

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

APRIL/ MAY 2018

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. According to the given chemical equation, the formation of nitrogen dioxide gas can be increased by



	Temperature	Pressure
A	High	Low
B	Low	High
C	High	High
D	Low	Low

2. Which of the following statements is FALSE about an exothermic reaction?

- A. It may occur spontaneously.
- B. It involves making of bonds.
- C. It releases energy to the surrounding.
- D. It shows an increase in enthalpy ($\Delta H > 0$).

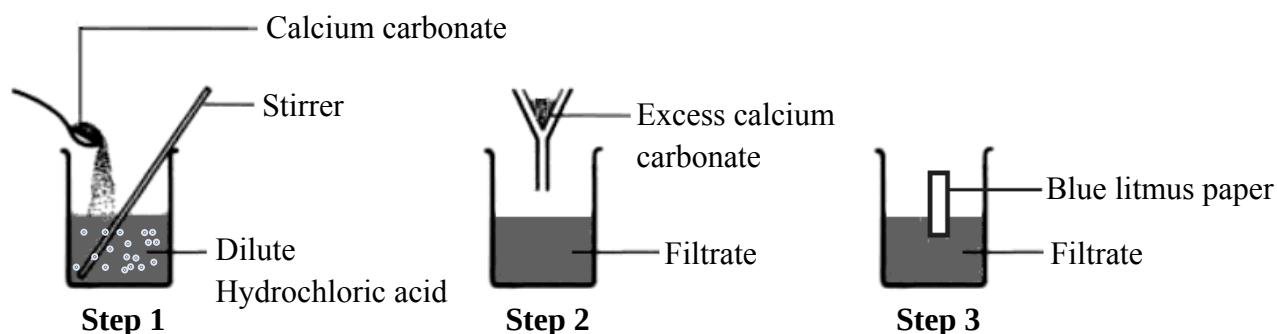
3. Nitrogen dioxide (NO_2), a reddish brown gas, is a major pollutant released from car exhausts which causes acid rain. When two molecules of NO_2 join together, they form one molecule of the colourless dinitrogen tetroxide gas. The equilibrium constant K_c expression for this reversible reaction is:

$$K_c = \frac{[\text{N}_2\text{O}_4]}{[\text{NO}_2]^2}$$

What will be the unit of equilibrium constant for this reaction?

- A. $\frac{\text{mol}}{\text{dm}^3}$
- B. $\frac{\text{dm}^3}{\text{mol}}$
- C. $\frac{\text{mol}^{-2}}{\text{dm}^6}$
- D. $\frac{\text{dm}^{-3}}{\text{mol}}$

4. A student performs a reaction in three steps as follows and carefully records his observations.



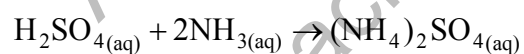
Which of the following results will be observed in step 1 and 3?

	Step 1	Step 3
A	Chlorine bubbles off	No change
B	Chlorine bubbles off	Litmus paper turns red
C	Carbon dioxide bubbles off	No change
D	Carbon dioxide bubbles off	Litmus paper turns red

5. If the hydroxyl ion concentration of a solution is 10^{-13} , what will be the nature of the solution?

- A. Very basic
- B. Very acidic
- C. Slightly basic
- D. Slightly acidic

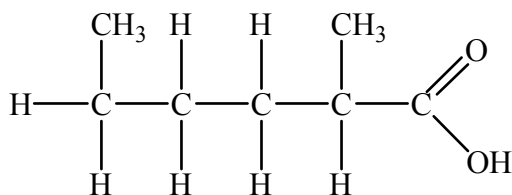
6. 10 cm^3 of ammonia solution was neutralised by 12 cm^3 of 2 M sulphuric acid. The reaction is shown below.



Which of the following will be the concentration of the ammonia solution?

- A. 1.2 M
- B. 2.4 M
- C. 2.8 M
- D. 4.8 M

7.



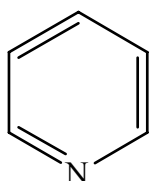
The functional group present in the given molecule is

- A. ester.
- B. amide.
- C. hydroxyl.
- D. carboxylic acid.

8. If CH_3COCH_3 is compared with $\text{CH}_3\text{OCH}_2\text{CH}_3$, then it would be concluded that they both

- A. have same molecular formula.
- B. are chain isomers of each other.
- C. have different functional groups.
- D. belong to the same homologous series.

