Chemical Bonding

1. List the factors that determine the type of bond that will be formed between two atoms? (AS1)
2. Explain the difference between the valence electrons and the co-valency of an element. (AS1)
3. A chemical compound has the following Lewis notation: (AS1)

a) How many valence electrons does element Y have?
b) What is the valency of element Y?
c) What is the valency of element X?
d) How many covalent bonds are there in the molecule?
e) To which groups the elements X and Y belong? (AS2)

4. Why do only valence electrons involve in bond formation? Why not electron of inner shells?Exp (AS1)

5. How bond energies and bond lengths of molecule help us in predicting their chemical propertie Explain with examples. (AS1)

6. Draw simple diagrams to show
how electrons are arranged in the following covalent molecules:
(AS5)
a) Calcium oxide (CaO) (b) Water (H2O) (c) Chlorine (Cl2)

7. Represent the molecule H2O using Lewis notation. (AS5)

8. Represent each of the following atoms using Lewis notation: (AS5)
(a) beryllium (b) calcium (c) lithium d) bromine gas (Br2)
(e) calcium chloride (CaCl2) (f) carbon dioxide (CO2)

9. What is octet rule? How do you appreciate role of the ‘octet rule’ in explaining the chemicalprop of elements? (AS6)

10. What is hybridisation? Explain the formation of the following molecules using hybridisation
a) Be Cl2 b) BF3

11. Explain the formation of sodium chloride and calcium oxide on the basis of the concept of elec transfer from one atom to another atom. (AS1)\

12. A, B, and C are three elements with atomic numbers 6, 11 and 17 respectively.
i. Which of these cannot form ionic bond? Why? (AS1)
ii. Which of these cannot form covalent bond? Why? (AS1)
iii. Which of these can form ionic as well as covalent bonds? (AS1)

13. Predict the reasons for low melting point for covalent compounds when compared with ionic compound. (AS2)

14. How Lewis dot structure helps in understanding bond formation between atoms? (AS6)

15. Explain the formation of the following molecules using valence bond theory
a) N_2 molecule b) O_2 molecule

16. Two chemical reactions are described below. (AS5)
• Nitrogen and hydrogen react to form ammonia (NH_3)
• Carbon and hydrogen bond together to form a molecule of methane (CH_4).
For each reaction, give:
(a) The valence of each of the atoms involved in the reaction. (AS1)
(b) The Lewis structure of the product that is formed. (AS5)

1) Which one of the following four elements is more electronegative? [ ]
a) Sodium b) Oxygen c) Magnesium d) Calcium

2) An element 11X23 forms an ionic compound with another element 'Y'. Then the charge on the i
formed by X is [ ]
a) +1 b) +2 c) -1 d) -2

3) An element 'A' forms a chloride ACl_4. The number electrons in the valence shell of 'A' is
a) 1 b) 2 c) 3 d) 4 [ ]

4) The inert gas element which does not have octet electronic configuration in its outermost orbit is
a) Helium b) Argon c) Krepton d) Radon

5) Number of covalent bonds in methane molecule
a) 1 b) 2 c) 3 d) 4

6) The concept hybridisation of orbitals of an atoms was introdused by
a) Lives pouling b) Mosley c) Lewis d) Kossel

7) The value of bond angle in Berileum chloride molecule is
a) 1800 b) 1200 c) 1100 d) 104.310