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0304N26

Candidate's Seat No :_____

B.Sc. F & S Semester-6 Examination

CC

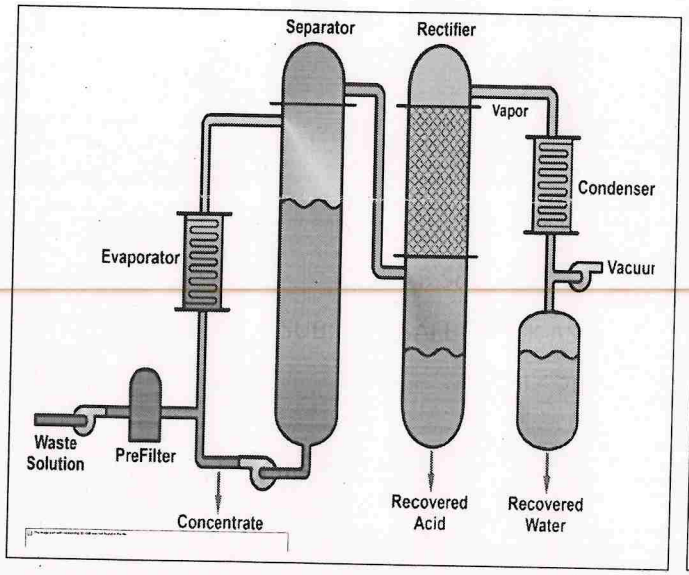
Fire Safety Risk Assessment & Mgmt

April-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Q 1 (i) Describe the role of major barriers between a fire source and fatality of the people. 7

(ii) 7



(ii) In this given figure, how separation of Hydrochloric acid from waste acid solution is shown. First it is heated past the boiling temperature of both acid and water in evaporator. Vapours of water and HCl are separated from waste solution in separator. Thereafter it is sent to rectifier where HCl is recovered from water vapor. Water vapours are sent to a condenser and recovered. Carryout a HAZOP with the following deviations using give table:

a. High temperature in evaporator

b. High temperature in rectifier

Deviation	Causes	Consequences	Actions Taken	P	S	RL	Remarks

OR

Q 1(i) What is FTA? Describe the method of preparing FTA. How it differ from ETA? 7

(ii) Describe the various types of hazards under some main subjects with examples. 7

Q 2(i) Carryout the Risk Assessment of the plant area shown in the figure of Q1(ii) with identifying at least 5 nos. of high potential hazards. Record in the given table: 7

Activity	Hazards	Probability	Severity	Risk Level	Evaluation	Remarks

(ii) Describe 5 step method to carry out a risk assessment of a chemical plant. 7

OR

Q 2(i) What is Risk Assessment and who is authorized to conduct it? Why is FSRA s important? When FSRA should be done? 7

(ii) What are the key aspects to provide safe means of escape and means of givingwarning on construction sites? 7

P.T.O

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Q 3(i) H_2S gas is released from Refinery unit where following control equipment / devices are provided with a given probability: 7

a. Absorbed with Iron oxide : 100% chances of success
b. Evacuation : 80% chances of success
c. Response of Fire Team : 90% chances of success

Construct an ETA to find out various probabilities of outcomes.

(ii) What is "Risk Indexing"? Describe the procedure how to evaluate the same. 7

OR

Q 3 (i) Give overview of "Quantitative Fire Risk Assessment". Describe briefly the various ways to perform systematic Quantitative Fire Risk Assessment. 7

(ii) What is Risk Matrix? Prepare a Risk Matrix diagram where the degree of risk is based on the level of the probability of occurrence and the severity of the consequences. 7

Q 4 (i) Explain how a SMART decision of the management can change the complete scenario of fire damage. State important functions of risk management. 7

(ii) Describe the role and responsibilities of a senior manager and safety advisor. 7

OR

Q4(i) What should be the management structure and responsibilities to manage the fire risk efficiently? Describe the role of a employee in an industry with respect to fire and safety. 7

(ii) Describe the key aspects and steps for risk management to achieve fire and safety goal. 7

Q 5 Attempt any seven out of twelve. 14

MCQTick marks the correct option:

1. A risk control technique where budget is allocated to cover the expected level of loss is called:
   a. Elimination
   b. Prevention
   c. Transferred
   d. Absorbed
2. The technique used to consider ways in which the basic components of a system can fail to perform their design intent is called .....:
   a. FTA
   b. ETA
   c. FMEA
   d. HAZOP
3. ..... is the assessment of the risks to the people and property as a result of unwanted fires.
   a. Fire Risk Audit
   b. Fire Risk HAZOP
   c. Fire Risk Assessment
   d. Fire Risk Analysis
4. Example of Chemical and petroleum hazards:
   a. Wrong chemistry
   b. Floods
   c. Collisions
   d. Flashovers

5. The impact of each of the fire protection measures on the severity is assessed using a .....
    a. Probability Multiplier
    b. Residual Probability Multiplier
    c. Consequence Multiplier
    d. Residual Consequence Multiplier
6. Interruptions to the supply chain in an industry is an example of .... risk.
7. Who is not a Stake holder:
    a. Public
    b. Staff
    c. Board
    d. Regulators
    e. All of the above
8. During risk assessment process it was observed that illumination level at several places is not adequate. This will be covered under step:
    a. Step 1
    b. Step 2
    c. Step 3
    d. Step 4
9. Assembly point is the key aspect of
    a. Means of fighting fire
    b. Means of giving warning
    c. Means of escape
    d. None of them
10. Who are covered under "People at risk":
    a. employees,
    b. contractors,
    c. visitors
    d. All of the above
11. Carbon Monoxide gas was released two times in a company in 5 year and 15 peoples were died in 5 years. Find QRA:
    a. 2
    b. 3
    c. 4
    d. 5
12. The function of ..... is to control uncertain external developments or events.
    a. Risk Management
    b. Risk Assessment
    c. Risk Evaluation
    d. Risk Analysis

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