22CHU623/18CHU23

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Sixth Semester)

Branch – **CHEMISTRY**

INORGANIC CHEMISTRY-II

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1. What is the general electronic configuration of the lanthanides?
   (i) $(n-2)f^{1-14}(n-1)d^{1-10}ns^2$ (ii) $(n-2)f^{1-14}(n-1)d^{1-2}ns^2$
   (iii) $(n-2)f^{1-14}(n-1)d^{0-1}ns^2$ (iv) $(n-2)f^{1-14}(n-1)d^{0}ns^2$

2. Which of following elements are include in actinide?
   (i) Th to Lr (ii) Ac to Lr
   (iii) Ac to No (iv) Th to No

3. In Geiger Muller Counter, one "court" is directly due to _____
   (i) a primary electron (ii) a secondary electron S
   (iii) a beta particle (iv) many electrons and ions

4. How is the separation of uranium isotopes carried out?
   (i) Centrifugation (ii) Electrodialysis
   (iii) Electrophoresis (iv) Thermal diffusion

5. Which of the following is non aqueous solvent?
   (i) Benzene (ii) Ether
   (iii) CCl4 (iv) All of these

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6. a) Explain briefly has f-block elements are classified as Lanthanides and Actinides.
   (OR)
   b) Summarize the uses of various lanthanide compounds.

7. a) Outline the preparation of Transuranic Elements.
   (OR)
   b) Compare Lanthanides and Actinides.

8. a) Describe the applications of radioactive radiation.
   (OR)
   b) Explain the group displacement law in briefly.

9. a) Summarize the structure of isobars and isotones.
   (OR)
   b) Describe the structural features of Isotopes of Hydrogen.

10. a) How are the classification of Carbides?
   (OR)
   b) Describe the structure features of $LiAlH_4$.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11. a) Analyze the Extraction of Lanthanides from Monazite sand.

(OR)

b) Elucidate the Lanthanide contraction in detail.

12. a) Discuss the extraction and properties of Uranium.

(OR)

b) (i) Elucidate the importance of colours and complex formation in actinides.

(ii) Enumerate the general properties of actinides.

13.a) Outline the classification of radioactive series.

(OR)

b) Explain the function of Electroscope method and Geiger Muller Counter Method.

14. a) Discuss in detail about the detection of Aston and Dempster mass Spectograph.

(OR)

b) Discover the separation of isotopes from Electromagnetic and Thermal diffusion Methods.

15. a) Outline the preparation, properties and uses of $NaBH_4$.

(OR)

b) Discuss the general methods of preparation, properties and uses of Covalent nitrides.

Z-Z-Z END