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MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL

A Constituent Institution of Manipal University

FIFTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)
END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: BIOMEDICAL INSTRUMENTATION [ICE 3102]

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

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

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| 1A. | Explain the working of Man Instrument System with its Block diagram | 5 |
| 1B. | What is EEG? Describe different types of EEG waveforms with amplitude and frequency specifications. | 3 |
| 1C. | Draw the block diagram of EEG machine. | 2 |
| 2A. | Explain the process of dialysis which uses abdominal cavity as artificial kidney | 4 |
| 2B. | Discuss the following terms | 3 |
| | i) Equivalent circuit and frequency response of Electrodes | |
| | ii) Types of bio potential electrodes | |
| 2C. | Explain various methods of direct measurement techniques used for BP measurement | 3 |
| 3A. | Describe the working of Defibrillator works at low voltage level with relevant sketches. | 3 |
| 3B. | Discuss the principle of operation of Pulse oximeter with analog signal processing circuit and relevant sketches | 4 |
| 3C. | Explain the working of the Heart Lung Machine with the help of neat sketch. | 3 |
| 4A. | Draw the block diagram and explain the working of X- Ray machine | 5 |
| 4B. | Explain various lung capacities and lung volumes with necessary diagram | 3 |
| 4C. | Discuss in detail about the various instruments used for respiratory therapy. | 2 |
| 5A. | With the block diagram explain the functions of each components of CT scanner | 4 |
| 5B. | What are Endoscopes? Explain the working of Endoscope. | 3 |
| 5C. | With necessary diagram explain the various parts of Bed side monitoring system. | 3 |