

Registration no:

--	--	--	--	--	--	--	--	--	--

Total Number of Pages: 02

B.Tech
PEEC5416

7th Semester Regular / Back Examination 2017-18
BIOMEDICAL INSTRUMENTATION

BRANCH: AEIE, BIOTECH, CSE, ECE, EEE, EIE, ELECTRICAL, ENV, ETC, IEE, IT, ITE

Time: 3 Hours

Max Marks: 70

Q.CODE: B373

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) Differentiate between bioengineering and bioscience.
 - b) Mention any two transducers for body temperature measurement.
 - c) Define bioelectrical signal with an example.
 - d) Write few important biomedical usefulness of patient monitoring system.
 - e) What is common impedance coupling?
 - f) Define Gross shock and Micro current shock.
 - g) List out the important parameters which are essential for patient monitoring.
 - h) What is an ECG 'Lead'?
 - i) List names of commonly engaged pressure transducers used in biomedical instrumentation.
 - j) What is a catheter tip type pressure transducer?
- Q2 a) What is a Biomedical Signal? List various biomedical signals and mention their sources. (5)**
- b) List the general constraints in biomedical instrumentation system. Explain in brief. (5)**
- Q3 a) Explain any one direct method of blood pressure measurement. (5)**
- b) Mention the different range of EEG waves and their significance in EEG analysis. (5)**
- Q4 a) What is an electro cardiogram? Describe the different electrodes used for ECG with suitable diagrams. (5)**
- b) What special features of bioelectric amplifiers make them suitable for Biomedical applications (5)**
- Q5 a) Describe with help of a block diagram the telemetry system for ECG and respiration rate. (5)**

- b) Explain Korotkoff method of indirect blood pressure measurement (5)
- Q6** a) How electrostatic and electromagnetic signals become a source of noise to biosignals? Briefly explain how it can be eliminated? (5)
- b) What is the principle behind blood volume measurement by impedance method ? Derive an equation for the variation of blood volume in a vessel with the change in its basal resistance. (5)
- Q7** Describe with the help of diagram, the important building blocks of a multi channel ECG machine. What is the role of a microprocessor used in such machine? (10)
- Q8** Write short answer on any TWO: (5 x 2)
- a) Biosensor
 - b) Phonocardiograph
 - c) Ultrasonic Blood Flow Meter
 - d) Inkjet Recorder