**20ME704/JO**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2024** | **Mechanical Engineering** | | |
| **Seventh Semester** | **Industrial Safety Engineering** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| *Answer Question No.1 compulsorily.* | | | (1X14 = 14 Marks) |
| *Answer ONE question from each unit.* | | | (4X14=56 Marks) |

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| 1. | Answer all questions. | |  | | |
|  | a) | What is industrial safety engineering? | CO1 | L1 | 1M |
|  | b) | Write about any of the accident causation models? | CO1 | L1 | 1M |
|  | c) | What are reportable and non - reportable injuries? | CO1 | L1 | 1M |
|  | d) | Summarize hazard and risk | CO2 | L2 | 1M |
|  | e) | Give your own example in a few words about PHA | CO2 | L2 | 1M |
|  | f) | Show some of the symbols used in FTA and name the symbols | CO2 | L2 | 1M |
|  | g) | Name some of the accidents occurred in industries | CO1 | L1 | 1M |
|  | h) | What is fire triangle | CO3 | L1 | 1M |
|  | i) | What are classes of fire | CO3 | L1 | 1M |
|  | j) | Name some of the examples for hand tools and powered tools | CO3 | L1 | 1M |
|  | k) | Mention the date of Factories act in fire safety industry | CO3 | L2 | 1M |
|  | l) | Abbreviate OHSAS | CO4 | L2 | 1M |
|  | m) | Mention few 1989 act’s regarding hazardous chemical | CO4 | L2 | 1M |
|  | n) | Write a short note on Personal protective equipment | CO4 | L2 | 1M |
| **UNIT I** | | | |  |  |
| 2. | a) | Illustrate Domino accident causation model | CO1 | L2 | 7M |
|  | b) | Explain Swiss cheese models and outline the salient points of factories act 1948 for health and safety | CO1 | L2 | 7M |
| **(OR)** | | | |  |  |
| 3. | a) | Write a short note on injuries with suitable examples | CO1 | L2 | 7M |
|  | b) | Calculation of accident indices Explain (frequency rate, severity rate, incident rate, accident rate) | CO1 | L2 | 7M |
| **UNIT II** | | | |  |  |
| 4. | a) | Outline PHA | CO2 | L2 | 7M |
|  | b) | Illustrate FTA | CO2 | L2 | 7M |
| **(OR)** | | | |  |  |
| 5. | a) | Develop a HAZARD EVALUATION REPORT considering fire accident in industry | CO2 | L3 | 7M |
|  | b) | Develop a HAZARD EVALUATION REPORT considering gas leakage in a chemical industry | CO2 | L3 | 7M |
| **UNIT III** | | | |  |  |
| 6. | a) | How can you design workplace in industries | CO2 | L4 | 7M |
|  | b) | Mention some of the factors in manual and material handling ergonomics | CO2 | L4 | 7M |
| **(OR)** | | | |  |  |
| 7. | a) | Explain about fire triangle in a brief | CO2 | L4 | 7M |
|  | b) | what do you know about fire chemistry and its physics | CO2 | L4 | 7M |
| **UNIT IV** | | | |  |  |
| 8. | a) | Explain Manufacture, Storage and import of Hazardous chemical rules 1989 | CO2 | L4 | 7M |
|  | b) | Describe the concept of 5s and its significance | CO2 | L4 | 7M |
| **(OR)** | | | |  |  |
| 9. | a) | What are the benefits of OSHAS 18001 certification | CO2 | L4 | 7M |
|  | b) | What are the guidelines for implementing OSHAS 18001 | CO2 | L4 | 7M |

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