

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

MAY 2015

Chemistry Paper I

Time: 35 minutes Marks: 25

INSTRUCTIONS

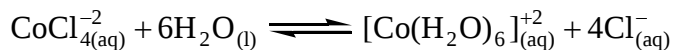
1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 25 only.
4. In each question there are four choices A, B, C, D. Choose ONE. On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

Correct Way		Incorrect Ways	
1		1	
		2	
		3	
		4	

Candidate's Signature

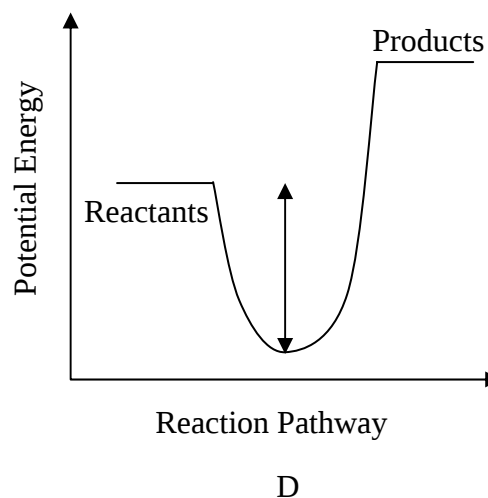
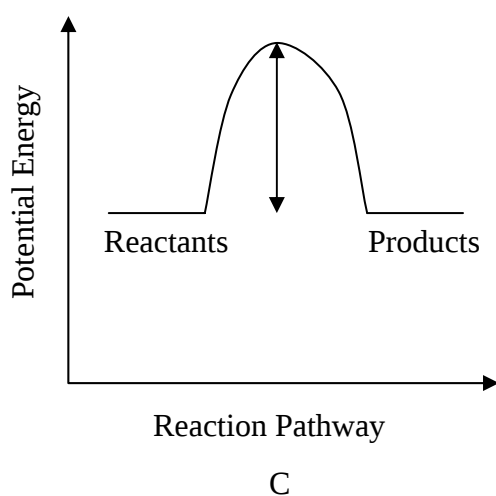
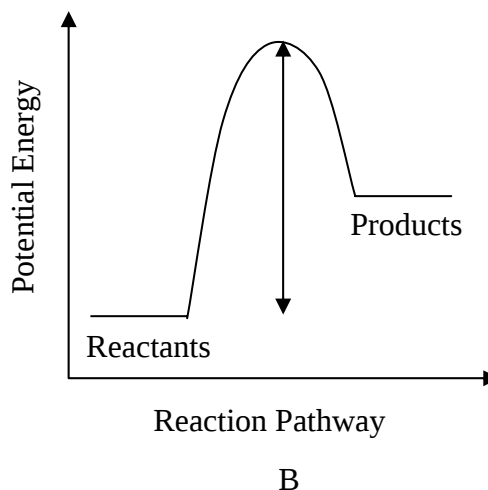
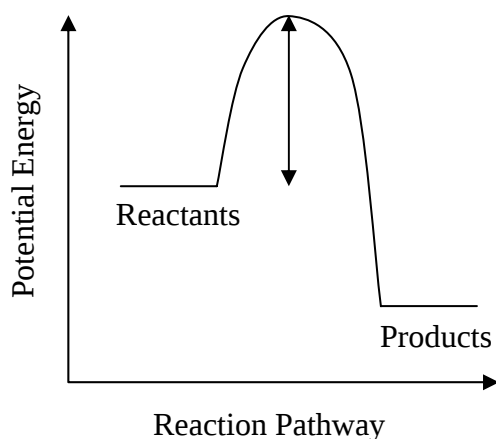
5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. The following equilibrium reaction is exothermic in the forward direction.

