

CODE: 66

Booklet Serial No.

Signature Invigilator

Maulana Azad National Urdu University
PhD Chemistry
Entrance Test May 2026
Question Paper cum Answer Script

Hall Ticket No.

OMR Serial No.

Time: 2hrs

Maximum Marks: 70

INSTRUCTIONS FOR CANDIDATES

1. Candidate should write their Hall Ticket number and OMR number on the space provided above. Candidate should not write their Hall Ticket and OMR number at any other place.
2. This question booklet contains (24) pages. The Candidate should check the booklet before taking the Test. In case of any discrepancy, a new booklet may be provided by the Invigilator.
3. The question booklet consists of Part A and Part B. Part A contains 50 multiple-choice questions, each with four options. The candidate must select the correct answer and mark the corresponding circle on the OMR sheet using a blue or black ballpoint pen. Each question carries one mark. No marks will be awarded if the correct answer is not properly marked against the corresponding question number in the OMR sheet. Further, if more than one option is marked for any question, no marks will be awarded for that question.
4. Part B consists of four descriptive questions, each carrying 5 marks. The answers must be written only in the 8-page answer booklet provided. No additional answer booklet will be issued.
5. There are no Negative marks.
6. At the end of Entrance Test, candidates are allowed to take their question booklet and handover the OMR Sheet and answer booklet to the Invigilator.

Part A
Section 1 – Research Methodology

1. The captain of KKR in IPL 2026 is:
(A) Virat Kohli (B) Rohit Sharma
(C) Rinku Singh (D) Ajinkya Rahane
2. Research is based upon
(A) Experiments (B) General principles
(C) Scientific methods (D) None of these
3. Deduction and induction are a part of the system of reasoning ‘ stated by
(A) P.V. Young (B) Caroline
(C) Emory (D) Dewey John
4. Fundamental Research is otherwise called
(A) Pilot study (B) Survey
(C) Action Research (D) Pure Research
5. Which of the following is not the method of Research
(A) Observation (B) Survey
(C) Historical (D) None of these
6. Questionnaire is filled by
(A) Everybody (B) Enumerator
(C) Respondent (D) None of these
7. The depth of research can be judged by
(A) The Research method (B) Results of the research
(C) The objective of the research (D) Both a & c
8. An essential criterion of scientific study is
(A) Case study (B) Experimental studies
(C) Objectivity (D) Clinical trial studies

9. Which of the following research is also known as collaborative research?
- (A) Analytical Research (B) Applied research
(C) Action research (D) Descriptive research
10. What are the main purposes of data analysis?
- (A) Description
(B) Construction of Measurement Scale
(C) Generating empirical relationships
(D) Explanation and prediction
11. Which of the following is not a data collection method?
- (A) Observation (B) Interview
(C) Schedules (D) Research question
12. Sciences are broadly divided in to?
- (A) Natural sciences and social sciences
(B) Natural sciences and physical sciences
(C) Physical sciences and Physiological sciences
(D) Natural sciences and human sciences
13. The term 'ethno' refers to
- (A) Geographical area (B) People or culture
(C) Social life (D) Cultural group
14. Review of literature means?
- (A) Overview of the previously published works on specific topic
(B) Documentation of referenced material
(C) Formation of a theoretical framework
(D) Elucidating and testing hypothesis
15. If P is the husband of Q and R is the mother of S and Q. What is R to P?
- (A) Mother (B) Sister
(C) Aunt (D) Mother in law

16. If BOY is Coded as ACNPXZ, what would be the code for LIFE ?
 (A) KMHJEGDF (B) LMGHEGDF
 (C) LMHJGEFD (D) None of these
17. If in a certain code language 'RAMAN' is written as '18113114', then how will 'KAPILA' be written in that code?
 (A) 111196112 (B) 116119121
 (C) 111169121 (D) 111169112
18. If 8 men or 12 women can do a piece of work in 25 days then in how many days can 6 men and 11 women do the same piece of work ?
 (A) 10 (B) 15
 (C) 18 (D) 21
19. January 1, 2008 is Tuesday. What day of the week lies on January 1, 2009?
 (A) Monday (B) Tuesday
 (C) Wednesday (D) Thursday
20. Rahul traveled 8 km straight towards South. He turned left and traveled 12 km straight. Then turned right and traveled 8 km straight. How far is he from the starting point?
 (A) 16 Km (B) 20 Km
 (C) 24 Km (D) 18 Km
21. A shopkeeper sold 16 chairs at the cost price of 10 chairs. Find his loss or gain percent.
 (A) 60 % Lose (B) 60 % Gain
 (C) 10 % Lose (D) 10 % Gain
22. Who was the first education minister of India ?
 (A) Sir Syed Ahmad Khan
 (B) Maulana Abul Kalam Azad
 (C) Indira Gandhi
 (D) Pandit Jawahar Lal Nehru

