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CLASS 11

Chemistry

Sample Paper 3 - Questions

33 questions | 70 marks | 2026-27

Time: 3 hours. Answer all questions and subparts unless a choice is stated. Marks are shown on the right. Write answers on separate sheets. Independently prepared practice paper.

Section A - Objective questions

1. Which statement correctly describes Inductive effect? **1**

(A) An electron-pair acceptor reacts with electron-rich sites.

(B) Atomic orbitals are combined in a model to describe suitable bonding arrangements.

(C) Lower-energy orbitals are generally filled before higher-energy orbitals in ground-state configurations.

(D) Electron displacement through sigma bonds influences reactivity.

2. Which statement correctly describes Atomic orbital? **1**

(A) A reactant exhausted first limits the possible product amount.

(B) Each fragment retains one electron from a covalent bond.

(C) A wavefunction describes an electron state with associated probability information.

(D) An electron-pair acceptor reacts with electron-rich sites.

3. Identify the term described by this statement: A suitable hydrogen-containing group interacts with an electronegative atom's electron density. **1**

(A) Hydrogen bonding

(B) Inductive effect

(C) Enthalpy

(D) Homolytic fission

4. Identify the term described by this statement: An atom's tendency to attract shared electron density is described. **1**

(A) Mole
(B) Hydrogen bonding
(C) Electronegativity
(D) Le Chatelier's principle

5. Identify the term described by this statement: A reactant exhausted first limits the possible product amount. **1**

(A) Limiting reagent
(B) Homolytic fission
(C) Aufbau principle
(D) Electronegativity

6. Identify the term described by this statement: An electron-pair acceptor reacts with electron-rich sites. **1**

(A) Electronegativity
(B) Hess's law
(C) Le Chatelier's principle
(D) Electrophile

7. Which statement correctly describes Mole? **1**

(A) Amount of substance is linked with a specified number of entities.
(B) Electron displacement through sigma bonds influences reactivity.
(C) Forward and reverse reaction rates are equal at equilibrium.
(D) An atom's tendency to attract shared electron density is described.

8. Identify the term described by this statement: Each fragment retains one electron from a covalent bond. **1**

(A) Homolytic fission
(B) Oxidation number
(C) Electronegativity
(D) Electrophile

9. Which statement correctly describes Hybridisation? 1

(A) Atomic orbitals are combined in a model to describe suitable bonding arrangements.

(B) A wavefunction describes an electron state with associated probability information.

(C) A suitable hydrogen-containing group interacts with an electronegative atom's electron density.

(D) A reactant exhausted first limits the possible product amount.

10. Identify the term described by this statement: Electronic structure produces systematic property changes across the periodic table. 1

(A) Oxidation number

(B) Periodic trend

(C) Hybridisation

(D) Mole

11. Which statement correctly describes Oxidation number? 1

(A) An atom's tendency to attract shared electron density is described.

(B) Each fragment retains one electron from a covalent bond.

(C) A formal electron-accounting value helps identify redox changes.

(D) A wavefunction describes an electron state with associated probability information.

12. Identify the term described by this statement: Lower-energy orbitals are generally filled before higher-energy orbitals in ground-state configurations. 1

(A) Hess's law

(B) Inductive effect

(C) Aufbau principle

(D) Oxidation number

13. Identify the term described by this statement: An equilibrium system responds to a disturbance in a direction opposing its effect. 1

(A) Le Chatelier's principle

(B) Electronegativity

(C) Electrophile

(D) Inductive effect

14. Which statement correctly describes Dynamic equilibrium? 1

(A) Forward and reverse reaction rates are equal at equilibrium.

(B) A wavefunction describes an electron state with associated probability information.

(C) Lower-energy orbitals are generally filled before higher-energy orbitals in ground-state configurations.

(D) Degenerate orbitals are singly occupied with parallel spins before pairing in the usual ground-state arrangement.

15. Identify the term described by this statement: Degenerate orbitals are singly occupied with parallel spins before pairing in the usual ground-state arrangement. 1

(A) Hund's rule

(B) Aufbau principle

(C) Enthalpy

(D) Hess's law

16. Identify the term described by this statement: Reaction enthalpy depends on initial and final states, not the chosen path. 1

(A) Inductive effect

(B) Hund's rule

(C) Hess's law

(D) Pauli principle

Section B - Short responses

17. A neutral atom has atomic number 23 and mass number 48. Calculate its number of neutrons. 2

18. Compare Pauli principle and Atomic orbital. Give the meaning and an appropriate application of each. 2

19. Calculate moles in 378 g of water, using molar mass 18 g/mol. 2

20. Explain how the following example illustrates Enthalpy: Heat at constant pressure equals enthalpy change under suitable conditions. 2

21. For A <=> B, equilibrium concentrations are [A] = 0.20 mol/L and [B] = 1.90 mol/L. Calculate Kc. 2

Section C - Short responses

22. Explain how the following example illustrates Oxidation number: An increase in oxidation number indicates oxidation. 3

23. In 2H2 + O_2 -> 2H2O, how many moles of water form from 36 mol H_2 with excess O_2? 3

24. Compare Le Chatelier's principle and Electronegativity. Give the meaning and an appropriate application of each. 3

25. Two steps have enthalpy changes -460 and 115 kJ/mol. Calculate the sum for the overall path. 3

26. Explain how the following example illustrates Dynamic equilibrium: Concentrations stay constant while both reaction directions continue. 3

27. Calculate moles in 360 g of water, using molar mass 18 g/mol. 3

28. Explain how the following example illustrates Electrophile: A positively charged or electron-deficient species attacks a suitable pi bond. 3

Section D - Case and application questions

29. Consider this situation: A reaction cannot produce more product after its limiting reactant is consumed.

(a) Name the concept demonstrated in the case. 1

(b) Explain the connection between the situation and that concept. 1

(c) Distinguish that concept from Mole, giving an appropriate feature of each. 2

30. Consider this situation: Atomic size generally decreases across a period under the usual comparison.

(a) Name the concept demonstrated in the case. **1**

(b) Explain the connection between the situation and that concept. **1**

(c) Distinguish that concept from Electronegativity, giving an appropriate feature of each. **2**

Section E - Extended responses

31. (a) Explain Hybridisation and analyse this application: sp3 hybridisation is associated with a tetrahedral electron-pair arrangement. **5**
(b) Explain Atomic orbital and show how this second application fits it: An orbital is not a definite classical path around the nucleus.

32. (a) Explain Electronegativity and analyse this application: A bond can become polar when bonded atoms attract electrons differently. **5**
(b) Explain Periodic trend and show how this second application fits it: Atomic size generally decreases across a period under the usual comparison.

33. (a) Explain Hydrogen bonding and analyse this application: Intermolecular interactions influence water's properties. **5**
(b) Explain Mole and show how this second application fits it: Molar mass converts a sample's mass to amount of substance.

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