

C 58375

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Name.....

Reg. No.....

**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE  
EXAMINATION, JUNE 2009**

**AI 04 603—BIOMEDICAL INSTRUMENTATION**

(2004 Admissions)

Maximum : 100 Marks

Time : Three Hours

- I. (a) Write short notes on biometric.
- (b) Draw the electrocardiogram waveform and explain its shape.
- (c) Discuss the colour codes, abbreviations and position of the electrodes used to record ECG.
- (d) What is a Catheter ? How is it used to measure blood pressure ?
- (e) What is a Neuron ? Explain the communication between neurons. \*
- (f) Discuss the principle of airway resistance measurement.
- (g) Explain one method for the detection of X-rays.
- (h) How is hemoglobin concentration determined ?

(8 × 5 = 40 marks)

2. (a) What are resting and action potentials ? Explain the propagation of action potentials.

(10 marks)

- (b) What is a pH electrode ? Explain its use.

(5 marks)

Or

Discuss the problems encountered in biomedical measurements.

(15 marks)

- III. Draw the building blocks of an ECG recorder and explain the principle of operation. (15 marks)

Or

- (a) Discuss the method of blood pressure measurement by indirect method.

(7 marks)

- (b) Explain photoelectric plethysmograph.

(8 marks)

- IV. (a) What are the different types of electrodes used for measurement of EEG ? Discuss the 10-20 EEG electrode configuration with the help of a diagram.

(10 marks)

Turn over



- (b) Explain the chemical analysis method to determine the amount of diffusion in the lungs.

(5 marks)

Or

- (a) Explain how FRC is measured using body plethysmograph.

(7 marks)

- (b) What is ac defibrillation ? What are its disadvantages ? What is the principle of dc defibrillation ?

(8 marks)

- V. (a) Explain how three dimensional visualization of the X-ray image is achieved ?

(8 marks)

- (b) Write notes on ultrasonic imaging system.

(7 marks)

Or

- (a) Discuss a method used for the measurement of sodium and potassium in the blood.

(8 marks)

- (b) Explain the physiological effect of electrical current with the help of a diagram.

(7 marks)

[4 × 15 = 60 marks]