U.G. DEGREE EXAMINATION — DECEMBER 2023

Chemistry

Second Year

GENERAL CHEMISTRY – III

Time : 3 hours   Maximum marks : 70

PART A — ($3 \times 3 = 9$ marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Beryllium and magnesium do not give colour to flame whereas other alkaline earth metals do so. Why?

2. Determine the oxidation number of Phosphorus in H_3PO_2 molecule.

3. Write the Vilsmeyer Haack reaction.

4. Give any one example when the molecularity and the order of the reaction are the same.

5. What is isoprene rule?

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. What occurs when:

   (a) Sodium metal is immersed in water?

   (b) Sodium metal is heated in free supply of air?

   (c) Sodium peroxide gets dissolved in water?

7. Illustrate about the structure of Diborane.

8. Explain the Friedal's Craft's acylation reaction of benzene.

9. Derive rate constants for IInd order reactions with example.

10. Mark off the isoprene unit in menthol, α-terpineol and camphor.

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PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in
500 words.

All questions carry equal marks.

11. How does the chemical behavior of lithium similar to that of magnesium?

12. Explain the physical, chemical properties and uses of Si.

13. Explain the deactivating and *meta* directing nature of nitro group towards elecrtophilic aromatic substitution.

14. (a) The activation energy for the reaction, 2 HI(g) → H$_2$+I$_2$ (g) is 209.5 kJ mol^{-1} at 581 K. Calculate the fraction of molecules of reactants having energy equal to or greater than activation energy?

    (b) Differentiate order and molecularity of reactions.

15. Illustrate the general methods for the determination and structural elucidation of nicotine.

16. Discuss about the manufacture of glass and ceramics.

17. Illustrate the mechanism of Friedal's Craft's alkylation reaction of benzene and its limitations.

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U.G. DEGREE EXAMINATION — DECEMBER, 2023.

Chemistry

Second Year

GENERAL CHEMISTRY – IV

Time : 3 hours   Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Name the various processes involved in ore concentration.

2. What are Green catalysts?

3. Why do noble gases have low boiling points?

4. What are the ores of titanium?

5. Define reducing and non–reducing agents.

PART B — $(3 \times 7 = 21$ marks)

Answer any THREE questions out of Five questions in
200 words.

All questions carry equal marks..

6. Define the terms; calcinations, roasting and smelting.

7. Write the 12 principles of green chemistry.

8. Determine the oxidation number of Phosphorus in H_3PO_2 molecule.

9. What is lanthanide contraction? Write its consequences.

10. List out the deficiency diseases caused by Vitamin A and K.

PART C — $(4 \times 10 = 40$ marks)

Answer any FOUR questions out of Seven questions in
500 words.

All questions carry equal marks.

11. Explain about the van Arkel de Boer method to refine zirconium metal.

12. Give the reaction mechanism for the green chemical synthesis of paracetamol.

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13. Illustrate structure and preparation methods of XeF_6 and $XeOF_4$.

14. Discuss the group study of chromium group elements.

15. Define the terms:

    (a) Analgesics

    (b) Anaesthetics

    (c) Antipyretics and

    (d) Antiinflammatory.

16. Write note on Microwave and Ultrasound assisted green synthesis.

17. Discuss the occurrence and metallurgical process of Uranium.

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U.G. DEGREE EXAMINATION – DECEMBER, 2023.

Chemistry/ Botany

Second Year

ANIMAL DIVERSITY

Time : 3 hours   Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five
questions in 100 words

All questions carry equal marks

1.   What is Prochordate with examples?

2.   Highlight contractile vacuoles in Paramecium.

3.   Salient features of Pedicellaria.

4.   List out the types of Scales and their adaptations.

5.   Draw a neat sketch on brain of pigeon.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five
questions in 200 words

All questions carry equal marks

6. Classify the phylum Mollusca up to the class.

7. Describe the structure of Obelia Colony.

8. Describe the circulatory system of Prawn.

9. Illustrate and describe the male reproduction of Calotes.

10. Present a brief account on digestive system of pigeon.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven
questions in 500 words

All questions carry equal marks

11. Classify the phylum Echinodermata up to class with suitable example.

12. Give an account on parasitic adaptations of *Fasciola hepatica*.

13. Describe the water vascular system of star fish.

14. Illustrate and describe the respiratory system of Frog.

15. Give an account on circulatory system of Rabbit.

16. Classify the phylum Arthropod with suitable example.

17. Write an essay on respiratory system of pigeon.

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