

22436

24225

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. Solve any FIVE :

5 × 2 = 10

- (a) Name the diagnostic equipment used to measure systolic and diastolic pressure.
- (b) List methods of calculation of heart rate.
- (c) Draw labelled diagram of ECG signal.
- (d) List any two technical specifications for EMG machine.
- (e) List applications of
 - (i) Pulse oximeter
 - (ii) Thermometer
- (f) List any four respiratory parameters.
- (g) List types of audiometer.



2. Solve any THREE :**3 × 4 = 12**

- (a) Prepare preventive maintenance and weekly maintenance chart for EEG machine.
- (b) Draw labelled block diagram of digital blood-pressure meter.
- (c) Suggest the instrument for fetal heart rate measurement. Explain with neat diagram.
- (d) Differentiate between direct and indirect method of blood pressure measurement tech (Any 4 tech points).

3. Solve any THREE :**3 × 4 = 12**

- (a) With the help of neat block diagram elaborate concept of basic audiometry.
- (b) Draw neat labelled diagram of phonocardiogram and give function of each block.
- (c) For measurement of oxygen saturation in human body name the diagnostic equipment to be used, also give the working principle of the same.
- (d) Draw labelled diagram of EEG machine.

4. Solve any THREE :**3 × 4 = 12**

- (a) Prepare any four technical specifications of heart rate monitor.
- (b) Draw 10-20 system of placement of electrodes for EEG signal. Give significance of each electrode of their position.

- (c) With neat diagram give working of digital hearing aid. List any two advantages of digital hearing aid over analog hearing aid.
- (d) Give relationship between ECG, PCG (Phonocardiography) and arterial blood pressure.
- (e) Give role of masking in audiometry, how it is achieved. State role of white noise.

5. Solve any TWO :

2 × 6 = 12

- (a) For following faults suggest the possible cause and action :
 - (i) ECG Machine does not get on
 - (ii) Stylus of ECG Machine remains stationary in centre.
 - (iii) Chart paper does not move
 - (iv) Ripple on base line
 - (v) Paper feed not advancing
 - (vi) Printing not clear or not uniform
- (b) A patient losing his muscle contraction. Suggest the doctor an instrument to monitor muscle activity. Also draw block diagram and explain its working.
- (c) Suggest the instrument for measurement of respiration rate. Explain with neat diagram.

6. Solve any TWO :

$2 \times 6 = 12$

- (a) With the help of neat diagram give working of digital stethoscope. List any two applications of the same.
 - (b) Explain sensory and motor nerves conduction system. Elaborate its application area.
 - (c) With the help of neat diagram, explain bipolar and unipolar lead configuration.
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