



VENKATESHWAR INTERNATIONAL SCHOOL

Sector - 10, Dwarka, New Delhi - 110075

UNIT TEST II (2025-26)

SET B

CLASS - XI

CHEMISTRY

Time: 1 $\frac{1}{2}$ hrs

Max Marks: 35

General Instructions:

1. All questions are compulsory
2. Questions 1 to 5 are multiple choice questions and carry 1 mark each.
3. Questions 6 to 9 are very short answer questions and carry 2 marks each.
4. Questions 10 to 13 are short answer questions and carry 3 marks each.
5. Questions 14 and 15 is long answer question and carries 5 marks.

Q1 In thermodynamics, a process is called reversible when:

- (a) When system and surroundings are interconvertible
- (b) There is no boundary between system and surroundings
- (c) The surrounding is always in equilibrium with system
- (d) System changes into surrounding

Q2 Which of the following does not match with respect to the shape of the molecule?

- (a) NH_3 - Trigonal pyramidal
- (b) SF_4 - Tetrahedral
- (c) H_2S - Bent
- (d) XeF_4 - Square planar

Q3 Intramolecular H-Bonding is shown by:

- (a) p-Nitrophenol
- (b) m-Nitrophenol
- (c) o-Nitrophenol
- (d) All of these

Q4 Identify the incorrect statement amongst the following:

- (a) C_2 molecule has four electrons in its two degenerate π molecular orbitals.
- (b) H_2^+ ion has one electron.
- (c) H_2^+ ion is diamagnetic.
- (d) O_2^+ ion is paramagnetic.

Q5 The quantity of heat needed to raise the temperature of substance by $1^\circ C$ (1K) is called:

(a) Heat Capacity

(b) Specific Heat

(c) Molar heat capacity

(d) Specific heat capacity

Q6 Derive the relation $\Delta H = \Delta U + \Delta nRT$.

Q7 Predict the dipole moment of the following where X is more electronegative than A:

(i) A molecule AX_2 with a linear geometry.

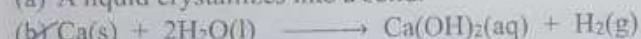
(ii) A molecule AX_4 with tetrahedral geometry.

(iii) A molecule A_2X with bent/angular geometry.

(iv) A molecule AX_4 with square planar geometry.

Q8 Explain and predict the sign of entropy change in each of the following:

(a) A liquid crystallizes into a solid.



Q9 Answer the following:

(a) Why Be_2 molecule does not exist?

(b) What is the total number of sigma and pi bonds in C_2H_2 ?

Q10 (a) Draw the Born Haber cycle for $CaCl_2$.

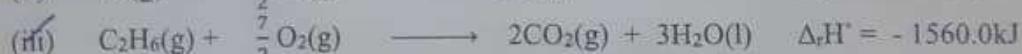
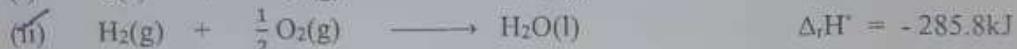
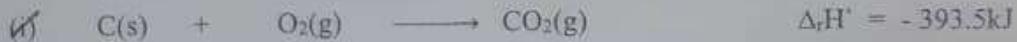
(b) Classify the following as open, closed or isolated systems:

(i) A chemical reaction taking place in an enclosed flask.

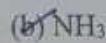
(ii) A cup of hot tea placed on a table.

Q11 Enlist the main postulates of VSEPR theory.

Q12 Calculate the enthalpy of formation of ethane from the following data:



Q13 Draw the orbital overlap diagram for the following on the basis of hybridisation:



Q14 (a) Calculate Δ_fG° for the reaction:



Δ_fG° values (kJ/mol) are: $C_6H_{12}O_6(s) = -910.2$, $CO_2(g) = -394.4$ and

$H_2O(l) = -237.2$. Also predict the feasibility of the reaction.

(b) Explain extensive and intensive properties giving suitable examples.

Q15 (a) Draw the molecular orbital diagram for F_2 molecule.

(b) Write electronic configuration of F_2^+ and F_2^- and compare their stabilities.