

'I' – Scheme

Sample Question Paper

**Programme name : Diploma in Instrumentation/Instrumentation
& Control**
Programme code : IS/IC
Semester : Sixth
Course Title : Biomedical Instrumentation
Max. Marks : 70

22648

Time: 3 Hrs.

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.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FIVE of the following.

10 Marks

- a. Draw a neat labeled diagram of a neuron.
- b. Write any one function of each of the following
i) Medulla oblongata (ii) midbrain.
- c. Draw the block diagram of MAN Instrument System.
- d. Name any two electrodes each used for measurement of :
i) ECG (ii) EEG
- e. Define micro-shock.
- f. State any one application each of: (i) CT Scanner (ii) Ultrasonography Machine.
- g. List types of different methods of blood pressure measurement.

Q.2 Attempt any Three of the following.

12 Marks

- a. Explain Neuronal communication with neat diagram.
- b. Draw the block diagram of an EMG machine and explain its working.
- c. Explain its working of plethysmograph with a neat diagram.
- d. Explain the working of an internal pacemaker with a neat block diagram.

Q.3 Attempt any Three of the following.

12 Marks

- a. Define the following w.r.t. lung volume and capacities :
 - i. Tidal volume
 - ii. Inspiratory reserve volume
 - iii. Expiratory reserve volume
 - iv. Functional residual capacity
- b. Explain the working of an ECG machine with a neat block diagram.
- c. Draw a neat and labeled block diagram of spirometer. Explain its working.
- d. Describe the working of a D.C. defibrillator with a neat diagram and waveform.

Q.4) Attempt any Three of the following.

12 Marks

- a. Draw a neat labeled diagram of the internal structure of human heart.
- b. Describe action potential with the help of neat and labeled diagram.
- c. Explain with neat diagram the working of phonocardiograph.
- d. State any four precautions to be taken to minimize electric shock hazards and leakage current.
- e. Draw MRI imaging system. Explain it in brief.

Q.5) Attempt any Two of the following.

12 Marks

- a. Describe the operation of kidney with neat sketch.
- b. Draw a neat and labeled diagram of EEG machine and explain each block.
- c. Explain operation of X-ray machine with its block diagram. List its two applications.

Q.6) Attempt any Two of the following.

12 Marks

- a. Explain the working of sphygmomanometer with the help of diagram.
- b. Describe A, B and M mode of ultrasonography with the help of waveform.
- c. Draw the block diagram of a dialysis machine. Describe its working in detail.

'T' – Scheme

Sample Question Paper

Programme name : Diploma in Instrumentation/Instrumentation
& Control
Programme code : IS/IC
Semester : Sixth
Course Title : Biomedical Instrumentation
Max. Marks : 20

22648

Time: 1 Hrs.

Instructions:

1. All questions are compulsory
2. Figures to the right indicate full marks
3. Assume suitable data if necessary
4. Preferably, write the answers in sequential order

Q.1 Attempt any FOUR.

(8 Marks)

- a. List the functions of kidney.
- b. Draw ECG waveform, write significance of it.
- c. Draw labeled general bio electric potential waveform.
- d. State the function of hypothalamus.
- e. State two applications of Audiometer.
- f. Draw electromagnetic blood flow measurement system.

Q.2 Attempt any THREE.

(12 Marks)

- a. Draw a neat labeled diagram of cardiovascular system.
- b. Describe the mechanism of breathing with a neat diagram.
- c. Explain electrode-electrolyte interface with the help of diagram.
- d. Describe the various stages of sleep with the help of EEG waveforms. .
- e. With a neat diagram explain the ultrasonic method for measurement of blood flow.

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Time: 1 Hrs.

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4. Preferably, write the answers in sequential order

Q.1 Attempt any FOUR.

(8 Marks)

- a. List any four heart sounds.
- b. Classify various pacing modes.
- c. Draw the block diagram of biotelemetry system.
- d. Draw image intensifier system.
- e. State any two applications of MRI imaging system.
- f. Explain the concept of SPECT.

Q.2 Attempt any THREE.

(12 Marks)

- a. Describe the precaution to minimize electric shock hazards.
- b. Describe the use of Demand Pacemaker.
- c. Draw neat and labeled block diagram of spirometer. State its use.
- d. Explain operation of X-ray machine with its block diagram.
- e. Describe the working of CAT scan machine with a neat block diagram.