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18BM823

Eighth Semester B.E. Degree Examination, July/August 2022

Bio – Materials and Artificial Organs

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is a Bio-Materials? What are the uses of Bio-Materials? (08 Marks)
- b. With suitable figures and examples, discuss the basics of corrosion of Metallic implants. (12 Marks)

OR

- 2 a. With neat graph, explain the mechanical properties of Stainless Steel. (08 Marks)
- b. Discuss on Non – Absorbable Bioinert Bio – Ceramics. (12 Marks)

Module-2

- 3 a. What is Polymerization? Explain the basic structure of Polymerization. (10 Marks)
- b. Write briefly about any 5 Polymers used as Biomaterials. (10 Marks)

OR

- 4 a. Discuss about Glycolide based Bio-degradable Homopolymers Polyesters. (10 Marks)
- b. Explain properties of collagen and collagen rich tissues. (10 Marks)

Module-3

- 5 a. With a neat diagram, explain the Freez thaw Technology. (10 Marks)
- b. Briefly explain about Hip joint replacement with neat structure. (10 Marks)

OR

- 6 a. Explain the evaluation of process of Artificial Organs. (08 Marks)
- b. Write a short note on Effects of Materials selections for Dental Implants. (12 Marks)

Module-4

- 7 a. Discuss the steps involved in the Engineering design of Artificial hearts and Circulatory Assist devices. (10 Marks)
- b. Explain about the mechanical valves of Cardiac Valve prostheses, with a neat diagram. (10 Marks)

OR

- 8 a. Explain Artificial Kidneys function of Kidney diseases, Renal failure , Renal transplantation. (10 Marks)
- b. Discuss about the Durability of a Prosthetic valve. (10 Marks)

Module-5

- 9 a. Discuss on Liver Support System. (12 Marks)
- b. Explain Design principle for permanent skin replacement. (08 Marks)

OR

- 10 a. With BIK diagram, explain Cardiopulmonary Bypass. (10 Marks)
- b. Discuss briefly Fluorocarbons Hemoglobin Based Artificial Blood Oxygen Carrier. (10 Marks)