

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2017

(CUCBCSS—UG)

Chemistry

CHE 5B 06—INORGANIC CHEMISTRY—III

Time : Three Hours

Maximum : 80 Marks

Section A*Answer all questions.**Each question carries 1 mark.*

1. Which isotope of hydrogen is radioactive ?
2. Properties of Li differ from other alkali metals due to _____.
3. What is the most abundant element in the nitrogen family ?
4. Which compound is formed when PCl_5 is hydrolyzed with excess of water ?
5. H_2O is liquid but H_2S is gas at ordinary temperature due to _____.
6. Name a particulate pollutant commonly present in the atmosphere.
7. The alkaline earth metal with least density is _____.
8. The formula of bleaching powder is _____.
9. Name a Greenhouse gas.
10. Inorganic graphite is _____.

(10 × 1 = 10 marks)

Section B*Answer any ten questions.**Each question carries 2 marks.*

11. What is meant by greenhouse effect ?
12. Differentiate the term accuracy and precision ?
13. Cu(II) is precipitated as CuS in dil. HCl medium, while Co(II) is precipitated as CoS in ammoniacal medium. Explain.
14. Explain how diborane react with ammonia.
15. How is DO in water expressed ? What happens when DO falls very low ?

Turn over

16. What is the geometry of ClF_3 and ICl_3 ?
17. What is meant by dumping of solid waste ?
18. What are carboranes ?
19. The first ionisation energy of Be is greater than that of Li But the position is reversed in the case of second ionisation energy. Why ?
20. What are carbides ? How do we classify them ?
21. Give the structure of polymeric boron nitride. Why is it poorer electrical conductor than graphite ?
22. What are protic and aprotic solvents ? Give examples ?

(10 × 2 = 20 marks)

Section C

*Answer any five questions.
Each question carries 6 marks.*

23. What are errors in quantitative analysis ?
24. Give the methods of preparation, properties and structure of borazene.
25. What are the important sources of thermal pollution ?
26. What are the various oxy acids of sulphur ?
27. Discuss the structures of fluorides and oxy fluorides of xenon in various oxidation states ?
28. What are the chemical reactions and limitations of anhy. H_2SO_4 as a solvent ?
29. What are the natural and human made sources of SO_2 which is emitted to the atmosphere ? What are the adverse effect of this gas ?
30. Explain different types of glasses.

(5 × 6 = 30 marks)

Section D

*Answer any two questions.
Each question carries 10 marks.*

31. Discuss the variation in properties of halogens with reference to :
 - (a) Ionization energy.
 - (b) Oxidation state.
 - (c) Catenation.
 - (d) Electronegativity.
 - (e) Metallic character.

(5 × 2 = 10 marks)

32. (a) What are the sources of air pollution ? How can we reduce air pollution ? (5 marks)
(b) What are pesticides ? How are they classified ? (5 marks)
33. (a) What are the diagonal relationship of lithium and magnesium ? (3 marks)
(b) Discuss the methods of preparation, properties and uses of ammonia. (7 marks)
34. (a) Discuss the following reactions in liq. SO_2 giving example for each type:—
(i) Acid-base reaction.
(ii) Solvolytic reactions.
(iii) Complex formation reactions. (3 × 2 = 6 marks)
- (b) Write a note on energy production from waste. (4 marks)
- [2 × 10 = 20 marks]