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5E3112

Roll No. _____ Total No. of Pages : 3

5E3112

B.Tech. V Sem.(Main/Back) Exam. Dec. 2012

Applied Electronics & Instrumentation

5AI5 Biomedical Instrumentaion

Common With EC

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five question** selecting **one question** from **each unit.** All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used / calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. **Nil** 2. **Nil**

UNIT - I

Q.1 (a) What is meant by pulmonary and systemic blood circulation? Draw an engineering equivalent of the heart showing blood circulation throughout. The body. 10

(b) What are various types of transducers used in medical instrumentation system? Also mention their principle of operation. 6

OR

Q.1 (a) Explain human respiratory system with a suitable diagram. 8

(b) What is the working principle of strain gauges? Describe different types of strain gauges used in medical equipments. 8

UNIT - II

Q.2 (a) Define 'Blood Pressure'. How blood pressure can be measured in blood vessels using indirect measurement method? 10

(b) What does 'EMG' mean? Why a normal EMG wave form looks like a noise wave form? 6

OR

Q.2 (a) Draw a block diagram of EEG machine. Describe function of each element. 8

(b) Describe working principle of electromagnetic blood flow meter with suitable diagram. 8

UNIT - III

Q.3 (a) What do you mean GSR? Explain measurement of GSR by a suitable diagram. 10

(b) Compare ultrasonic, X- Ray and MRI imaging techniques. 6

OR

Q.3 (a) What is meant by diagnostic X-Rays? Explain the generation of X- Rays with a suitable diagram. 8

(b) Describe colorimeter method of determining chemical concentration. 8

UNIT - IV

Q.4 (a) What types of instruments are normally available in an Intensive care unit? 6

(b) Explain landline telemetry system with a suitable diagram. How it is different from radio telemetry. 10

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OR

Q.4 (a) What are the applications of a computers for a caradiac patient? 6

(b) What are the various physiological effe ts electric cument on human body? Also explain why? 10

UNIT - V

Q.5 (a) What are various types of pacemakers? Describe Asynchronous type pace maker with a suitable diagram. 10

(b) How a long duration, short amplitute pulse can be obtained from a dc defibrillator? 6

OR

Q.5 (a) What are different types of ventilators used in medical application? Explain briefly. 8

(b) What is meant by 'Diathermy'? What are various types of diathermy used? Explain in brief. 8