23. In the series 3, 11, 23, 39, 59, the next term will be:
(A) 63 (B) 83
(C) 73 (D) 93
24. A Blue Print of research work is called:
(A) Research Problem (B) Research Design
(C) Research Methods (D) Research Tools
25. Which is different from others?
(A) Shafali Verma (B) Harman Preet kaur
(C) Smirti Mandhana (D) Sania Mirza

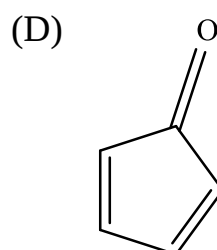
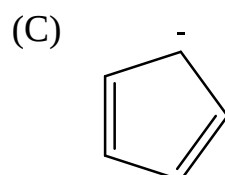
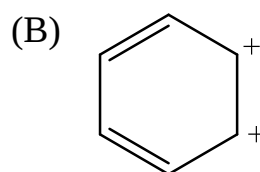
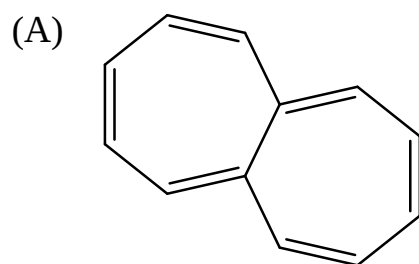
Section 2 – Chemistry

26. The sequence of ionic mobility for alkali metal cations in aqueous solution is
(A) $K^+ > Na^+ > Rb^+ > Cs^+ > Li^+$ (B) $Rb^+ > K^+ > Cs^+ > Na^+ > Li^+$
(C) $Na^+ > K^+ > Rb^+ > Cs^+ > Li^+$ (D) $Cs^+ > Rb^+ > K^+ > Na^+ > Li^+$
27. Which of the following pairs of chlorides do not impart color to the flame?
(A) $BeCl_2$, $MgCl_2$ (B) $CaCl_2$, $BaCl_2$
(C) $BaCl_2$, $SrCl_2$ (D) $BeCl_2$, $SrCl_2$
28. Which of the following show Raman spectrum?
(A) H_2 (B) N_2
(C) O_2 (D) All of these
29. Which of the following aqueous solution will show highest boiling point?
(A) 0.015 M $C_6H_{12}O_6$ (B) 0.01 M Na_2SO_4
(C) 0.01 M KNO_3 (D) 0.01 M Urea