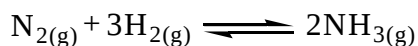


When the temperature is increased, the mixture becomes blue. This colour change shows that the concentration of

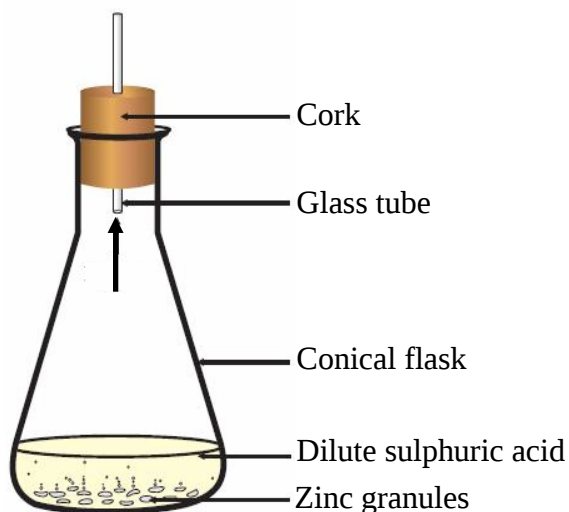
- Cl^{-} has increased and CoCl_4^{2-} has decreased.
 - CoCl_4^{2-} has increased and Cl^{-} has decreased.
 - $[\text{Co}(\text{H}_2\text{O})_6]^{+2}$ has increased and H_2O has decreased.
 - $[\text{Co}(\text{H}_2\text{O})_6]^{+2}$ has increased and CoCl_4^{2-} has decreased.
2. The reaction of iron with sulphur is exothermic. Which of the following energy level diagrams represents the given reaction CORRECTLY?



3. What will be the unit of equilibrium constant K_c for the given reaction?

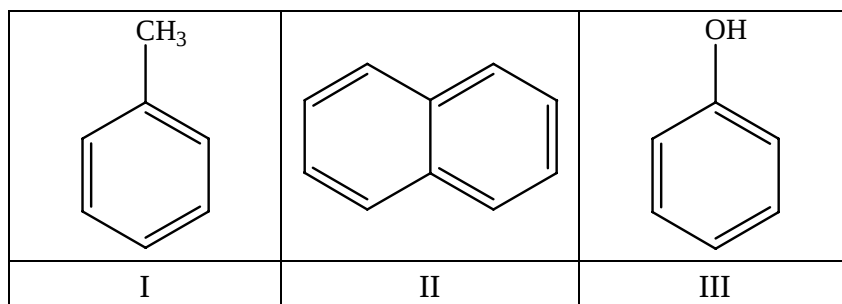


- A. mol dm^{-3}
B. $\text{mol}^{-1} \text{dm}^{+3}$
C. $\text{mol}^{-2} \text{dm}^{-4}$
D. $\text{mol}^{-2} \text{dm}^{+6}$
4. Which type of ions will be obtained upon dissociation of potassium ferrocyanide, $\text{K}_4[\text{Fe}(\text{CN})_6]$?
- A. Simple cation and simple anion
B. Simple anion and complex cation
C. Simple cation and complex anion
D. Complex cation and complex anion
5. The given diagram represents the reaction of dilute sulphuric acid with zinc metal. Which of the following products will be obtained as a result of this reaction?

