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

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(Held in January/February, 2022)

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

1. Answer any five of the following questions :

3×5=15

- (a) What are the different types of sources of data/information? Discuss each one of them with examples.

3

- (b) Write a comparative discussion about the following types of scientific articles : 3

Original research article, Review article, Communication article

- (c) Discuss in detail about the Beilstein database. 3

- (d) Name three online databases to search published scientific articles. Also briefly discuss the search option available and information that can be obtained from each of these databases. 3

- (e) Write the full forms of the following chemistry journal publishing groups :

(i) ACS

(ii) RSC

Name one journal published by each of these publishing groups, also write their ISO 4 abbreviations. 1+1+1=3

- (f) What is 'Chemical Abstracts'? Who publishes 'Chemical Abstracts'? What are the collective indexes published by 'Chemical Abstracts Service'? 1+1+1=3

2. (a) Define impact factor. What are the uses and limitations of impact factor? 1+1=2

- (b) A journal published 105, 120 and 112 citable articles in the year 2019, 2020 and 2021 respectively. The journal received a total of 10472 citations in 2021; out of these citations 8542 were received by articles published before 2019 while 372 citations were received by articles published in 2021. Calculate the 2021 impact factor of the journal. 2

3. Define *h*-index. The following citation data is available for the articles published by an author :

| | | | | | | | | | | |
|--------------------|----|----|----|----|---|---|----|---|---|----|
| Article S. No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Citations received | 16 | 12 | 34 | 13 | 8 | 6 | 10 | 3 | 1 | 0 |

Use a graph to find the *h*-index of the author.

$$1+3=4$$

UNIT—II

4. Answer any *four* of the following questions : $5 \times 4 = 20$
- (a) What is plagiarism? Name two plagiarism detection services. Discuss how to avoid plagiarism. $1+1+3=5$
- (b) Discuss the general structure of a research article. Elaborate the role of each section in the research article. $2+3=5$

UNIT—V

9. What is an electronic circuit? Name four electronic components and discuss their functions. 1+4=5
10. Answer any *one* of the following questions : 5
- (a) Discuss the electronic circuit of cyclic voltammetry setup.
 - (b) Discuss the roles of various electronic components used in a UV-visible spectrophotometer.
