

S.S.L.C. EXAMINATION, MARCH - 2018

CHEMISTRY

(English)

Time : 1½ Hours

Total Score : 40

General Instructions :

- First 15 minutes is cool-off time.
- Read all the instructions carefully.
- Questions with scores 1, 2, 3 and 4 are categorised separately.
- 5 questions are given in each category. Answer **any four** from each category.
- Answer each question by keeping time.

Score

(Answer **any 4** questions from 1 to 5. Each question carries 1 score.)

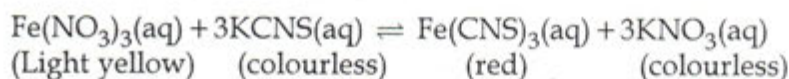
1. The number of moles in 400 g CaCO_3 is _____.
[Hint : Gram atomic masses : Ca = 40 g, C = 12 g, O = 16 g]
2. Which of the following is a reversible reaction ?
A : $\text{NaCl(aq)} + \text{AgNO}_3\text{(aq)} \rightarrow \text{NaNO}_3\text{(aq)} + \text{AgCl(s)}$
B : $\text{NH}_4\text{Cl(s)} \rightleftharpoons \text{NH}_3\text{(g)} + \text{HCl(g)}$
3. Find the relation and fill in the blank.
Amino group : $-\text{NH}_2$
Carboxylic group : _____
4. Which colour is given by cobalt oxides to glass ?
5. The medicines which relieve pain are called _____.

(Answer **any 4** questions from 6 to 10. Each question carries 2 score.)

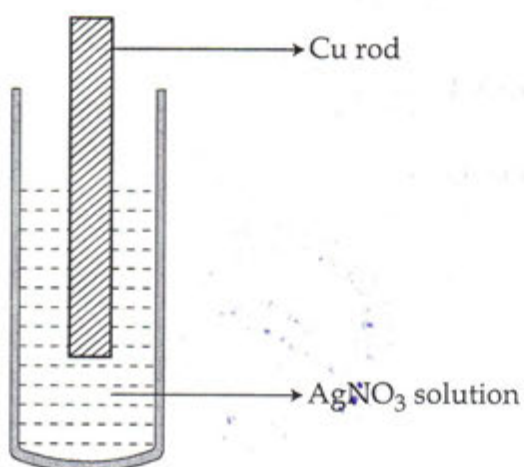
6. The balanced chemical equation for the formation of ammonia gas by the reaction between nitrogen gas and hydrogen gas is given.
 $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$
 - (a) Write the ratio between the number of moles of reactants and products in the correct order.
 - (b) How many moles of ammonia are formed when 6 moles of N_2 react with 6 moles of H_2 ?

P.T.O.

7. (a) Which of the following statements is correct about chemical equilibrium ?
- At equilibrium both the reactants and products coexist.
 - At equilibrium the rate of forward reaction is greater than the rate of backward reaction.
- (b) Write any one activity to increase the red colour in the following reaction.



8. Observe the diagram showing a copper rod kept immersed in silver nitrate solution.



- What is the colour change of the solution ?
 - Write the balanced chemical equation for the reaction.
9. (a) Write an example for a metal which can be refined by liquation ?
- (b) What is calcination ?
10. Esters are obtained by the reaction between alcohols and carboxylic acids.
- Write the chemical formula of ethyl ethanoate.
 - Write the chemical equation for the formation of ethyl ethanoate.

(Answer any 4 questions from 11 to 15. Each question carries 3 score.)

11. (a) What is gram atomic mass ?
(b) Calculate the following :
(i) How many gram atoms of sodium is present in 115 g sodium ?
(ii) Mass of 5 gram atoms of calcium.
[Hint : Gram atomic masses : Na = 23 g, Ca = 40 g]
12. The outermost shell electronic configuration of an element 'A' (symbol given is not real) is $3s^2 3p^4$.
(a) To which period of the periodic table does this element belong to ?
(b) Find the group number of the element.
(c) Which is the block to which the element belongs ?
13. What happens to the rate of the forward reaction of the equilibrium,
 $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g) + \text{Heat}$ during the following situations ?
(a) increase in temperature
(b) SO_3 is removed
(c) pressure is decreased
14. (a) What are isomers ?
(b) Write the structural formulae of any two position isomers of an alcohol with molecular formula $C_5H_{12}O$.
15. Petroleum is a mixture of different hydrocarbons.
(a) Which method is used for separating the components of petroleum ?
(b) Which is the hydrocarbon present in liquified petroleum gas (LPG) ?
(c) Write any two environmental issues caused by the excessive consumption of fossil fuels.

(Answer any 4 questions from 16 to 20. Each question carries 4 score.)

16. There are sub shells in shells around the nucleus.
(a) What is the maximum number of electrons that can be accommodated in d-sub shell ?
(b) Write the possible sub shells in 3rd shell in the increasing order of energy.
(c) Which of the following is the outermost electronic configuration of copper ?
(Atomic number = 29)
A : $3d^9 4s^2$
B : $3d^{10} 4s^1$
Justify your answer.

17. Ions are the current carriers in electrolytes.
- Sodium chloride in solid state is not an electrical conductor, but molten sodium chloride can conduct electricity. Give reason.
 - What are the products obtained at anode and cathode during the electrolysis of molten sodium chloride ?
 - If the aqueous solution of sodium chloride is subjected to electrolysis, what are the products obtained at each electrode ?
18. Different methods are used for the concentration of ores.
- What is the ore of aluminium ?
 - Explain how the ore of aluminium is concentrated by leaching.
19. Organic compounds are obtained through different chemical reactions.
- What is the difference between substitution reactions and addition reactions ?
 - Complete the following reactions :
 - $\text{CH}_3 - \text{CH}_3 + \text{Cl}_2 \rightarrow \text{-----} + \text{HCl}$
 - $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3 + \text{HI} \rightarrow \text{-----}$
20. The structural formulae of some organic compounds are given below :
- $\text{CH}_3 - \text{CH}_2 - \text{CO} - \text{CH}_3$
 - $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CHO}$
 - $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{OH}$
 - $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$
- Which of these is an alkane ?
 - Write the structural formula of the position isomer of the third compound.
 - Which of the given compounds are functional isomers ?
 - Write the structural formula of the chain isomer of the fourth compound.