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Printed Pages—3

IC—702 / EC—011

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

PAPER ID : 3014 Roll No.

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B.Tech.

SEVENTH SEMESTER EXAMINATION, 2005-2006

BIO-MEDICAL ELECTRONICS

Time : 3 Hours

Total Marks : 100

- Note : (i) Answer **ALL** questions.
(ii) All questions carry equal marks.
(iii) Be precise in your answer.

SEVENTH

1. Attempt **any four** of the following questions : (5×4=20)
- What are the various problems encountered in measuring a living system ?
 - What is a transducer ? What is its principle of operation and working ? Differentiate between active transducers and passive transducers.
 - Define and explain Resting and Action potentials.
 - Explain the various types of electrodes used in Biomedical Electronics engineering.
 - Define and explain briefly ECG, EEG and EMG.
 - Differentiate between reference electrodes, PH electrodes, and Blood Gas electrodes

2. Attempt *any four* of the following questions : (5x4=20)
- (a) Define Electrocardiography and explain ECG amplifiers.
 - (b) Explain briefly the different types of ECG recorders.
 - (c) Explain a method of Blood pressure measurement and a method of blood flow measurement.
 - ~~(d)~~ Discuss about the Electrodes and Leads that are fixed to the body of the patient in order to record an Electrocardiogram.
 - (e) Explain Biochemical Transducers or Heart Sound measurements.
 - (f) Explain the ECG system used for stress testing.
3. Attempt *any two* of the following questions : (10x2=20)
- (a) Explain the physiology of the respiratory system and also explain measurement of breathing mechanics with the help of a Spirometer.
 - ~~(b)~~ Describe and explain briefly Respiratory therapy equipments i.e. inhalators, ventilators and respirators.
 - ~~(c)~~ Explain and describe briefly Humidifiers, Nebulizers and Aspirators.
4. Attempt *any two* of the following questions : (10x2=20)
- ~~(a)~~ Explain ultrasonic Diagnosis and also explain the concepts of echo-cardiography.
 - (b) What are ophthalmic scans ? Explain X-Ray and Radio-isotope Instrumentation.
 - (c) Describe MRI with the help of a diagram.

5. Attempt *any two* of the following questions : (10x2=20)

- (a) What are the components of a Biotelemetry system? Explain telemetry for ECG measurements during exercise.
- (b) Explain other prosthetic devices like Hearing aid, and Myo-electric Arm.
- (c) Explain the various shock hazards from Electrical equipments and prevention against them.

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