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3 (Sem-6 /CBCS) CHE HE 4

2024

CHEMISTRY

(Honours Elective)

Paper : CHE-HE-6046

(Research Methodology for Chemistry)

Full Marks : 80

Time : Three hours

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

1. Answer the following questions : $1 \times 10 = 10$

(a) SciFinder is a resource introduced by

- (i) Chemical Abstracts Service
- (ii) Elsevier
- (iii) Indian Chemical Society
- (iv) Royal Society of Chemistry

Contd.

(b) Which of the following is not true of a cover letter ?

- (i) It is exact replica of abstract or conclusion.
- (ii) It outlines the main theme of the paper.
- (iii) It argues the novelty of the paper.
- (iv) It justifies relevance of manuscript to targeted journals.

(c) As per the Diamond symbol of the chemical label, red represents

- (i) Health Hazard
- (ii) Fire Hazard
- (iii) Reactivity Hazard
- (iv) Personal Protective Equipment

(d) The GHS pictogram with skull and cross-bone mark represents

- (i) Aquatic Toxicity
- (ii) Acute Toxicity
- (iii) Explosive
- (iv) Irritant

(e) Which of the following is not a measure of central tendency ?

- (i) Mode
- (ii) Median
- (iii) Mean
- (iv) Pearson's coefficient

(f) Full form of ANOVA is

- (i) Analysis of Variance
- (ii) Analysis of Values
- (iii) Answering of Variance
- (iv) None of the above

(g) Semiconductor diode is used as

- (i) Amplifier
- (ii) Oscillator
- (iii) Rectifier
- (iv) Modulator

(h) An example of passive component in electronic circuit is

- (i) Diodes
- (ii) Capacitors

(iii) Generator

(iv) Battery

(i) The Journal of Indian Chemical Society is published by

(i) Indian Chemical Society

(ii) Taylor and Francis

(iii) Elsevier

(iv) Royal Society of Chemistry

(j) The first step of waste management is

(i) Reduce generation

(ii) Reuse

(iii) Eliminate generation

(iv) Treatment

2. Answer the following questions : $2 \times 5 = 10$

(a) What is author index ?

(b) Name *two* plagiarism checking softwares.

(c) What is called autoignition temperature ?

(d) What is *R* in data analysis ? Discuss its use and drawback.

(e) What are digital electronics ?

3. Answer **any five** of the following questions : $4 \times 5 = 20$

(a) What is transformer ? Draw the circuit of a transformer. Write *any two* applications of a transformer.

(b) Write what is known as skewness. Draw different types of skewness.

(c) Write a short note on storage, handling and transportation of flammable chemicals in the laboratory.

(d) Write the different stages of waste management as per RCRA.

(e) What are the different forms of plagiarism in scientific writing.

(f) What are the different proforma of a research project ?

(g) Write the names of three International journals of chemistry and two National journals of chemistry with their publishing houses.

4. Answer **all** questions : $10 \times 4 = 40$

A. (a) (i) What are different search engines ? Write briefly on Google Scholar.

$2 + 3 = 5$

- (ii) What are the advantages of ChemSpider ? 5

Or

- (b) (i) Discuss with suitable examples about impact factor and *h*-index and how are they calculated. 5

- (ii) Discuss the major websites that offer teaching and learning materials for researchers. 5

- B. (c) (i) Explain how you can avoid plagiarism in research. 5

- (ii) What rules must be followed to give an effective oral presentation ? 5

Or

- (d) (i) Discuss the complete publication process of a scientific work. 5

- (ii) Write in detail the various steps to follow in the reporting of a project work. 5

- C. (e) (i) Write the general guidelines for recycle, recovery and reuse of chemical wastes inside the laboratory. 5

- (ii) What are flammable materials ? Write and classify different flammable chemicals in laboratory. 5

Or

- (f) Draw a chart of chemicals with associated hazards mentioning pictogram symbol, name and meaning of the symbol. 4+2+2+2=10

- D. (g) (i) Discuss about the different measures of central tendency with examples. 5

- (ii) Write about the safety procedures and protective equipments required while working in a chemistry laboratory. 5

Or

- (h) (i) What are operational amplifiers, their types and applications ? 5

- (ii) Draw the basic schematic diagram of a spectrophotometer as well as its electronic circuit. $2\frac{1}{2}+2\frac{1}{2}=5$