



ANGEL'S PUBLIC SCHOOL

SAMPLE PAPER

HALF YEARLY EXAMS SESSION 2025 – 26

CLASS – XI

TIME : 3 HRS.

SUBJECT –CHEMISTRY

M.M:70

General Instructions.

(a) SECTION – A (Q NO. 1 TO 15)CARRIES 1 MARKS EACH

(b) SECTION – B (Q NO. 16 TO 23)CARRIES 2 MARKS EACH

(c) SECTION – C(Q NO. 24 TO 31) CARRIES 3 MARKS EACH

(d) SECTION – D (Q NO. 32 TO 34)CARRIES 5 MARKS EACH

(e) ATTEMPT ALL QUESTIONS

(f) USE OF CALCULATOR IS NOT ALLOWED

1. An adiabatic expansion of an ideal gas always has:

- (a) Decrease in temperature (b) $q = 0$ (c) $W = 0$ (d) $\Delta H = 0$.

2. For an endothermic reaction ΔS is positive, the reaction is:

- (a) feasible when $T\Delta S > \Delta H$ (b) feasible when $\Delta H > T\Delta S$
(c) feasible at all temperature (d) Not feasible at all

3. Which of the following is not a state function?

- (a) ΔG (b) ΔE (c) W (d) H

4. The unit of entropy is:

- (a) joule (b) joule per mole (c) joule per Kelvin (d) joule per gram.

5. The quantity of heat measured for a reaction in a bomb calorimeter is equal to:

- (a) ΔG (b) ΔH (c) $P\Delta V$ (d) ΔE

6. The bond energies of C-C, C=C; H-H and C-H linkages are 350, 600, 400 and 410 kJ per mole respectively. The heat of hydrogenation of ethylene is:

- (a) -170 kJ mol^{-1} (b) -260 kJ mol^{-1} (c) 400 kJ mol^{-1} (d) -450 kJ mol^{-1}

7. Number of pi and sigma bonds in benzene are:

- (a) 3 & 12 (b) 12 & 12 (c) 6 & 11 (d) 6 & 6

8. The hybridisation of iodine in I_3^+ is :

- (a) sp^3 (b) sp^3d (c) sp^3d^2 (d) sp^3d^2

9. Which of hybridisation is possible in square planer molecules :

- (a) sp^3d (b) dsp^3 (c) sp (d) sp^3d^2

10. The geometry of ClO_3^- ion according to VSEPR theory will be:

- (a) triangular planer (b) pyramidal (c) tetrahedral (d) square planer

11. Which of the following molecule is linear ?

- (a) SO_2 (b) NO_2^+ (c) NO_2^- (d) SCl_2

12. Bond order of nitric oxide (NO) is :

- (a) 1 (b) 2 (c) 2.5 (d) 1.5

13. Two lone pair of electrons and two bond pair of electrons are present in :
 (a) NH_3 (b) BF_3 (c) H_2O (d) CO_2
14. In which of the following pair of both the molecules does not possess same type of hybridisation?
 (a) CH_4 and H_2O (b) PCl_5 and SF_4 (c) SF_6 and XeF_4 (d) BCl_3 and NCl_3
15. Hybridisation in SO_2 is :
 (a) sp (b) sp^2 (c) sp^3 (d) sp^3d

SECTION - B

16. Explain sp^3 hybridisation in detail?
17. Name the element in the periodic table having the highest electron affinity and the Size ?
18. Write postulates of molecular orbital theory.
19. Explain ionisation energy and electron affinity.
20. Calculate the no. of atoms in: [a] 88.0 g of CO_2 [b] 10 gram atoms of Na.
21. Arrange elements of second period on the basis of Ionisation energy . Give reason
22. Calculate the enthalpy of combustion of propane . the bond energy of:
 $\text{C}-\text{C}$, $\text{C}-\text{H}$, $\text{C}=\text{O}$, $\text{O}-\text{H}$, $\text{O}=\text{O}$ are 347, 414, 741, 464 kJ, 500kJ
23. What is the number of photons of light with a wavelength of 4000nm that provide 1.0J of energy?

SECTION - C

24. Calculate the wavenumber for the transition of n_1 to n_3 in the hydrogen spectrum?
25. Draw the shape of aP Orbital.
26. What is a node ? Draw the shape of d_{xy} and d_{zx} orbitals?
27. Explain isothermal workdone.
28. Derive de Broglie relation. What is its significance?
29. Draw molecular orbital energy diagram of N_2^+ molecule and find its bond order , magnetic property and electronic configuration ?
30. Explain VSEPR theory.
31. Define and prove Hess's law.

SECTION - D

32. Draw the structure, and write the shape and state the hybridization of the following:
 (a) CH_4 (b) SF_4 (c) XeO_3
33. Draw the molecular orbital energy level diagram of N_2 , N_2^+ and arrange them on the basis of :
 (a) bond order (b) bond length (c) bond dissociation energy (d) magnetic character
34. Calculate the enthalpy of formation of methane . if its enthalpy of combustion is -1323kJ . And enthalpy of formation of CO_2 and H_2O are -393.5kJ and -249kJ .