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Total number of printed pages – 2

B. Tech
PEEC 5416

Seventh Semester (Special) Examination – 2013

BIOMEDICAL INSTRUMENTATION

BRANCH : EEE, ELECTRICAL

QUESTION CODE : D 438

Full Marks – 70

Time : 3 Hours

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

The figures in the right-hand margin indicate marks.

1. Answer the following questions :

2×10

- (a) Write the sources of bio-optical and bio-acoustic signals.
- (b) What is meant by intelligent medical instrumentation system ?
- (c) What is an Electrode ?
- (d) What is Motion Artifact ?
- (e) Distinguish between Transducers and Sensors.
- (f) What is Smart Sensor ?
- (g) What is Biosensor ?
- (h) What is Patient Monitoring ?
- (i) What is the magnitude of blood pressure of a healthy person ?
- (j) What is leakage current ?

2. (a) Describe the function of a basic medical instrumentation system. 5
- (b) Describe general constraints in design of medical instrumentation system? 5

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3. (a) Draw waveform of an action potential and explain Polarization and Depolarization. 5
- (b) What is Skin Contact Impedance ? How is it measured ? 5
4. (a) Describe construction and working of any one Pressure Transducer. 5
- (b) Describe construction and working of Transducers used for body temperature measurement. 5
5. (a) Briefly explain techniques used for biomedical signal analysis. 5
- (b) Describe construction and working of Potentiometric Recorders. 5
6. (a) Briefly describe method of measurement of Heart Rate. 5
- (b) Describe construction and principle of operation of blood pressure measurement. 5
7. (a) Describe construction and principle of operation of Ultrasonic blood flow meter. 5
- (b) Distinguish between Micro Shock and Macro Shock. Briefly explain various Shock Hazards. 5
8. Write short notes on any **two** of the following : 5×2
 - (a) Electrodes for ECG – Construction and characteristics
 - (b) Construction and working of Phonocardiography
 - (c) Construction and principle of operation of Electromagnetic blood flow meter.

