Code No: 157AT **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, February/March - 2022
BIOMEDICAL INSTRUMENTATION
(Common to ECE, EIE)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Draw the structure of a living cell of our body and explain its constituents.
b) Write about body surface recording electrodes. [7+8]

2.a) Briefly explain the different types of static and dynamic characteristics of the medical system.
b) With relevant diagram explain how pH is measured using a reference electrode. [8+7]

3.a) Explain the standard 12 lead configuration used for measurement of ECG.
b) By utilizing electromagnetic technique explain how blood flow is measured with neat diagram. [7+8]

4.a) State the frequency range and amplitude of a normal ECG bioelectric signal, with relevant ECG waveform.
b) By employing ultrasonic technique explain how blood flow is measured. [8+7]

5.a) Explain how simulator is employed in Electro myograph measurements.
b) By employing computer analysis for ECG explain how amplitude and frequency analysis is implemented. [7+8]

6.a) With help of a neat diagram explain the electrode placement of 10-20 electrodes in EEG.
b) By utilizing EEG analysis explain how evoked potential is recorded. [8+7]

7.a) With help of a neat diagram explain the working of a hemodialysis machine.
b) Explain the working of a basic spirometer with help of a neat diagram. [8+7]

8.a) Explain the following concerning MRI, Relaxation time T1 and T2.
b) With neat block diagram explain the working of the basic pulse-echo technique used in ultrasound. [7+8]

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