

B.Sc. (F&S) Sem.-6 Examination

CC

Fire Safety Risk Assessment & Management

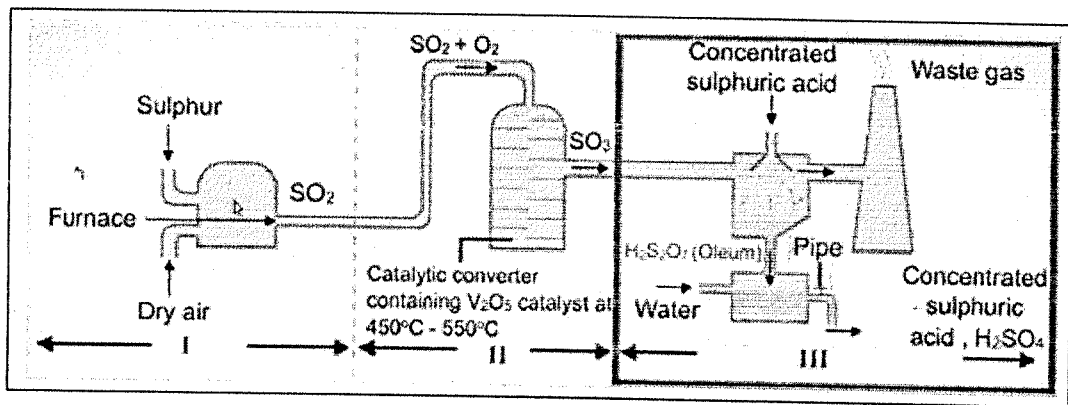
Time : 2-30 Hours]

April-2025

[Max. Marks : 70

Q 1(A) (i) Process diagram of manufacturing oleum from sulphur is shown here. Sulphur is burnt in furnace to produce SO₂, which is then oxidized to SO₃ in presence of catalyst V₂O₅ at temperature of 500°C. This formation of SO₃ is a reversible and highly exothermic reaction. SO₃ is then absorbed in H₂SO₄ to produce oleum. Carry out HAZOP study for "High Temperature in Catalytic converter" and "More flow of SO₃ at inlet of absorber" as per table given below.

7



Deviation	Causes	Consequences	Actions Taken	P	S	RL	Remarks

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

OR

Q 1(B) (i) A person fell down from a working platform at height of 10 M and died immediately. Construct an FTA to find out basic causes of the same. 7

(ii) What are the Risk elements? Describe various types of risk those are found common in most industries. 7

Q2(A)(i) Prepare a FSRA report of manufacturing plant of oleum as shown in Q1(A)(i) by identifying at least 5 nos. of high potential hazards. Record the data in the given table:

Activity	Hazards	Probability	Severity	Risk Level	Evaluation	Remarks

7

(ii) Explain how a system of "Means of giving warning" and "Means of Fire Fighting" work in the industries. What is the usefulness of "Means of Escape"? 7

7

(P.T.O)

OR

Q2(B)(i) Describe the procedure for Risk Assessment. How risk assessment differs with safety audit? 7

(ii) What are the key aspects to provide safe means of escape on construction sites? Give use-fullness of each aspect. What will happened if each one of them missing? 7

Q3(A)(i) Carryout a qualitative fire risk assessment for a hotel fire using the ETA method of a fire scenario considering 60% chances of success for each with the following fire control systems provided: 7

- a. No Combustible Material
- b. Fire Alarm
- c. Sprinkler system
- d. Evacuation drill

ii. Give an overview of Qualitative Fire Risk Assessment. How it differs from quantitative risk assessment? 7

OR

Q3(B)(i) Explain how severe a fire event is likely to be evaluated using modeling? What other information can be predicted for fire risk assessment. 7

(ii) Describe the "Checklist Method to evaluate the "Quantitative Fire Risk Assessment" with an appropriate example. 7

Q4(A)(i) What is the difference between Risk Assessment and Risk Management? Explain characteristics of risk management. 7

(ii) How a senior manager can contribute in the process of fire safety risk management? Can he also work as advisor there? Explain the role of an advisor in the industry. 7

OR

Q4(B)(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) What is role of general public in fire safety risk management system? 7

Q 5 Attempt any seven out of twelve. 14

1. "Natural disasters such as bush fire, hail, flooding and wind storms" is an example of:

- a. Environmental Risk
- b. Health and safety risks
- c. Operational risks
- d. Employee risks

2. Which area is said to be ALARP in the triangle:

- a. Red
- b. Yellow
- c. Green
- d. None of them

3. The last option to manage the remaining business risk is:

- a. Prevention
- b. Elimination
- c. Mitigation
- d. Transfer

4. Business continuity plan (BCP) is a part of the following approach:
 - a. Transference
 - b. Mitigation
 - c. Avoidance
 - d. Acceptance
5. Review of the fire safety risk assessment will not be considered in case of:
 - a. A significant incident or "near miss"
 - b. Changes to plant, equipment, processes, or substances used etc.
 - c. Significant change in the number, character or needs of persons who use the building
 - d. Change of Occupier
6. Have a "no smoking policy" is an example of:
 - a. Evaluation
 - b. Remove
 - c. Reduce
 - d. Protect against fire risk
7. If failure frequency data does not exist, one can use to derive the appropriate failure frequency.
 - a. ETA
 - b. FTA
 - c. FMEA
 - d. HAZOP
8. "Combustible material" is related to the following during ETA:
 - a. Probability of fire
 - b. Severity of fire
 - c. Control measure
 - d. All the above
9. is a feature of risk management:
 - a. Peace of mind
 - b. Uncertainty
 - c. Fire drill
 - d. Fire safety training
10. QRA is required to be carried out by management because:
 - a. It is the Legal requirement
 - b. It is for sake of duty of management
 - c. To save life of people and properties
 - d. None of the above
11. Evaluation is the Step of Risk Management.
 - a. First
 - b. Second
 - c. Third
 - d. Fourth
12. "Cash flow" is a
 - a. Function of risk management
 - b. Characteristics of risk management
 - c. Key aspect of risk management
 - d. Feature to manage