



Answer five questions only

Q1) Define briefly the following: (20 Marks)

Immobilized enzymes, Medicine polymers, Biodegradable polymers,
Hydrogel polymers, Capillarity of a suture material.

Q2) What are the difference between the following: (20 Marks)

- A- Irreversible Enzyme Immobilization & Reversible Enzyme Immobilization?
- B- Thermoplastic polymers and Thermosetting polymers?
- C- Heat-cured acrylic and cold cured acrylic?
- D- Super porous hydrogels and Microporous Hydrogels (size, mechanism, usage)?

Q3) What are the following dependents on: (20 Marks)

- A- The mechanism of release drugs from hydrogels polymers?
- B- Choice of Supports (matrices) in immobilized enzymes?
- C- The water holding capacity in a zero gel?
- D- Choose the right polymer for medical use?

Q4) Explain the following: (20 Marks)

- A- When using azoaromatic as crosslinkers for polyacrylate acid how it works with in the human body?
- B- What are the most important medical applications that used Polyvinylchloride?
- C- How we can loading drugs in the polymers Hydrogel?
- D- What happens for Negative temperature-sensitive hydrogel when the temperature is raised above the LCST and below the LCST?

Q5) Explain the cause of the following: (20 Marks)

- A- Why used the Agarose as matrix in the immobilizing enzymes?
- B- Why are the complete absorption time of Vicryl suture is less than that of Dexon suture?
- C- Why is the degree of swelling is important?
- D- Why used the stimuli-responsive hydrogels in controlled drug delivery to achieve?

Q6) Explained only by drawing or equations: (20 Marks)

- A- limited and unlimited swelling?
- B- Reversible methods used to approaches to enzyme immobilization?
- C- Poly (acrylic acid) and poly(*N,N*-diethylaminoethyl methacrylate) when change PH?
- D- The different approaches to drug delivery systems based on biodegradable polymers?

.....GOOD LUCK.....