Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **15EI2025** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MEDICAL EQUIPMENT TROUBLESHOOTING AND MAINTENANCE** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | List out and explain the various steps involved in manufacturing a printed circuit board of a medical equipment. | CO1 | 10 |
| b. | Discuss the basic knowledge for a biomedical engineer to deal with the biomedical equipment. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Classify the types of power sources used for biomedical equipment and explain them in detail. | CO1 | 10 |
| b. | Insulation of biomedical equipment’s are very important factor – explain. | CO1 | 10 |
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| 3. |  | Select any two sensors that can be used for a physiotherapy assistive device – Justify the selection of the sensor. | CO3 | 20 |
| **(OR)** | | | | |
| 4. | a. | Discuss the types of bio-signal used in diagnostics and the ways in which the measurement of the signals evolved. | CO2 | 15 |
| b. | The medical equipment to be kept in a good cool room away from hazards areas – justify. | CO2 | 5 |
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| 5. | a. | With neat diagrams, illustrate the measurement of blood pressure using appropriate sensors. | CO2 | 15 |
| b. | List the sensors used in medical applications. | CO2 | 5 |
| **(OR)** | | | | |
| 6. | a. | With aid of a block diagram interpret the construction and working of the implantable cardioverter defibrillator. | CO2 | 12 |
| b. | List the different types of pacemakers used and compare the same. | CO2 | 8 |
|  |  |  |  |  |
| 7. |  | With help of a neat block diagram, give details about the working of life supporting machine also list the maintenance check that is carried out on the equipment. | CO3 | 20 |
| **(OR)** | | | | |
| 8. | a. | Analyze the treatment given to kidney using ultra sound. Elucidate the operation and the maintenance aspect of the device. | CO3 | 15 |
| b. | Mention the equipment facilities to be available in emergency ward. | CO3 | 5 |
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|  | | **Compulsory**: |  |  |
| 9. |  | Identify the equipment used to keep the pre matured baby with optimum conditional as in their mother’s womb. Explain the construction of the same also discuss the maintenance techniques used. | CO3 | 20 |