

Total No. of Questions : 12]

SEAT No. :

P1758

[4859]-117

[Total No. of Pages : 3

B.E. (Electronics)

c - BIOMEDICAL INSTRUMENTATION

(2008 Course) (Semester - I) (Elective - I)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) Solve any 3 questions from each section.*
- 2) Answers to the two sections should be written in separate answer books.*
- 3) Neat diagram must be drawn wherever necessary.*
- 4) Figures to the right indicate full marks.*
- 5) Assume suitable data, if necessary.*

SECTION - I

- Q1)** a) Write short note on active and passive transducer used for measurement of bio-signal. [8]
- b) Explain with suitable diagram action potential, resting potential, depolarization and re-polarization of a cell. [8]

OR

- Q2)** a) Give full form of: EKG, EMG, EOG, ERG, EEG and EGG. [6]
- b) Discuss 10 most important factors to be considered in the design of medical instrumentation. [10]

OR

- Q3)** a) Explain in detail working of brain & function of spinal chord. [8]
- b) What is EEG? Draw block schematic of EEG and explain in detail. [8]

- Q4)** a) Name different types of EMG. Explain the procedure to perform EMG with the help of diagram. [8]
- b) Define α, β, δ and θ activities. [8]

P.T.O.

- Q5)** a) Sketch bipolar limb leads, unipolar augmented limb leads and comment. [8]
- b) Explain an electro conduction system of the heart. [6]
- c) The distance between two consecutive R waves is 30 mm and paper speed is 60mm/sec what is heart rate and comment on heart rate. [4]

OR

- Q6)** a) What are the effect of artifacts on ECG recording? Draw and explain a block diagram of ECG machine. [10]
- b) Explain the concept of phonocardiography with the help of basic heart sound and primary signal characteristic. [8]

SECTION - II

- Q7)** a) Explain Finger Plethysmography, Echocardiography, and Defibrillator. [12]
- b) Explain the necessity and functioning of pace marker. [4]

OR

- Q8)** a) Write a short note on electromagnetic blood flow meter. [6]
- b) Explain in details patient monitoring system. [10]

- Q9)** a) Name different methods of blood cell counting. Explain coulter counters in detail. [8]
- b) Explain in brief dialysis system. [8]

OR

- Q10)** a) What is pH of blood? Explain electrode used in blood pH measurement. [8]
- b) Describe the working of Flame photometer. [8]

Q11)a) What are the properties of X-Ray machines? With block schematic explain operation of X-ray machine. [10]

b) Explain merits and demerits of MRI system. [8]

OR

Q12)Write a short note on (any 3): [18]

- a) Laser in vision correction.
- b) Ultrasonic Doppler machine.
- c) Shadow less light.
- d) Amalgamator.

