B E (Biomed) (Sem-VII) (Rev) Dec, 2010.
Sub: Biomedical Instrumentation-III

-120

on. 5871–10. **(REVISED COURSE)** **GT–9036**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume **suitable** data wherever **necessary**.
(5) Draw **sketches / diagrams** wherever **necessary**.
(6) Use **legible** handwriting. Use **blue/black** ink.

1. (a) Explain basic principle of Hemodialysis machine. [05]
   (b) Explain placement of electrodes in dc defibrillator machine. [05]
   (c) Explain the basic principle of surgical diathermy. [05]
   (d) Compare advantages and disadvantages ultrasonic and shortwave diathermy [05]

2. Draw and explain using circuit diagrams following sections of on-demand Pacemaker.
   (a) Rate generator [05]
   (b) Monostable multivibrator [05]
   (c) Reset circuit [05]
   (d) Meter driver circuit [05]

3. (a) What are the different types of fibrillations. [05]
   (b) Draw the circuit diagram of discharging of capacitor in INST mode. [10]
   (c) Explain how capacitor discharges in INST mode. [05]

4. (a) What is the effect of heat on body and how heat therapy helps in pain relief ? [05]
   (b) What are the application techniques of Ultrasonic diathermy ? [05]
   (c) Draw the circuit diagram of Ultrasonic diathermy machine. [05]
   (d) Explain the circuit diagram of Ultrasonic diathermy machine [05]

5. (a) Explain using suitable circuit diagram temperature in hemodialysis m/c [10]
   (b) List various types of lasers used in biomedical Engineering. [05]
   (c) Explain using suitable diagram any one type of Laser. [05]

6. (a) Explain with suitable diagrams various electrodes used ESU. [10]
   (b) Explain using circuit diagram COAG mode of operation in ESU [10]

7. Write short notes on: [20]
   (a) Heart rate variability.
   (b) Applications of LASERS.
   (c) Circus Motion Theory.