

Sl. No.

SSLC MODEL EXAMINATION, FEBRUARY - 2017.

CHEMISTRY

(English)

Time : 1½ Hours

Total Score : 40

Instructions :

- 15 minutes is given as cool-off time. This time is to be spent for reading the questions and planning the order of the answers.
- Start writing answers only after reading the questions and instructions thoroughly.
- The allocated score and time are to be considered while writing answers.

	Score
1. Which among the following subshells are not possible ? 2p, 6s, 3f, 5d, 4s, 1p	1
2. The outermost electronic configuration of an element 'X' is $3s^23p^1$. Answer the questions given below related to this element. (Symbol of the element is not actual).	
(a) What is the atomic number of this element ?	1
(b) Write the group number and period number of X ?	1
(c) Write the formula of the oxide of this element ?	1
3. This question has choice. Answer any one.	
(A) Marble reacts with dilute HCl according to the equation. $\text{CaCO}_3 + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$	
(a) Calculate the number of grams of water produced when two moles of CaCO_3 reacts with excess HCl.	1
(b) What volume of CO_2 gas is liberated at STP when 500 g of CaCO_3 reacts with excess HCl. (Atomic mass Ca - 40, C - 12, O - 16, Cl - 35.5, H - 1)	2
OR	
(B) Carbon monoxide gas is a reducing agent. The reduction of Fe_2O_3 using carbon monoxide is as given below. $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$	
(a) How many grams of Fe_2O_3 is required to produce 28 g of iron through this reaction ?	1
(b) What volume of carbon monoxide is required at STP for the complete reduction of 320 g of Fe_2O_3 ? (Atomic mass Fe - 56, O - 16, C - 12)	2

P.T.O.

4. Given below are three solutions :

Solution A : 14 g KOH dissolved in 500 mL of solution

Solution B : 18 g NaOH dissolved in 600 mL of solution

Solution C : 18 g NaOH dissolved in 750 mL of solution

Arrange them in the increasing order of their concentrations.

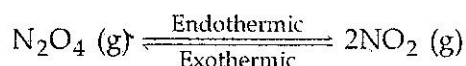
(Atomic mass K - 39, Na - 23, O - 16, H - 1)

5. Catalysts are substances that alter the rate of a chemical reaction without themselves undergoing any change.

(a) Which is the catalyst used in Haber process ? 1

(b) What is meant by positive and negative catalysts ? Give an example for each and indicate the corresponding reaction. 2

6. Consider the following reversible reaction at equilibrium. 2



Identify the wrong statement from among the following.

(i) Increase in concentration of N_2O_4 favours the forward reaction.

(ii) Increase in pressure favours the forward reaction.

(iii) Decrease in temperature favours the backward reaction.

(iv) Removal of NO_2 favours the backward reaction.

7. CuSO_4 is used in the manufacture of fungicides. Can a solution of copper sulphate be stored in iron vessels ? Give reason for your answer. 2

8. The chemical change taking place in an electrolyte when electricity is passed through it is electrolysis.

(a) Which are the products of electrolysis of aqueous CuCl_2 using graphite electrodes ? 1

(b) Write the electrode reactions involved in the electrolysis of aqueous CuCl_2 using graphite electrodes ? 2

(c) What is the charge of the anode in the electrolytic cell ? 1

Score

9. Metallurgy involves all the processes leading to the separation of a pure metal from its ore.
- (a) Distinguish a mineral from an ore. 1
- (b) What type of ores are usually concentrated by froth floatation process. Give an example. 2
10. Iron is extracted using the blast furnace. Name one chief ore of iron. 1
11. The metallurgy of aluminium involves two stages - a concentration process and electrolysis.
- (a) Why is the ore of aluminium treated with hot concentrated NaOH ? 1
- (b) During electrolysis, cryolite is added to the electrolyte. Why ? 1
12. Isomers are compounds having the same molecular formula but different structural formulae.
- (a) Draw the structures of two isomeric carboxylic acids with molecular formula $C_4H_8O_2$. 2
- (b) Give the IUPAC name of the above two isomers. 2
13. Given below are the IUPAC names of two organic compounds.
- (a) 3, 3, 5, 5 - tetra methyl octane 1
- (b) 4 - methyl hept -2-yne 1
- Draw their structures.
14. PVC is an extensively used polymer.
- (a) Which is the monomer of PVC ? 1
- (b) Give the structure of PVC. 1
15. An ester can be prepared by the reaction between an alcohol and a carboxylic acid.
- (a) Name the carboxylic acid and alcohol needed to prepare methyl propanoate ester. 1
- (b) Write the chemical equation for the above reaction. 2

P.T.O.

16. Match the following items in columns A and B :

A Type of Medicine	B - Function
(i) Antacids	(a) To control micro organisms
(ii) Antiseptics	(b) To relieve pain
(iii) Analgesics	(c) To lower body temperature
(iv) Antipyretics	(d) To reduce acidity

17. Glass is an important man - made material. Which type of glass is used to make lenses and prisms ? 1