2811E815

Candidate's Seat No :_____

M.Sc Sem-3 Examination

504

Chemistry P EA-I (SP)

November-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Answer the following questions:

Que.1 (a) What is the working principle of catalyst? What are the different types of catalysts? Explain the mechanism of phase transfer catalysis. 07

OR

(a) Explain the affinity of Hemoglobin towards oxygen binding on the basis of the Hill equation. 07

(b) What are the different types of phase transfer catalysis? Explain the kinetics of enzyme catalysed reaction deriving suitable equation. 07

OR

(b) Explain briefly the factors governing the enzyme catalysed reaction. What are different phase transfer catalysts? Discuss the roll of crown ethers in phase transfer reactions. 07

Que.2 (a) How enzymes are used in food preservation? Explain various applications of enzymes in food industries. 07

OR

(a) What are the features that distinguish the enzymes as drugs from all other types of drugs? Explain various applications of enzymes in pharmaceutical industries. 07

(b) How can enzymes be used to create new flavors in food industries? Explain few applications of enzymes in Aroma industries. 07

OR

(b) Explain the applications of enzymes in Beverage and Detergent industries. 07

Que.3 (a) What is the basic principle of nanoparticles? How nanoparticles are prepared? Give some applications of nanoparticles. 07

OR

(a) Explain the method for the preparation of nanowires and nanorods. What are the advantages of nanowires and nanorods? 07

(b) Explain the preparation of carbon nanotubes. What are the properties of carbon nanotubes? Give some applications of nanotubes. 07

OR

(b) Explain how nanofilms are prepared. Explain its applications in various fields. 07

Que.4 (a) What is the basic principle of Scanning electron microscope (SEM)? Explain the SEM technique to characterize nanoparticles. 07

OR

(a) Explain the working of Transmission electron microscope(TEM). How it is used in the characterization of nanomaterials? 07

P.T.O.

(b) Explain the working of X-ray diffraction technique. Explain how nanoparticles are characterized by this technique. 07

OR

(b) Explain how Atomic force microscope is used in the characterization of nanomaterials. 07

Que.5 Answer the following (Any seven – each two marks) 14

(i) What is phase transfer method?
(ii) What is the principle of phase transfer catalysis?
(iii) Explain in brief the advantages of phase transfer catalysis.
(iv) In what way phase transfer catalysts differ from homocatalysts? What is positive catalysts?
(v) What are the applications of nano materials?
(vi) Why are nanomaterials used?
(vii) What are the effects of decrease in size at nanoscale in nanomaterials?
(viii) What are the physical and chemical characteristics of nanomaterils?
(ix) Name the factors affecting the synthesis of nanoparticles.
(x) What is the requirement for a substance to work as phase transfer catalysts?