

Reg. No.									
----------	--	--	--	--	--	--	--	--	--



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

SEVENTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER EXAMINATIONS, DEC - 2017

SUBJECT: BIOMEDICAL EQUIPMENTS [ICE 4016]

Duration: 3 Hour

Max. Marks:50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitably assumed.

- | | | |
|-----------|---|---|
| 1A | Show as to how the clinically essential potentials can be evoked from the human brain in order to assess any pathology in the auditory cortex? | 5 |
| 1B | Explain one type of conventional hearing aid that is used for single sided deafness. | 3 |
| 1C | What is a bionic ear? Draw an audiogram indicating normal and abnormal hearing level. | 2 |
| 2A | With a neat block diagram, explain the electrosurgical machine in detail and explain any two modes of operation of the Electro Surgical Unit. | 5 |
| 2B | Describe the procedure involved in providing the artificial ventilation intermittently by applying positive pressure. | 3 |
| 2C | Differentiate between bubble and film oxygenator (2 main difference) | 2 |
| 3A | Why Argon laser is mainly used in coagulation? Explain working of CO ₂ Laser in detail and mention their one drawback | 5 |
| 3B | Write a note on instrument channels involved in endoscope. Also explain the different instrument used for the same. | 3 |
| 3C | It takes 0.3 msec for the sound to travel from the ultrasound probe to a baby's heel and back again. If the sound travels at 1400m/sec inside the body, how far is the baby's foot below the mother's skin? | 2 |
| 4A | What you mean by M- scan? Explain the echocardiograph procedure with the block diagram. | 5 |
| 4B | What is Neonatology? Explain a non-invasive technique used to monitor the serum bilirubin level. | 3 |
| 4C | Differentiate the mechanical and tissue heart valves. | 2 |
| 5A | Mention two liquid and gas anesthetic agents. With a diagram, explain the working of anesthesia machine in detail. | 5 |

- 5B** Explain the equipment used for thermography and also list the applications of thermography in medicine. 3
- 5C** Mention the factors considered in the incubator design. 2
