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**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
Seventh Semester B.Tech Degree Examination December 2022 (2019 scheme)



**Course Code: MCN401**

**Course Name: INDUSTRIAL SAFETY ENGINEERING**

**Max. Marks: 100**

**Duration: 3 Hours**

**PART A**

*Answer all questions, each carries 3 marks.*

- |    |   | Marks |
|----|---|-------|
| 1  | Explain any three unsafe acts which are responsible for accidents in industries.                          | (3)   |
| 2  | List any important six responsibilities of worker/workmen towards the safety measures in an organization. | (3)   |
| 3  | What is respiratory protective equipment (RPE)? Explain the features of any one type of RPE.              | (3)   |
| 4  | How does frequency rate and incidence rate support safety analysis?                                       | (3)   |
| 5  | List any important six safety practices used with ladders in construction sites.                          | (3)   |
| 6  | Explain any important four safety practices in excavation works.  | (3)   |
| 7  | Mention any four potential hazards associated with wire rope used for material handling.                  | (3)   |
| 8  | Discuss the key elements of a hearing conservation program.   | (3)   |
| 9  | Explain the hierarchy of control of chemical hazards.   | (3)   |
| 10 | Why material safety data sheet is mandatory for chemical products?  | (3)   |

**PART B**

*Answer any one full question from each module, each carries 14 marks.*

**Module I**

- 11 a) With suitable schematics, describe the different types of safety organization. (6)  
b) Explain the responsibilities of safety officer in the implementation of safety in industries. (8)

**OR**

- 12 List the various accident causation theories and explain any two in detail with relevant schematics. (14)

**Module II**

- 13 a) Explain the benefits of good housekeeping? Also, explain the five 'S' (5 S) concept in housekeeping. (9)  
b) With suitable sketches explain the important functions of any two PPE used for eye protection. (5)

**OR**

- 14 a) What are the major objectives of a work permit system in a hazardous work site? (5)
- b) Discuss any five potential hazards associated with hot works. Hence, mention any eight safety measures referred to hot work permits. (9)

**Module III**

- 15 a) You are appointed as a safety manager for a demolition work of a 10-storey building in a congested residential area. What are the safety measures that you need to ensure for the completion of the work? (8)
- b) Discuss the major ergonomic hazards associated with construction industries. (6)

**OR**

- 16 a) What are the safety precautions to be taken before entering a confined space? (9)
- b) Discuss some important aspects of construction safety provisions in National Building Code. (5)

**Module IV**

- 17 a) With suitable sketches explain the operation of any two types of safety guards suitable for industrial applications. (8)
- b) Explain the potential hazards associated with grinding operations. (6)

**OR**

- 18 a) Discuss the safety issues associated with gas welding operations. (8)
- b) Discuss about the handling capacity assessment for lifting process associated with manual material handling. (6)

**Module V**

- 19 a) Explain the need for a Preliminary Hazard Analysis in a hazardous industry. (6)
- b) Explain the important features and functions of any four different types of fire extinguishers. (8)

**OR**

- 20 a) What is the significance of Hazard and Operability Analysis? How do you conduct a HAZOP analysis? (8)
- b) Discuss about different types of chemical hazards with suitable examples. (6)

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