Question Bank

Class : BSC V Semester

Subject : Physical chemistry

PAPER 2

UNIT- 1

1. State the postulates of Quantum mechanics.

2. Explain the term :

(1) Normalised wave function and

(2) Nodes.

3. Whatdo you understand by black body and black body readiations.

4. Explain how classical mechanics failed when applied ti photoelectric effect.

5. State and explain Heisenberg's uncertainty principle.

6. Write Schrondinger's wave equation and explain meaning of terms involved.

7. Explain the term node in atomic orbital.

8. What is meant by Symmerty and antisymmetry of wavw function.

9. Explain Orthogonal wave function.

10. Explain the Zero point energy.

UNIT - 2

1. Write Schrondinger wave equation in polar coordinates.

2. Write Schrondinger's wave rquation for hydrogen atom in spherical polar coordinates.

3. State the significance of principal quantum number and azimuthal quantum number.

4. Discuss the significance of quantum numbers l and m.

5. Give the significance of :

(1) Magnetic

(2) Spin quantum numbers.

6. What are the condition for the formation of molecular orbital from atomic orbitals?

7. Explain physical picture of bonding and antibonding molecular orbitals.

8. Compare important characteristics of sigma and pi- molecular orbitals.

9. Distinguish between sigma and pi - molecular orbitals.

10. Draw and discuss radial probability distribution curves for 3s and 3d orbitals.

UNIT - 3

1. What is Vant's - Hoff factor ? How is it related to degree of dissociation of an electrolyte?

2. State Raoult's law. What are its limitation.

3. Explain the phenomenon of Osmosis.

4. Discuss Berkeley and Hartely method for measurement of osmotic pressure.

5.Write a note on vant's Hoff factor.

6. How magnetic susceptibility of a substance can be used to decide the structure of coordination compounds?

7. Calculate the magnetic moment if the number of unpaired electrons is 2.

8. What is sign of molar magnetic susceptibility for diamagnetic and paramagnetic substances.

9. Differentiate diamagnetic and paramagnetic substances on the basis of magnetic permeability.

10. What order of magnetic permeability decides the substance as ferromagnetic.

UNIT - 4

1. Write a note on photosensitization.

2. State and explain Gortthus - Draper's law.

3. Distinguish between photochemical and thermal reaction.

4. Distinguish between fluoresenceand phosphoresence.

5. What do you understand by singlet and triplet state ? Explain with diagram.

6. What are the reasons for very low quantum yields of photochemical reactions.

7. Explain Stokes and anti - stokes lines.

8. Sketch experimental arrangement for observing Raman spectra.

9. What are tha advantages of Raman spectroscopy over infrared spectroscopy?

10. Why Raman spectroscopy is more useful than IR spectroscpoy?