

Seat No.

Total No. of Pages : 11

P.G. Entrance Examination 2025
Chemistry/Applied Chemistry/Industrial Chemistry
Subject Code : 58806

Day and Date : Tuesday, 09-Sep-2025
Time : 10.00 am to 12.00 noon

Total Marks : 100**Instructions:**

- 1) All questions are compulsory.
 - 2) Each question carries 2 mark.
 - 3) Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
 - 4) Follow the instructions given on OMR sheet.
 - 5) Rough work shall be done on the sheet provided at the end of question paper.
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SECTION-I

1. Many journals and editors encourage to use and unambiguous. voice because it is less verbose
 - a) Simple
 - b) Complex
 - c) Active
 - d) Passive
2. is heart and art of presentation or presenting your work.
 - a) results
 - b) conclusion
 - c) introduction
 - d) abstract
3. What is full form of CAS?
 - a) Chemical Assessment System
 - b) Chemical Abstracts Service
 - c) Cognitive Assessment System
 - d) Central Authentication Service

4. Encoding is important because it
 - a) Produces messages
 - b) Guarantees that one's message will be decoded
 - c) Encourages listener feedback
 - d) Eliminates noise
5. A message can only be deemed effective when it is
 - a) Understood by others and produces the intended results
 - b) Repeated back as proof of understanding
 - c) Delivered with confidence
 - d) Communicated face-to-face
6. Which of the following is an example of a nonverbal message?
 - a) Mumbling
 - b) Yelling
 - c) Jargon
 - d) Eye contact
7. Which of the three components are part of human communication process?
 - a) Feedback, message, critiquing
 - b) Message, recording, feedback
 - c) Message, noise, feedback
 - d) Noise, feedback, jargon
8. An example of a communication channel is
 - a) Context
 - b) Noise
 - c) Feedback
 - d) Face-to-face conversation

9. To decode a message is to
- a) Interpret a message
 - b) Reject a message
 - c) Evaluate a message
 - d) Translate ideas into code
10. Feedback is a listener's
- a) Aversion
 - b) Acceptance of a message
 - c) Verbal or non verbal responses to a message
 - d) Verbal critique of your message
11. A researcher divides the populations into PG, graduates and 10+2 students and using the random digit table he selects some of them from each. This is technically called
- a) Stratified sampling
 - b) Stratified random sampling
 - c) Representative sampling
 - d) None of these
12. Attributes of objects, events or things which can be measured are called
- a) Qualitative measure
 - b) Data
 - c) Variables
 - d) None of the above
13. An example of scientific knowledge is
- a) Authority of the prophet or great men
 - b) Social traditions and customs
 - c) Religious scriptures
 - d) Laboratory and field experiments

14. What is the aim of basic research or fundamental research?
- a) Developing methodology
 - b) Developing technology
 - c) Improving quality of research, product and technology
 - d) Scientific research
15. What kind of tools are used for searching literature survey or research topic.
- | | |
|--------------------|----------------|
| (i) Web of Science | (ii) SciFinder |
| (iii) Scopus | (iv) Focus |
- a) (i), (ii) and (iii)
 - b) (i) and (iii)
 - c) (i) and (iv)
 - d) All of the above
16. Research is
- a) Searching again and again
 - b) Finding solution to any problem
 - c) Working in a scientific way to search for truth of any problem
 - d) None of the above
17. Action research means
- a) A longitudinal research
 - b) An applied research
 - c) A research initiated to solve an immediate problem
 - d) A research with socioeconomic objective

18. The essential qualities of a researcher are
- a) Spirit of free enquiry
 - b) Reliance on observation and evidence
 - c) Systematization or theorizing of knowledge
 - d) All the above
19. A research paper is a brief report of research work based on
- a) Primary Data only
 - b) Secondary Data only
 - c) Both Primary and Secondary Data
 - d) None of the above
20. One of the following is an open source software:
- a) Origin
 - b) Windows
 - c) MS Office
 - d) Linux
21. Classification of all types of libraries has been made by-
- a) IFLA
 - b) UNISIST
 - c) UNESCO
 - d) USA
22. Informal self-Education is possible in what kind of library?
- a) National Library
 - b) Public Library
 - c) Specific Library
 - d) College Library
23. What is Bibliometry?
- a) Function of Library Network
 - b) Information Management Service
 - c) Information Management Tool
 - d) Library Service

24. One of the following search engine is exclusively meant for scientific information:
- a) Google
 - b) Yahoo
 - c) SCIRUS
 - d) Altavista
25. UNESCO assisted Model Public Library in India is located at:
- a) Kolkata
 - b) Delhi
 - c) Mumbai
 - d) Chennai