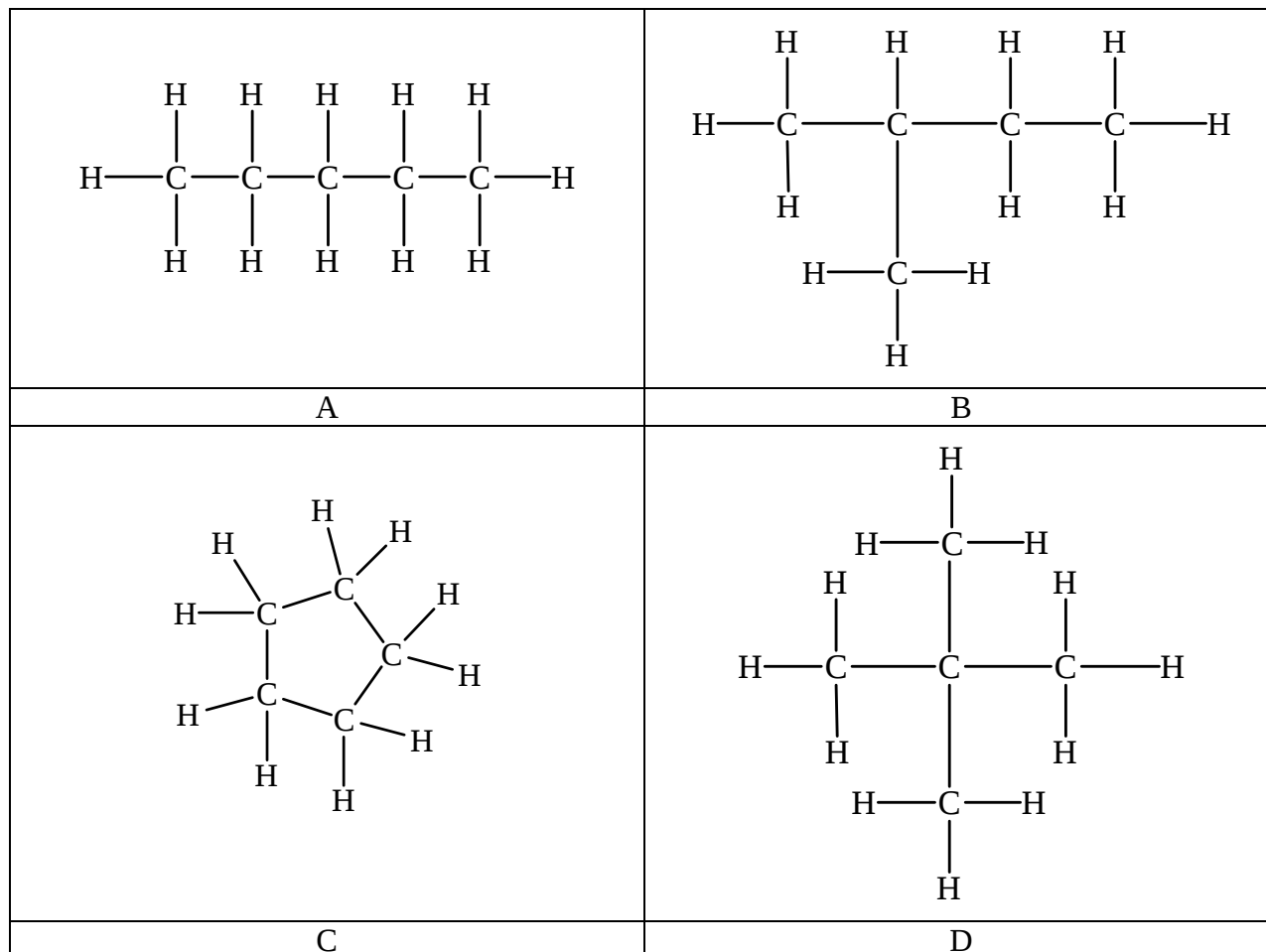


- A. Zinc sulphate and water vapours
B. Zinc sulphide and hydrogen gas
C. Zinc sulphate and hydrogen gas
D. Zinc hydroxide and sulphur dioxide gas
6. Which of the following is the pH of 0.001M solution of KOH?
- A. 10
B. 11
C. 12
D. 13

7. The following chemical structures are examples of



- A. acyclic compounds.
 B. alicyclic compounds.
 C. aromatic compounds.
 D. heterocyclic compounds.
8. Which functional group gives a positive Fehling's test?
 A. Carboxylic acid group
 B. Aldehydic group
 C. Ketonic group
 D. Ether linkage
9. Which of the following is NOT an isomer of C_5H_{12} ?



10. Which of the following represents an unsaturated hydrocarbon?

- A. C_5H_{12}
- B. C_6H_{10}
- C. C_7H_{16}
- D. C_8H_{18}

11. A substitution reaction takes place when bromine reacts with

$\begin{array}{c} \text{H} & & \text{H} \\ & \diagdown & / \\ & \text{C} = \text{C} \\ & / & \diagdown \\ \text{H} & & \text{H} \end{array}$	$\begin{array}{c} \text{HO} & & \text{H} \\ & \diagdown & / \\ & \text{C} = \text{C} \\ & / & \diagdown \\ \text{H} & & \text{H} \end{array}$
A	B
$\text{H} - \text{C} \equiv \text{C} - \text{H}$	$\begin{array}{c} \text{H} & & \text{H} \\ & \diagdown & / \\ \text{H} - & \text{C} & - \text{C} - \text{H} \\ & / & \diagdown \\ \text{H} & & \text{H} \end{array}$
C	D

