



Reg. No. :

Name :

**Sixth Semester B.Tech. Degree Examination, June 2015
(2008 Scheme)**

08.606 (Elective – II) (b) : BIOMEDICAL INSTRUMENTATION (E)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions :

1. Differentiate between absolute refractory period and relative refractory period of bioelectric potential.
2. What are the characteristics of microelectrodes ?
3. Write down the principle of working of any two pressure transducers.
4. Explain any direct method for blood flow measurement.
5. List various EEG waveforms and its frequency specifications.
6. Explain the recorder details of an ECG machine.
7. Explain the cardiac conduction system.
8. What are the medical and industrial applications of X-ray ?
9. Explain the microwave diathermy machine.
10. How an isolation transformer protects the patient and equipment from electric shock hazards ?



(10×4=40 Marks)

PART – B

Answer **any one** question from **each** Module. **Each** question carries **20** marks :

Module – I

11. a) Explain how the action potential is propagated.
b) Explain the instrumentation for heart rates with the help of diagrams.
c) Write down the Nernst equation and indicate various terms in it.
12. a) Explain the working of a spirometer for respiration measurements.
b) Draw a Spirogram and indicate various volumes and capacities. Define each terms.



Module – II

13. Describe the method of picking up EEG signals from brain, along with electrode placement schemes. Also explain the block diagram of an EEG machine.
14. a) Draw the block diagram of an ECG machine, explain each part.
b) Explain the mechanism of EMG recorder.

Module – III

15. a) Explain the operational details of CT scanner.
b) Describe how the cardiac pacemaker synchronizes the natural rhythm of heart. Also give classification of pacemakers.
 16. a) Describe the wearable artificial kidney with sketches.
b) Differentials between macro and micro shocks.
c) Write a note on leakage current.
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