

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

MAY 2016

Chemistry Paper I

Time: 35 minutes Marks: 25

INSTRUCTIONS

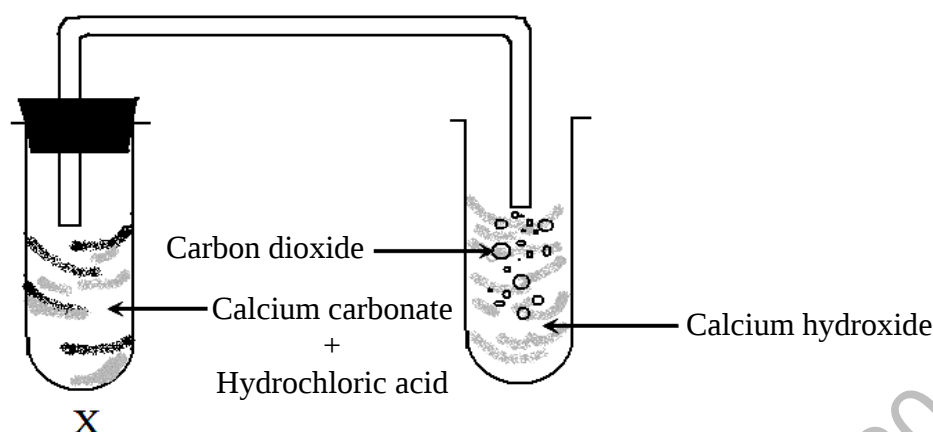
1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 25 only.
4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the circle for your choice with a pencil as shown below.

Correct Way	Incorrect Ways
1 ☐ A ☐ B ☒ C ☐ D	1 ☐ A ☐ B ☒ C ☐ D
	2 ☐ A ☐ B ☒ C ☐ D
	3 ☐ A ☐ B ☒ C ☐ D
	4 ☐ A ☐ B ☒ C ☐ D

Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1.



The word equation that CORRECTLY represents the chemical reaction taking place in test tube X is

- A. calcium carbonate + hydrochloric acid $\rightarrow$ carbon dioxide + calcium chloride
 - B. calcium carbonate + hydrochloric acid $\rightarrow$ carbon dioxide + calcium hydroxide
 - C. calcium carbonate + hydrochloric acid $\rightarrow$ carbon dioxide + water + calcium chloride
 - D. calcium carbonate + hydrochloric acid $\rightarrow$ carbon dioxide + water + calcium hydroxide
2. A physiologist took a blood sample from a diabetic patient and examined the composition and amount of each component present in the sample using different techniques and instruments.
- His study is related to the field of
- A. nuclear chemistry.
 - B. physical chemistry.
 - C. inorganic chemistry.
 - D. analytical chemistry.
3. A compound X has an empirical formula C_3H_3O and its molecular mass is 110.
- Which of the following represents the molecular formula of compound X?
- A. CHO
 - B. $C_3H_3O_3$
 - C. $C_6H_6O_2$
 - D. C_6H_6O
4. The electronic configuration of aluminium ion in aluminium oxide, Al_2O_3 , is
- (Note: $^{27}_{13}Al$)
- A. $1s^2 2s^2 2p^6$
 - B. $1s^2 2s^2 2p^6 3s^1$
 - C. $1s^2 2s^2 2p^6 3s^2 3p^1$
 - D. $1s^2 2s^2 2p^6 3s^2 3p^2$

5. Which of the following statements is TRUE about Bohr's atomic model?
- It shows that an atom produces continuous spectrum.
 - It proves that the plum-pudding model of an atom was correct.
 - It proves that the size and energy of each orbit in an atom is quantised.
 - It shows that electrons emit radiation when revolving around the nucleus.

6. How many sub-shells are present in an L-shell?

- 1
- 2
- 3
- 4

7. Which of the following two elements react to form a covalent bond?

- Ba and Cl
- K and O
- H and S
- Na and F

- 8.

I.	${}^{19}_{9}\text{F}$	III.	${}^9_4\text{Be}$	V.	${}^{32}_{16}\text{S}$
II.	${}^{40}_{18}\text{Ar}$	IV.	${}^{27}_{13}\text{Al}$	VI.	${}^{14}_7\text{N}$

Which of the above mentioned elements form cations?

