

KAMARAJ COLLEGE (Autonomous)

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(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

(4 Pages)

Reg. No:

Question Code: 26E02206

Course Code: 24PSCH41

PG Degree - End Semester Examinations, April 2026

Fourth Semester

M.Sc., CHEMISTRY

Scientific Research Methodology

(For those who joined in July 2024 onwards)

Time: 3Hours

Maximum: 75 Marks

PART - A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer:

- CO:1 1. What is the primary objective of scientific research?
K:1
(a) advertising products (b) entertainment
(c) social development (d) generation of new knowledge
- CO:1 2. Which of the following describes about good research problem?
K:2
(a) impossible to solve (b) based on personal opinion
(c) clearly defined and (d) vague and broad
researchable
- CO:2 3. Choose the best primary source of information
K:1
(a) research journal article (b) textbook
(c) review article (d) encyclopedia
- CO:2 4. Impact factor is a _____
K:2
(a) number of pages in a (b) measure of the frequency of
journal citation of articles in a journal
(c) number of authors in a (d) number of journals in a
paper database
- CO:3 5. Which part of the research article summarizes the entire study?
K:1
(a) results and discussion (b) introduction
(c) abstract (d) references

- CO:3 6. What is the use of a research proposal?
K:2 (a) To outline the planned research work (b) To Summarize completed work
(c) To publish the final results (d) To prepare a poster only
- CO:4 7. _____ is a form of intellectual property right (IPR)
K:1 (a) Article (c) Patent
(b) Insurance (d) Tax
- CO:4 8. Why are plagiarism detection softwares used in research publications?
K:2 (a) To improve grammar only (b) To design graph and table only
(c) To identify similarity with existing published work (d) To generate references automatically
- CO:5 9. Which technique is used to determine the crystal structure of solids?
K:1 (a) X-ray diffraction (b) Mass Spectrometry
(c) Flame Photometry (d) Chromatography
- CO:5 10. The objective of Atomic Force Microscopy is to _____
K:2 (a) measure electrical conductivity (b) determine melting point
(c) study surface structure (d) determine molecular weight

PART - B (5 X 5 = 25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

- CO:1 11. (a) Choose the criteria for selecting a good research problem.
K:3 **(OR)**
(b) Identify the major problems encountered by researchers in India.
- CO:2 12. (a) Examine the procedure for conducting an effective literature survey.
K:4 **(OR)**
(b) Inspect the importance of Monographs and treatise on specific areas.

CO:3 13. (a) Organize the structure and format of a standard research
K:3 paper used in scientific journal.

(OR)

(b) Construct the different methods of presenting research results.

CO:4 14. (a) Classify the different types plagiarism with suitable
K:4 examples.

(OR)

(b) Analyse the importance of IPR.

CO:5 15. (a) Examine the principle of powder and Single crystal XRD.

K:4

(OR)

(b) How will you analyse the surface morphology using SEM?

PART - C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 600 words.

CO:1 16. (a) Analyse the characteristics of a good research problem.

K:4

(OR)

(b) Examine the importance of scientific research in National development.

CO:2 17. (a) Categorize the different sources and importance of scientific
K:4 information.

(OR)

(b) Survey about Scopus and Web of Science.

CO:3 18. (a) Evaluate the different methods of communicating research
K:5 findings.

(OR)

(b) Interpret the major components required for submission to funding agencies.

CO:4 19. (a) Criticize the strategies to avoid plagiarism in scientific
K:5 writing.

(OR)

(b) Estimate the values of IPR and Licensing.

CO:5 20. (a) Design an analytical approach using XRD and EDX techniques
K:6 for determining the structure and composition of material.

(OR)

(b) Formulate the role of HRTEM in structural analysis.