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10BT53

**Fifth Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**Biosensors and Instrumentation**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.**

**PART – A**

- 1 a. Describe functional elements of digital instrumentation system. (08 Marks)  
b. What is a Transducer? Give its classification. (06 Marks)  
c. Explain the principle and operation of LVDT. (06 Marks)
- 2 a. Explain with waveform the principle ECG recording. (08 Marks)  
b. Discuss on Computed Tomography with SPECT and PET. (12 Marks)
- 3 a. Explain Lumped parameter modeling of Cardio Vascular system. (10 Marks)  
b. List and explain the various types of replacement heart valves. (10 Marks)
- 4 a. Describe various components of Instrumentation used in measurement of Respiration parameters. (12 Marks)  
b. Explain the working of Spirometer. (08 Marks)

**PART – B**

- 5 a. Explain the working principle of pH - meters. (06 Marks)  
b. What is Fluorescence? Give its principle and applications. (06 Marks)  
c. Explain with principle the HPLC Instrumentation and its utilities in various processes. (08 Marks)
- 6 a. Describe in details any 2 Fluorescence techniques. (10 Marks)  
b. Briefly explain any 2 Bioanalytical methods and application. (10 Marks)
- 7 a. What is Barcode technology? Describe various methods employed in acquiring bar code data. (08 Marks)  
b. Discuss the components and classification of Robots on motions, with suitable examples. (12 Marks)
- 8 a. Discuss the various application of Biosensors in Bioprocess industry. (10 Marks)  
b. Explain the stepwise construction of DNA Biochip and their applications. (10 Marks)

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