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

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**End Semester Examination – Nov/Dec – 2018**

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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. | State the causes and remedies of the following faults in SMPS,  i) Unregulated voltage in the output.  ii) High frequency ripples in the output. | CO1 | 10 |
| b. | What are the importance of shielding? List the shielding methods and explain any one in detail. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | What are the importance of grounding? List the grounding methods and explain any one in detail. | CO1 | 10 |
| b. | Discuss the various alarm and display systems used in the medical equipments. | CO3 | 10 |
|  |  |  |  |  |
| 3. | a. | What are the electrical safety components? Explain their importance and testing procedures. | CO2 | 10 |
| b. | Define loading effect? Examine the effect of R,L,C in a measuring probe. | CO3 | 10 |
| (OR) | | | | |
| 4. | a. | Explain the typical problems of a ultra sound machine and also discuss the solution. | CO3 | 10 |
| b. | Describe the electrical safety standards has to be followed when a biomedical equipment is under troubleshooting. | CO2 | 10 |
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| 5. | a. | Explain the typical problems of a X-ray machine and discuss the solution. | CO1 | 10 |
| b. | List the possible causes of baby warmer mechanism. | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | Summarize the possible causes of a ECG data recording machine and discuss the solutions for the same. | CO3 | 10 |
| b. | Identify the major faults which may occur with mechanical ventilation system and summarize the solution. | CO3 | 10 |
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| 7. | a. | Visualize the procedure of connecting the patient monitoring system. | CO3 | 10 |
| b. | List out the sensors of a dialyzer machine? Identify the use of heparin pump. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | Explain the heart-lung machine setup and identify the function of heat exchanger mechanism. | CO3 | 10 |
| b. | List the possible faults of an infusion pumps and discuss the solution. | CO1 | 10 |
|  | | **Compulsory:** |  |  |
|  | | Evaluate the importants of following concepts, |  |  |
| 9. | a. | Vendor Services. | CO2 | 10 |
| b. | Quality and Safety Standards. | CO2 | 10 |