

# 315356

**12526**

**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) State the importance of cardiac output.
  - b) Write the basic need of pulse oximeter.
  - c) Enlist two applications of spirometer.
  - d) Suggest the suitable device for the following.
    - i) To a patient suffering from a permanent SA node block.
    - ii) To a patient suffering from kidney failure.
  - e) Classify the types of leakage current.
  - f) Enlist the types of pacemakers based on their pacing modes.
  - g) Draw the block diagram of phonocardiograph.

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- 2. Attempt any THREE of the following :** **12**
- a) Draw Einthoven triangles for different leads.
  - b) Explain the working of spirometer with suitable diagram.
  - c) Explain the working of ventilator with the help of suitable diagram.
  - d) Discuss the problems encountered in measuring living system.  
(any two)
- 3. Attempt any THREE of the following :** **12**
- a) Enlist the types of valves present in heart and blood vessel originated from Heart also state their functions.
  - b) State the application of followings:
    - i) X-ray
    - ii) CT scan
    - iii) MRI
    - iv) Ultrasonography
  - c) Classify the various types of bioelectrodes based on their area of application.
  - d) Suggest the suitable instrument to diagnosis of Ear Disorders and explain it with suitable diagram.
- 4. Attempt any THREE of the following :** **12**
- a) Draw a labelled diagram of internal structure of brain.
  - b) State the application of the followings:
    - i) Photoplethysmography
    - ii) Phonocardiography
    - iii) Sphygmomanometer
    - iv) Audiometer
  - c) Suggest a recorder that produces the cardiac activity of the heart as a waveform and draw its block diagram.
  - d) State the concept of fibrillation and defibrillation.
  - e) Explain the hospital information and management system in brief.

- 5. Attempt any TWO of the following :** **12**
- a) Prepare stepwise procedure to measure blood pressure using sphygmomanometer also state the normal range of blood pressure in a healthy person.
  - b) Draw schematic diagram of electrode -electrolyte interface. Explain its working.
  - c) Describe various modes of ultrasonography with the help of waveform.
- 6. Attempt any TWO of the following :** **12**
- a) Explain the construction and working of MRI machine with its suitable diagram.
  - b) Describe the working of biotelemetry with the help of block diagram.
  - c) Explain the electromagnetic type blood flow meter with respect to following points:
    - i) Diagram
    - ii) Construction
    - iii) Working
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