

(6 pages)

Reg. No. :

Code No. : 20061 E Sub. Code : AMCH 51

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

Fifth Semester

Chemistry – Core

INORGANIC CHEMISTRY – II

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Pick out the wrong statement.

- (a) Noble gases have no unpaired electron
- (b) Noble gases are highly reactive
- (c) Noble gases are inert
- (d) Radon is radio active

2. Which of the following gas is used as a coolant in atomic reactors?

- (a) H₂
- (b) O₂
- (c) CH₄
- (d) He

3. In d-block elements _____ sub-shell is incomplete.

- (a) nd
- (b) (n - d) d
- (c) ns and nd
- (d) ns

4. Pick out the diamagnetic element from the following

- (a) Cu
- (b) Zn
- (c) Ti
- (d) Mn

5. Which of the following lanthanide is radioactive?

- (a) Pm
- (b) Sm
- (c) Eu
- (d) Gd

6. _____ synthetic actinide element.

- (a) Th
- (b) U
- (c) Pa
- (d) Pu

7. Sulphide ores are concentrated by _____ process.
(a) gravity separation
(b) magnetic separation
(c) froth floatation
(d) electrolysis
8. The important ore of uranium is
(a) bauxite (b) pitch blende
(c) rutile (d) wurzite
9. Which of the following is an acid base indicator?
(a) starch (b) phenolphthalein
(c) ammonia (d) EDTA
10. _____ is eliminated before proceeding the second group analysis.
(a) borate (b) arsenate
(c) fluoride (d) oxalate

PART B — (5 × 5 = 25 marks)

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

11. (a) Discuss the bonding in xenon compounds.
Or
(b) Write the Importance of inert gases in theoretical chemistry.

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12. (a) What are coinage metals? Explain.
Or
(b) Draw the structure of Nickel DMG complex and Ziegler—Natta catalyst and Wilkinson catalyst.
13. (a) Identify the similarities between lanthanides and actinides.
Or
(b) Discuss the separation of lanthanides by solvent extraction method.
14. (a) What are ores and minerals? Explain.
Or
(b) Write the names of any important ores of lithium, Beryllium, titanium and vanadium.
15. (a) What is solubility product? Give its application in qualitative analysis.
Or
(b) Discuss the principle of redox titration.

PART C — (5 × 8 = 40 marks)

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

16. (a) Explain the general physical properties and special properties of helium.

Or

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- (b) Discuss the following:
(i) Oxyfluorides of xenon (4)
(ii) Fluorides of radon. (4)

17. (a) Describe the general properties of d-block elements.

Or

- (b) How will you prepare the following compounds
(i) KMnO_4 (2)
(ii) $\text{K}_2\text{Cr}_2\text{O}_7$ (2)
(iii) Sodium nitroprusside (2)
(iv) Prussian blue (2)
18. (a) Write the preparation properties and uses of ceric ammonium sulphate.

Or

- (b) Explain the colour and spectra of lanthanide elements.
19. (a) How will you extract uranium from its ore?

Or

- (b) Discuss the principles of the following:
(i) Froth floatation (4)
(ii) Zone refining (4)

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20. (a) What are interfering acid radicals? Write the procedure for the elimination of any two interfering radicals.

Or

- (b) (i) Write the requirements of primary standards. (4)
(ii) Discuss the role of indicator in complexometric titration. (4)

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