



50404



PART - B

(5×16=80 Marks)

11. a) i) What is solution polymerization? Discuss its advantages and disadvantages. (8)  
ii) Give the expressions for the various molecular weights of a polymer. (8)  
(OR)
- b) Discuss the various steps involved in chain or vinyl or radical polymerization. (16)
12. a) i) Derive Van't Hoff Isotherm and Van't Hoff equation. (10)  
ii) Derive integrated form of Van't Hoff equation. (6)  
(OR)
- b) i) The free energy change  $\Delta G$  for a reaction is  $-3.138K \text{ Cal}$  at  $27^\circ\text{C}$  and  $(\partial\Delta G/\partial T)$  is  $14.39 \text{ Cal/deg}$ . Find  $\Delta H$  for the reaction at  $300 \text{ K}$ . (8)  
ii)  $18 \text{ g}$  of water at  $95^\circ\text{C}$  is placed in a thermostat at  $298 \text{ K}$ . Calculate  $\Delta S$  for the system (water) and for the surroundings (thermostat) if the mean molar heat capacity of water is  $75.3 \text{ JK}^{-1}$ . (8)
13. a) Draw the block diagram of UV or vis or IR spectrophotometer and list the various sources, monochromators, sample holders and detectors used in the above spectrophotometers. (16)  
(OR)
- b) i) Draw Jablonski diagram and indicate the various photo processes. (8)  
ii) Briefly discuss about different electromagnetic radiations and their interaction with matter. (8)
14. a) i) How do the properties of metal improve by alloying? (8)  
ii) Give short notes on ferrous and non-ferrous alloys. (8)  
(OR)
- b) With phase diagram of lead-silver system, apply phase rule and indicate the phases present in various parts of the diagram. (16)
15. a) Discuss any three methods of synthesis of carbon nano tubes. (16)  
(OR)
- b) i) Give the distinction among molecules, nanoparticles and bulk materials. (6)  
ii) How the properties of nanomaterials are different from bulk materials? (10)