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CLASS 11 CHEMISTRY - PRACTICE QUESTIONS

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CLASS 11

# Chemistry

Sample Paper 2 - 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.** Calculate moles in 18 g of water, using molar mass 18 g/mol. **1**
(A) 2 (B) 3 (C) 0 (D) 1

**2.** Select the term described below. Amount of substance is linked with a specified number of entities. **1**
(A) Periodic trend (B) Dynamic equilibrium (C) Mole (D) Limiting reagent

**3.** Select the term described below. A reactant exhausted first limits the possible product amount. **1**
(A) Dynamic equilibrium (B) Limiting reagent (C) Mole (D) Periodic trend

**4.** In 2H2 + $O_2$ -> 2H2O, how many moles of water form from 2 mol $H_2$ with excess $O_2$? **1**
(A) 4 (B) 2 (C) 1 (D) 3

**5.** Select the term described below. A wavefunction describes an electron state with associated probability information. **1**
(A) Mole (B) Periodic trend (C) Dynamic equilibrium (D) Atomic orbital

**6.** Select the term described below. Lower-energy orbitals are generally filled before higher-energy orbitals in ground-state configurations. **1**
(A) Periodic trend (B) Dynamic equilibrium (C) Mole (D) Aufbau principle

**7.** A neutral atom has atomic number 6 and mass number 14. Calculate its number of neutrons. **1**
(A) 7 (B) 10 (C) 8 (D) 9

**8.** Select the term described below. Two electrons in an atom cannot have the same four quantum numbers. **1**
(A) Pauli principle (B) Mole (C) Dynamic equilibrium (D) Periodic trend

**9.** Select the term described below. Degenerate orbitals are singly occupied with parallel spins before pairing in the usual ground-state arrangement. **1**
(A) Dynamic equilibrium (B) Mole (C) Hund's rule (D) Periodic trend

**10.** Two steps have enthalpy changes -20 and 5 kJ/mol. Calculate the sum for the overall path. **1**
(A) -15 (B) -16 (C) -14 (D) -13

**11.** Select the term described below. Electronic structure produces systematic property changes across the periodic table. **1**
(A) Periodic trend (B) Mole (C) Dynamic equilibrium (D) Hund's rule

**12.** Select the term described below. An atom's tendency to attract shared electron density is described. **1**
(A) Dynamic equilibrium (B) Mole (C) Hund's rule (D) Electronegativity

**13.** For A <=> B, equilibrium concentrations are [A] = 0.20 mol/L and [B] = 0.10 mol/L. Calculate Kc. **1**
(A) 1/2 (B) 5/2 (C) -1/2 (D) 3/2

**14.** Select the term described below. Atomic orbitals are combined in a model to describe suitable bonding arrangements. **1**
(A) Dynamic equilibrium (B) Mole (C) Hund's rule (D) Hybridisation

**15.** Select the term described below. A suitable hydrogen-containing group interacts with an electronegative atom's electron density. **1**
(A) Mole (B) Dynamic equilibrium (C) Hydrogen bonding (D) Hund's rule

**16.** Calculate moles in 36 g of water, using molar mass 18 g/mol. **1**
(A) 3 (B) 2 (C) 1 (D) 4

## Section B - Short responses

**17.** In 2H2 + $O_2$ -> 2H2O, how many moles of water form from 4 mol $H_2$ with excess $O_2$? **2**

**18.** A neutral atom has atomic number 7 and mass number 16. Calculate its number of neutrons. **2**

**19.** Two steps have enthalpy changes -40 and 10 kJ/mol. Calculate the sum for the overall path. **2**

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

**21.** Calculate moles in 54 g of water, using molar mass 18 g/mol. **2**

## Section C - Short responses

**22.** In 2H2 + $O_2$ -> 2H2O, how many moles of water form from 6 mol $H_2$ with excess $O_2$? **3**

**23.** A neutral atom has atomic number 8 and mass number 18. Calculate its number of neutrons. **3**

**24.** Two steps have enthalpy changes -60 and 15 kJ/mol. Calculate the sum for the overall path. **3**

**25.** For A <=> B, equilibrium concentrations are [A] = 0.20 mol/L and [B] = 0.30 mol/L. Calculate Kc. **3**

**26.** Calculate moles in 72 g of water, using molar mass 18 g/mol. **3**

**27.** In 2H2 + $O_2$ -> 2H2O, how many moles of water form from 8 mol $H_2$ with excess $O_2$? **3**

**28.** A neutral atom has atomic number 9 and mass number 20. Calculate its number of neutrons. **3**

## Section D - Case and application questions

**29.** Consider the following case: Molar mass converts a sample's mass to amount of substance.

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

(b) Explain how the details of the case support your choice. **1**

(c) Explain Aufbau principle with another appropriate example. **2**

**30.** Consider the following case: A reaction cannot produce more product after its limiting reactant is consumed.

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

(b) Explain how the details of the case support your choice. **1**

(c) Explain Pauli principle with another appropriate example. **2**

## Section E - Extended responses

**31.** For 11 g of $CO_2$, calculate moles, number of molecules and mass of oxygen present. Use C = 12, O = 16 and NA = $6.022 \times 10^{23}$ $mol^{-1}$. **5**

**32.** Compare $CH_4$ and $NH_3$ in terms of central-atom hybridisation, electron-pair arrangement, molecular shape and polarity. Explain the effect of the lone pair in $NH_3$. **5**

**33.** At equilibrium for $N_2O_4(g) <=> 2NO2(g)$, concentrations are $[N_2O_4]$ = 0.20 mol/L and $[NO_2]$ = 0.10 mol/L. Write Kc and calculate it. Predict the shift when volume is decreased at fixed temperature. **5**

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