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SUMMATIVE ASSESSMENT – TERM II, 2026–27

CHEMISTRY (English Medium)

SET 1

Standard: IX **Time: 1½ Hours**

Total Score: 40

Instructions

- The first 15 minutes is cool-off time. Use it to read the questions and plan your answers.
- This question paper has 18 questions in Sections A, B, C and D.
- Questions 6, 8, 14, 17 and 18 have a choice. Answer only one of the options.
- Answer according to the score and time.

Section A

Answer all questions from 1 to 4. Each carries 1 score. **(4 × 1 = 4)**

1. Which of the following molecules contains a polar covalent bond? (1)

a) H_2 b) Cl_2 c) HCl d) O_2

2. **Statement:** Powdered marble reacts faster with dilute hydrochloric acid than marble chips of the same mass. (1)

Reason: Powdering increases the surface area of the marble that comes in contact with the acid.

a) Both the statement and the reason are true, and the reason explains the statement.

b) Both the statement and the reason are true, but the reason does not explain the statement.

c) The statement is true, but the reason is false.

d) The statement is false, but the reason is true.

3. Read the following statements about solutions. (1)

i. A saturated solution can dissolve more solute at the same temperature.

ii. The solubility of most solids in water increases with temperature.

iii. The solubility of gases in water decreases when the temperature rises.

iv. Mass percentage = (mass of solute ÷ mass of solvent) × 100

Choose the correct option.

a) i and ii are correct b) ii and iii are correct

c) iii and iv are correct d) i and iv are correct

4. Match Column A with Column B. (1)

A	**B**
(i) Catalyst used in the Haber process	(x) Hydrogen
(ii) Oxidation	(y) Iron
(iii) Reducing agent in $CuO + H_2 \rightarrow Cu + H_2O$	(z) Loss of electrons

a) i – x, ii – z, iii – y b) i – y, ii – z, iii – x

c) i – z, ii – x, iii – y d) i – y, ii – x, iii – z

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Section B

Answer questions 5 to 11. Questions 6 and 8 have a choice. Each carries 2 scores. (7 × 2 = 14)

5. The electronegativity values of some elements are given: H = 2.20, Cl = 3.16, Na = 0.93. Find the electronegativity difference and name the type of bond in

a) HCl (1)

b) NaCl (1)

6 A. The atomic number of oxygen is 8 and that of hydrogen is 1.

a) Draw the electron dot diagram of a water molecule. (1)

b) How many lone pairs of electrons are there on the oxygen atom? (1)

OR

6 B. The atomic number of nitrogen is 7.

a) Draw the electron dot diagram of the nitrogen molecule (N_2). (1)

b) What type of covalent bond is present in it? (1)

7. Find the oxidation number of the underlined element.

a) $H_2\underline{S}O_4$ (1)

b) $K_2\underline{Cr}_2O_7$ (1)

8 A. $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$

a) Which substance is oxidised in this reaction? (1)

b) Write the equation for the oxidation half reaction. (1)

OR

8 B. $2Mg + O_2 \rightarrow 2MgO$

a) Name the oxidising agent. (1)

b) What change happens to the oxidation number of magnesium? (1)

9. Milk kept in a refrigerator does not turn sour as quickly as milk kept outside.

a) Which factor influencing the rate of reaction is shown here? (1)

b) Explain how this factor slows down the reaction. (1)

10. 15 g of sugar is dissolved in 135 g of water. Calculate the mass percentage of sugar in the solution. (2)

11. The electronic configuration of an element X is 2, 8, 1.

a) In which group and period of the periodic table is X placed? (1)

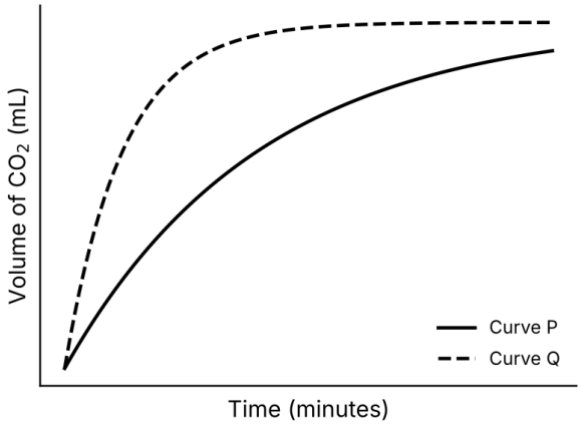
b) Write the chemical formula of the compound formed when X combines with chlorine. (1)

