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Roll No.

Second Unit Test 2016-17

Chemistry

Time : 90 Min

Class : XI

M.M. : 40

1. Which of the following species will have largest and the smallest size ?
Mg, Mg^{2+} , Al, Al^{3+}
2. Draw the lewis dot structure of following molecule : $HCOOH$.
3. In terms of period and group where would you locate the element with $Z = 114$?
4. State Dalton's law of partial pressure.
5. Which of the following pairs of elements would have a more negative electron gain enthalpy and why ?
F or Cl. 1×5=5
6. (a) Distinguish between a sigma and a pi-bond (any two).
(b) Define hydrogen bond. Is it weaker or stronger than the vanderwaals forces ? 1+1
7. (a) What would be the SI unit for the quantity $P V^2 T^2 / n$?
(b) In terms of charle's law, explain why $-273^{\circ}C$ is the lowest possible temperature. 1+1



(P.T.O.)

8. Write the resonance structures for SO_3 , NO_2 . 1+1

9. The first ionization enthalpy values (in KJ/mol) of group 13 elements are:

B Al Ga In Tl

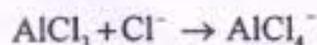
801 577 579 558 589

How would you explain this deviation from the general trend? 2

10. (a) Critical temperature for carbon dioxide and methane are 31.1°C and -81.9°C respectively, which of these has stronger intermolecular forces and why?

(b) Explain the physical significance of vander waals parameters. $1 \times 1 = 2$

11. (a) Describe the change in hybridisation (if any) of the Al atom in the following reaction.



(b) Describe the hybridisation in case of PCl_5 . Why are the axial bonds longer as compared to equatorial bonds? 1+2

12. (a) What do you understand by Isoelectronic species? Name a species that will be isoelectronic with each of the following atoms or ions.

(i) F^-

(ii) Ar.

- ✓(b) How would you explain the fact that the first ionization enthalpy of sodium is lower than that of Magnesium but its second ionization enthalpy is higher than that of Magnesium ? 2+1
13. ✓(a) Define electronegativity. How does it differ from electron gain enthalpy ?
- ✓(b) Which out of NH_3 and NF_3 has higher dipole moment and why ? 2+1
14. (a) How would you react to the statement that the electronegativity of N on Pauling scale is 3.0 in all nitrogen compounds ?
- (b) The increasing order of reactivity among group I element is $\text{Li} < \text{Na} < \text{K} < \text{Rb} < \text{Cs}$ where as that among group 17 elements is $\text{F} > \text{Cl} > \text{Br} > \text{I}$. Explain.
- (c) Write general outer electronic configuration of d-block element. 1+1+1
15. ✓(a) Starting from the gas laws, show that at a given temperature density of a gas is proportional to gas pressure P.
- (b) State Vanderwoals equation of state for 'n' mole of real gases. 2+1
16. ✓(a) What is meant by the term bond order ? Calculate the bond order of N_2 and O_2^+ by writing their electronic configuration.
- (b) Although geometries of NH_3 and H_2O molecules are distorted tetrahedral, bond angle in water is less than that of ammonia. Discuss 3+2

