Content

THE OPEN UNIVERSITY OF SRI LANKA
B.Sc/ B.Ed DEGREE PROGRAMME- 2006/2007
Level 4- CHU 2123/ CHE 4123
INORGANIC CHEMISTRY

ASSIGNMENT I TEST

Date: 27th September 2006 Time: 3.30- 5.00 p.m.

Part A- Multiple Choice Questions (45 marks)

Answer all the questions

Select the most correct answer to each question given below and mark a cross ***X*** over the answer on the given answer sheet. Any answer with more than one ***X*** will not be counted. 3 marks will be awarded for each correct answer. 1/6 th of a mark will be deducted for each incorrect answer.

1. What type of bond holds the basic structural units together in a molecular solid?
   (1) ionic (2) covalent (3) ionic (4) coordinate
   (5) van der Waals forces

2. Which of the following is classified as a covalent solid?
   (1) solid carbon dioxide (2) copper (3) sodium chloride (4) ice
   (5) silica

3. In which of the following does *ionic* bonding occur between the named atoms?
   (1) Hydrogen and chlorine in hydrogen chloride
   (2) Hydrogen and sodium in sodium hydride
   (3) Hydrogen and boron in sodium borohydride
   (4) Hydrogen and silicon in solid silane
   (5) Hydrogen and carbon in solid methane.

4. Which of the following will belong to the class of metallic solid?
   (1) moth ball (2) river sand (3) table salt (4) filament of a bulb
   (5) ice

5. What could be the best description of the property/ies of a covalent network solid?
   (1) low melting (2) low melting, brittle (3) hard and high melting
   (4) high melting and malleable (5) malleable and electrically conductive.

6. Consider the following statements about solids,
   (a) In solid carbon dioxide, the molecules are held by intermolecular forces.
   (b) Ice is an example of a covalent solid
   (c) The type of bond present in diamond is covalent.

   The correct statement is/are
   (1) a and b only (2) b and c only (3) a and c only (4) all a, b and c
   (5) none of the above.

7. Exmple(s) of an amorphous solid is/are
(a) graphite (b) glass (c) rubber (d) silica

The correct answer is/are
(1) a and b only (2) b and c only (3) c and d only (4) a and d only
(5) a, b and c only

8. The number atoms in a face centred cubic unit cell is
(1) 2 (2) 3 (3) 4 (4) 6 (5) 8

9. The relative size of positive ion and the negative ion is directly related to the coordination number of ions in the crystal. What will be the nearest radius ratio (r_c/r_a)for the ions in a body centred cubic crystal?
(1) 0.22 (2) 0.22- 0.41 (3) 0.41- 0.73 (4) 0.73
(5) >0.73

10. Which of the following has the face centred cubic (*fcc*) arrangement?
(1) sodium chloride (2) Caesium chloride (3) wurtzite (4) sodium chloride
(5) zinc sulphide

11. The axis/es of symmetry in a C_6H_6 molecule are
(a) C_2 (b) C_3 (c) C_4 (d) C_6
The correct answer is/are
(1) a and b only (2) b and c only (3) c and d only (4) a and d only
(5) a, b and c only

12. Consider the following symmetry planes:
(a) $2\sigma_v$ (b) $3\sigma_v$ (c) $3\sigma_d$ (d) σ_h
All the symmetry planes of the ion CO_3^{2-} is/are
(1) a and b only (2) b and c only (3) c and d only (4) a and d only
(5) a, b and c only

13. Which of the following molecules has an inversion centre?
(1) c*is*-CHClCHCl (2) NH_3 (3) CH_4 (4) $C_5H_5^-$ (5) C_6H_6

14. Consider the following molecules/ion:
(a) CH_4 (b) $CHCl_3$ (c) H_2O (d) NO_3^-
The molecules/ion that can have a dipole moment are
(1) a and b only (2) b and c only (3) c and d only (4) a and d only
(5) a, b and d only

15. What is the point group of C_6H_6?
(1) C_6 (2) D_{6h} (3) D_{3d} (4)D_{3h} (5) D_{2h}