

(6 pages)

Reg. No. :

Code No. : 10321 E Sub. Code : AMCH 51

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Fifth Semester

Chemistry — Core

INORGANIC CHEMISTRY — II

(For those who joined in July 2020 only)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Kr and Xe encapsulated in zeolite structures is an example for
- (a) Clathrate compounds
 - (b) Hydrates
 - (c) fluorides
 - (d) Molybdates

2. Which one of the following is a isotope of helium
- (a) ^3He (b) ^4He
 - (c) (a) and (b) (d) ^5He
3. The formula for Ziegler natta catalyst is
- (a) $\text{TiCl}_4 + \text{Et}_3\text{Al}$ (b) $\text{TiCl}_4 + \text{Et}_3\text{Al}$
 - (c) $\text{Cl}_4 + \text{Et}_3\text{Al}$ (d) $\text{TiCl}_6 + \text{Et}_3\text{Al}$
4. Wilkinson's catalyst is
- (a) $\text{C}_5\text{H}_4\text{IP}_3$ (b) $\text{C}_5\text{H}_4\text{IP}_5\text{Rh}$
 - (c) $\text{C}_5\text{H}_4\text{IP}_3\text{Rh}$ (d) $\text{C}_5\text{H}_4\text{IP}_3\text{R}$
5. The majority of the Lanthanides are
- (a) Paramagnetic (b) Diamagnetic
 - (c) Ferro magnetic (d) Anti ferromagnetic
6. The most common oxidation state exhibited by actinides is
- (a) +2 (b) 0
 - (c) +1 (d) +3
7. Which process converts an ore to its purest form
- (a) Smelting (b) Melting
 - (c) Calcinations (d) Roasting

Page 2 Code No. : 10321 E

8. Which method used to purify the metals such as Germanium, Gallium, and Silicon?
- (a) Van Arkel
 - (b) Zone refining
 - (c) Electrolysis
 - (d) Van arkel deboer method
9. The number of gram equivalents of solute present in one litre of a solution is called as
- (a) Molarity (b) Molality
 - (c) Normality (d) Formality
10. Occlusion is a kind of
- (a) Co precipitation (b) Post precipitation
 - (c) Precipitation (d) Solubility product

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Describe the significance of inert gases.
- Or
- (b) List out the applications of hydrates of noble gases.

12. (a) Write a note on sodium nitroprusside.
- Or
- (b) Write a note on zinc group metals.
13. (a) Discuss on lanthanide contraction.
- Or
- (b) Write the preparation and properties of uranium hexafluoride.
14. (a) Define the following (i) calcination (ii) electrolysis.
- Or
- (b) Discuss on van Arkel deboer method.
15. (a) How the acid base reaction is playing a significant role in titration?
- Or
- (b) Define the following (i) Co precipitation (ii) Post precipitation.

Page 3 Code No. : 10321 E

Page 4 Code No. : 10321 E
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PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) (i) Explain the preparation and properties of oxides of xenon. (6)
(ii) Write any three properties of helium. (2)

Or

- (b) Discuss on the properties of fluorides of krypton and radon.
17. (a) (i) Write the preparation of Ziegler - Natta catalyst. (5)
(ii) Write a short note on iron group metals. (3)

Or

- (b) (i) How can we prepare the Nickel DMG complex? (4)
(ii) Discuss on Wilkinson's catalyst.
18. (a) (i) Account on the properties and uses of ceric ammonium sulphate. (6)
(ii) Write the uses of thrium nitrate.

Or

- (b) (i) Compare lanthanides with actinides on their basic characteristics. (6)
(ii) Write the preparation of thorium dioxide. (2)

19. (a) How froth floatation and magnetic separation methods are useful in metallurgical processes?

Or

- (b) (i) Explain zone refining. (4)
(ii) Write a short note on the basic principles of metallurgy. (4)
20. (a) (i) How the common ion effect is useful in precipitation of cations? (4)
(ii) Account on the interfering radicals and their elimination. (4)

Or

- (b) (i) What are the conditions for precipitation? (4)
(ii) How will you minimize the errors during the precipitation process? (4)