9.



The given organic molecule is classified as a/ an

- A. acyclic compound.
- B. alicyclic compound.
- C. homocyclic compound.
- D. heterocyclic compound.

10. The structural formula of 3-pentene-1-yne is

$\text{H}_2\text{C}=\text{CH}-\text{CH}=\text{CH}-\text{CH}_3$	$\text{H}_2\text{C}=\text{CH}-\text{C}\equiv\text{C}-\text{CH}_3$
A	B
$\text{HC}\equiv\text{C}-\text{C}\equiv\text{C}-\text{CH}_3$	$\text{HC}\equiv\text{C}-\text{CH}=\text{CH}-\text{CH}_3$
C	D

11. The complete combustion of methane in the presence of two moles of oxygen gas releases
- 2 moles of water, 1 mole of carbon and heat.
 - 2 moles of hydrogen gas, 1 mole of carbon and heat.
 - 2 moles of water, 1 mole of carbon dioxide and heat.
 - 2 moles of hydrogen gas, 1 mole of carbon dioxide and heat.
12. Which of the following reactants forms ethyne on heating with zinc dust?

$ \begin{array}{c} \text{Cl} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{H} \quad \text{Cl} \end{array} $	$ \begin{array}{c} \text{H} \quad \text{Cl} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{H} \quad \text{Cl} \end{array} $
A	B
$ \begin{array}{c} \text{Cl} \quad \text{Cl} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{Cl} \quad \text{Cl} \end{array} $	$ \begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{H} \quad \text{Cl} \end{array} $
C	D

13. In addition to carbon, hydrogen and oxygen, a protein molecule may also contain
- sulphur and calcium.
 - nitrogen and sulphur.
 - calcium and chlorine.
 - chlorine and nitrogen.
14. Monosaccharides differ from disaccharides on the basis of their
- colour.
 - hydrolysis.
 - physical state.
 - solubility in water.
15. Which of the following does NOT denature proteins?
- Heat
 - Water
 - Vinegar
 - Ethanol

16. Amylase enzymes are used in bread making as they facilitate the breakdown of

- A. starch.
- B. lactose.
- C. maltose.
- D. cellulose.

17. Dry air contains the smallest percentage of

- A. argon.
- B. oxygen.
- C. nitrogen.
- D. carbon dioxide.

18. The envelope of gases surrounding the Earth and other planets is known as

- A. biosphere.
- B. lithosphere.
- C. atmosphere.
- D. hydrosphere.

19. Which of the following is a primary air pollutant?

- A. Ozone
- B. Nitric acid
- C. Nitric oxide
- D. Peroxyacetyl nitrate

20. Which of the following differences is TRUE about soft and hard water?

	Hard Water	Soft Water
A	It makes good lather with soap.	It makes poor lather with soap.
B	It is rich in sodium ions.	It is rich in calcium ions.
C	It uses less soap for laundry.	It uses more soap for laundry.
D	It leaves a messy scum.	It leaves no scum.

21. Which of the following compounds in agricultural wastes cause water pollution?

- I. Fertilisers
- II. Oil and greases
- III. Pesticides
- IV. Heavy metals

- A. I and II
- B. I and III
- C. II and IV
- D. III and IV

22. When calcium carbide (CaC_2) reacts with water (H_2O), it forms
- A. calcium oxide and ethyne.
 - B. calcium oxide and methane.
 - C. calcium hydroxide and ethyne.
 - D. calcium hydroxide and methane.
23. Brine is one of the raw materials used in Solvay's process which is a
- A. decomposed calcium carbonate.
 - B. decomposed sodium bicarbonate.
 - C. concentrated aqueous solution of sodium chloride.
 - D. concentrated aqueous solution of calcium hydroxide.
24. In the extraction of aluminium, cryolite is used as a/ an
- A. anode.
 - B. solvent.
 - C. cathode.
 - D. catalyst.
25. What happens in the evaporator chamber during the manufacturing of urea?
- A. Liquid urea is converted into granules.
 - B. Ammonium carbamate is heated with steam.
 - C. Carbon dioxide is passed through liquid ammonia.
 - D. High pressure and a hot current of air are introduced.

Please use this page for rough work

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