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H – 4431

Reg. No. :

Name :

Sixth Semester B.Tech. Degree Examination, January 2020

13.606.1 : BIOMEDICAL INSTRUMENTATION (E)

(Elective II)

(2013 Scheme)

Time : 3 Hours

Max. Marks : 100

PART – A

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

1. Name any four physiological systems of human body.
2. How the electrodes for bio-potential measurements are classified?
3. Explain the characteristics of heart sounds.
4. What is meant by impedance pneumography?
5. How the EEG waveforms are classified?
6. What is meant by electromyography?
7. Explain the uses of ultrasonic imaging in medical diagnosis.
8. Differentiate between macro shock and micro shock.
9. Explain a neuron.
10. What is the function of cardiac pacemakers?

(10 × 2 = 20 Marks)

P.T.O.



PART – B

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

Module – I

11. (a) Explain how action potential is generated? Draw the action potential waveform with necessary details. **12**
- (b) Discuss the various problem encountered in biomedical measurements. **8**

OR

12. (a) Explain the various types of transducers employed for biomedical measurements. **10**
- (b) Explain with neat diagrams the different types of electrodes used in Biomedical measurements. **10**

Module – II

13. (a) Explain the measurement of blood pressure using the principle of electromagnetic induction. **10**
- (b) Discuss the various lead configurations used in ECG measurements. **10**

OR

14. (a) How the lung volumes are classified? Explain the lung volume measurements with the help of neat figures. **12**
- (b) Draw the block diagram of ECG recording instrument. **8**



Module – III

15. (a) Draw the block diagram of EEG measurement unit and explain the function of each block. **14**
- (b) Explain the significance of brain computer interfacing. **6**

OR

16. (a) With neat block diagram, explain EMG recorder. **10**
- (b) Draw the block diagram of bed side monitor and explain its functioning. **10**

Module – IV

17. (a) Explain how the X-Ray is generated? How it can be used for medical diagnosis. **10**
- (b) Explain the working principle of MRI scanning. What are their applications? **10**

OR

18. (a) Explain the working of de-fibrillator with the help of neat sketches. **10**
- (b) Write short notes on the devices used to protect against electrical shock hazards. **10**

(4 × 20 = 80 Marks)

