

- Q.17 Cathodic protection (CP) is a technique used to control the \_\_\_\_\_ of a metal surface by making it the cathode of an electrochemical cell.
- Q.18 In India, Schedule 9 of the Manufacture, Storage and Import of Hazardous Chemicals Rules, 2009 prescribe the format of MSDS Sheet.
- Q.19 \_\_\_\_\_ controls are methods that are built into the design of a plant, equipment or process to minimize the hazard.
- Q.20 \_\_\_\_\_ is the process of routinely measuring the material thickness of equipment such as piping, tubing, pressure vessels, or tanks.

#### SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Tremcard
- Q.22 Runaway Chemical Reactions
- Q.23 Instrumentation for safe plant operations
- Q.24 Shut down procedure in chemical plant
- Q.25 Lower explosive limit
- Q.26 Water hammer
- Q.27 Bund wall
- Q.28 Non-destructive testing
- Q.29 Classification of dangerous goods
- Q.30 Chemical compatibility consideration with an example
- Q.31 Explosive range of LPG
- Q.32 Spark arrestors
- Q.33 Combustion
- Q.34 Spark arrestor
- Q.35 Domino effect

#### SECTION-D

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain general guidelines for storage and handling of corrosive chemicals?
- Q.37 Explain Engineering Control Measures used in chemical industry with an example each?
- Q.38 Describe Confined and Unconfined Vapour Cloud Explosion (VCE) with examples.

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### 1st Year / One Year Post Diploma in Industrial Safety

**Subject:- Safety in Chemical Industry**

Time : 3Hrs.

M.M. : 100

#### SECTION-A

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 The term "Mutagenic Effect" with reference to exposure to the Hazardous Chemical, means, -
- Effect on Genes
  - Effect on the unborn child
  - Effect on rate of Cell mutation in the body
  - Effect of development of the Children
- Q.2 Which of the following information is not provided in the section of MSDS dealing with Accidental Release Measures?
- Measure to be adopted to deal with small spill
  - Measure to be adopted to deal with large spill
  - Measure to be adopted to deal with leakage
  - Precaution to be taken to avoid spillage or leakage.
  - None of the above
- Q.3 FMEA is ?
- Failure Modes and Effects Analysis
  - Faulty Modes and Effects Analysis
  - Fire Mode and Effect Analysis
  - Failure Modes and Effective Analysis
- Q.4 Which of the following is not a chemical-related health hazard?
- Carcinogenicity
  - Reactivity
  - Corrosivity
  - Toxicity
- Q.5 Device designed to protect the wearer from inhaling hazardous atmospheres, including fumes, vapours, gases and particulate matter such as dusts and airborne microorganisms
- Respirator
  - Resuscitator
  - Galvanometer
  - None of the above
- Q.6 Which of the following statements is correct about flash point?

- a) It is the lowest temperature at which vapours of the substance will have unsustained fire in presence of ignition source
  - b) It is the lowest temperature at which vapours of the substance will have sustained fire in the presence of ignition source
  - c) It is the lowest temperature at which vapors of the substance will automatic start burning even without presence of ignition source
  - d) It is the lowest concentration at which vapours of the substance will have sustained fire if once ignited with ignition source.
- Q.7 In India, MSDS has been mandated under which law.
- a) The Manufacture, storage and Import of Hazardous Chemicals Rules, 1989
  - b) The Chemical Accidents ( Emergency Planning, Preparedness and Response ) Rules, 1996
  - c) The Factories Act, 1948
  - d) None of the above
- Q.8 Which one of the following statements is not correct GHS?
- a) The Acronym "GHS" stands for Globally Harmonized system of classification and labelling of Chemicals
  - b) The recommendations by the GHS committee are contained in purple Book .
  - c) As per latest recommendations on GHS, the safety Data Sheet should have information presented under 16 headings.
  - d) The recommendations of GHS Committee are binding on all Countries of the world.
- Q.9 Which one of the following statement is correct about the term "Threshold Limit value (TLV)"?
- a) A concentration level expressed in ppm (part of the vapour per million part of contaminated air) upto which it is believed a worker can be exposed day after day for working without any adverse health effect.
  - b) A concentration level in ppm (part of the vapour per million part of contaminated air) upto which a worker can be exposed for a day (24 hrs) for working without any adverse health effect.

- c) A concentration level in ppm (part of the vapour per million part of contaminated air) upto which a worker can be exposed for 12 hours without any adverse health effect.
  - d) A concentration level in ppm (part of the vapour per million part of contaminated air) to which it is believed a worker can be exposed for 4 hours without any adverse health effect.
  - e) None of the above
- Q.10 A fire that spreads rapidly through a diffuse fuel, such as dust, gas or the vapours of an ignitable liquid, without the production of damaging pressure.
- a) Flash Fire
  - b) BLEVE
  - c) Flash Over
  - d) All of the above

### SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 A \_\_\_\_\_ is a document that contains information on the potential hazards(health, fire, reactivity and environment) and how to work safely with the chemical product.
- Q.12 \_\_\_\_\_ is subsonic combustion propagating through heat transfer; hot burning material heats the next layer of cold material and ignites it.
- Q.13 A flame arrester is a device that stops fuel combustion by extinguishing the flame.
- a) True
  - b) False
- Q.14 Material with \_\_\_\_\_ specific heat will heat up more rapidly in fire conditions.
- Q.15 The basic objective of MSDS is to enhance protection of human health of the all stake holder such as workers, consumer, transport workers, emergency responders and public in general by communicating the various hazards associated with the chemicals.
- a) True
  - b) False
- Q.16 \_\_\_\_\_ is a type of combustion involving a supersonic exothermic front accelerating through a medium that eventually drives a shock front propagating directly in front of it.