F–3119

Sub. Code
7PCH1C1

M.Phil DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Chemistry

RESEARCH METHODOLOGY IN CHEMISTRY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (5 × 5 = 25)

Answer **any FIVE** questions.

1. How is abstract of a research paper drafted? Explain.

2. Write the names and abbreviations of any five UGC approved journals in the subject 'chemistry'.

3. Provide the emergency procedures and first aids for.

   (a) Acid burn

   (b) Alkali burn

   (c) Inhalation of chlorine.

4. Explain the working procedure with flammable and explosive chemicals.

5. Describe the components of AAS instrument.

6. Explain the principle and applications of cyclic voltammetry.

7. Write notes on the following project management:

   (a) Time management

   (b) Cost management.

8. Give a short not on tools of project management.

Part B ($5 \times 10 = 50$)

Answer **all the qu**estions, choosing either (a) or (b).

9. (a) Discuss the uses of Scopus, Science direct and Scifind in the chemical research.

Or

   (b) Give a detailed account on primary and secondary sources of literature survey.

10. (a) How is a safe chemical laboratory constructed? Explain.

Or

   (b) (i) Describe the safe storage method and disposal of waste chemicals.

   (ii) Write briefly on recovery, recycling and reuse of laboratory disposal of explosives.

11. (a) Discuss the principle and instrumentation of double beam UV-Visible spectrophotometer.

Or

   (b) (i) Describe the various ionization techniques in mass spectral study.

   (ii) Explain the principle and applications of ESCA.

12. (a) Explain the principles and instrumentations of XRD and DTA.

Or

(b) Discuss the instrumentation of TEM and SEM.

13. (a) Discuss the need for project management and various project development stages.

Or

(b) Describe the features and significance of cost estimation and budgeting of project management.

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F–3120

Sub. Code
7PCH1C2

M.Phil. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Chemistry

AREA OF SPECIALIZATION IN CHEMISTRY

(CBCS – 2017 batch)

Time : 3 Hours Maximum : 75 Marks

Section A (5 × 5 = 25)

Answer any **five** questions.

1. Provide a brief note on electrochemical reactions and performance characteristics of Leclanche cell.

2. Define the terms: (a) Energy density (b) Power density (c) Anode (d) Cathode.

3. Write briefly on (a) Quantum well (b) Quantum wire.

4. Write a note on Fluorescent brightening and blueing agents.

5. Give an account on bio-degradable polymers.

6. Explain the effect of crystallinity on the properties of polymers.

7. Explain the postulates of MO theory by taking Co^{3+}-hexammine complex.

8. Explain the Orgel diagrams of d^2 octahedral and tetrahedral complexes.

Section B (5 × 10 = 50)

Answer **all** questions, choosing either (a) or (b).

9. (a) Give a detailed account on the principles and working of different fuel cells.

Or

(b) Discuss the principle, features and working of lead — acid and lithium — ion batteries.

10. (a) Discuss the synthesis, properties and applications of carbon nano tubes.

Or

(b) Describe the sol-gel method and chemical vapour deposition method of material processing.

11. (a) Discuss the classification, colour and constitution of dyes.

Or

(b) Explain the chemistry of intermediates from aniline, phenol and nitrobenzene.

12. (a) Discuss the factors affecting T_g. How is T_g measured?

Or

(b) (i) Explain the mechanism and kinetics of cationic polymerization.

(ii) Write the properties and uses of liquid crystalline polymers. (6+4)

13. (a) Discuss the crystal field splitting of tetrahedral and square planner complexes.

Or

(b) Explain the ligand substitution reactions in octahedral and square planner complexes.

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