

HIGHER SECONDARY MODEL EXAMINATION**HSE II****CHEMISTRY****Max.marks: 60****Time: 2.45 hrs****General instructions**

- All questions are compulsory
- Cool-off time is 15 minutes

1] Defects modify the properties of crystals [4 marks]

- A] Give differences between Schottky and Frenkel defects [2.0]
- B] On heating zinc oxide becomes yellow in colour. Why? [1.0]
- C] Alkali metal halides on heating in presence of alkali metal produce characteristic colours. Give reason [1.0]

2] Colligative properties depend on the number of solute particles in solution [4 marks]

- A] Give the name of colligative property suitable for the measurement of molar mass of starch [1.0]
- B] Give reasons for abnormal colligative properties [1.0]
- C] Represent elevation in boiling point graphically [2.0]

3] Cells are used for different purposes [4 marks]

- A] Differentiate between primary and secondary cells [1.0]
- B] The voltage given by mercury cell is constant . Why ? [1.0]
- C] What are fuel cells ? Give their two advantages . [2.0]

4] Chemical kinetics deals with rates of chemical reactions [4 marks]

- A] Give two differences between order and molecularity of a chemical reaction [1.0]
- B] Draw a graphical representation to show the effect of a positive catalyst on the activation energy [1.0]
- C] How rate of reaction increases with increase in temperature ? [1.0]
- D] What is the half life of a first order reaction whose rate constant is 200 s^{-1} ? [1.0]

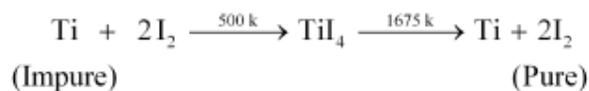
5] Colloids are heterogeneous systems [3 marks]

A] Differentiate between Tyndall effect and Brownian movement [2.0]

B] State Hardy-Schulze rule for the coagulation of colloids [1.0]

6] Metallurgy deals with the extraction of a metal from a suitable ore [3 marks]

A] Which method of purification is represented by the given equation? [1.0]



B] Differentiate between roasting and calcination [1.0]

C] "All ores are minerals but all minerals are not ores" .Justify the statement [1.0]

7] Elements belonging from group 13 to group 18 are known as p-block elements [5 marks]

A] Draw the structures of phosphorous and sulphur molecules [1.0]

B] What are interhalogen compounds . Give example [1.0]

C] a. Account for the high viscous nature and boiling point of sulphuric acid [1.0]

b. Why are all the halogens usually coloured? [1.0]

D] Why are all bonds in PCl_5 molecule **not** equivalent? [1.0]

8] Elements from group 3 to group 12 are known as d block elements [4 marks]

A] Explain the following observations:

(i) Transition elements generally form coloured compounds. [1.0]

(ii) Mercury is a liquid at room temperature [1.0]

B] Give the preparation of potassium permanganate from pyrolusite [2.0]

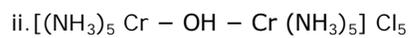
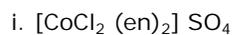
9] Co-ordination compounds are addition compounds [4 marks]

A] A coordination compound has the formula $\text{PtCl}_4 \cdot 3\text{NH}_3$. It does not liberate ammonia, but precipitates chloride ion as silver chloride. [2.0]

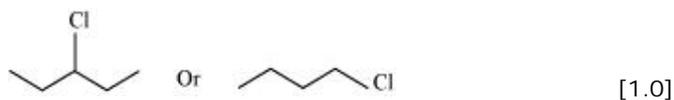
i. Write the IUPAC name and the structural formula of the compound.

ii. What is the secondary valency of the compound in part (i)?

B] Write down the IUPAC nomenclature of the following compounds: [2.0]

**10] Halogen compounds reactive compounds [4 marks]**

A] (i) Why is it that haloalkanes are more reactive than haloarenes towards nucleophiles?[1.0]

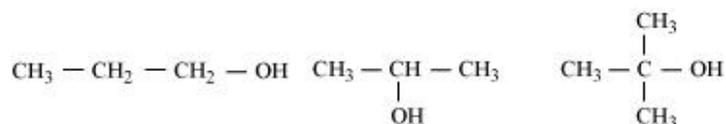
(ii) Which one of the following reacts faster in an $\text{S}_{\text{N}}1$ reaction and why?

B] Chloroform is kept in amber coloured bottles. Why? [1.0]

C] Differentiate the action of moist and dry silver oxide on bromomethane [1.0]

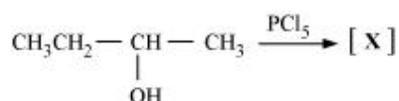
11] Alcohols are important industrial solvents [4 marks]

A] Which of the following alcohols give ketone on oxidation?[1.0]



B] What happens when dehydration of ethanol is carried at a higher temperature of 443 K?[1.0]

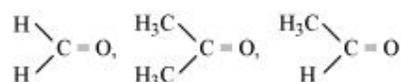
C] a] Complete the reaction [1.0]



b. Write all the possible structural isomers of the compound X [1.0]

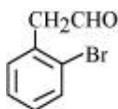
12] Aldehydes and ketones are carbonyl compounds [5marks]

A] Giving reasons, arrange the following carbonyl compounds in the decreasing order of their reactivity in nucleophilic addition reactions.[2.0]

B] Give two chemical tests to distinguish between CH_3CHO and CH_3COCH_3 . [1.0]

C] Give a commercial method to obtain benzaldehyde from toluene.[1.0]

D] Write the IUPAC name of the following compound.[1.0]



13] Amines are derivatives of ammonia [3 marks]

A] Between ethylamine and ethyl alcohol, which has a higher boiling point and why?[1.0]

B] Giving reasons, arrange the given amines in the decreasing order of their basicity in the follow[2.0]



14] Biomolecules are complex organic molecules [3 marks]

Match the following

Glucose	Amylose	Reducing sugar
Sucrose	Aldohexose	Zwitterion
Starch	Invert sugar	ketohexose
Fructose	Glycine	Linear polymer
Aminoacid	Denaturation	Peptide linkage
Proteins	Sweetest sugar	Non-reducing sugar

15] Polymers are macromolecules formed from monomers [3 marks]

a. What was the need for developing biodegradable polymers?[1.0]

b. What does PHBV stand for? Give its uses.[1.0]

c. Write the monomer units of Nylon 2-Nylon- 6?[1.0]

16] Chemistry plays an important role in our day to day life [3 marks]

a) State the function along with one example each of: [2.0]

(i) Antihistamines

(ii) Antioxidants

(b) Give two differences between soaps and synthetic detergents [1.0]