



विद्या सर्वार्थ साधिका

ANANDALAYA
MID TERM EXAMINATION
Class : XI

Subject: CHEMISTRY

Date : 21/09/ 2019

M.M: 40

Time: 2 Hours

General Instructions:

1. All questions are compulsory.
2. Marks for each question are indicated against it.
3. Question numbers 1 to 10 are very short answer questions, carrying 1 mark each.
4. Question numbers 11 to 14 are short answer questions, carrying 2 marks each.
5. Question numbers 15 to 18 are short answer questions carrying 3 marks each.
6. Question numbers 19 & 20 are long answer questions carrying 5 marks each.

1. How does atomic radius vary in a period? (1)
2. Which among the following elements would have a more negative electron gain enthalpy? (1)
(a) F (b) Cl (c) Br (d) I
3. Predict the formulas of the stable binary compound that would be formed by the combination of the following pair of elements. Lithium and oxygen (Atomic numbers of Lithium =3, O= 8) (1)
4. Define the bond length. (1)
5. The hybridisation of P in PCl_5 is _____ ? (Atomic No. of P= 15) (1)
6. Considering x-axis as the inter-nuclear axis which out of the following will not form a sigma bond? (1)
(a) $1s$ and $1s$ (b) $1s$ and $2px$ (c) $2py$ and $2py$ (d) $1s$ and $2s$.
7. Which out of NH_3 and NF_3 has higher dipole moment? (1)
8. Critical temperature for carbon dioxide and methane are 31.1°C and -81.9°C respectively. Which of these has stronger intermolecular forces? (1)
9. In the following questions a statement of Assertion (A) followed by a statement of Reason (R) is given. Choose the correct option out of the choices given below each question. (1)
Assertion (A): Three states of matter are the result of balance between intermolecular forces and thermal energy of the molecules.
Reason (R): Intermolecular forces tend to keep the molecules together but thermal energy of molecules tends to keep them apart.
(i) Both A and R are true and R is the correct explanation of A.
(ii) Both A and R are true but R is not the correct explanation of A.
(iii) A is true but R is false.
(iv) A is false but R is true.
10. Name any one intermolecular force that exists between HF molecules in liquid state. (1)
11. What is the basic difference between the terms electron gain enthalpy and electronegativity? (2)
12. Use electron configuration to explain why copper is paramagnetic while its $1+$ ion is not. (2)
(Atomic number of copper = 29)

13. Would you expect the first ionization enthalpies for two isotopes of the same element to be the same or different? Justify your answer. (2)
14. The increasing order of reactivity among group 1 elements is $\text{Li} < \text{Na} < \text{K} < \text{Rb} < \text{Cs}$ whereas that among group 17 elements is $\text{F} > \text{Cl} > \text{Br} > \text{I}$. Explain. (2)
15. What do you understand by bond pairs and lone pairs of electrons? Illustrate by giving one example of each type. (3)
16. What will be the pressure exerted by a mixture of 3.2 g of methane and 4.4 g of carbon dioxide contained in a 9 L flask at 27°C ? (Molecular mass of methane = 16 u, carbon dioxide = 44 u, $R = 0.0821 \text{ L atm/K/mol}$) (3)
17. (a) Using the equation of state $pV = nRT$; show that at a given temperature density of a gas is proportional to gas pressure p . (3)
 (b) What does the Vander Waals constant 'a' and 'b' represent?
18. Explain the following: (3)
 (a) Electronegativity of elements increase on moving from left to right in the periodic table.
 (b) Ionization enthalpy decrease in a group from top to bottom?
19. What is meant by the term bond order? Calculate the bond order of: N_2 , O_2 , O_2^+ and O_2^- . (5)
- OR
- Discuss the shape of the following molecules using the VSEPR model: BeCl_2 , BCl_3 , SiCl_4 , H_2S , PH_3
 (Atomic Number of Be = 4, B = 5, Si = 14, Cl = 17, S = 16, P = 15)
20. (a) At 25°C and 760 mm of Hg pressure a gas occupies 600 mL volume. What will be its pressure at a height where temperature is 10°C and volume of the gas is 640 mL. (5)
 (b) If 1 gram of each of the following gases are taken at STP, which of the gases will occupy (a) Greatest volume and (b) smallest volume? CO , H_2O , CH_4 , NO . (Atomic mass of C = 12, H = 1, O = 16, N = 14)