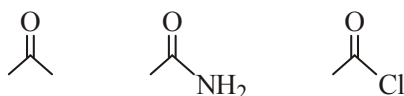


(j) Which of the following will absorb at higher wave number for C=O stretching



SECTION-B

2. Explain the cold lime-soda process for the removal of hardness of water and give the difference between cold and hot lime-soda process. [8]
 3. (a) Describe sacrificial anodic method for corrosion prevention with an example. [4]
 - (b) What are inhibitors ? Explain types of inhibitors employed to control corrosion. [4]
 4. Write short notes on gas chromatography and HPLC. [8]
 5. (a) Derive Nernst equation and give its significance. [5]
 - (b) Calculate the EMF of the given cell at 298°K [3]
- $\text{Ag(s)}|\text{Ag}(\text{NO}_3) (0.018 \text{ m})|| \text{Ag}(\text{NO}_3) (1.2 \text{ m})|\text{Ag(s)}$

SECTION - C

6. (a) Discuss various theories of mechanism of photosynthesis. [5]
- (b) Define quantum yield. Discuss reasons for low and high quantum yield. [3]
7. (a) “*IR spectra is often characterized as molecular finger prints.*” Justify this statement. [3]
- (b) Calculate the number of vibrational degrees of freedom in following compounds: [3]
- (i) CO_2 (ii) SO_2 (iii) CH_4
- (c) Which of the following molecules will show IR Spectra and why ? [2]
- H_2 , HCl , CH_4 , CO_2 , H_2O
8. Discuss the application of NMR with respect to Magnetic Resonance Imaging. [8]
9. State and explain phase rule. Describe phase diagram of Phenol-water system and triethylamine-water system. [8]