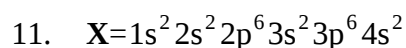
- I and VI
- III and IV
- I, V and VI
- II, III and IV

9. Which of the following compounds shows hydrogen bonding?

- H_2S
- C_6H_6
- CH_3Cl
- CH_3OH

10. In the modern periodic table, the elements are arranged according to

- increasing atomic mass.
- decreasing atomic mass.
- increasing atomic number.
- decreasing atomic number.



According to the given electronic configuration, the element X belongs to which group and period of the modern periodic table?

	Period	Group
A	2	IVA
B	3	VIIIA
C	4	IIA
D	7	VIIIA

12. An oxygen atom is similar to an atom of sulphur because they both

- A. form diatomic molecules.
- B. have the same number of protons.
- C. form cations with a double negative charge.
- D. have the same number of valence electrons.

13. At constant temperature, if the volume of a gas in a container is reduced to half, then the pressure on the gas will

- A. be doubled.
- B. reduce to half.
- C. remain the same.
- D. reduce to a quarter.

14. Liquids can be converted into solids by

- A. increasing collision among the molecules.
- B. decreasing kinetic energy of the molecules.
- C. increasing volume occupied by the molecules.
- D. decreasing force of attraction among the molecules.

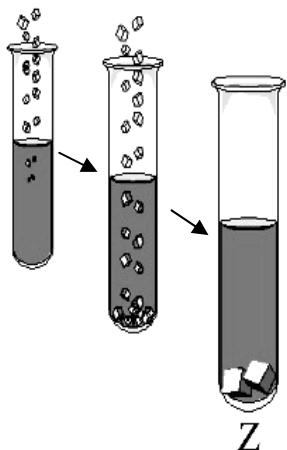
15. The picture shows gas formation around snow-capped mountains.



This formation of gas occurs through the process of

- A. diffusion.
- B. evaporation.
- C. sublimation.
- D. condensation.

16. A scientist prepared sugar solution in a sequence as shown below. He started dissolving sugar at room temperature and then raised the temperature to dissolve an excess amount. The solution was then cooled to a temperature where the scientist observed crystal formation.



The solution **Z** which favoured the formation of crystals is said to be a/ an

- A. colloidal solution.
 B. saturated solution.
 C. unsaturated solution.
 D. supersaturated solution.
17. A concentrated solution is the one which is made up of
- A. more solute than solvent.
 B. more solvent than solute.
 C. known amount of solute and solvent.
 D. fixed amount of solute and solvent at 25°C.
18. Which of the following predictions is **WRONG** about the solubility of substance **X** in substance **Y**?

	Substance X	Substance Y	Solubility
A	Toluene	Benzene	Soluble
B	Sodium chloride	Water	Soluble
C	Grease	Water	Insoluble
D	Paint	Kerosene oil	Insoluble

19. $\text{H}_2\text{S}_{(\text{g})} + \text{Cl}_{2(\text{g})} \rightarrow \text{S}_{(\text{s})} + 2\text{HCl}_{(\text{g})}$

