**PH1**

**Hall Ticket Number:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2024** | **Common to all branches** | | |
| **Seventh Semester** | **Nanomaterials** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |
|  | | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | CO | BL | M |
| 1 | a) | Give any two differences between bulk and nano materials | CO1 | L2 | 1M |
|  | b) | What are nano clusters? | CO1 | L1 | 1M |
|  | c) | What is meant by top down approach. | CO1 | L1 | 1M |
|  | d) | What are quantum dots. | CO1 | L1 | 1M |
|  | e) | What are the carbon nano tubes. | CO2 | L1 | 1M |
|  | f) | Define Graphene. | CO2 | L1 | 1M |
|  | g) | What is meant by electro deposition. | CO2 | L1 | 1M |
|  | h) | What are Bucky balls. | CO2 | L1 | 1M |
|  | i) | What is the principle of XRD method. | CO3 | L1 | 1M |
|  | j) | What is the principle of Scanning Tunneling Microscope. | CO3 | L1 | 1M |
|  | k) | What is the principle of Differential Scanning Calorimetry. | CO3 | L1 | 1M |
|  | l) | What are the applications of nanomaterials in coatings. | CO4 | L3 | 1M |
|  | m) | What are the applications of nanomaterials in Aerospace. | CO4 | L3 | 1M |
|  | n) | What are the applications of nanomaterials in textiles. | CO4 | L3 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | Describe the Chemical vapour deposition method for preparation of nanomaterials. | CO1 | L4 | 8M |
|  | b) | Explain the classification of nanomaterials based on dimensions. | CO1 | L2 | 6M |
| **(OR)** | | | | | |
| 3 | a) | Describe the Sol-Gel method for preparation of nanomaterials. | CO1 | L4 | 7M |
|  | b) | Describe the Physical vapour deposition method for preparation of nanomaterials | CO1 | L4 | 7M |
| **Unit-II** | | | | | |
| 4 | a) | Explain the Electrical, magnetic and optical properties of nanomaterials. | CO2 | L2 | 7M |
|  | b) | Explain the physical, chemical and mechanical properties of nanomaterials. | CO2 | L2 | 7M |
| **(OR)** | | | | | |
| 5 | a) | Explain the types and properties of Carbon Nano Tubes. | CO2 | L2 | 7M |
|  | b) | Give some applications of Carbon nanotubes. | CO2 | L3 | 7M |
| **Unit-III** | | | | | |
| 6 | a) | Describe the construction, working and applications of Scanning Electron Microscope(SEM). | CO3 | L4 | 8M |
|  | b) | Explain briefly about X-ray diffraction method (XRD). | CO3 | L2 | 6M |
| **(OR)** | | | | | |
| 7 | a) | Explain the construction, working and applications of Transition Electron Microscope(TEM). | CO3 | L2 | 7M |
|  | b) | Describe the construction, working and applications of Scanning Tunneling Microscope(STM). | CO3 | L4 | 7M |
| **Unit-IV** | | | | | |
| 8 | a) | Give some applications of nanomaterials in computers and Electronics. | CO4 | L3 | 7M |
|  | b) | Explain the applications of nanomaterials in Mechanical and Chemical fields. | CO4 | L3 | 7M |
| **(OR)** | | | | | |
| 9 | a) | Explain the applications of nanomaterials in Optoelectronics and Industries. | CO4 | L3 | 7M |
|  | b) | Give some applications of nanomaterials in cosmotics and Sensors. | CO4 | L3 | 7M |

