

### **SECTION-C**

**Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x5=40)**

- Q.23 Define disabling injury.
- Q.24 What are the benefits of permit to work system?
- Q.25 Differentiate between FR and SR.
- Q.26 Prepare event tree for bursting of a pressure vessel.
- Q.27 Explain the importance of accident records.
- Q.28 What are the key facts of accident investigation?
- Q.29 Explain frequency severity indicator. How is it useful?
- Q.30 What are the objectives of safety survey and safety sampling.
- Q.31 Explain the guide words used in HAZOP study.
- Q.32 Explain fault tree analysis.

### **SECTION-D**

**Note: Long answer questions. Attempt any three questions out of four Questions. (3x10=30)**

- Q.33 How will you investigate the release of ammonia gas from ammonia plant of a fertilizer unit? Discuss.
- Q.34 Explain the various stages of BLEVE with a typical case example.
- Q.35 Enumerate the conditions which demand for a need for permit to work system. Explain different types of permits. Design a permit format for confined space working.
- Q.36 In a factory the average daily rate of employment is 900. There are 3 shifts of 8 hrs. Duration. In a year the factory works for 310 days. If the total reportable incident in the year was 60 and MDL was 120 days, find FR, SR, IR of accidents.

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**Ist Year / Industrial Safety  
Sub.: Appraisal Analysis Inspection & Control Procedures**

Time : 3 Hrs.

M.M. : 100

### **SECTION-A**

**Note: Multiple type Questions. All Questions are compulsory. (10x1=10)**

- Q.1 Job safety analysis is a technique of \_\_\_\_\_?
  - a) Hazard identification
  - b) Risk categorisation
  - c) Hazard analysis
  - d) None of the above
- Q.2 The leadership style which is based on consultations with his group is called:
  - a) Autocratic style
  - b) Democratic style
  - c) Paternalistic style
  - d) None of the above
- Q.3 Risk is defined as
  - a) Probability of occurrence of the event X Severity of the event
  - b) F.R. X S.R.
  - c) Cannot be quantified
  - d) None of the above

Q.4 What is the first stage of risk assessment

- a) Exposure assessment
- b) Hazard identification
- c) Toxicity study
- d) Risk Characterization

Q.5 Plant safety inspection is carried out with the help of \_\_\_\_\_.

- a) Questionnaire      b) Checklist
- c) Either A or B      d) None of the above

Q.6 A vehicle assembly line is a typical example of \_\_\_\_\_.

- a) Plant layout      b) Product layout
- c) Project layout      d) None of the above

Q.7 What type of process would a thermal power plant most likely to use

- a) Project      b) Continuous
- c) Job      d) Flow shop

Q.8 The IS standard available for computation of frequency and severity rates for industrial injuries is

- a) 2594      b) 3796
- c) 3786      d) None of the given options

Q.9 Incidence rate is expressed as the number of injuries per \_\_\_\_\_ persons employed.

- a) 1000      b) 2000
- c) 5000      d) None of the given options

Q.10 The number of mandays lost charged for fatal injuries is \_\_\_\_\_.

- a) 4500
- b) 5000
- c) 5500
- d) 6000

## SECTION-B

**Note:** Very Short answer type questions. Attempt any ten questions out of twelve questions. (10x2=20)

Q.11 Define Man Days lost.

Q.12 What are reportable accidents.

Q.13 What are the purposes of accident investigation

Q.14 What is the use of TREM Card.

Q.15 Define safety sampling.

Q.16 Differentiate between plant safety inspection and plant safety observation.

Q.17 What are study nodes in HAZOP study.

Q.18 What is accident free period.

Q.19 Write the formula for frequency rates and severity rate.

Q.20 Write down the hierarchy of controls.

Q.21 Define incidence rate.

Q.22 What is the difference between safety audit and safety inspection.