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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April/May– 2017**

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| **Code :** | **14PH2010** | **Duration :** | **3hrs** |
| **Sub. Name :** | **VACUUM AND 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. | Experiment the working ofDiffusion pump. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Differentiate the Penning and Pirani gauges. | CO1 | 5 |
| b. | Demonstrate the working of penning gauge with aneat diagram. | CO1 | 15 |
| 3. | a. | Draw the schematic diagram of the Molecular Beam Epitaxial method and explain the working. | CO1 | 10 |
|  | b. | Identify the uses of RHEED and Effusion cell in MBE technique. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Experiment with Chemical vapour deposition method. | CO1 | 10 |
|  | b. | Compare the RF,DC and Magnetron sputtering with their sailent features. | CO1 | 10 |
| 5. | a. | Illustrate the Adsorption and Surface diffusion Processes in thin film deposition. | CO2 | 10 |
|  | b. | Defend how the substrate influence the growth of thin films and the concept of lattice mismatch. | CO2 | 10 |
| (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. | Experiment the X-ray diffraction method to evaluate the particle size. | CO2 | 10 |
|  | b. | What are the inferences you could get out of the pattern? Explain with suitable XRD patterns. | CO2 | 10 |
| (OR) | | | | |
| 8. |  | Interpret the UV- Vis spectrograph to identify the band gap. | CO2 | 20 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Construct a thin films solar cell and explain the working | CO2 | 10 |
|  | b. | Explain the Advantages of MEMS technology with some salient features in sensing devices. | CO2 | 10 |

ALL THE BEST