

22436

22232

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

10

- (a) Enlist any two Blood Pressure Measurement Techniques. Name the technique used for continuous Blood Pressure Measurement.
- (b) Name the transducer used for Foetal Heart Rate Measurement and Respiration Rate.
- (c) Write temperatures observed for
 - (i) Systemic temperature for Normal body
 - (ii) Skin temperature for Normal body
- (d) Name the body parameter measured with the help of Spirogram and phonocardiography.
- (e) Suggest the equipment which is used for Recording the heart sound and list its two technical specifications.
- (f) Enlist any two possible faults for EEG machine and give the causes for the observed faults.
- (g) State the significance of Hearing Aid.



- 2. Attempt any THREE of the following : 12**
- (a) Differentiate between Conventional Acoustic Stethoscope and digital Stethoscope on the basis of principle of working.
 - (b) Draw block diagram of Respiration Rate meter and explain Sensor Section.
 - (c) Name the 12 leads used in ECG Recording and draw Unipolar lead configuration.
 - (d) Explain the principle of working of GSR meter with block diagram.
- 3. Attempt any THREE of the following : 12**
- (a) Calculate the heart rate by beat to beat method for R-R interval of 0.2 seconds and name the other two methods for heart rate calculation.
 - (b) Draw and explain Bipolar lead configuration.
 - (c) Draw and explain the standard 10/20 system of Electrode placement on scalp for EEG machine.
 - (d) Explain the concept of Impedance audiometer.
- 4. Attempt any THREE of the following : 12**
- (a) Explain Respiratory Parameters with sketches and with its standard values.
 - (b) Suggest the name and draw the circuit which is used to minimize the common mode signal between body of patient and floating ground in ECG machine.
 - (c) Enlist four important technical specifications of EEG machine.
 - (d) Explain the significance of sensitivity control knob in EEG machine.
 - (e) Choose the equipment for detecting the hearing loss. Write any three important technical specifications for the same.

5. Attempt any TWO of the following :**12**

- (a) Draw block diagram of Pulse-oximeter and explain the sensor block.
- (b) ECG machine is received with the following problems; identify the various causes. (at least two)

ProblemVarious Causes (at least two)

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|----------------------------------|---|---|
| (i) Interference from power line | — | ? |
| (ii) Shifting of Base line | — | ? |
- (c) Draw block diagram of EEG machine and Identify the block which is used to eliminate the muscle artefact.

6. Attempt any TWO of the following :**12**

- (a) Identify the B.P. Meter which records the Blood pressure without using stethoscope and explain it.
 - (b) Draw block diagram of ECG machine. Give the function of Lead Selector.
 - (c) Explain generation of EMG signal.
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