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Section C

Answer questions 12 to 17. Questions 14 and 17 have a choice. Each carries 3 scores. (6 × 3 = 18)

12. Equal masses of marble chips and powdered marble were added separately to the same volume of dilute hydrochloric acid. The volume of carbon dioxide collected is shown in the graph.



a) Which curve shows the reaction of powdered marble? Give a reason. (1)

b) Both curves become horizontal after some time. Why? (1)

c) Write one more factor that can increase the rate of this reaction. (1)

13. The solubility of potassium nitrate in 100 g of water at different temperatures is given.

Temperature (°C)	**20**	**40**	**60**
Solubility (g / 100 g water)	32	64	110

a) 64 g of potassium nitrate is dissolved in 100 g of water at 40 °C. Is the solution saturated or unsaturated? (1)

b) A saturated solution made with 100 g of water at 60 °C is cooled to 20 °C. How much potassium nitrate will crystallise out? (1)

c) What conclusion can you draw about the effect of temperature on the solubility of a solid? (1)

14 A. $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

a) What is the oxidation number of iron in Fe_2O_3? (1)

b) Which substance is reduced? (1)

c) Name the reducing agent. (1)

OR

14 B. $2Na + Cl_2 \rightarrow 2NaCl$

a) Define oxidation in terms of electrons. (1)

b) Write the oxidation half reaction and the reduction half reaction. (2)

15. Hydrogen peroxide decomposes very slowly at room temperature ($2H_2O_2 \rightarrow 2H_2O + O_2$). When a little manganese dioxide is added, oxygen bubbles out quickly.

a) What is the role of manganese dioxide here? (1)

b) Is manganese dioxide used up in the reaction? Explain. (1)

c) Name the catalyst used in the industrial manufacture of sulphuric acid by the contact process. (1)

16. Methane (CH_4) is the main component of natural gas. (Atomic numbers: C = 6, H = 1)

a) Draw the electron dot diagram of methane. (1)

b) How many single covalent bonds are there in a methane molecule? (1)

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c) Covalent compounds usually have low melting and boiling points. Why? (1)

17 A. Analyse the following and answer.

a) 20 mL of ethanol is mixed with water to make 100 mL of solution. Find the volume percentage of ethanol. (1)

b) A sample of 1000 g of drinking water contains 0.002 g of fluoride. Express this concentration in ppm. (1)

c) Why is the ppm unit used to express the concentration of such substances? (1)

OR

17 B. Salt solution, milk and muddy water are three mixtures kept in a laboratory.

a) Which of these is a true solution? (1)

b) A beam of light is passed through milk. Its path becomes visible. What is this phenomenon called? (1)

c) Which of these mixtures will leave a residue on filter paper? Why? (1)

Section D

Answer question 18 (A or B). It carries 4 scores. **(1 × 4 = 4)**

18 A. The atomic numbers of three elements are given: P = 11, Q = 17, R = 6 (not real symbols).

a) Write the electronic configuration of P and Q. (1)

b) Which two elements combine to form an ionic compound? Write its chemical formula. (1)

c) Write the formula of the compound formed between R and Q. (1)

d) What type of bond is present in the compound in (c)? (1)

OR

18 B. A student added dilute hydrochloric acid to sodium thiosulphate solution kept over a paper marked with a cross (×) and noted the time taken for the cross to disappear.

Temperature (°C)	**30**	**40**	**50**
Time taken (s)	80	40	20

a) Why does the cross mark disappear? (1)

b) What is the relation between temperature and the rate of this reaction? (1)

c) Explain this relation on the basis of collisions between particles. (1)

d) Predict the time taken at 60 °C. (1)

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