

Half-Yearly Examination 2014

XI-Science

Chemistry

SET-2

Time: 3 hrs

M.M:70

Answer all the following questions

Questions 1-5 are for 1 mark each

Questions 6-10 are for 2 marks each

Questions 11-22 are for 3 marks each

Question 23 is for 4 marks

Questions 24-26 is for 5 marks each

1. Give two characteristics of d-block elements.
2. Heisenberg's principle cannot be applied to a stationary electron. Why?
3. Define transition elements.
4. What is meant by polar covalent bond?
5. Define bond length.
6. Explain photoelectric effect.
7. Explain the two conditions on which the lattice energy depends.
8. Why is  $Mg^{2+}$  ion smaller than Mg atom?
9. Calculate the frequency of infrared radiations having wavelength  $3 \times 10^6$  nm.
10. Derive de-Broglie's equation.
11. An electron has a speed of 500 m/s with an uncertainty of 0.02%. What is the uncertainty in locating its position?
12. Explain why the second period has 8 elements and the fourth period has 18 elements?
13. Calculate the wavelength of the spectral line obtained in the spectrum of  $Li^{2+}$  ion when the transition takes place between two levels whose sum is 4 and difference is 2.
14. Calculate de Broglie wavelength of an electron moving with 1% of the speed of light.
15. Calculate the volume of hydrogen liberated at STP when  $500 \text{ cm}^3$  of 0.5 N sulphuric acid reacts with excess of zinc.
16. Calculate the electronic configurations of the following species: Mn, Cr,  $Ni^{2+}$ . (atomic numbers of Mn=25, Cr=24 & Ni=28).
17. Write short notes on spin and principal quantum numbers.
18. The density of methanol is .793 Kg/L, what is the volume needed for making 2.5 L of its 0.25 M solution.
19. Explain partial covalent character with the help of Fajan's rules.
20. Differentiate between bonding and antibonding molecular orbitals.
21. Explain the shape of the following molecules according to VSEPR model:  
(a)  $H_2O$  (b)  $NH_3$  (c)  $BeF_2$ .
22. Explain with the help of examples :

(a) Resonance (b) hydrogen bond

23. (a) What are the consequences of hydrogen bonding?

(b) Explain Hund's rule with an example.

24. Explain the type of hybridisation taking place in (a)  $PCl_5$  (b)  $C_2H_2$  (c)  $C_2H_4$ .

25. What is meant by ionization enthalpy? What are the factors affecting ionisation enthalpy? Explain what happens to ionisation enthalpy as we move from Li - Be - B - C - N - O - F.

26. What is meant by Bond Order? Calculate the bond order and magnetic character in the following species;  $F_2$ ,  $N_2$  and  $O_2^-$ .