

MSc Semester-3 Examination

504

Chemistry (P) EA-1 - Special Topics in Phy Chem

Time : 2-30 Hours]

April-2023

[Max. Marks : 70

Instruction: Attempt all questions:**Q-1 Answer the following:**

- (a) Explain the general principle of catalysis. Explain the mechanism of phase transfer catalysis. (7)

OR

- (a) Explain the significance of K_m and V_{max} in Michaelis-Menten's equation and explain the steady state kinetics. (7)
- (b) Explain the important characteristics of enzyme catalysis and the factors affecting the enzyme catalyzed reactions. (7)

OR

- (b) Derive Michaelis-Menten's equation for enzyme catalysed reaction. (7)

Q-2 Answer the following:

- (a) Discuss the application of enzyme technology in pharmaceutical. (7)

OR

- (a) Explain in brief the applications of enzymes in Aromas, flavors and detergent industries. (7)
- (b) Explain in brief the applications of enzymes in natural gas conservation. (7)

OR

- (b) Explain the applications of enzymes in food and Beverage industries. (7)

Q-3 Answer the following:

- (a) Explain the uses of nanomaterial in the field of cosmetics and textiles. (7)

OR

- (a) What are the various applications of carbon nano tubes? Explain nano rods with their applications (7)
- (b) What are Nanowires? Describe the structure and applications of nanowires. (7)

OR

- (b) Describe the structure and applications of nanotubes and nano (7)

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films.

Q-4 Answer the following:

- (a) Explain the working principle and applications of Transmission electron Microscope. (7)

OR

- (a) Explain the working principle and applications of Scanning Electron Microscope. (7)
- (b) Explain the working principle and applications of X-ray diffraction technique. (7)

OR

- (b) Explain the working of Fluorescence spectroscopy and its applications. (7)

Q-5 Answer the following: (Any Seven-Two marks each) (14)

- (i) Name the factors that affect the synthesis of Nano particles?
 - (ii) Give any two characteristics of enzyme catalysis.
 - (iii) How the activity of enzyme effected?
 - (iv) Name the properties of nanoscale materials which make them unique and widely useful?
 - (v) Why are nano materials used in cosmetics?
 - (vi) What is cofactor in enzyme catalysis?
 - (vii) What is the fundamental requirement of Scanning Tunneling microscope?
 - (viii) Name the various techniques used to characterise the nano materials.
 - (ix) What are synthetic nano particles?
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