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TEE – 031

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0290 **Roll No.** | | | | | | | | | | |

B.Tech.

(SEM VIII) EVEN SEMESTER THEORY EXAMINATION, 2009-2010

BIO-INSTRUMENTATION

Time : 3 Hours *Total Marks : 100*

Note : *(i) Answer **all** questions.*

*(ii) All questions carry **equal** marks.*

1. Answer **any two** parts of the following : **(2x10=20)**

(a) (i) Explain problems encountered in measuring a living system.

(ii) What are bioelectric potentials ? Mention its sources.

(b) (i) Classify transducers. List static and dynamic characteristics of transducers.

(ii) Explain electrical resistance thermometer used for body temperature measurement.

(c) Explain ECG, EEG and EMG with respect to the following :

(i) Generation.

(ii) Wave pattern.

(iii) Range of frequency and signal amplitude.

(iv) Application.

2. Answer **any two** parts of the following : **(2x10=2**

(a) Explain cardiovascular system. Discuss cardiovascular circulation with the help of a block diagram.

(b) (i) What is electrocardiography? How can it be used for measuring stress ?

(ii) Explain working principle of any one type of blood flow meter.

(c) (i) Differentiate between microelectrodes and body surface electrodes.

(ii) What is biochemical transducer ? Explain pH electrode.

3. Answer **any two** parts of the following : **(2x10=2**

(a) Explain physiology of nervous system. Write the factors which affect the neuronal communication.

(b) Explain EPSP and IPSP. Discuss neuronal firing measurements.

(c) What are the functions of human brain ? Draw block diagram of peripheral motor control system and explain its functioning.

4. Answer **any two** parts of the following : **(2x10=2**

(a) Explain working principle of a pacemaker. How does it regulate the functioning of heart ?

(b) List various elements of intensive care monitoring. Explain patient care monitoring system with the help of a diagram.

(c) What is bio - telemetry ? Explain

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(c) What is bio - telemetry ? Explain components of a bio - telemetry system with the help of a diagram.

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Answer **any two** parts out of the following : **(2x10=20)**

(a) What are different shock hazards that can be generated from an electrical equipment and also give protection against them ?

(b) Explain X - ray diagnostic technique. Mention its applications.

(c) Explain use of digital computer in biomedical applications. Describe its application for ECG analysis.

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