

17666

16172

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.

Marks

1. (A) Attempt any **THREE** of the following :

12

- (i) Draw a neat labelled diagram of MAN-INSTRUMENT system. State the function of any 2 blocks.
- (ii) Name any 2 electrodes each used for measurement of :
 - (1) ECG
 - (2) EEG
- (iii) Explain the need of dialysis machine.
- (iv) State one application each of the following :
 - (1) Centrifuge
 - (2) Autoclave
 - (3) Deionizer
 - (4) Incubator

(B) Attempt any ONE of the following :**6**

- (i) Draw a neat diagram of cardiovascular system analogous to a pump and hydraulic piping system. Also define heart rate and cardiac output.
- (ii) Explain the operation of an X-ray machine with a neat block diagram.

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

- (a) Describe resting potential and action potential with neat diagrams and waveform.
- (b) Define systole and diastole. Explain how blood pressure can be measured using sphygmomanometer with a neat diagram.
- (c) Explain the working of an internal pacemaker with a neat block diagram.

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

- (a) State functions of the following :
 - (i) Medulla oblongata
 - (ii) Cerebellum
 - (iii) Cerebrum
 - (iv) Frontal lobe
- (b) List the effects of leakage current on human body with increasing current intensity.
- (c) With a neat diagram explain the ultrasonic method for measurement of blood flow.
- (d) Describe the working of a d.c. defibrillator with a diagram and waveform.
- (e) State any two applications each of the following :
 - (i) X-ray machine
 - (ii) CAT Scanner

4. (A) Attempt any THREE of the following :**12**

- (i) Describe the working of an image intensifier used with a X-ray machine with the help of a neat diagram.
- (ii) Draw a neat labelled diagram of the cut section of a kidney.
- (iii) Define the following :
 - (a) TV
 - (b) RV
 - (c) VC
 - (d) IRV
- (iv) Explain A Scan and M Scan display modes of ultrasound imaging.

(B) Attempt any ONE of the following :**6**

- (i) List the precautions to be taken to minimize electric shock hazards.
- (ii) Explain the working of dialysis machine with a neat block diagram.

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

- (a) What is respiration ? Describe the mechanism of breathing with a neat diagram.
- (b) Explain the working of an ECG machine with a neat block diagram.
- (c) Describe the working of CAT Scan machine with a neat block diagram.

P.T.O.

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

- (a) Explain the construction of a micro electrode with a neat diagram.
 - (b) What do you understand by micro shock and macro shock ?
 - (c) Explain the working of spirometer with a neat diagram.
 - (d) List the four heart sounds. How do they originate ?
 - (e) State the functions of :
 - (i) SA node
 - (ii) Hypothalamus
 - (iii) Nephron
 - (iv) Tricuspid valve
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