

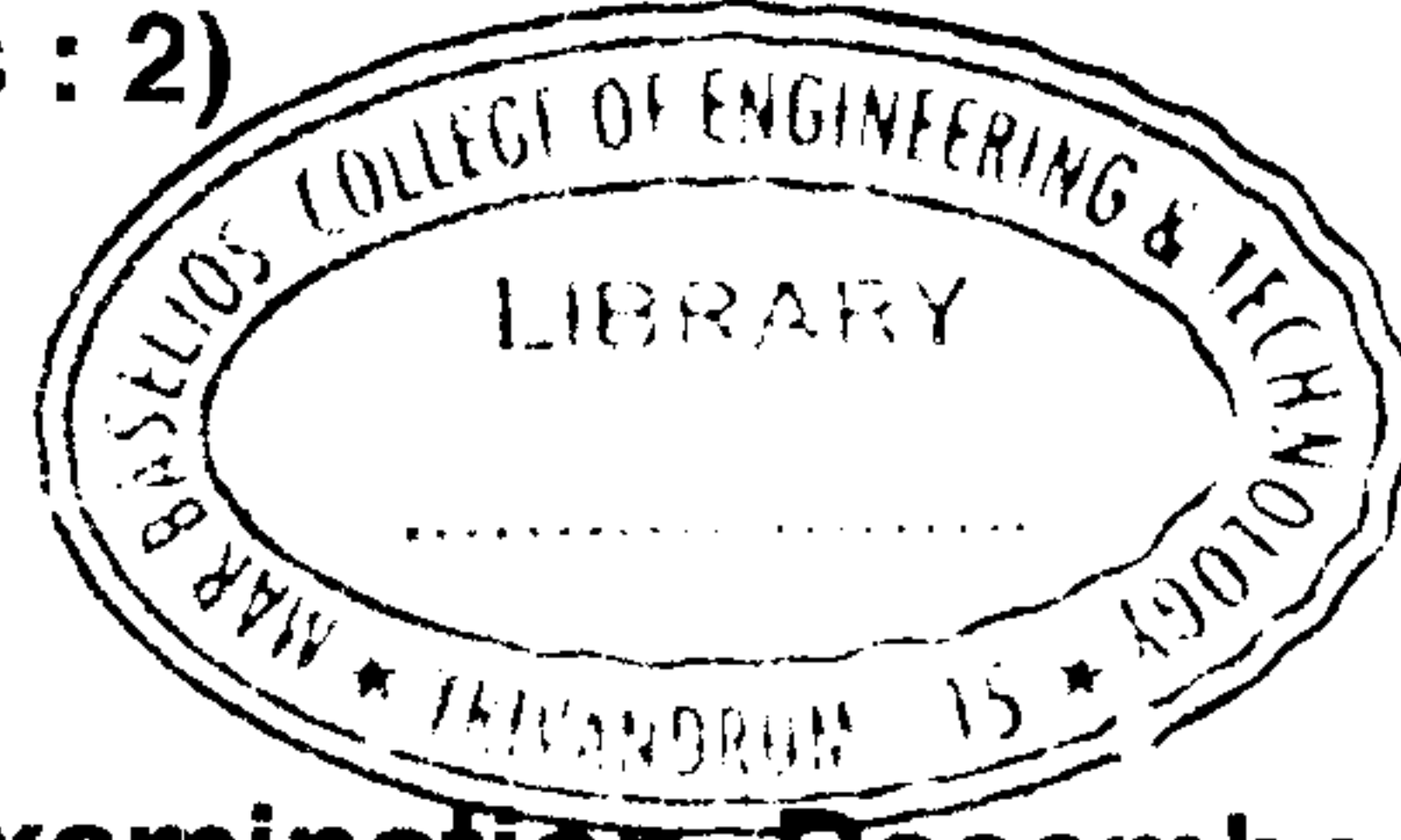


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Reg. No. :

Name :



**Sixth Semester B.Tech. Degree Examination, December 2018
(2013 Scheme)
13.606.1 : BIOMEDICAL INSTRUMENTATION (E)
(Elective – II)**

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **2** marks.

1. Define action potential with the help of waveform.
2. Explain the working of skin electrodes.
3. Draw the normal ECG waveforms with necessary details.
4. Differentiate between direct and indirect methods of blood pressure measurements.
5. How the respiration rate can be measured using thermistor ?
6. Draw the basic structure of neuron and explain how neuronal communication is done.
7. Explain the term Brain-computer interfacing.
8. Explain the harmful effect of X-Rays on human body.
9. Explain the method to protect the patient from leakage current.
10. Write a note on cardiac pacemakers. (10x2=20 Marks)

PART – B

Answer **any one full** question from **each** Module.

Module – I

11. a) Explain various problems encountered in biomedical measurements. 10
b) Classify various types of electrodes used for biomedical measurements. 10

OR

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12. a) Explain the various bioelectric potential associated with human body. 10
 b) What are the different types of transducers used in biomedical measurements ? 10

Module – II

13. a) Explain how the heart rate is measured with the help of neat figures. 10
 b) Discuss the various lead configurations used in ECG measurements. 10

OR

14. a) Explain the method of spirometry with the help of figures. 10
 b) With neat block diagram, explain ECG recording system. 10

Module – III

15. a) Draw the block diagram of EMG measurement unit and explain the function of each block. 12
 b) Explain the elements of intensive care unit. 8

OR

16. a) Draw the various EEG rhythms and give their frequency ranges. 10
 b) Draw the block diagram of bed side monitor and explain its functioning. 10

Module – IV

17. a) Explain with neat diagram, the principle of operation of Computer Tomography (CT) Scanner. 10
 b) Explain the working principle of ultrasonic imaging system. 10

OR

18. a) Explain the various methods used for electrical accident prevention to ensure patient safety. 10
 b) Write short notes on :
 i) Haemodialysis 5
 ii) Artificial Kidney. 5

