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Total Number of Pages : 01

B.Tech  
PEI6J004

6<sup>th</sup> Semester Regular / Back Examination 2018-19

BIOMEDICAL INSTRUMENTATION

BRANCH : AEIE, AEIE, EIE, EIE, IEE, IEE

Max Marks : 100

Time : 3 Hours

Q.CODE : F748

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- What is meant by skin contact impedance?
- Distinguish between active and passive transducers?
- Write the normal ranges of heart rate, blood pressure and respiration rate.
- Which type of thermocouple is most suitable for biomedical application and why?
- Mention any two types of electrodes used for the measurements of ECG.
- What is programmable pacemaker? Why it is named so?
- List various types of electromagnetic blood flow meter.
- Give the equivalent circuit of an electrode/electrolyte interface.
- Give a brief idea about electrodes for EMG.
- What is catheter tip type pressure transducer?

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- What is electroencephalogram? Draw and explain any one of the electrodes used in EEG.
- Explain Ag-AgCl electrodes in detail.
- What is biomedical signals? List various biomedical signals and list their sources.
- What is electrical conductivity of electrode jellies and creams?
- What are the needs for defibrillators? Explain DC defibrillators.
- What are the effects of artifacts? Give a brief idea about it.
- How automatic external defibrillators are different from implantable defibrillators?
- Explain thermistors and its biomedical applications.
- Define interferential current therapy.
- What do you mean by electromagnetic blood flow meter principle using ultrasonic blood flow meter?
- Give a brief idea about chemical transducers of acoustic and thermal principles.
- Write short notes on amperometric sensors and electrical gas sensors.

Part-III

Q3 Only Long Answer Type Questions (Answer Any Two out of Four) (16)

Explain electrode tissue interface in detail with neat diagram.

Q4 What do you mean by cardiac pacemakers? Explain its types and sources in detail. (16)

Q5 Explain electro diagnosis –electrotherapy-functional block diagram and working in detail. (16)

Q6 Define biosensors. Explain its types in detail with neat diagram. (16)