

**B.TECH. SEM -V BIO MEDICAL 2014 COURSE (CBCS) :
SUMMER - 2018**

SUBJECT: BIOMEDICAL ELECTRONICS-I

Day : **Wednesday**
Date : **23/05/2018**

S-2018-2377

Time : **10.00 AM TO 01.00 PM**
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the **RIGHT** indicate full marks.
 - 3) Draw neat diagrams **WHEREVER** necessary.
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Q.1 State Fick's law. Explain drift and diffusion equation for potential across cell membrane in a biological tissue. **(10)**

OR

- a) What is ERG and EOG? Give their applications and frequency range. **(06)**
- b) Describe resting potential in a cell and muscle twitch. **(04)**

Q.2 Describe signal recovery and data acquisition used for biosignals. **(10)**

OR

- a) Briefly describe the bridge amplifier and its importance. **(06)**
- b) What are the physiological signal amplifiers? **(04)**

Q.3 Draw ECG waveform and describe it. List and explain briefly various lead systems. **(10)**

OR

- a) Describe physiological effects of electrical current passing through human body. **(06)**
- b) Define systolic and diastolic blood pressure with normal, high and low BP range. **(04)**

Q.4 Draw and explain typical setup for EMG recording. What are the types of electrodes used to pick up EMG signals? **(10)**

OR

- a) What are the diagnostic uses of EEG? **(06)**
- b) Draw and explain the EEG bands. **(04)**

Q.5 Describe the basic principle of electromagnetic blood flow meter with the help of neat diagram. Draw different flow heads to measure blood flow. **(10)**

OR

- a) What are the applications of pulmonary function analyzers? **(04)**
- b) What is respiratory gas analyzer? Explain its importance. **(06)**

Q.6 What are the applications of laser in the field of biomedical? Explain any five applications with example. **(10)**

OR

- a) Describe ultrasonic therapy unit with diagram. **(06)**
- b) What are the galvanic and faradic currents used in electrical stimulator. **(04)**

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