

**B.TECH SEM – V (2007 COURSE) (BIOMEDICAL ENGG.) :**

**SUMMER - 2018**

**SUBJECT: BIOMEDICAL ELECTRONICS-I**

Day : **Tuesday**  
Date : **22/05/2018**

**S-2018-2690**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks: 80

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**N. B. :**

- 1) **Q. No.1 and Q. No.5 are COMPULSORY.** Out of the remaining attempt **ANY TWO** questions from each Section.
  - 2) Figures to the right indicate **FULL** marks.
  - 3) Answers to both the sections should be written in **SEPARATE** answer book.
  - 4) Assume suitable data, if necessary.
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**SECTION-I**

- Q.1** a) Draw the diagram of action potential & explain the following: **(05)**  
i) Polarization ii) Repolarization iii) Depolarization
- b) What are the characteristics of medical pre-amplifiers? **(04)**
- c) What is blood pressure? Explain Systolic & Diastolic blood pressure using graphical representation & give their normal values. **(05)**
- Q.2** a) Explain propagation of action potential through a nerve along with distribution of ions during propagation. **(07)**
- b) What are the physiological effects of current passing through the body? **(06)**
- Q.3** a) State the need for biosignal amplifier. Briefly explain the trend of design. **(07)**
- b) What are the line driving amplifiers, bridge amplifiers & current amplifiers? Give their applications. **(06)**
- Q.4** a) What is 1mv calibration in ECG and why it is required? Explain ECG block diagram. **(07)**
- b) List and explain the types of normal & abnormal heart sounds with diagram. **(06)**

**SECTION-II**

- Q.5** a) Explain 10-20 electrode system used to pick up EEG. **(05)**
- b) What are the applications of electro-diagnostic apparatus? **(04)**
- c) Briefly describe the Electromagnetic blood flowmeter. **(05)**
- Q.6** a) Draw and explain EEG block diagram. What is the significance of EEG? **(07)**
- b) Explain EMG electrodes with diagrams. **(06)**
- Q.7** a) Draw and explain continuous wave Doppler blood flowmeter. **(07)**
- b) What are the basic types of measurements made in pulmonary clinic? **(06)**
- Q.8** a) Write a short note on TENS. **(06)**
- b) List the types of Lasers used in biomedical applications & write their characteristics. **(07)**