SECTION-II

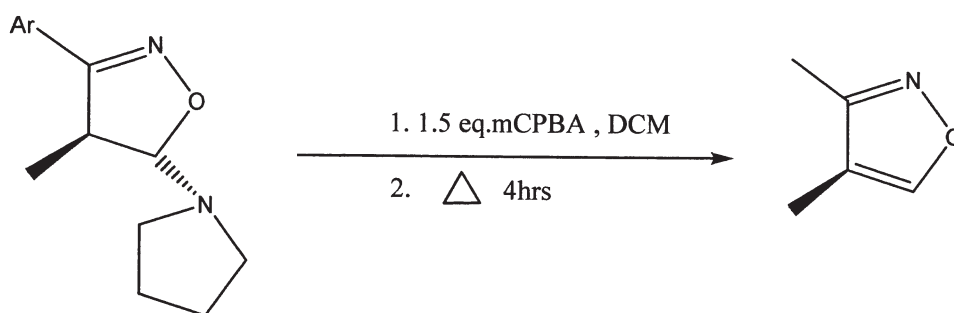
26. Compounds with low R_f value can be effectively separated by paper chromatography.
- a) Radial/circular
 - b) Ascending
 - c) Descending
 - d) None of these
27. Effective separation of analytes in gas chromatography can be achieved by
- a) Isocratic elution
 - b) Gradient elution
 - c) Flow rate
 - d) Temperature programming
28. The best recommended detector used in gas chromatography
- a) Thermal conductivity detector
 - b) Mass spectrometry detector
 - c) Refractive index detector
 - d) Flame ionization detector

29. If m and t are respectively the flow rate and drop time of mercury of the DME, the limiting diffusion current I_d is proportional to.....
 - a) $m^{2/3} t^{1/6}$
 - b) $m^{1/6} t^{2/3}$
 - c) $m^{3/2} t^{1/6}$
 - d) $m^{1/6} t^{3/2}$
30. In polarography any change in diffusion current is denoted by.....
 - a) Arrhenius equation
 - b) Nernst Equation
 - c) Ilkovic equation
 - d) Stock equation
31. The efficiency of the ion-exchange resin depends on
 - a) Strong/weak resin
 - b) Ion-Exchange efficiency
 - c) Ion-Exchange capacity
 - d) Packing density of the resin
32. Which of the following is correct for adsorption?
 - a) Increase in entropy of the system.
 - b) Increase in enthalpy of the system.
 - c) Decrease in enthalpy of the system.
 - d) $T\Delta S$ for the system is positive
33. The chemical adsorption is
 - a) Multilayer
 - b) Monolayer
 - c) No adsorption
 - d) None of these
34. For a first order reaction, the units of Arrhenius factor (A) will be
 - a) $\text{JK}^{-1} \text{s}^{-1}$
 - b) s^{-1}
 - c) $\text{mol L}^{-1} \text{s}^{-1}$
 - d) $\text{JK}^{-1} \text{L}^{-1} \text{s}^{-1}$

42. Bridgehead carbons generally have difficulties undergoing SN^2 reactions because a bridgehead alkyl halide will be

- a) Secondary
- b) Tertiary
- c) Primary
- d) None of these

43. Predict the type of following elimination reaction.



- a) E_1C_B elimination
- b) E_2 elimination
- c) E_1 elimination
- d) Pyrolytic elimination

44. The magnitude of Δ_0 value depend upon

- a) Charge of the central metal ion
- b) Nature of ligand
- c) Principal quantum number of the d-electron
- d) All of the above

45. Which transition metal is present in Zeisc's salt?

- a) Au
- b) Pt
- c) Rh
- d) Pd

- [illegible]

- $$\begin{array}{ccccc} \text{H} & & \text{H} & & \text{H} \\ & \diagdown & & \diagup & \\ & \text{B} & & \text{B} & \\ & \diagup & & \diagdown & \\ \text{H} & & \text{H} & & \text{H} \end{array}$$

- a. C_{3v}
- b. D_{2h}
- c. D_{6h}
- d. C_{4v}

- a. Al₂O₃, PbO b. N₂O₅, CO₂
- c. Na₂O, CuO d. B₂O₃, SiO₂

- $$\begin{array}{c} \cdot\cdot \\ \text{C} \\ // \quad \backslash \\ \text{O} \quad \text{O} \end{array} \text{--- O ---}$$

- a. Trigonal pyramidal b. tetrahedral
- c. square pyramidal d. pentagonal bipyramidal

- a. Fe²⁺, Ni²⁺
c. Zr⁴⁺, Hf⁴⁺

-- ROUGH WORK --