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Total Number of Pages : 01

B.Tech
PEEC5416

7th Semester Back Examination 2018-19
BIOMEDICAL INSTRUMENTATION
BRANCH : AEIE, BIOTECH, CSE, ECE,
EEE, EIE, ELECTRICAL, ENV, ETC, IEE, IT, ITE, METTA, MME
Time : 3 Hours
Max Marks : 70
Q.CODE : E160

Answer Question No.1 which is compulsory and any FIVE from the rest.

The figures in the right hand margin indicate marks.

- Q1** Answer the following questions : (2 x 10)
- a) Classify the transducers used in biomedical instrumentation.
 - b) Differentiate clinical and research instrumentation.
 - c) Define physiological variable and give at least two examples.
 - d) What do you mean by resting and action potentials?
 - e) Define the term latency in EMG.
 - f) State all -or-nothing law.
 - g) What is meant by sodium pump?
 - h) What are the types of ECG recorders?
 - i) Lists the physical principles that governs the operation of blood flow meter.
 - j) What are the methods used for direct measurement of blood pressure?
- Q2** a) Describe briefly the components of Man-Instrumentation system with a neat block diagram. (5)
- b) Explain different states of cell during generation of action potential with suitable diagrams. (5)
- Q3** a) What are the types of biopotential electrodes? Explain briefly about each of them. (5)
- b) What is an electrocardiogram? Explain how it depicts different condition of heart in details. (5)
- Q4** a) Explain about different ECG lead configuration. (5)
- b) Discuss the thermoelectric effect and the working of the transducer based on it. (5)
- Q5** a) Describe about indirect methods of blood pressure measurement. (5)
- b) Explain principle and working of magnetic blood flow meter. (5)
- Q6** a) Explain about skin contact impedance and methods used for its measurement. (5)
- b) Discuss electrodes used for EEG measurement. (5)
- Q7** What are the possible shock hazards? Explain briefly the methods of accident prevention due to these hazards. (10)
- Q8** Write short answer on any TWO : (5 x 2)
- a) Pressure measurement using strain gauge.
 - b) Electrodes for Electromyogram.
 - c) Pacemaker.
 - d) Microprocessor in biomedical instrumentation.