

# 17666

**15162**

**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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

- 1. Attempt any FIVE of the following: **20****
- List basic types of electrodes for measurement of bio-electric potentials.
  - State main function of :
    - Heart
    - Medulla Oblongata
    - Lungs
    - Aorta
  - Explain with neat block diagram the working of Phonocardiograph
  - Classify pacemakers. Explain any one type in brief.
  - State two applications of each:
    - Ultrasonography
    - X-rays

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- f) State the working principle of centrifuge. State its two applications.
- g) Draw a neat labeled typical ECG waveform. Explain it in brief.

**2. Attempt any TWO of the following: 16**

- a) Draw the block diagram of X-ray machine. Explain its working in detail.
- b) Draw the neat and labeled block diagram of Man-Instrument system. Explain the function of each block.
- c) Define electrocardiogram. Describe ECG system with the help of neat and labeled diagram.

**3. Attempt any FOUR of the following: 16**

- a) List various effects of leakage current that occur with the increasing current intensity on human body.
- b) Compare internal and external pacemaker (any four points).
- c) Draw neat and labelled diagram of heart.
- d) Compare CT Scan's method of visualisation with conventional X-Ray method (any four points)
- e) Describe action potential with the help of neat and labeled diagram.
- f) Describe the instrument spirometer to measure respiration rate with neat and labelled diagram.

**4. Attempt any TWO of the following: 16**

- a) Describe the indirect method of blood pressure measurement with the help of diagram. State the systolic and diastolic pressure range in a healthy human being.
- b) Draw block diagram of dialysis machine. Explain its working in detail.
- c) Explain cardio vascular system with neat and labelled diagram.

**5. Attempt any TWO of the following:****16**

- a) Describe lung volumes and capacities.
- b) Explain with the help of neat and labelled diagram working of CAT scan.
- c) Draw and explain ultrasonic type blood flow measurement.

**6. Attempt any FOUR of the following:****16**

- a) Explain the terms Microshock and Macroshock. How it can be avoided?
  - b) State the importance of paddle electrodes. Also list two specification of DC fibrillator.
  - c) Explain A and B mode of Ultrasonography with the help of waveforms.
  - d) State any two needs of dialysis machine. Also state any two specifications of the same.
  - e) State four functions of kidney.
  - f) Describe with neat and labelled diagram:
    - (i) Needle electrode
    - (ii) Micro electrode
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