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

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

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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. |  | Explain the working of the following transducers used to measure torque.   1. Electrical torsion meter. 2. Strain guage torsion meter. | CO1 | 16 |
|  |  |  |  |  |
| 2. |  | Explain the principle of MEMS gyroscopes. | CO2 | 16 |
|  |  |  |  |  |
| 3. |  | Define surface micromachining. Explain in detail the process steps involved. | CO3 | 16 |
|  |  |  |  |  |
| 4. |  | What is photolithography? Explain the fabrication steps with neat sketches. | CO4 | 16 |
|  |  |  |  |  |
| 5. |  | Discuss the design and principle of Peltier effect heat pump. List some applications of heat pump. | CO5 | 16 |
|  |  |  |  |  |
| 6. |  | Elaborate on :   1. Sputtering 2. Xray lithography | CO4 | 16 |
|  |  |  |  |  |
| 7. |  | Discuss the procedure of designing pressure sensor using MATLAB simulink. | CO6 | 16 |
| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Explain strain gauge pressure transducer. | CO1 | 10 |
| b. | Explain the working of electromagnetic flow meter with a neat sketch. | CO1 | 10 |