

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2024  
(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 most common oxidation state of lanthanides?  
(i) +2 (ii) +4  
(iii) +6 (iv) +3
2. Which of the actinides is used as a nuclear fuel?  
(i) Actinium (ii) Thorium  
(iii) Uranium (iv) Californium
3. Radioactivity is the characteristic of \_\_\_\_\_.  
(i) nucleus (ii) electron  
(iii) Proton (iv) neutron
4. Isotopes have  
(i) equal number of neutrons  
(ii) equal number of protons  
(iii) equal number of neutrons but unequal number of protons  
(iv) none
5. What is formed when lithium combines with nitrogen?  
(i) Nitrides (ii) Nitrate  
(iii) Lithium nitride (iv) Nitronate

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

6. a Discuss the general characteristics of lanthanides.  
OR  
b List out the uses of lanthanides.
7. a Explain about the position of actinides in periodic table.  
OR  
b Compare lanthanides and actinides.
8. a Mention the application of radioactive radiation.  
OR  
b Write note on: (i) Half-life period (ii) Radioactive series.
9. a Discuss the isotopes of Hydrogen in detail.  
OR  
b How isotopes are separated by Electromagnetic method?
10. a Classify Carbides.  
OR  
b Explain about covalent nitrides and Interstitial nitrides.

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. a Interpret the concept lanthanide contraction. Write its consequences.  
OR  
b How lanthanides are extracted from Monazite?
12. a List out the properties of actinides.  
OR  
b Explain about the extraction of Uranium.
13. a How radioactivity is detected and measured by Geiger Muller Counter method?  
OR  
b Explain the theory of radioactive disintegration.
14. a Describe Aston's mass spectrograph to identify isotopes.  
OR  
b Explain the process of separation of isotopes by Gaseous diffusion method.
15. a Describe the preparation, properties and uses of  $\text{LiAlH}_4$ .  
OR  
b Discuss the reactions of liquid ammonia.

Z-Z-Z

END