H)

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(Nov/Dec)

CHEMISTRY

(Discipline Specific Elective)

(For Honours)

Paper : DSE-3

(Research Methodology for Chemistry)

Full Marks : 80

Pass Marks : 32

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

UNIT—I

(Marks : 23)

1. Write short notes on any *four* of the following : 4×4=16
- (a) Chemical abstracts
 - (b) Beilstein database
 - (c) Impact factor
 - (d) h-index
 - (e) Online databases of scientific literature

(2)

2. How can internet and world wide web help in performing literature survey? Briefly discuss about Internet resources available for research in Chemistry. 1+3=4
3. What is a review article? How to write a good review article? 1+2=3

UNIT—II

(Marks : 22)

4. Answer any *four* of the following questions : 5×4=20
- (a) How to report a project work performed in chemistry research laboratory? Discuss the general structure of the dissertation. What are the roles of each section of the dissertation? 1+2+2=5
- (b) How to deliver an effective oral presentation? How is an oral presentation different from a poster presentation? 3+2=5
- (c) What is plagiarism? How to detect and avoid plagiarism? 1+4=5
- (d) Discuss in detail the process of writing and publishing a research article. 5
- (e) Discuss the steps of a research process. 5
5. What are the needs for illustrative diagrams and tables in a scientific paper? 2

(3)

UNIT—III

(Marks : 12)

6. Answer any *three* of the following questions :

2×3=6

- (a) Discuss about the protective apparels to be used in a chemical laboratory. 2
- (b) Discuss about an emergency procedure when chemical splashes on skin. 2
- (c) How to handle flammable chemicals in a laboratory? 2
- (d) What is an MSDS document? Why is this document important? 1+1=2

7. Answer any *two* of the following questions : 3×2=6

- (a) Discuss how to store and dispose waste chemicals from a research laboratory.
- (b) Discuss the procedure for disposal of explosives.
- (c) Discuss the methods to recycle and reuse laboratory chemicals.

UNIT—IV

(Marks : 13)

8. Answer any *three* of the following questions :

4×3=12

- (a) What is ANOVA? Discuss the importance of ANOVA in statistical analysis of research data. 1+3=4

- (b) Discuss the method of least square fit to find the best fit straight line to a given data. 4
- (c) Discuss the method of multiple linear regression analysis. 4
- (d) Define any three measures of central tendency. What is a robust statistic? 3+1=4
9. What are the upper and lower limits of Pearson's correlation coefficient? 1

UNIT—V

(Marks : 10)

10. Write short notes on any *three* of the following : 2×3=6
- (a) Diodes
- (b) Transistors
- (c) Logic gates
- (d) Capacitors
11. Answer any *one* of the following questions : 4
- (a) Discuss the electronic circuit of cyclic voltammetry setup.
- (b) Discuss the roles of various electronic components used in a UV-visible spectrophotometer.