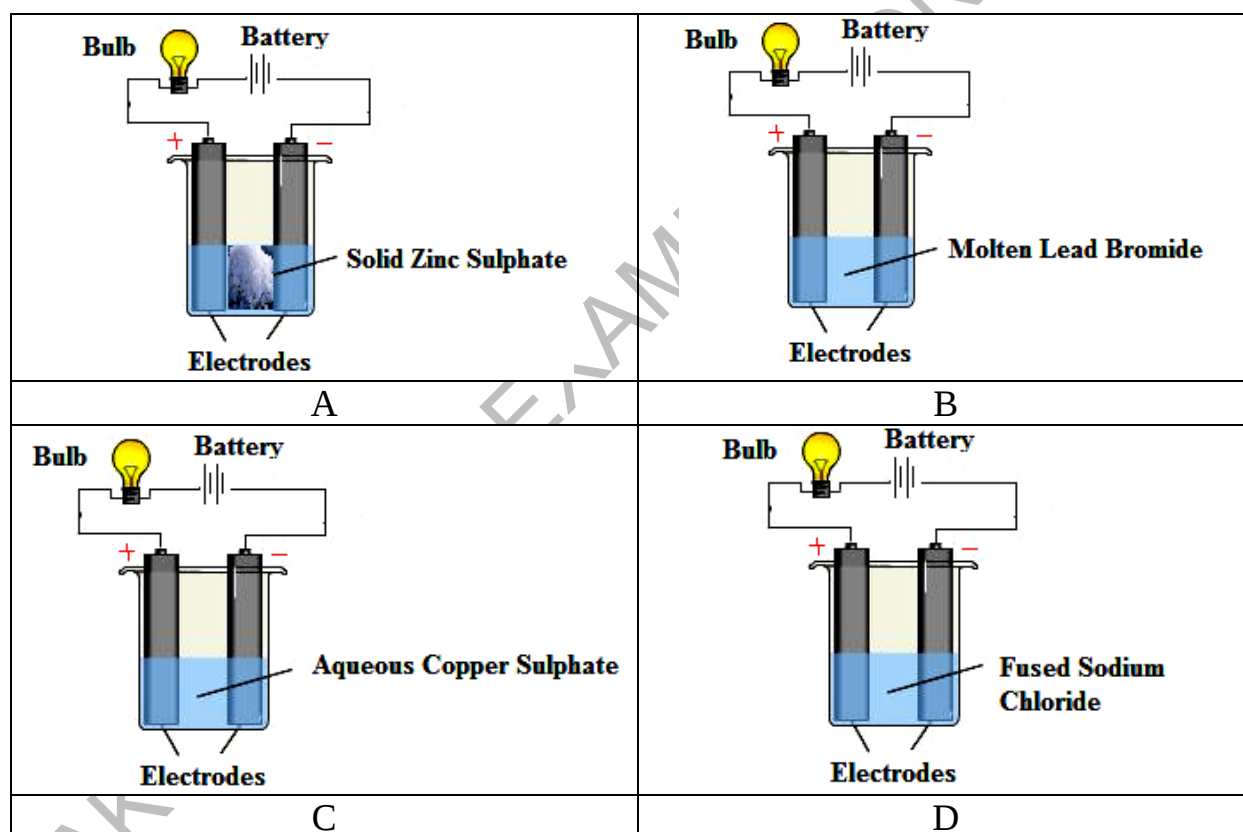
The oxidation state of chlorine gas in the given equation changes from

- A. 0 to +1
 B. 0 to -1
 C. -2 to 0
 D. -2 to -1

20. Which of the following CORRECTLY matches the redox reaction with its observation?

	Redox Reaction	Observation
A	$2\text{HI}_{(\text{g})} + \text{Cl}_{2(\text{g})} \rightarrow \text{I}_{2(\text{g})} + 2\text{HCl}_{(\text{g})}$	Hydrogen iodide is reduced into iodine.
B	$\text{Mg}_{(\text{s})} + 2\text{HCl}_{(\text{aq})} \rightarrow \text{MgCl}_{2(\text{aq})} + \text{H}_{2(\text{g})}$	Magnesium is reduced into magnesium chloride.
C	$\text{CuSO}_{4(\text{aq})} + \text{Mg}_{(\text{s})} \rightarrow \text{MgSO}_{4(\text{aq})} + \text{Cu}_{(\text{s})}$	Copper sulphate is reduced into copper.
D	$\text{H}_2\text{S}_{(\text{g})} + \text{Cl}_{2(\text{g})} \rightarrow \text{S}_{(\text{s})} + 2\text{HCl}_{(\text{g})}$	Hydrogen sulphide is reduced into sulphur.

21. Following diagrams show electrolytic cells with different chemical substances. In which of the electrolytic cells will the bulb NOT glow?



22. A metallic anchor is used to prevent ships from drifting due to wind or ocean current.

Anchors are often made up of iron because it

- A. is sonorous.
- B. is unreactive.
- C. has high density.
- D. has low melting point.

23. What will happen when a small piece of burning sodium metal on a combustion spoon is introduced in a gas jar containing oxygen gas?
- A. It will not react with oxygen gas.
 - B. It will react violently to form oxide.
 - C. It will react slowly to form superoxide.
 - D. It will react violently to form hydroxide.
24. An element which forms a cation with +2 charge is a/ an
- A. halogen.
 - B. noble gas.
 - C. alkali metal.
 - D. alkaline earth metal.
25. Gold and silver are considered as noble metals because they
- A. are lustrous.
 - B. are highly ductile.
 - C. do not form alloys.
 - D. do not oxidize easily.

Please use this page for rough work

AKU-EB MAY EXAMINATIONS 2016