3 (Sem–6 / CBCS) CHE HE 4

2022

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 ***any ten*** *questions from following :* 1×10=10

   (i) Write *one* easily flammable chemical available in every chemical laboratory.

   (ii) Who owns ChemSpider ?

   (iii) What is SCOPUS ?

Contd.

(iv) What is a digital journal ?

(v) Write the full form of ANOVA.

(vi) Write the name of the instrument where intensity of a light beam at different wavelengths is measured in a laboratory.

(vii) What is literature review in research ?

(viii) What is TOC alert ?

(ix) Define H-index in chemical research.

(x) What is a preprint ?

(xi) What is Google Scholar ?

(xii) What is incineration in chemical research ?

(xiii) Define bibliography.

(xiv) What is SciFinder used for ?

(xv) What is a monograph ?

2. Answer ***any five*** questions from following questions : 2×5=10

(i) Why is Wiki named as database ?

(ii) Write the names of *two* chemicals which are treated as laboratory hazard.

(iii) How does literature survey help in research ?

(iv) How can researchers take help of E-Consortium ?

(v) Write the significance of Beilstein database in chemical research.

(vi) What is chemical abstract ?

(vii) What is ChemSpider used for ?

(viii) Differentiate oral presentation from poster presentation.

3. Answer ***any four*** questions from following options : 5×4=20

(a) What is the difference between e-book and e-journal ? How are these helpful in chemical research ? 4+1=5

(b) What do you mean by multiple regression analysis ? How is it helpful to a researcher ? Explain with an example.

(c) Mention *five* important precautions that must be taken while transporting hazardous chemicals.

(d) What are different styles of referencing ? Write about *any two* of them. 2+3=5

(e) How do chemometrices help in analytical chemistry research ? 5

(f) Define collective index and give *four* examples of it. 1+4=5

(g) *(i)* How does search engine help in research ? 3

(ii) Define linearzing transformations. 2

(h) Write about *five* important precautions that must be taken by an oral presenter.

4. Answer ***any four*** questions from the following : 10×4=40

(a) Write the basic principles of a spectrophotometer. Why and how are spectrophotometers used in chemical analysis research ? 2+(4+4)=10

(b) What is curve fitting and how does it help in data analysis in chemistry ? How is it related with regression ? How do you fit an exponential model data ? 4+2+4=10

(c) What is plagiarism in scientific research ? Why is it done by some researchers ? Why is plagiarism wrong ? How can it be prevented ? 3+3+2+2=10

(d) (i) Why is laboratory safety important ? Name *five* laboratory safety items that must be present in a UG level laboratory. 1+5=6

(ii) To handle common accidents in a chemical laboratory. What first acid measures one should take ? Elaborate. 4

(e) Identify *five* ethical issues in writing papers. Why is ethics important in writing ? What are the ethical ways to avoid plagiarism ? 5+2+3=10

(f) What is a project work ? Write a brief outline of an excellent chemistry project. 2+8=10

(g) (i) What are SI units ?

(ii) Why are statistical tests important in research ? How does a researcher choose the right statistical test ?

(iii) What are the important steps in designing an experiment ? 1+(2+2)+5=10

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