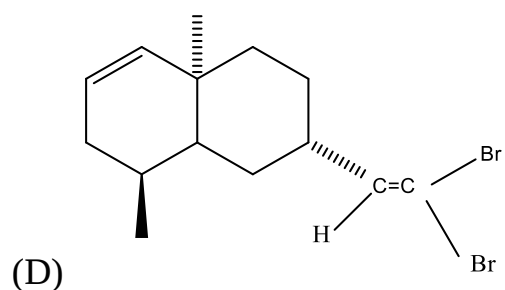
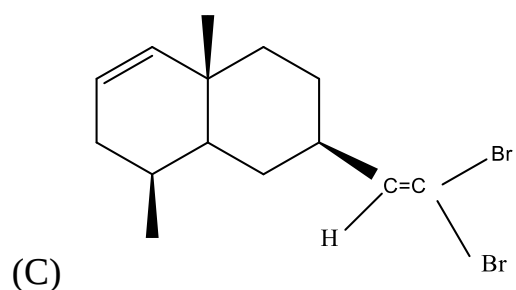
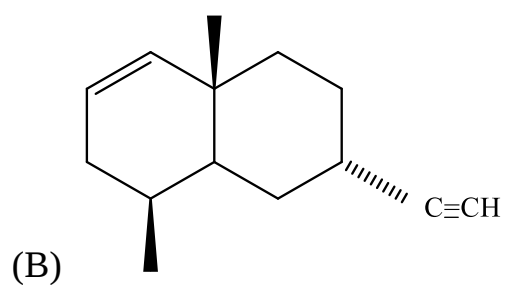
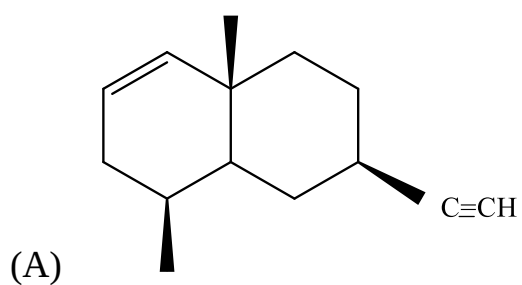
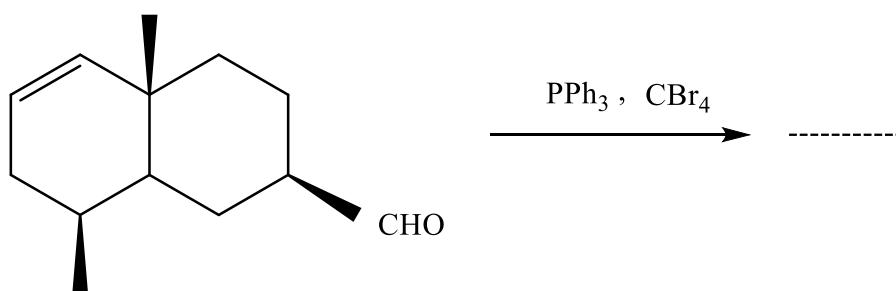
30. Which is independent of temperature?
- (A) Molarity (B) Molality
(C) Normality (D) None of these
31. Which one of the following compounds does not decolourize bromine water?
- (A) Phenol (B) Aniline
(C) Cyclopentane (D) Styrene
32. The correct order of decreasing acidity of the following aliphatic acids is:
- (A) $\text{HCOOH} > (\text{CH}_3)_3\text{CCOOH} > (\text{CH}_3)_2\text{CHCOOH} > \text{CH}_3\text{COOH}$
(B) $\text{HCOOH} > \text{CH}_3\text{COOH} > (\text{CH}_3)_2\text{CHCOOH} > (\text{CH}_3)_3\text{CCOOH}$
(C) $\text{CH}_3\text{COOH} > (\text{CH}_3)_2\text{CHCOOH} > (\text{CH}_3)_3\text{CCOOH} > \text{HCOOH}$
(D) $(\text{CH}_3)_3\text{CCOOH} > (\text{CH}_3)_2\text{CHCOOH} > \text{CH}_3\text{COOH} > \text{HCOOH}$
33. The correct order of decreasing basic strength of the given amines is:
- (A) benzenamine > ethanamine > N-methylaniline > N-ethylethanamine
(B) N-ethylethanamine > ethanamine > N-methylaniline > benzenamine
(C) N-ethylethanamine > ethanamine > benzenamine > N-methylaniline
(D) N-methylaniline > benzenamine > ethanamine > N-ethylethanamine
34. Out of the following complex compounds, which of the compound will be having the minimum conductance in solution?
- (A) $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{Cl}$ (B) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
(C) $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]$ (D) $[\text{Co}(\text{NH}_3)_3\text{Cl}_3]$
35. The correct order of the wavelength of light absorbed by the following complexes is,
i) $[\text{Co}(\text{NH}_3)_6]^{3+}$, ii) $[\text{Co}(\text{CN})_6]^{3-}$, iii) $[\text{Cu}(\text{H}_2\text{O})_4]^{2+}$, iv) $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$
Choose the correct answer from the options given below:
- (A) $\text{ii} < \text{iv} < \text{i} < \text{iii}$ (B) $\text{iii} < \text{i} < \text{iv} < \text{ii}$
(C) $\text{ii} < \text{i} < \text{iv} < \text{iii}$ (D) $\text{iii} < \text{iv} < \text{i} < \text{ii}$

36. Emulsion is a type of _____ solution.
 (A) Solid - Liquid (B) Liquid - Liquid
 (C) Gas - Liquid (D) Solid - Solid
37. Which salt solution has $\text{pH} > 7$?
 (A) Sodium carbonate (B) Ammonium nitrate
 (C) Sodium sulphate (D) Ammonium chloride
38. Match List-I with List-II
- | List-I | List-II |
|-----------------------------|--|
| i) Haber Process | 1- PdCl_2 |
| ii) Wacker oxidation | 2- Fe catalyst |
| iii) Wilkinson catalyst | 3- $[(\text{PPh}_3)_3\text{RhCl}]$ |
| iv) Ziegler catalyst | 4- TiCl_4 with $\text{Al}(\text{CH}_3)_3$ |
| (A) i-1, ii-2, iii-3, iv- 4 | (B) i-4, ii-2, iii-3, iv- 1 |
| (C) i-2, ii-1, iii-3, iv- 4 | (D) i-3, ii-2, iii-4, iv-1 |
39. The total number of vibrations in allyl bromide are:
 (A) 18 (B) 16
 (C) 14 (D) 21
40. Which of the following oxyacid of phosphorus act as a reducing agent?
 (A) Pyrophosphoric acid (B) Hypophosphorus acid
 (C) Phosphoric acid (D) Hypophosphoric acid
41. Which intermediate is formed during Cannizzaro reaction?
 (A) Carbocation (B) Carbanion
 (C) Hydride ion (D) Free radical
42. Which of the following is not NMR active?
 (A) ^{13}C (B) ^{15}N
 (C) ^{16}O (D) ^1H

