

22436

**11920**

**3 Hours / 70 Marks**

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Illustrate your answers with neat sketches wherever necessary.
  - (3) Figures to the right indicate full marks.
  - (4) Assume suitable data, if necessary.
  - (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) Draw blood pressure waveform and label it.
- (b) List any two methods of calculation of heart rate.
- (c) List any four technical specifications of sphygmomanometer.
- (d) State the concept of fatal heart rate.
- (e) Identify the instrument in which Wilson network circuit is used.
- (f) Mention any two possible faults which can occur in EMG machine and write remedies for it.
- (g) Define audiometer.

**2. Attempt any THREE of the following :**

**12**

- (a) Draw the block diagram of digital blood pressure meter.
- (b) Explain working principle of spirometer with neat diagram.
- (c) List any four technical specification of phonocardiography.
- (d) State the concept of impedance audiometer.

- 3. Attempt any THREE of the following : 12**
- (a) Suggest an instrument used to measure breathing rate of patient. Draw block diagram of it.
  - (b) Describe generation of ECG signal.
  - (c) List any four technical specifications of EEG machine.
  - (d) Define air conduction and bone conduction.
- 4. Attempt any THREE of the following : 12**
- (a) Explain ultrasonic fetal heart rate meter with neat diagram.
  - (b) Suggest the method of recording the magnitude and direction of electrical forces that are generated by the heart and describe it.
  - (c) Draw the preamplifier circuit of EEG machine.
  - (d) Describe sensory and motor nerve conduction in detail.
  - (e) Suggest the instrument to measure sweat gland activity and explain its principle of operation.
- 5. Attempt any TWO of the following : 12**
- (a) State the concept of systemic and skin temperature and list any four technical specifications of digital temperature meter.
  - (b) State any three faults related to ECG machine and give its remedies to eliminate it.
  - (c) Choose the instrument used to evaluate the electrical activity in the brain and give its operation with neat diagram.
- 6. Attempt any TWO of the following : 12**
- (a) Suggest the instrument to measure oxygen saturation in blood and explain it with neat diagram.
  - (b) Describe the block diagram of ECG with neat diagram.
  - (c) Explain various recording techniques used for EEG measurement.
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