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

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

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| **Code :** | **18BM3009** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MEDICAL SENSORS AND MEMS TECHNOLOGY** | **Max. marks :** | **100** |

**ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Design the circuit for digital blood pressure monitor for clinical applications. List out the design parameters considered. | CO3 | 10 |
| b. | List out the applications of digital blood pressure monitoring system. | CO6 | 6 |
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| 2. | a. | Develop the force measurement system. | CO3 | 10 |
| b. | Illustrate the applications of force measurement in medical field. | CO6 | 6 |
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| 3. | a. | Write notes on smart sensors. | CO1 | 6 |
| b. | Determine the circuit for digital thermometer having the Sensitivity of 1 microvolts per degree Fahreheit. Design the scaling circuit for equalent degree Celsius units. | CO2 | 10 |
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| 4. |  | Give notes on the following sensors: |  |  |
| a. | Surface Acoustic wave devices. | CO1 | 2 |
| b. | Design and working of microgripper. | CO2 | 6 |
| c. | Present the challenges in temperature monitoring system for human body. | CO5 | 8 |
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| 5. | a. | Explain the working principle of microsensors. | CO1 | 4 |
| b. | Compare sensors and microsensors. | CO2 | 4 |
| c. | Compare microsystem and microelectronics. | CO2 | 4 |
| d. | Give few applications and challenges of MEMS devices. | CO4 | 4 |
|  | | | | |  |  |  |
| 6. | a. | Classify the micromachining techniques. | CO2 | 6 |
| b. | Explain each of them with sketches and give its applications. | CO6 | 10 |
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| 7. | a. | Explain the pulsed lazer type deposition techniques. Present its merits and illustrate with suitable applications. | CO4 | 10 |
| b. | Give the applications of microvalve. | CO6 | 6 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 8. | a. | Give the criteria for microsensor design. Explain in detail. | CO5 | 10 |
| b. | Detail the tools for performing the analysis of mems devices. | CO3 | 10 |