8th Sem

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B.Tech. 6th Semester Examination
BIO-MEDICAL INSTRUMENTATION
(EIC-312)

Time : 3 Hours] [Max. Marks : 60

Instructions : *Part I is compulsory. Attempt any four questions from Part II.*

PART-I

1. (a) Define common mode rejection ratio. Why it is preferred for applications in recording of bio-electric signals?

(b) Explain metal electrolyte and electrolyte skin interface.

(c) What is the role of internet in telemedicine?

(d) Draw block diagram of basic bio-medical instrumentation.

(e) What is Blood Pressure? Give the upper & lower limits of blood pressure.

(f) Explain A-Scan and its working in M-mode.

(g) Define the terms Resolution and beamwidth of ultrasonic physics.

(h) Give the applications of LASER in biomedical field.

(i) What is the difference between X-ray and CT-scan?

(j) Name five types of bio-signals and explain their origin.

[2×10]

6th Sem (EIC)

PART-II

2. (a) Explain PCO_2 measurement of Blood Gas analyzer with its diagram.

   (b) Explain the working of Echocardiograph? [5×2]

3. (a) Draw and explain Block diagram of patient monitoring system.

   (b) What is NMR detection technique? Also describe the performance parameters required for NMR detection. [5×2]

4. (a) Explain the working of Electroencephalogram (EEG) using block diagram.

   Draw a typical EEG waveform. Give frequency range of various bands for purpose of EEG analysis. What is an evoked potential.

   (b) Explain the working of Na-Yad Laser with schematic diagram. [5×2]

5. (a) Explain the block diagram of an ECG machine. Also draw and explain the block diagram of an isolation amplifier commonly used in ECG machines.

   (b) What are the different types of recorders used in medical field? [5×2]

6. (a) How programmable pacemaker is implemented inside the human body?

   (b) Explain the amplifiers and writing methods for phonocardiography. How it is differ from ECG? [5×2]

7. Write a short note on: [5×2]

(a) DC Defibrillator.

(b) Implementable bio-telemetry system.