

Reg. No.



Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



SEVENTH SEMESTER B.TECH (INSTRUMENTATION & CONTROL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: BIOMEDICAL EQUIPMENTS [ICE 433]

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ANY FIVE FULL** questions.
- ❖ Missing data may be suitably assumed.

- 1A. Describe the characteristics, types and causes of hearing loss. **5**
- 1B. Explain one type of conventional hearing aid that is used for single sided deafness. **3**
- 1C. What is the importance of masking in audiometry? Explain one type of masking noise used in audiometry. **2**
- 2A. What is the advantage of pneumotachometer over the spirometer? Also compare the various types of pneumotachometers. **5**
- 2B. Describe the procedure involved in providing the artificial ventilation intermittently by applying positive pressure. **3**
- 2C. Classify the ventilators based on the type of safety limit. **2**
- 3A. What is Neonatology? Explain a non-invasive technique used to monitor the serum bilirubin level. **5**
- 3B. Write a note on the different channels and valves used in endoscopes. **3**
- 3C. Define the following (a) Colposcopy (b) Laproscopy **2**
- 4A. What is population inversion? Explain any one type of pulsed laser in detail. **5**
- 4B. Write a note on the different modes of operation of the ESU and also draw the waveforms required for the different modes of operation. **3**
- 4C. Can renal calculi be cleared non-invasively? Justify your answer. **2**
- 5A. Write a note on the design and the material considerations for the prosthetic heart valves. **5**
- 5B. What are the characteristics of an ideal artificial kidney? **3**
- 5C. Compare between bubble and membrane type oxygenator (any two) **2**
- 6A. What are the various elements of Coronary Care Unit (C.C.U)? Explain each in brief. **5**
- 6B. Mention the drawbacks of the microscopic method of cell counting and explain in detail the automatic blood cell counter. **3**
- 6C. Differentiate between elastomeric and volumetric infusion pump system. **2**