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Reg. No. :

Name :

**Eighth Semester B.Tech. Degree Examination, May 2013
(2008 Scheme)
08.816 : BIOMEDICAL ENGINEERING (T)**

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions.

1. State the frequency range of ECG, EEG and EMG signals.
2. What are the design considerations of bioelectric amplifiers ?
3. What is the principle of magnetic induction type active transducer used in biomedical applications ?
4. What are the typical values of blood pressure in aorta, terminal arteries, capillaries and venules ?
5. What do you understand by microshock hazard ?
6. Define the terms i) tidal volume ii) inspiratory reserve volume iii) residual volume iv) vital capacity.
7. Explain the propagation of action potential through nerves.
8. What are the important characteristics of ultrasonic waves making it suitable in biomedical applications ?
9. How a scan is used in Echo-encephalograph ?
10. What are the limitations of using conventional X-rays in diagnosis ?
(10×4=40 Marks)

PART – B

Answer **any two** questions from **each** Module. **Each** question carries **10** marks.

Module – I

11. Explain cardio vascular system with neat sketches on system level and block schematic level approaches.

10

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| 12. a) Discuss surgical type and therapeutic type defibrillators. | 7 |
| b) Explain the working of DC defibrillator circuit. | 3 |
| 13. a) Why isolation amplifier is required in biomedical recording instruments ? | 4 |
| b) Explain the circuit of a chopper amplifier with input and output waveforms. | 6 |

Module – II

14. Discuss the concept of DNA protein sequence alignment and its importance.
15. With schematics, explain impedance pneumography and CO₂ methods for the measurement of respiration rate.
16. With schematics, explain the principle and application of Heart-Lung machine.

Module – III

17. Discuss the applications of telemetry in patient care.
 18. With a block schematic, discuss various sections of X-ray machine.
 19. Discuss various image reconstruction techniques in nuclear magnetic resonance system.
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