

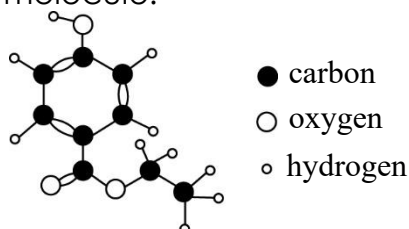
Summary Quiz (Chemical Bonding)

Section A: Multiple-choice questions

- The electronic arrangement of element X is 2, 8, 18, 8, 2. It forms an ionic compound with oxygen. The chemical formula of the oxide is
 - X_2O
 - XO_2
 - XO
 - X_2O_3
- The atomic number of chromium is 24. How many electrons are there in a chromium(III) ion?
 - 3
 - 21
 - 24
 - 27
- Elements X and Y react to form an ionic compound with the formula X_3Y_2 . If X is a metal, which group does Y belong to in the Periodic Table?
 - Group II
 - Group III
 - Group V
 - Group VI
- Which of the following pairs of particles have the same electronic arrangement?
 - H^+ and He
 - Na^+ and Ar
 - O and F^-
 - P^{3-} and Cl^-
- Four particles P^{2+} , Q^{2-} , R^+ and S^- have the same electronic arrangement. Which of the following correctly shows the order of the atomic number of P , Q , R and S ?
 - $Q < S < R < P$
 - $P < R < S < Q$
 - $R < P < Q < S$
 - $S < Q < P < R$
- Which of the following combinations is INCORRECT?

	<u>Name</u>	<u>Formula</u>
A.	Potassium chloride	KCl
B.	Calcium hydroxide	$Ca(OH)_2$
C.	Sodium permanganate	Na_2MnO_4
D.	Magnesium carbonate	$MgCO_3$
- Which of the following statements about ammonium permanganate is correct?
 - (1) It is composed of polyatomic ions.
 - (2) It is purple in colour.
 - (3) It is an electrolyte.
 - (1) and (2) only
 - (1) and (3) only
 - (2) and (3) only
 - (1), (2) and (3)
- Which of the following statements about metallic bond is INCORRECT?
 - It forms between delocalized electrons and metal atoms in metals.
 - It is electrostatic in nature.
 - It is non-directional.
 - It can be found in all metals.

9. How many covalent compounds are there in the following list?
 NO_2 , O_3 , H_2SO_4 , NH_4NO_3 , CoCl_2 , SO_3
- A. 3
 B. 4
 C. 5
 D. 6
10. Which of the following molecules does NOT contain triple covalent bond?
- A. Carbon monoxide
 B. Hydrogen cyanide
 C. Nitrogen
 D. Phosphorus trichloride
11. Which of the following statements about sulphur is INCORRECT?
- A. It belongs to Group VI in the Periodic Table.
 B. The atomicity of sulphur is 2.
 C. It reacts with sodium to form an ionic compound.
 D. It reacts with chlorine to give a covalent compound.
12. Consider the following molecule:

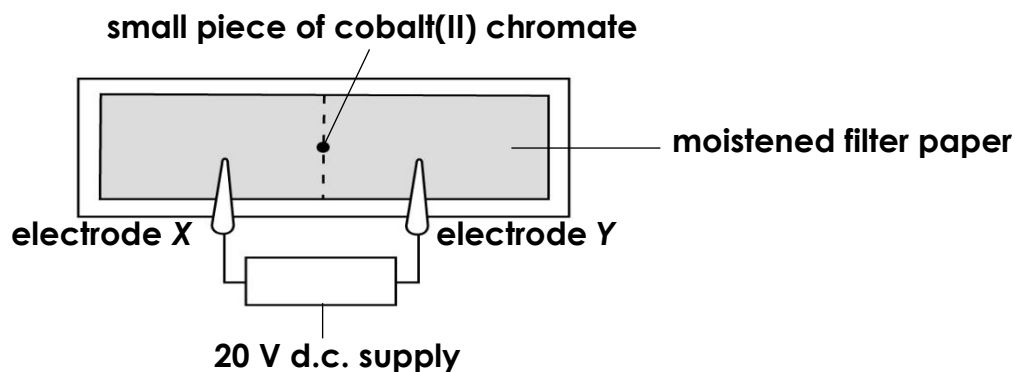


What is the molecular formula of the molecule?

- A. $\text{C}_6\text{H}_{10}\text{O}_3$
 B. $\text{C}_9\text{H}_{10}\text{O}_3$
 C. $\text{C}_9\text{H}_{12}\text{O}_2$
 D. $\text{C}_9\text{H}_{12}\text{O}_3$
13. Elements P and Q are in Group V and Group VII of the Periodic Table respectively. Which of the following is the chemical formula of the compound formed between P and Q ?
- A. P_5Q_7
 B. P_7Q_5
 C. PQ_3
 D. P_3Q
14. The electronic arrangement of element A is 2, 8, 18, 7. Which of the following statements about A are correct?
- (1) It is a halogen.
 (2) It reacts with magnesium to form a compound with the formula MgA_2 .
 (3) It reacts with oxygen to form a compound with the formula A_2O .
- A. (1) and (2) only
 B. (1) and (3) only
 C. (2) and (3) only
 D. (1), (2) and (3)

Section B: Structured questions

1. A student used the following set-up to investigate the migration of ions.



- (a) (i) A student used distilled water to moisten the filter paper, but there is no migration of ions observed. Explain why.
- (ii) Suggest a solution that should be used to moisten the filter paper.
- (b) A yellow spot was later found on the filter paper closer to electrode X. Name the substance responsible for the observation.
- (c) Which colour slowly migrated towards the electrode Y?
- (d) Deduce the polarity of electrode X. Explain your answer.
- (e) What would happen if the polarities of the two electrodes were reversed?
2. Carbon disulphide is a colourless liquid at room conditions.
- (a) Draw an electron diagram of carbon disulphide, showing electrons in the outermost shells only.
- (b) State the atomicity of carbon disulphide.
- (c) Describe a simple experiment to show that carbon disulphide is a covalent compound.

Suggested Answer

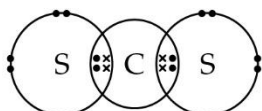
Section A

1.	C	8.	A
2.	B	9.	A
3.	C	10.	D
4.	D	11.	B
5.	A	12.	B
6.	C	13.	C
7.	D	14.	D

Section B

1. (a) (i) Distilled water does not conduct electricity.
(ii) Sodium sulphite solution (accept other reasonable answers)
- (b) Chromate ions
- (c) Pink
- (d) Electrode X is the positive electrode.
Chromate ions are negatively charged and move towards the positive electrode.
- (e) The colour spots would migrate towards the opposite direction.

2. (a)



- (b) 3
- (c) - Put the liquid in a beaker and immerse two graphite electrodes in the liquid to be tested.
- Connect the electrodes with a d.c. power supply and a light bulb.
- See if the light bulb lights up. If it does not light up, it is a covalent compound.