

6E6064

Roll No. : .

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B.Tech. (Sem. VI) (Main & Back) Examination, April-May 2018
Electronics Inst. & Control Engg.
6EI4A Biomedical Instrumentation

Time : 3 Hours]**[Maximum Marks : 80****[Min. Passing Marks : 26**

Attempt any five questions, 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. NIL2. NIL**UNIT - I**

- 1 (a) Explain various elements of control nervous system with a suitable diagram. 8
- (b) Explain the electrode theory. Discuss the selection criteria for electrodes and transducers. 8

OR

- 1 (a) Describe the problems encountered in measurement of physiological system. Explain how these differ from physical systems? 8
- (b) List the various types of electrodes used in biomedical instrumentation and explain micro electrodes. 8

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UNIT - II

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- 2 (a) Explain the basic electrocardiogram. Explain the different lead configuration employed in ECG monitoring. 8
- (b) Explain working principle of Electromagnetic Blood Flow Meter with suitable diagram. 8

OR

- 2 (a) What is phonocardiograph ? Explain various techniques for measuring Heart Sounds. 8
- (b) Describe blood pressure measurement by direct and indirect measurement method. 8

UNIT - III

- 3 (a) With the help of reactions explain the measurement of O_2 and CO_2 concentration in blood. 8
- (b) Explain the following :
(i) Medical use of Isotopes
(ii) Endoscopy 4+4

OR

- 3 (a) Explain the block diagram of X-ray machine. 8
- (b) Explain working principle of spectrophotometer. Discuss its applications in clinical laboratory. 8

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UNIT - IV

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- 4 (a) What are the various elements of Intensive Care in hospitals. Explain it briefly. 8
- (b) What are the physiological effects of electric current on human body ? 8

OR

- 4 (a) Why do we require Heart-lung machine ? Draw a block diagram of it and explain its working. 8
- (b) What is hemodialysis ? Explain the working of an artificial kidney with the help of diagram. 8

UNIT - V

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- 5 (a) Explain the data acquisition and processing system used in patient monitoring. 8
- (b) Describe the criteria for identification of cardiac disorders. 8

OR

- 5 Write short note on :
- (i) Clinical applications on EEG, EMG and ERG
- (ii) Remote data recording and management. 16

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