**20EI203/CY02**

**Hall Ticket Number:**

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| **I B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **September, 2021** | **Electrical and Instrumentation Engineering** | | |
| **Second Semester** | **Nano Chemistry & Instrumentation** | | |
| **Time:** Three Hours | | **Maximum: 7**0 Marks | |
| *Answer Question No.1 compulsorily.* | | | (1X14 = 14 Marks) |
| *Answer ONE question from each unit.* | | | (4X14 = 56 Marks) |

**1.** Answer all questions (1X14 = 14 Marks)

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| --- | --- | --- | --- |
| a | Define the term of CNT? | Remembering | CO1 |
| b | Illustrate the structure of Fullerenes? | Analyzing | CO1 |
| c | Illustrate the diagram Quantum dot? | Analyzing | CO1 |
| d | List any two methods for the preparation of CNT. | Remembering | CO1 |
| e | Mention any two engineering applications of nanomaterials. | Applying | CO2 |
| f | List any two methods for preparation of nanomaterials. | Remembering | CO2 |
| g | Define CVD? | Remembering | CO2 |
| h | Write any two applications of alkaline battery. | Applying | CO3 |
| i | Explain term of primary batteries? | Remembering | CO3 |
| j | List anode material and cathode materials in Ni – Cad battery. | Remembering | CO3 |
| k | Illustrate function monochromator used in colorimetry. | Analyzing | CO4 |
| l | Mention applications of IR spectroscopy. | Applying | CO4 |
| m | State Beer-Lamberts law. | Remembering | CO4 |
| n | Mention light source in colorimetry | Remembering | CO4 |

**UNIT – I**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2.a | Describe about nano peapods and Graphenes. | Remembering | CO1 | 7M |
| 2.b | Illustrate structure and applications carbon nanotubes. | Analyzing | CO1 | 7M |

**(OR)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3.a | Discuss about Iron Oxide Nanoparticles. | Understanding | CO1 | 7M |
| 3.b | Explain properties of dendrimers. | Understanding | CO1 | 7M |

**UNIT – II**

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| --- | --- | --- | --- | --- |
| 4.a | Describe preparation of nanomaterial by sol-gel process? | Remembering | CO2 | 7M |
| 4.b | Explain Chemical evaporation deposition method for preparation of  nanomaterials | Understanding | CO2 | 7M |

**(OR)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5.a | Illustrate preparation of nanomaterials by Photochemical synthesis. | Analyzing | CO2 | 7M |
| 5.b | Illustrate engineering applications of nanomaterials. | Analyzing | CO2 | 7M |

**UNIT – III**

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| 6.a | Summarize the discharging and charging process involved in lead-acid cell with equations? | Evaluating | CO3 | 7M |
| 6.b | Illustrate Li ion battery and it’s applications. | Analyzing | CO3 | 7M |

**(OR)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 7.a | Summarize solar battery? | Evaluating | CO3 | 7M |
| 7.b | Describe the electrochemical sensors. | Remembering | CO3 | 7M |

**UNIT – IV**

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| --- | --- | --- | --- | --- |
| 8.a | Draw black diagram of colorimetry and discuss its components. | Understanding | CO4 | 7M |
| 8.b | Demonstrate procedure for estimation of Iron by colorimetry. | Applying | CO4 | 7M |

**(OR)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 9.a | Illustrate procedure for the estimation of Nickel by AAS | Analyzing | CO4 | 7M |
| 9.b | Summarize the procedure for estimation of sodium by flame photometry | Evaluating | CO4 | 7M |

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