12. Which of the following acids is produced by the oxidation of acetylene with alkaline potassium permanganate?

$\begin{array}{c} \text{O} & \text{O} \\ & \\ \text{HO} - \text{C} & - \text{C} - \text{OH} \end{array}$	$\begin{array}{c} \text{O} \\ \\ \text{H} - \text{C} - \text{OH} \end{array}$
A	B
$\begin{array}{c} \text{H} & \text{O} \\ & \\ \text{H} - \text{C} & - \text{C} - \text{OH} \\ \\ \text{H} \end{array}$	$\begin{array}{c} \text{H} & \text{H} & \text{O} \\ & & \\ \text{H} - \text{C} & - \text{C} & - \text{C} - \text{OH} \\ & & \\ \text{H} & \text{H} & \end{array}$
C	D

13. All of the following are fat soluble vitamins EXCEPT

- A. vitamin A.
- B. vitamin B.
- C. vitamin D.
- D. vitamin E.

PLEASE TURN OVER THE PAGE

14. A detergent company receives complaints from their customers that one of their detergents is inefficient against starch based stains. On investigation, it is found that an enzyme that breaks down starch based stains is missing in the detergent.

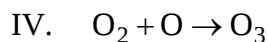
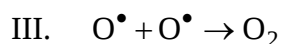
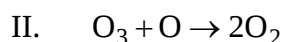
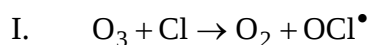
Which of the following is the missing enzyme?

- A. Lipase
 - B. Lactase
 - C. Protease
 - D. Amylase
15. Which of the following monomers is found in a protein molecule?

$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{C}-\text{C}-\text{NH}_2 \end{array}$	$\begin{array}{c} \text{CH}_3 \\ \\ \text{H}_2\text{N}-\text{C}-\text{COOH} \\ \\ \text{H} \end{array}$
A	B
$\begin{array}{c} \text{H} \quad \text{O} \\ \quad \parallel \\ \text{NC}-\text{C}-\text{C}-\text{OH} \\ \\ \text{H} \end{array}$	$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{C}-\text{NH}_2 \end{array}$
C	D

16. Sucrose gives one unit of glucose and one unit of fructose on
- A. reduction.
 - B. hydrolysis.
 - C. condensation.
 - D. decomposition.
17. Which of the following is a long-term effect of increasing carbon dioxide in the atmosphere?
- A. Melting of glaciers and ice bergs
 - B. Suffocation and ultimate death of fish
 - C. Loss of heat energy from the earth's surface
 - D. Increased respiratory problems for asthmatic patients
18. Which of the following processes helps in decreasing global warming?
- A. Respiration
 - B. Combustion
 - C. Deforestation
 - D. Photosynthesis

19. Which of the following reactions, under normal conditions, would help to maintain a balance in ozone concentrations in the stratosphere?



- A. I and II
B. I and III
C. II and IV
D. III and IV
20. Sugar is an organic compound while water is not, but it is still soluble in water. This happens because between the sugar and the water molecules there exists
- A. a dipole – dipole force of attraction.
B. an ion – dipole force of attraction.
C. a covalent bond.
D. a hydrogen bond.

21. A student heated temporary hard water in an electric kettle. After some time, he finds layers of scale around the walls of the kettle.

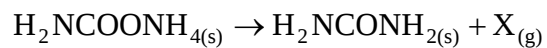
The layers of scale are due to the deposition of

- A. calcium chloride.
B. calcium carbonate.
C. calcium sulphate.
D. calcium bicarbonate.
22. Run-off from agricultural lands that are exposed to fertilizers and pesticides enters into water bodies causing pollution.

Which of the following washed-away salts causes an over growth of algae in water that could lead to the death of aquatic animals?

- A. Sulphate salts
B. Phosphate salts
C. Carbonate salts
D. Bicarbonate salts
23. The process which is based on the differences in densities of the metallic ore and gangue particles is known as
- A. smelting.
B. froth flotation.
C. gravity separation.
D. electromagnetic separation.

24. One of the reactions that takes place during the formation of urea is as follows.



The by-product X in the above reaction is

- A. H_2O
 - B. CO_2
 - C. CO
 - D. H_2
25. During the electrolysis of alumina (Al_2O_3) to extract aluminium, carbon anodes are eaten away and require replacing from time to time because of the
- A. formation of CO_2 gas.
 - B. formation of Al metal.
 - C. addition of cryolite with alumina.
 - D. passage of current at high temperature.