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

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

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| **Code :** | **14EI2017** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BIOMEDICAL INSTRUMENTATION** | **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. | Explain in detail about the recording set up used in EMG. | CO1 | 10 |
| b. | Discuss the various components of a generalized biomedical instrument system with block diagram. | CO1 | 10 |
| (OR) | | | | |
| 2. |  | Describe the 10-20 electrode system used in electroencephalogram. Draw the brain waves for different frequency ranges. | CO1 | 20 |
|  |  |  |  |  |
| 3. |  | Describe the indirect method of measuring the blood pressure. | CO2 | 20 |
| (OR) | | | | |
| 4. | a. | With necessary diagram discuss the principle, constructional details  and application for the different blood flow meters. | CO2 | 10 |
| b. | Distinguish between internal and external pacemakers and give the typical ranges of pacemaker parameters. | CO2 | 10 |
|  |  |  |  |  |
| 5. |  | With a necessary diagram explain and compare the heart lung machine with the mechanical functions of the heart. | CO1 | 20 |
| (OR) | | | | |
| 6. | a. | Discuss various methods for blood cell counting. | CO3 | 10 |
| b. | Explain the basic principle and various modes of Ultrasound scanning. | CO2 | 10 |
|  |  |  |  |  |
| 7. | a. | Explain any two cardiac output measurements with a necessary diagram. | CO2 | 15 |
| b. | Write short notes on Audiometer. |  | 5 |
| (OR) | | | | |
| 8. |  | Explain in detail the spectrophotometer. | CO3 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. |  | Draw the block diagram of a MRI system and explain the image reconstruction using it. | CO3 | 20 |