

Printed Pages : 3



EME066

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 140862

Roll No.

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B. Tech.

**(SEM. VIII) THEORY EXAMINATION, 2014-15
FUNDAMENTALS OF BIOMEDICAL ENGINEERING**

Time : **3 Hours]**

[Total Marks : **100**

1 Attempt any two questions: **2×10=20**

- (a) Define forces and moments. Explain briefly about the statics and dynamics of the musculoskeletal system.
- (b) Describe with suitable equation: the forces and moments acting at hip and knee joint.
- (c) Explain briefly about the analysis of pathological situations of human joints.

2 Attempt any two questions: **2×10=20**

- (a) Explain the stress strain behaviour of bone. Explain that hollow structure of bone provide most efficient structure.
- (b) Describe the properties and biocompatibility of materials used for dental and bone implant.

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[Contd...

- (c) What is corrosion? Describe different types of corrosion phenomenon. Discuss the methods used to protect metals from corrosion. Also explain the properties of self degradable bio-implants that are need for safe implant of self degradable type bio-implants

3 Attempt any two questions : **2×10=20**

- (a) Define the term fluid. Explain the various types of fluid flow with a suitable example.
- (b) What is rheology? What are the rheological properties of blood?
- (c) Write short notes on the following:
- (i) Circulatory system
 - (ii) Blood flow in arteries, veins and heart

4 Attempt any two questions: **2×10=20**

- (a) Explain the principle and working of magnetic resonance along with its clinical applications.
- (b) Describe briefly as how a medical image is being produced.
- (c) Write short notes on the following:
- (i) Physiological signals, noise and their characteristics
 - (ii) Positron Emission Tomography.

5 Attempt any two questions: **2×10=20**

- (a) Discuss the importance of communication in health-care management?
 - (b) What are the different standards for medical data interchange used in biomedical applications? Discuss in detail.
 - (c) Explain telemedicine and describe its components in detail.
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