43. Which of the following is an aromatic compound ?



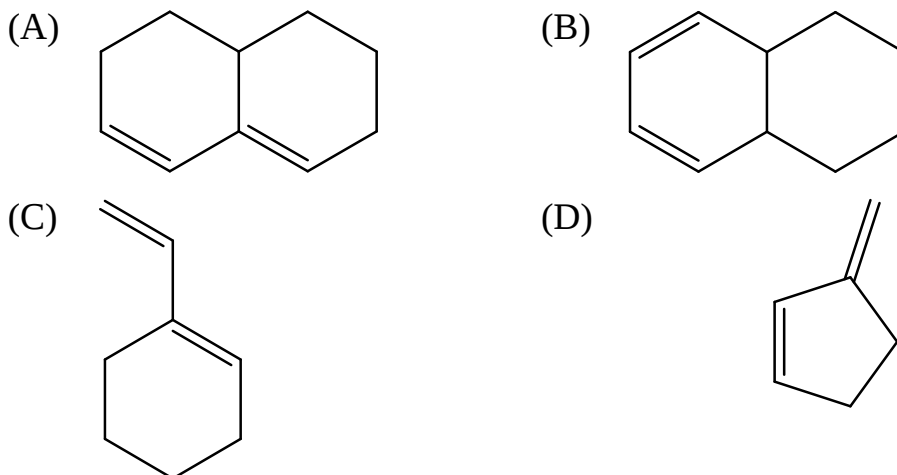
44. The major product formed in the following reaction.



45. Which of the following does not react with ammoniacal cuprous chloride?

- (A) 1-Butyne (B) Propyne
(C) 2-Butyne (D) Acetylene

46. Which of the following does not undergo Diels-Alder reaction?



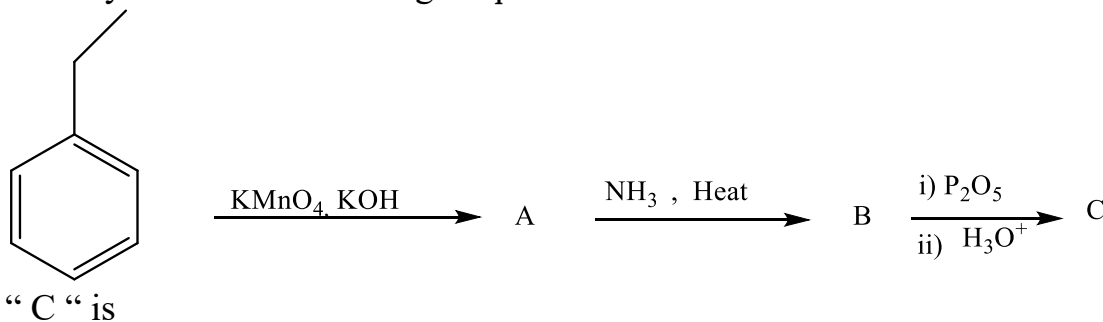
47. How many Faraday's of electricity is required to convert 1 mol of $\text{Cr}_2\text{O}_7^{2-}$ to Cr^{3+}

- (A) 3 F (B) 6 F
(C) 5 F (D) 2 F

48. Aniline on direct nitration yields

- (A) 51%-ortho, 47%-para, 2%-meta derivative
(B) 51%-meta, 47%-ortho, 2%-para derivatives
(C) 51%-para, 47%-meta, 2%-ortho derivatives
(D) 51%-ortho, 47%-meta, 2%-para derivatives

49. Identify 'C' in the following sequence of reactions .



- (A) Benzamide (B) Benzaldehyde
(C) Benzoic acid (D) Aniline

50. Which reaction is used to convert acid halide into aldehyde ?
- (A) Aldol reaction (B) Reimer-Tiemman Reaction
(C) Rosenmund reaction (D) Mitsununobo Reaction

Part B (Descriptive Questions)

Answer all the four questions: 20 Marks

Research Methodology

1. What is literature survey? Write its importance in research.
2. Explain the following terms.
i) Plagiarism ii) Falsification and iii) Fabrication.

Chemistry

3. State Kohlrausch law of independent of Migrations. Discuss its two important applications.
4. Explain the following with suitable examples.
i) Hyperconjugation ii) Mesomeric Effect

Rough Work

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