**20ME704/JO**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2024** | **Mechanical Engineering** | | |
| **Seventh Semester** | **Industry 4.0** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |
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|  |  |  | CO | BL | M |
| 1 | a) | Define Industry 4.0. | CO1 | L1 | 1M |
|  | b) | List the periods of four industrial revolutions? | CO1 | L1 | 1M |
|  | c) | What is a smart factory? | CO1 | L2 | 1M |
|  | d) | Write about simulation. | CO1 | L1 | 1M |
|  | e) | What is Technology Roadmap for Industry 4.0? | CO2 | L1 | 1M |
|  | f) | List the phases of Technology Roadmap for Industry 4.0. | CO2 | L1 | 1M |
|  | g) | What is augmented reality. | CO2 | L2 | 1M |
|  | h) | List any two augmented reality softwares. | CO2 | L2 | 1M |
|  | i) | What is a sensor? | CO3 | L1 | 1M |
|  | j) | Define Internet of Robotic Things. | CO3 | L1 | 1M |
|  | k) | What is Cloud robotics? | CO3 | L1 | 1M |
|  | l) | Enumerate any two obstacles for Industry 4.0 | CO4 | L1 | 1M |
|  | m) | How do you protect the corporate data? | CO4 | L2 | 1M |
|  | n) | What is Finance 4.0? | CO4 | L2 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | Explain the origin concept of industry 4.0. | CO1 | L2 | 7M |
|  | b) | Describe the Design Principles of Industry 4.0. | CO1 | L2 | 7M |
| **(OR)** | | | | | |
| 3 |  | How is India Preparing for Industry 4.0? | CO1 | L3 | 14M |
| **Unit-II** | | | | | |
| 4 |  | Propose a Framework for Technology Roadmap for Industry 4.0. | CO2 | L3 | 14M |
| **(OR)** | | | | | |
| 5 | a) | Explain the hardware and software technology of a augmented reality system. | CO2 | L1 | 7M |
|  | b) | List and explain any four industrial applications of augmented reality system. | CO2 | L2 | 7M |
| **Unit-III** | | | | | |
| 6 |  | Explain 14 advanced Sensor Technologies used in robotics in context to Industry 4.0. | CO3 | L3 | 14M |
| **(OR)** | | | | | |
| 7 |  | Explain the Cognitive Architecture for Cyber-Physical Robotics | CO3 | L2 | 14M |
| **Unit-IV** | | | | | |
| 8 | a) | How the lack of Digital Strategy alongside Resource Scarcity affects the implementation of Industry 4.0. | CO4 | L3 | 7M |
|  | b) | How the lack of standards and poor data security affects the implementation of Industry 4.0. | CO4 | L2 | 7M |
| **(OR)** | | | | | |
| 9 | a) | Enumerate skills that must be possessed in the face of industrial revolution 4.0. | CO4 | L2 | 7M |
|  | b) | Describe the State support in India for specific Industry 4.0 projects. | CO4 | L2 | 7M |

