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

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

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| **Code :** | **16NT3003** | **Duration :** | **3hrs** |
| **Sub. Name :** | **NANO-LITHOGRAPHY** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Assuming a positive resist, explain the fabrication process of CMOS invertor through a neat schematic using n –well process. | CO3 | 20 |
| (OR) | | | | |
| 2. | a. | Sketch the various steps involved in lithography process using negative photoresist in order to obtain below image. | CO1 | 10 |
|  | b | Schematically illustrate the fabrication of N-MOS using negative resist. | CO3 | 10 |
|  |  |  |  |  |
| 3. |  | Elaborate the various steps involved in lithography process with a neat diagram. | CO1 | 20 |
| (OR) | | | | |
| 4. |  | Assuming a negative resist, explain the fabrication process of BJT with a neat diagram | CO3 | 20 |
|  |  |  |  |  |
| 5. | a. | What is soft lithography? | CO2 | 2 |
| b. | Draw a flow chart representing the different types of soft lithography | CO2 | 3 |
| c. | Explain the different types of replica moulding with a neat diagram | CO2 | 15 |
| (OR) | | | | |
| 6. |  | Write in detail about Focused Ion Beam (FIB) lithography. | CO2 | 20 |
|  |  |  |  |  |
| 7. | a. | Write a note on i).Instrumentation ii).Sources and iii).Scattering technique of charged particle lithography. | CO2 | 15 |
| b. | Mention few advantages and disadvantages of charged particle lithography. | CO2 | 5 |
| (OR) | | | | |
| 8. | a. | Schematically explain the working principle of Scattering with Angular Limitation Projection Electron beam Lithography (SCALPEL). | CO2 | 10 |
| b. | Explain the lithography technique which obeys Moore’s law. | CO2 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Discuss the significance of Nano imprint Lithography. | CO2 | 10 |
| b. | Briefly explain the Stereolithography. | CO2 | 10 |