

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3160303****Date:03/06/2022****Subject Name:Therapeutic Instrumentation****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1**
- (a) Explain briefly the types of electrodes used in Defibrillator. **03**
- (b) Explain briefly the classification of Pacemaker on based of its different coding system. **04**
- (c) Explain in detail DC Defibrillator along with its Circuit diagram and operation. **07**

- Q.2**
- (a) Write short note on Intra-Aortic Balloon Pump (IABP). **03**
- (b) Explain briefly the safety aspects to be considered in Electrosurgical Diathermy. **04**
- (c) Explain in detail the construction and working of Heart Lung Machine with neat labelled diagram. **07**

OR

- (c) Explain in detail different techniques of Electrosurgical Diathermy. **07**

- Q.3**
- (a) Define Diathermy. Enlist the applications of Ultrasound Therapy unit. **03**
- (b) State and explain briefly the application of Functional Electrical Stimulation. **04**
- (c) Explain in detail the construction and working of Microwave diathermy. **07**

OR

- Q.3**
- (a) Write short note on TENS. **03**
- (b) Explain briefly the concept of Deep Brain Stimulation. **04**
- (c) Explain the concept of Short wave diathermy along with its application areas. **07**

- Q.4**
- (a) Enlist various components of Anesthesia machine and also enlist various anesthetic agents used commonly. **03**
- (b) Explain in short the need of following during administration of Anesthesia : **04**
- (1) Continuous monitor of Vital Parameters
- (2) To check the level of humidity
- (c) Define Ventilation. Give the classification of all possible types of ventilators and also explain various modes of ventilators. **07**

OR

- Q.4**
- (a) Explain briefly the Gas Supply system of Anesthesia machine. **03**
- (b) Explain the importance of Vapor Delivery System in Anesthesia machine. **04**
- (c) Explain in detail the Microprocessor controlled Ventilator with neat labelled diagram. **07**

- Q.5** (a) Explain the fundamental concept of Artificial Kidney. **03**
(b) Explain working of Infusion Pump. **04**
(c) Justify the importance of following in Haemodialysis machine for its efficient working and performance: **07**
(1) Blood Leak Detector
(2) Heparin Infusion
(3) Air Detector

OR

- Q.5** (a) Enlist various types of Dialyzers and Membrane used in Dialyzer Unit. **03**
(b) Explain briefly the construction and working of typical Baby Incubator. **04**
(c) Draw the typical diagram of Hemodialysis Machine and explain briefly the flow of blood through in different stages. **07**
