CBCS SCHEME

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21BS23

Second Semester B.Sc.(Hons) Degree Examination, June/July 2024
Chemistry - 2

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Calculate Lattice enthalpy for Sodium chloride using Born-Haber's cycle. **(05 Marks)**

b. What is Fajan's rule. Explain. **(05 Marks)**

c. Apply molecular orbital theory to carbon monoxide. Draw molecular orbital diagram write electronic configuration, calculate bond order and predict its magnetic behavior. **(10 Marks)**

OR

2 a. Apply VSEPR theory to explain the shapes of (i) H_2O (ii) NH_3 . **(08 Marks)**

b. Explain the following properties:
(i) Anomalous reactivity of lithium
(ii) Dissolution of alkali metals is liquid ammonia **(08 Marks)**

c. Discuss the biological importance of alkali metals. **(04 Marks)**

Module-2

3 a. Explain the factors affecting acidity and basicity of compounds. **(08 Marks)**

b. Explain the mechanism of (i) Pinacole – Pinacolone rearrangement (ii) Mitsunobu reaction **(08 Marks)**

c. Discuss the mechanism of Fries rearrangement with a suitable example. **(04 Marks)**

OR

4 a. Explain the mechanism of
(i) Claisen rearrangement
(ii) Lederer – Manasse reaction **(08 Marks)**

b. What are amino acids? Explain the Gabrial Phthalimide synthesis of amino acids. **(06 Marks)**

c. Outline the preparation of phenols by
(i) Dow process
(ii) Cumene process **(06 Marks)**

Module-3

5 a. Derive Clausius – Claperon equation. Mention its applications. **(08 Marks)**

b. Derive an expression for Langmuir adsorption isotherm and also write the four assumption of Langmuir adsorption isotherm. **(08 Marks)**

c. Differentiate between Chemisorptions and Physisorption. **(04 Marks)**

OR

6 a. Explain Langmuir – Hinshelwood and Rideal Eley Mechanisms. **(10 Marks)**

b. State first second and third law of thermodynamics with examples. **(06 Marks)**

c. Explain enzyme catalysis with an example. **(04 Marks)**

Module-4

7 a. What are air pollutants? Explain the sources, side effects and control mechanism of sulphur dioxide. **(07 Marks)**

b. What is biomedical waste? Discuss various methods for the treatment of biomedical waste. **(07 Marks)**

c. What are nano materials? Explain the solgel method of synthesis of nanomaterials. **(06 Marks)**

OR

8 a. Explain the sources, side effects and control mechanism of oxides of nitrogen. **(07 Marks)**

b. Explain the PXRD and SEM Techniques of characterization of nanomaterials. **(08 Marks)**

c. Outline the synthesis of fullerenes and mention its applications. **(05 Marks)**

Module-5

9 a. Outline the properties and composition of
(i) Soda lime glass (ii) Borosilicate glass (iii) Armoured glass (iv) Lead glass
(v) Photosensitive glass **(10 Marks)**

b. What is cement? Explain the processes involved in the manufacture of cement. **(06 Marks)**

c. How is gold extracted by cyanide process? **(04 Marks)**

OR

10 a. Discuss the principles of electroplating and explain the production of tungsten powder by powder metallurgy technique. **(09 Marks)**

b. What are Ellingham diagrams? Explain the extraction of Nickel from sulphide ore and its purification by Mond's process. **(07 Marks)**

c. Describe fusion method for the extraction of lithium. **(04 Marks)**

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