17666

11920

3 Hours / 100 Marks Seat No. | | | | | | | | |

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. Attempt any FIVE of the following: **20**

a) State the importance of cardiac output.

b) Explain electrode electrolyte interface with a neat schematic diagram.

c) List various methods of blood pressure measurement. State significance of blood pressure measurement.

d) What is fibrillation? Explain types of fibrillation occurs in human heart.

e) Enlist any four applications of x-ray machine.

f) What is leakage current? Explain various type of leakage current.

g) Describe structure of any one type of neurons.

Marks

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

a) Draw a neat labelled internal structure of human heart.

b) How action potential and resting potential develop in a cell? Describe the phenomenon with neat diagram and waveform.

c) Describe construction and working of basic spirometer with neat schematics.

d) Draw schematic diagram of dialysis machine with neat labelling.

e) Explain basic principle of operation of computer tomography.

f) List any two applications each of

(i) centrifuge

(ii) incubator

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

a) Illustrate structural features and operation of nephron with neat diagram.

b) Draw block diagram of typical setup for EMG recording. Explain it in brief.

c) How heart sounds are measured by using phonocardiograph?

d) List various types of pacing mode in pacemaker. Explain R-wave inhibited and R-wave triggered mode in brief.

e) Describe with block diagram a basic ultrasonography system.

f) State any four precautions to minimize electric shock hazards

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

a) Define following with respect to lung volumes and capacities

(i) Expiratory reserve volume (ERV)

(ii) Total lung capacity (TLC)

(iii) Inspiratory Capacity (IC)

(iv) Functional Residual volume (FRV)

Marks

b) Illustrate constructional details of micor-electrode.

c) What is plethysmography? Explain working of plethysmograph with neat diagram.

d) Explain dc defibrillator with neat circuit diagram and waveform.

e) Draw schematic diagram of image intensifier. Explain its working in brief.

f) State any two functions of

(i) Hypothalamus

(ii) Pons

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

a) List various types of heart sound. How they are generated?

b) Explain bipolar and unipolar ECG limb lead configurations with neat sketches.

c) How blood how measurement is done by using electromagnetic principle?

d) Draw the block diagram of internal pacemaker. Explain each block in brief.

e) Explain M-scan mode application of ultrasonography with neat block diagram.

f) Draw a neat labelled cutaway section of human brain.

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

a) How electrical conduction occurs in a human heart? Explain with diagram.

b) What is EEG? Draw schematic diagram of EEG machine.

c) What is systolic and diastolic pressure? Give its ranges. Draw schematic diagram of sphygmomanometer.

d) State need and functions of dialysis machine.

e) List any four applications of CAT

f) Explain a floating type skin surface electrode with a neat diagram.