

2024

BIOMEDICAL INSTRUMENTATION

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

Answer any five questions

1. a) With a block diagram, explain the biomedical instrumentation system. 5
b) Explain cell resting and action potentials. 5
c) With a neat diagram, explain the working of human heart. 10
2. a) Specify the use of micro electrode. Explain its types. 4
b) Explain a method to measure human blood pressure. 6
c) Explain any two types of spirometer. 10
3. With a neat diagram, explain the working of :
a) DC Defibrillator 8
b) Heart- Lung Machine 12
4. a) Explain photoplethysmograph and its types. 8
b) Specify the need of a pacemaker. With the help of block diagrams, explain the types of pacemaker. 12
5. a) Explain a technique to measure the following parameter of blood: 5+5=10
i) pH
ii) pO₂
b) With a neat diagram, explain the working of X-ray Machine. 10
6. Write short notes of the following: 4 × 5=20
i) Transmission modes of ultrasound imaging
ii) Instrumentation amplifier
iii) Thermograph
iv) EEG
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