

**A-2-B**

Total No. of Questions : 21]

[Total No. of Printed Pages : 7

**X1RKDO18**

**20802-B**

**CHEMISTRY**

**Time : 3 Hours]**

**[Maximum Marks : 70**

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(Long Answer Type Questions)

1. State and explain :

(i) Pauli's exclusion principle

(ii) Hund's rule of maximum spin multiplicity

Or

What is meant by dual nature of a particle in motion ? Explain also dual nature of light radiations.

2. State and explain Le-Chatelier's principle. Which factors can alter the equilibrium state.

Or

Explain the terms :

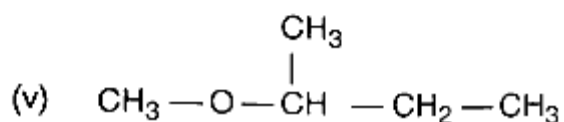
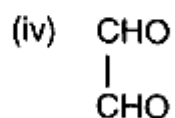
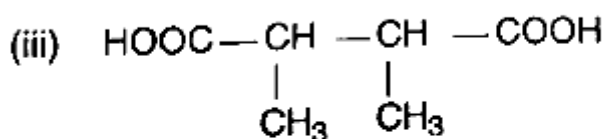
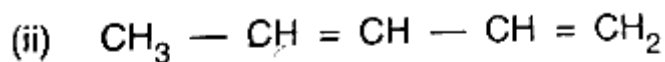
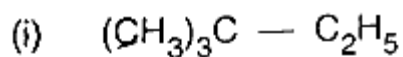
(i) Solubility product

(ii) Common ion effect

3. What are reaction intermediates ? Discuss the structure and relative stabilities of carbocation, carbanion and free radicals.

OR

Write IUPAC names of the following compounds :



4. What is Conformation ? Discuss the conformation of ethane.

OR

Discuss the mechanism of electrophilic substitution in benzene ring.

(Short Answer Type Questions)

5. State and explain law of conservation of mass and energy.

6. Distinguish between electron gain enthalpy and electronegativity.

7. Define Charle's law. How does it lead to the concept of absolute zero ?

8. Describe the factors which affect (a) surface tension, (b) viscosity.

9. State Hess's Law. How does it follow the first law of thermodynamics ?

10. Discuss anomalous behaviour of Beryllium.

11. Give biological importance of potassium.

12. What are silicones, silicates and zeolites?

(Very Short Answer Type Questions)

13. What are empirical and molecular formulae ?

14. Which of the following compounds have polar covalent bond  $\text{BeCl}_2$ ,  $\text{BF}_3$ ,  $\text{CO}_2$  and  $\text{CCl}_4$ ?
15.  $\text{BeCl}_2$  is a linear molecule whereas  $\text{CaCl}_2$  is not, why?
16. Hydride of Be is covalent while that of Na is ionic, why ?
17. What are Boranes ?
18. How is mixture containing iodine and common salt purified ?
19. What is formed when a mixture of  $\text{CH}_4$  and  $\text{O}_2$  is passed over  $\text{MoO}$  ?
20. Name the oxides of nitrogen which are pollutants.

(Objective Type Questions)

21. Choose the most appropriate option :

(i) Which pair of atomic numbers represents s-block elements ?

(A) 7, 15

(B) 6, 12

(C) 9, 17

(D) 3, 4

(ii) in the long form of periodic table all the non-metals are placed under:

(A) s-block

(B) p-block

(C) f-block

(D) d-block

(iii) The species having bond order different from that of  $\text{CO}_2$  is :

(A)  $\text{NO}^-$

(B)  $\text{NO}^+$

(C)  $\text{CN}^-$

(D)  $\text{N}_2$

(iv) At equilibrium Gibbs' free energy ( $\Delta G$ ) is :

(A)  $> 0$

(B)  $< 0$

(C) Zero

(D) depends upon reaction

(V) Oxidation number of Cr in  $\text{CrO}_5$  is :

(A) +2

(B) +4

(C) +6

(D) +10

(vi) -I effect is shown by :

(A)  $-\text{COOH}$

(B)  $-\text{C}_2\text{H}_5$

(C)  $-\text{CHR}_2$

(D)  $-\text{CH}_2\text{R}$

(vii) Which of the following will not be oxidised by  $\text{O}_3$  ?

(A) KI

(B)  $\text{FeSO}_4$

(C)  $\text{KMnO}_4$

(D)  $\text{K}_2\text{MnO}_4$

(viii) Which is strongest acid ?

(A)  $\text{CH}_3\text{CH}_2\text{COOH}$

(B)  $\text{CH}_3\text{CHClCOOH}$

(C)  $\text{CH}_2\text{ClCH}_2\text{COOH}$

(D)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$

(ix) The compound with highest boiling point is :

- (A) n-hexane
- (B) n-pentane
- (C) 2, 2-dimethyl propane
- (D) 2-methyl butane

(x) Addition of HBr to 3-methyl-1-pentyne follows :

- (A) Markownikov's rule
- (B) Anti-Markownikov's rule
- (C) Saytzeff rule
- (D) None of these