

**EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2009**

EE 04 805 (C)—BIOMEDICAL INSTRUMENTATION

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

1. (a) Define biometrics and explain briefly the instrumentation associated with it.
 - (b) Name *four* transducers and give their application in biomedical instrumentation.
 - (c) What is a plethysmograph ? List the methods for drawing the same.
 - (d) Draw the neat sketch of any two electrodes use for ECG signal acquisition.
 - (e) Explain the operation of a blood cell counter in brief.
 - (f) Draw and name the various lung volumes and capacities characteristics.
 - (g) Differentiate between micro shock and macro shock. List any *four* safety measures to avoid electrical accidents in hospitals.
 - (h) What are the components of an expert system ? Briefly state their functions.
2. (A) (a) Discuss the various sources of biopotentials. (5 marks)
 - (b) Explain the formation of ECG waveform. (10 marks)

Or

- (B) Explain the formation of action potential and the process of propagating it from one cell to another cell with neat diagram.
3. (A) Discuss any one direct and one indirect technique for measurement of blood flow.

Or

- (B) Explain the lead system of ECG.
4. (A) Discuss the following :—
 - (a) Nerve conduction velocity measurement. (8 marks)
 - (b) AC Defibrillator. (7 marks)

Or

- (B) (a) Explain the physiology of respiratory system.
 - (b) Discuss :
 - (i) Artificial heart valves.
 - (ii) Internal pacemakers.
- (15 marks)

Turn over

- 5 (A) (a) Discuss the process of endoscopy with neat diagram. (8 marks)
- (b) Compare and contrast ultrasound, MRI, Fluoroscopy and endoscopic imaging methods. (7 marks)

Or

- (B) Explain the various types of shock hazards from electrical equipments and methods of preventing such accidents.

(15 marks)

[4 × 15 = 60 marks]