

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

Paper ID : 140862

Roll No.

**B.TECH.**

**Theory Examination (Semester-VIII) 2015-16**

**FUNDAMENTALS OF BIO MEDICAL ENGINEERING**

*Time : 3 Hours*

*Max. Marks : 100*

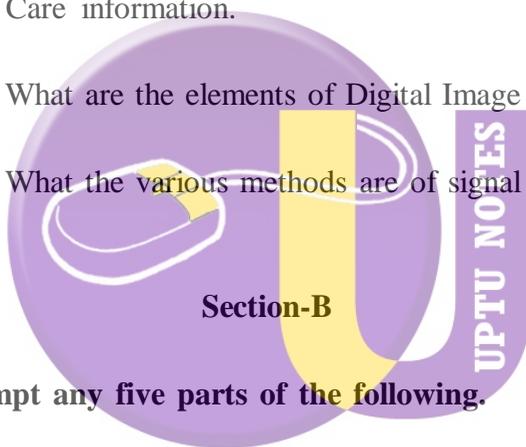
**Note: - Attempt all questions. All questions carry equal marks.**

**Section-A**

**1. Attempt each short answer type questions. (10×2=20)**

- (a) Explain the principle of Ultrasonic Imaging.
- (b) Discuss Biotelemetry system with different methods of modulation.
- (c) What are various physiological signals present in any human body?
- (d) What are transducers? List some of its characteristics.

- (e) Explain the operating principle of nuclear medicine
- (f) What is Radioactive Decay? How it contributes to Measurement of Radioactivity?
- (g) Explain Telemedicine with help of Mobile Communication.
- (h) Explain how Communication contributes to Health Care information.
- (i) What are the elements of Digital Image Processing?
- (j) What the various methods are of signal Processing?



**2. Attempt any five parts of the following. (10×5=50)**

- (a) Discuss in brief about the classification of Bones with Mechanical Properties of Bone.
- (b) Discuss the mechanical behaviors of both Tendons and Ligaments including Stress- Strain and Visco-elastic nature.

- (c) Explain the following :
- (i) Fretting corrosion
  - (ii) Crevice corrosion
  - (iii) Intergranular corrosion
- (d) Discuss the Anatomy of Spinal Column along with analysis of Force System.
- (e) What are the various instruments used for measurement of Respiratory Volume. Explain anyone in detail with neat sketch diagram.
- (f) What is telemedicine and what are its components? Explain in detail.
- (g) Describe in brief about Gait Analysis in context of Prostheses.
- (h) Discuss in detail about Orthopedic Prostheses Fixation with its types.

## Section-C

**Note: Attempt any two parts of the following. (15×2=30)**

3. Explain laminar and turbulent flow with the help of neat and clean diagram. What is Reynolds number and what is its significance?
4. Classify biopolymers along with their properties. How far these biopolymers find their suitability with respect to skin.
5. Discuss the major differences encountered between measurements in physiological system as distinct from physical system. What are the objectives of medical imaging and what are the main four areas of detailed examination.