

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: MSC
BRANCH: BIOTECHNOLOGY**

**SEMESTER : II
SESSION : SP/19**

**SUBJECT: BT427 BIOMEDICAL EQUIPMENT AND DEVICES
TIME: 3.00 Hrs.**

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
-

- Q.1(a) How electrophysiological signals are generated in human body? Explain. [5]
- Q.1(b) What is the need of ECG recording? Design the components of an ECG machine and discuss their working principles. [5]
- Q.2(a) Explain the principle and recording technique of pulse plethysmogram. [5]
- Q.2(b) What are the common modes of ventilators? With its essential components, design an efficient ventilator to support in intensive care unit (ICU). [5]
- Q.3(a) How many types of physiotherapeutic diathermies are commonly used? Explain the function of short-wave diathermy. How this therapy is interacting with body? [5]
- Q.3(b) What is an artificial pacemaker? Evaluate the common considerations in designing an on-demand pacemaker? [5]
- Q.4(a) What is an artificial blood pump? How a heart-lung machine works to support open heart surgery? Explain. [5]
- Q.4(b) With a block diagram and the operating waveform, explain the functions of surgical diathermy. [5]
- Q.5(a) Why measuring blood flow is important. How blood flow is measured with the help of electromagnetic principles? [5]
- Q.5(b) Evaluate the successful applications of biochemical analyzer with its most appropriate principle of operations. [5]

:26/04/2019 M: