

17666

21415

3 Hours / 100 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.

Marks

- 1. Attempt any FIVE of the following :** **20**
- a) Draw structure of neuron. Explain its functioning.
 - b) Describe the action and resting potential of a cell with neat diagrams and waveform.
 - c) How lung volumes and capacities can be determined with the help of spirometer ?
 - d) State any two functions and four specifications of dialysis machine.
 - e) Explain principle of x-rays with a neat diagram of x-ray tube.
 - f) List any two applications each for
 - (i) Autoclave
 - (ii) Deionizer
 - g) Draw a neat labelled internal structure of human heart.

P.T.O.

- 2. Attempt any FOUR of the following :** **16**
- a) List various types of heart sound. How they are generated ?
 - b) Explain a floating type skin surface electrode with a neat diagram.
 - c) With a neat labelled schematics, explain working of plethysmograph.
 - d) What is fibrillation ? List types of defibrillators.
 - e) Explain principle of ultrasonography with suitable diagram.
 - f) Explain any four effects of leakage current on human body.
- 3. Attempt any FOUR of the following :** **16**
- a) Explain the mechanism of breathing.
 - b) Draw a block diagram of electro-cardiograph. Explain it in brief.
 - c) How blood pressure is measured with the help of sphygmomanometer ?
 - d) List various pacing modes available in pacemaker. Explain any one in detail.
 - e) Explain the principle of operation of CT scan.
 - f) Explain any four precautions to minimize electric shock hazards.
- 4. Attempt any FOUR of the following :** **16**
- a) List any four function of kidney.
 - b) Describe working details of EEG (electro encephalogram).
 - c) How ultrasonic method is used for measurement of blood flow ?
 - d) Draw DC defibrillator circuit. Explain its working.
 - e) Describe working of image intensifier with a neat schematic.
 - f) List any two functions of
 - (i) Cerebellum
 - (ii) Medula oblongata

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

- a) Draw a block diagram at man-instrument system. Explain each blocks in brief.
- b) Illustrate constructional details of micro-electrode.
- c) Explain electromagnetic technique of blood flow measurement.
- d) Draw a block diagram of internal pacemaker. Explain each block in brief.
- e) List and explain various modes available in ultrasonography.
- f) List any four applications of CAT.

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

- a) Explain electrical conduction system of human heart.
 - b) Describe the charge distribution phenomenon at electrode-electrolyte interface.
 - c) What is phonocardiograph ? Explain its working.
 - d) Draw a schematic diagram of a dialysis machine. Explain its operation in brief.
 - e) Enlist any four applications of x-ray machine.
 - f) With respect to lung volumes and capacities define following :
 - (i) Tidal Volume (TV)
 - (ii) Inspiratory Reserve Volume (IRV)
 - (iii) Residual Volume (RV)
 - (iv) Vital capacity (VC)
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