

**B.TECH SEM – VI (2007 COURSE) (BIOMEDICAL ENGG.) :**  
**WINTER - 2017**

**SUBJECT: BIOMEDICAL ELECTRONICS – II**

Day: **Thursday**  
Date: **23/11/2017**

Time: **10.00 AM TO 01.00 PM**  
Max. Marks: **80**

**W-2017-2536**

**N.B.:**

- 1) **Q. No. 1 and Q. No. 5** are **COMPULSORY**. Out of the remaining attempt any **TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.
- 4) Draw neat diagrams **WHEREVER** necessary.
- 5) Assume suitable data if necessary.

**SECTION - I**

- Q.1**
- a) Explain the working principle of ink-jet recorder with the help of diagram. **(05)**
  - b) What are the instrumentation requirements for 4- bed ICU in order to monitor the patient? **(05)**
  - c) Explain with principle of Colorimeter with suitable diagram. What is an optical density? **(04)**
- Q.2**
- a) Explain servo feedback pen motor system for fast and accurate recordings. **(07)**
  - b) Draw the diagram of UV recording system with mirror galvanometer arrangement and explain. **(06)**
- Q.3**
- a) Draw and explain digital circuit used in non-fade display systems. **(07)**
  - b) Draw the patient monitoring system. Give the importance of patient monitoring and central monitoring system. **(06)**
- Q.4**
- a) Distinguish between spectrophotometer and flame photometer. Explain the working principle of diffraction grating used in flame photometer. **(07)**
  - b) Explain the principle of Coulter Counter used to count the blood cells. **(06)**

P. T. O.

## SECTION-II

- Q.5** a) What are the biological effects of ultrasound? (04)
- b) Explain chamber plethysmography used to monitor blood volume? (06)
- c) Write a note on any one pacemaker battery. (04)
- Q.6** a) Explain the circuit diagram for measuring airflow rate and volume of air using pneumotachography. (07)
- b) Explain SIMV mode used in ventilator with diagram and example. (06)
- Q.7** a) Explain real time scanning systems of ultrasound with neat diagram. (06)
- b) Explain block diagram of Electro-surgical unit and techniques of ESU. (07)
- Q.8** a) Explain the cases for which Implantable defibrillators are preferred than coronary artery bypass surgery. (06)
- b) Write short notes on: (07)
- i) Pacemaker leads
  - ii) Pacemaker batteries