Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – March 2021
I Semester

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

18BCHC01 Basics of Chemistry - I

Part A **10 x 1 = 10**
Choose the Correct Answer

1. Which of the following is vector quantity?
   a. Magnetic spin quantum number b. Principal quantum number
   b. Azimuthal quantum number d. Magnetic quantum number

2. Chalcogens belongs to_____.
   a. p-block b. s-block
   c. d-block d. f-block

3. Sublimation means conversion of_____.
   a. liquid into gas b. solid into gas
   c. solid into liquid d. liquid into solid

4. Distillation under reduced pressure is used to purify liquids having_____.
   a. high boiling point b. low boiling point
   c. high melting point d. low melting point

5. Which type of bond is present in cyclopropane ring?
   a. covalent bond b. sigma bond
   c. pi bond d. banana bond

6. Theory of strainless rings are also called as_____.
   a. Sache-Mohr's theory b. Baeyer strain theory
   c. Both a and b d. Pauling theory

7. Which of the following shows ionic bonds_____.
   a. sodium chloride b. methane
   c. carbon monoxide d. iodine monobromide

8. Which of the following theory does not explain the covalent bonding?
   a. Heitler-London theory b. Pauling theory
   c. Baeyer's theory d. Both a and b

9. What is the value of Gas constant?
   a. 8.3145 $Jmol^{-1}K^{-1}$ b. 6.626×10^{-34} JS
   c. $6.022 \times 10^{23}\ mol^{-1}$ d. 7.4579 $Jmol^{-1}K^{-1}$

10. Ideal gas equation is _____.
    a. PV = nRT b. PV = R/T
    c. PR = VT d. PV = T/R

Part B **5 x 6 = 30**

Answer ALL questions

Each answer should not exceed 400 words or two pages

11.a. Describe the magnetic quantum number.

(or)

11.b. State i. Aufbau principle (2 marks)
ii. Hund's rule (2 marks)
iii. Pauli's Exclusion principle (2 marks)

12.a. How do you purify the organic liquids via simple and steam distillation?

(or)

12.b. Summarize: Extraction of organic compounds.

13.a. Explain conformation of ethane & cyclohexane.

(or)

13.b. State Sache – Mohr's theory with example.

14.a. What is ionic bond? What are the factors influencing the formation of ionic bond?

(or)

14.b. Define Fajan's rule and write its postulates.

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

(or)

15.b. State i. Boyle's law (1.5 marks)
ii. Charles law (1.5 marks)
iii. Ideal gas equation (1.5 marks)
iv. Dalton's law (1.5 marks)

Part C **5 x 12 = 60**

Answer ALL questions

Each answer should not exceed 800 words or four pages

16.a. Explain. i. Principal quantum number (4 marks)
ii. Azimuthal quantum number (4 marks)
iii.Spin quantum number (4 marks)

(or)

16.b. Classify the elements into different orbitals such as s, p, d, f and their characteristics.

17.a. Illustrate the purification of organic liquids by distillation under reduced pressure and fractional distillation with suitable diagrams.

(or)

17.b. Explain the different methods to purify the solid organic compounds.

18.a. Describe the free radical mechanism for the halogenation of alkanes with suitable example.

(or)

18.b. Discuss about Baeyer Strain theory.

19.a. Discuss about Born Haber Cycle.

(or)

19.b. How the following molecules are formed? i. N_2 ii. O_2 iii. HF

20.a. Explain i. Collision frequency (4 marks)
ii. Collision number (4 marks)
iii. Maxwell's distribution of molecular velocities (4 marks)

(or)

20.b. Describe i. Relationship between critical and van der Waals constant (6 marks)
ii. Root mean square (6 marks)

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