

# 17545

**14115**

**3 Hours / 100 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) Assume suitable data, if necessary.  
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. a) Attempt any **THREE** of the following: **12**
- (i) Draw neat diagram of indirect blood pressure measurement and describe it.
  - (ii) With neat block diagram of pulse oxymeter describe its working.
  - (iii) Draw block diagram of heart rate meter and describe it.
  - (iv) Describe the significance of vector cardiography.
- b) Attempt any **ONE** of the following: **6**
- (i) Draw block diagram of ECG machine and describe it. Also describe standard ECG waveforms.
  - (ii) Draw figures of bipolar leads configuration. And explain. Einthoven's triangle with lead I, lead II, lead III.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Draw blood pressure waveform and define the following terms.
    - (i) Systolic blood pressure
    - (ii) Dichrotic Notch.
  - b) Draw and describe operation of digital blood pressure meter in detail.
  - c) List four technical specification of audiometer.
  - d) List technical specification of an ECG machine. (any 8)
  - e) List methods of EMG generation. Describe any one in detail with neat labelled diagram.
  - f) Compare between ECG and PCG. (any 4)
- 3. Attempt any FOUR of the following:** **16**
- a) Differentiate between direct and indirect blood pressure measurement technique (any four points)
  - b) List and describe the methods of measure heart rate.
  - c) Draw block diagram of EEG machine and describe it.
  - d) Describe four heart sounds generated by the heart with respect to its origin.
  - e) Draw an ECG pre amplifier using op-amp and mention four applications of the ECG pre amplifier.
- 4. a) Attempt any THREE of the following:** **12**
- (i) List technical specification of respiration rate meter.
  - (ii) Draw block diagram of pure tone audiometer and describe it.
  - (iii) Describe 1 mV calibration n/w in ECG machine with suitable diagram.
  - (iv) Describe motor and sensory nerve conduction.

- b) **Attempt any ONE of the following:** **6**
- (i) Draw figures showing Lenipolar limb leads configuration and describe it.
  - (ii) Draw and describe recording techniques of EEG signals.
- 5. Attempt any FOUR of the following:** **16**
- a) Describe systemic and skin temperature.
  - b) Give the function of spirometer and describe it with neat labelled diagram.
  - c) Draw block diagram of Beksey audio-meter and state the function of each block.
  - d) Draw block diagram of PCG machine and explain it.
  - e) Define any four respiratory parameter with neat diagram.
  - f) Draw the block diagram of EMG machine and state the function of each block.
- 6. Attempt any FOUR of the following:** **16**
- a) Draw Wilson's network circuit in ECG machine and state its importance.
  - b) Draw block diagram of GSR meter and describe it.
  - c) List technical specification of digital temperature meter.
  - d) Draw pre amplifier circuit of EMG machine and give application of EMG pre amplifier.
  - e) Describe impedance audiometer and the speech audiometer.
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