



- 11) If the position of atom changes with respect to original bond axis it is called as
a) Stretching b) Rocking c) Scissoring d) Bending
- 12) Nujol is
a) Hexachlorobutadine b) Mineral oil
c) Perfluorokerosene d) Fluorolube
- 13) Crystal structure can be studied by using
a) X-ray absorption method b) X-ray diffraction method
c) X-ray fluorescence method d) X-ray emission method
- 14) CO₂ spectrum shows bands at
a) 970 cm⁻¹ – 700 cm⁻¹ b) 2350 cm⁻¹ – 667 cm⁻¹
c) 1380 cm⁻¹ – 1050 cm⁻¹ d) 1500 cm⁻¹ – 1300 cm⁻¹
- 15) Which of the following electrode can be used as both reference and indicator electrode ?
a) Glass electrode b) Hydrogen electrode
c) Saturated calomel electrode d) Antimony electrode

2. Answer **any 5** :

(5×5=25)

- 1) How will you determine protein and nucleic acid by circular dichroism spectroscopy ?
- 2) Define molar refraction, specific refraction, specific refractive index increment, conductance, molecular conductance.
- 3) Write a note on high frequency titrations.
- 4) Explain Thermogravimetric curve. Factors affecting TG curve.
- 5) What are the requirements of molecules to absorb IR radiation ?
- 6) Write a note on particle size determination by using X-ray techniques.

3. Answer **any 3** :

(3×10=30)

- 1) Explain different types of electrodes used in potentiometry.
- 2) What is DTA ? Explain factors affecting DTA curve.
- 3) Explain different types of conductometric titrations.
- 4) Explain Finger Print Region. Add a note on different modes of vibration.