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



**End Semester Examination – Nov/Dec - 2017**

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| **Code :** | **15PH3018** | **Duration :** | **3hrs** |
| **Sub. Name :** | **THIN FILM TECHNOLOGY** | **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. | Demonstrate the working of Rotary pump with suitable schematic. | CO1 | 10 |
| b. | Analyze the advantages and disadvantages of rotary pump. | CO1 | 5 |
| c. | Classify different Vacuum pumps based on its working and vacuum levels. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Define the working principle of penning gauge. | CO1 | 3 |
| b. | Demonstrate the working of penning gauge with a neat diagram. | CO1 | 10 |
| c. | Appraise which boat would be suitable for high melting point materials based on the material and current rating. | CO1 | 7 |
|  |  |  |  |  |
| 3. | a. | How will you Apply Molecular Beam Epitaxial method for depositing a multi layers. | CO1 | 15 |
|  | b. | Explain the Effusion cell with a neat sketch. | CO1 | 5 |
| (OR) | | | | |
| 4. | a. | Experiment with Magnetron sputtering system to deposit metal films. | CO1 | 10 |
|  | b. | Compare the RF, DC and Magnetron sputtering with their salient features. | CO1 | 10 |
|  |  |  |  |  |
| 5. | a. | Illustrate the Adsorption and Surface diffusion Processes in thin film deposition. | CO2 | 15 |
|  | b. | Define lattice mismatch. | CO2 | 5 |
| (OR) | | | | |
| 6. | a. | How nucleation happens and builds crowth growth in thin film formation. | CO2 | 10 |
|  | b. | Define surface energy and how it influence the surface diffusion. | CO2 | 10 |
|  |  |  |  |  |
| 7. | a. | Evaluate the particle size using sherrer formula in a XRD graph. | CO2 | 20 |
|  | b. | Interpret the XRD graph for different inferences that you could make out. | CO2 |  |
| (OR) | | | | |
| 8. |  | Justify how the UV Vis spectrograph could identify the presence of nano particle through Blue shift, and Band gap. | CO2 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Construct a solar cell and explain the working. | CO2 | 10 |
|  | b. | Estimate the solar cell parameters through Illuminated IV characteristics. | CO2 | 10 |

ALL THE BEST