Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore-641043
Bachelor's Degree Examination - November 2017

I Semester

Class : I UG **Time :3 Hrs**
Major : Chemistry **Max.Marks :100**

15BCHC01 General Chemistry - I

Part – A **10x1=10**
Choose the correct answer

1. Electrons prefer to occupy sub-shell which has lower n+ℓ value . This is called ----------
   a. Hund's rule b. Pauli's principle
   c. Uncertainty principle d. Auf bau principle

2. Element having atomic number 22 is ----------
   a. Normal element b. Halogen
   c. Transition element d. Alkali metal

3. Naphthalene is purified by ----------
   a. Sublimation b. Crystallization
   c. Chromatography d. Distillation

4. A mixture of acetone and methanol can be separated by ----------
   a. Steam distillation b. Vacuum distillation
   c. Fractional distillation d. Sublimation

5. The general formula for an alkane is ----------
   a. $C_nH_{2n}+2$ b. $C_nH_{2n}+3$
   c. $C_nH_{2n}-2$ d. C_nH_{2n}

6. Benzene on catalytic hydrogenation gives ----------
   a. cyclo butane b. cyclo propane
   c. cyclo hexane d. cyclo pentane

7. Which one of the following haloacids shows Anti-Markovnikov addition to an asymmetric alkene in the presence of peroxides.
   a. Hcl b. HBr
   c. HI d. HF

8. Which of the following dienes is most reactive?
   a. 1,3 - Butadiene b. 1,2 - Propadiene
   c. 1,4 – pentadiene d. None of these

9. The gas constant is represented by the symbol.
   a. A b. Z
   c. R d. S

10. The mean free path is ----------
   a. directly proportional to the pressure of the gas.
   b. directly proportional to the root mean square velocity of gas.
   c. directly proportional to the temperature of the gas.
   d. directly proportional to the absolute temperature of the gas.

Part – B 5x6=30

Answer the following

Answer should not exceed 400 words or two pages

11. a. What are the general characteristics of s, p and d block elements?

(or)

11. b. State and explain Hund's rule and Auf bau principle.

12. a. What is mean by purification of organic compound? Explain the principle of Simple distillation.

(or)

12. b. What is mean by Sublimation? How are organic solid compounds purified by Sublimation and Crystallization method?

13. a. What are alkanes? Explain any one method of preparation of alkane and mechanism of free radical halogenations of alkanes.

(or)

13. b. Discuss the conformational analysis of Ethane and Cyclohexane.

14. a. What are dienes? How are they classified? Give an example for each type.

(or)

14. b. Explain hydrogenation, hydroboration and oxy – mercuration reactions of alkenes.

15. a. What are the postulates of kinetic theory of gases?

(or)

15. b. What is mean by RMS, average and most probable velocity? Write the different units of "R".

Part – C 5x12=60

Answer the following

Answer should not exceed 800 words or 4 pages

16. a. (i) Discuss about stability of atomic orbitals with suitable examples.(4)
(ii) Explain the important characteristics of 'd' and 'f' block elements.(8)

(or)

16. b. Write a brief note on Quantum numbers.

17. a. Write a brief note on Solvent extraction and steam distillation.

(or)

17. b. How are organic compounds purified by fractional distillation and distillation under reduced pressure?

18. a. Discuss about Baeyer's strain theory.

(or)

18. b. What are cycloalkanes? Give examples. Explain any two methods of preparation of cyclo alkanes.

19. a. (i) State and explain Markovnikoff's rule and anti – Markovnikoff's rule.(8)
(ii) What happens when alkene is treated with ozone? (4)

(or)

19. b. (i) Explain Diel's – Alder reaction. (5)
(ii) What do you understand by the term hydroxylation and allylic bromination. (7)

20. a. (i) Write down the expression for the Maxwell's distribution of Molecular velocity and discuss its characteristics. (6)
(ii) State and explain Boyle's law, Charele's law and Avogadro's law. (6)

(or)

20. b.(i) Derive Vander Waal's equation for "n" moles of a gas and write down the units in which Vander Waal's constants are expressed. (8)
(ii) Explain the significance of Vanderwaal's constant. (4)