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

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

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| **Code :** | **16NT3008** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MEMS AND NEMS** | **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 about the Planar fabrication techniques of MEMS with necessary diagram. | CO2 | 14 |
| b. | Elaborate the Design and Modelling of MEMS. | CO1 | 6 |
| (OR) | | | | |
| 2. | a. | Discuss in detail about the digital logic gates based MEMS with required diagram. | CO6 | 10 |
| b. | Describe about the MEMS pressure sensor with neat diagram. | CO4 | 10 |
|  |  |  |  |  |
| 3. |  | Estimate about the various CMOS-MEMS micromachining methods with neat diagram. | CO2 | 20 |
| (OR) | | | | |
| 4. | a. | Discuss about the benefits of Non-Silicon MEMS over the Silicon MEMS technology. | CO3 | 6 |
| b. | Describe about the Liquid Crystal Polymer based MEMS with neat diagram. | CO3 | 14 |
|  |  |  |  |  |
| 5. |  | Explain in detail about Printed Circuit board based MEMS technologies with neat sketch. | CO3 | 20 |
| (OR) | | | | |
| 6. | a. | Discuss in detail about the RF-MEMS with required diagram. | CO6 | 10 |
| b. | Compose the various property analysis of fabricated MEMS with neat diagram. | CO4 | 10 |
|  |  |  |  |  |
| 7. | a. | Elaborate the various software tools for analysis of MEMS/NEMS. | CO4 | 6 |
| b. | Explain in detail about the optical switching using MEMS. | CO6 | 14 |
| (OR) | | | | |
| 8. | a. | Explain about MEMS based memory devices and also discuss in detail about Probe Tip Fabrication used in storage devices. | CO6 | 12 |
| b. | Elaborate the function of clean room protocols and discuss about its various classes. | CO5 | 8 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Elaborate in detail about the MEMS packaging with neat diagram. | CO3 | 12 |
| b. | Illustrate about 3D printer based MEMS design? | CO2 | 8 |