

17666

15116

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) List four problems encountered during measurements of important parameter of living system.
 - (ii) Draw a neat and labelled diagram of micro electrode with its working detail.
 - (iii) Give significance of phonocardiograph. State and explain different sounds produced in human heart.
 - (iv) State principle of X-ray machine with its neat block diagram.
- b) Attempt any ONE of the following : 6
- (i) Enlist four functions of kidney. Give function of cerebrum, cerebellum, thalamus and spinal cord.
 - (ii) Describe working of sphygmomanometer with the help of neat schematic diagram.

P.T.O.

- 2. Attempt any TWO of the following :** **16**
- a) Explain mechanism of breathing. Also give significance of following terms –
 - (i) Tidal volume
 - (ii) Lung capacity
 - (iii) Inspiratory reserve volume
 - (iv) Expiratory reserve volume.
 - b) Explain working of ECG machine with neat block diagram. State any four technical specifications of ECG machine.
 - c) State necessity of defibrillator and pacemaker. Describe working of pacemaker with its neat block diagram.
- 3. Attempt any FOUR of the following :** **16**
- a) What is image intensifier ? Explain its working.
 - b) Describe the working of DC defibrillator with neat diagram.
 - c) Explain blood flow measurement with neat diagram using ultrasonic method.
 - d) Give significance of any four bioelectric signals.
 - e) Give significance of cardiac output, SA node, AV node and medulla oblongata.
 - f) Define pressure and flow. State its units.
- 4. a) Attempt any THREE of the following :** **12**
- (i) Explain structure of heart with neat diagram.
 - (ii) Explain with neat block diagram EMG system.
 - (iii) Draw neat and labelled diagram of spirometer. Explain its working.
 - (iv) State need of dialysis machine. Give its two specifications.
- b) Attempt any ONE of the following :** **6**
- (i) Write six effects of leakage current on human body.
 - (ii) Write meaning of fibrillation and defibrillation. Draw and explain DC defibrillator.

- 5. Attempt any FOUR of the following :** **16**
- a) Describe operation of kidney with its structure.
 - b) Draw neat and labelled diagram of EEG machine.
 - c) Draw neat and labelled diagram of plethysmography setup with its working.
 - d) Compare X-ray and Ultrasonography. (Four points)
 - e) State four precautions to minimize electric shock hazards and leakage current.
- 6. Attempt any FOUR of the following :** **16**
- a) Draw neat block diagram of man instrument system with its brief working.
 - b) Explain unipolar and bipolar lead configuration in ECG.
 - c) Explain working of electromagnetic blood flow meter with neat diagram.
 - d) Explain various pacing modes in pacemaker.
 - e) Describe CT scan with neat block diagram.
 - f) Explain the M mode of ultrasonography with neat diagram.
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