

- b. A cement manufacturing industry, employs 500 people for its production. 10 3 3 1,3
The data provided below is two years injury data.

Year	Occupational injury	Average hours worked	Days lost due to injury
2020	15	2700	650
2021	20	2800	700

Calculate FR, IR, SR, FSR and Safet -T -score

29. a. Describe the Fault tree analysis technique with an example. 10 3 4 1,3

(OR)

- b. Explain the Dow Fire and Explosion Index process. 10 3 4 1,3

30. a. Elaborate the various personal protective equipment used for respiratory system in process industries. 10 2 5 1,2

(OR)

- b. What is an occupational health hazard? Explain its types in detail. 10 2 5 1,2

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Reg. No.

B.Tech. DEGREE EXAMINATION, MAY 2022
Fourth & Sixth Semester

18CHO104T – PROCESS PLANT SAFETY

(For the candidates admitted from the academic year 2018-2019 to 2019-2020)

Note:

- (i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
(ii) **Part - B** should be answered in answer booklet.

Time: 2½ Hours

Max. Marks: 75

PART – A (25 × 1 = 25 Marks)

Answer **ALL** Questions

- | | Marks | BL | CO | PO |
|---|-------|----|----|-----|
| 1. One of the main intentions of OSHA is
(A) Increasing production (B) Worker's compensation
(C) Worker's family health (D) Increasing manpower | 1 | 1 | 1 | 1,3 |
| 2. Which of the following involves redesigning of equipment, machinery and material for the safe performance of the job?
(A) Safety Engineering (B) Safety Campaigns
(C) Safety training (D) Safety committee | 1 | 1 | 1 | 1,3 |
| 3. _____ guide to action in decision making in a industry
(A) Safety planning (B) Safety Policy
(C) Safety Culture (D) Safety Inspection | 1 | 1 | 1 | 1,3 |
| 4. An effective safety programme for a company 'does not' requires
(A) Safety performance tracking (B) Installations of equipment
(C) Safety training (D) Hazard assessment process | 1 | 1 | 1 | 1,3 |
| 5. Industrial pollution is the type of pollution that mainly affects
(A) Energy resources (B) Renewable resources
(C) Electrical resources (D) Natural resources | 1 | 1 | 1 | 1,3 |
| 6. In this machine guarding, a series of cables attached to the operator's wrist
(A) Pullback device (B) Fixed guard
(C) Two-hand control (D) Gate | 1 | 2 | 2 | 1,3 |
| 7. What is the most common route of entry to the body for substances that causes industrial poisoning?
(A) Ingestion (B) Inhalation
(C) Absorption (D) Injection | 1 | 2 | 2 | 1,3 |
| 8. The label danger on a chemical container most accurately signifies
(A) That the hazards can cause serious injury (B) That the hazards can cause less than serious injury
(C) That users should be careful when using, handling or storing the chemical (D) The Chemical container should be disposed | 1 | 1 | 2 | 1,3 |

9. Sodium metal falls under _____ Class of hazardous chemicals.
 (A) Flammables (B) Combustibles
 (C) Reactives (D) Oxidisers
10. Chronic poisoning
 (A) Is characterized by rapid assimilation of the substance
 (B) Is characterized by repeated exposure over months or years
 (C) Always has a sudden effect (D) Is usually fatal
11. Which accident causation theory tells that for a given set of workers, there exists a subset of workers who are more liable to be involved in accidents?
 (A) Domino theory (B) Multiple causation theory
 (C) Pure chance theory (D) Accident proneness theory
12. The acronym for FSI in safety performance is
 (A) Frequency safety index (B) Frequency safety incidence
 (C) Frequency severity index (D) Frequency severity incidence
13. Combustible metal alloys comes under _____ fire
 (A) Class A (B) Class B
 (C) Class C (D) Class D
14. Your primary responsibility during an emergency is
 (A) To rescue your coworkers (B) To order an evacuation
 (C) Shutting down equipment (D) Self-rescue
15. Where should smoke alarms be placed?
 (A) On or near the floor (B) In the middle of the wall
 (C) On the table in the corner of the room (D) On or near the ceiling
16. What is the main objective of risk assessment?
 (A) To evaluate hazard and minimize the risks
 (B) Remediation of contaminated sites
 (C) Hazard management (D) To know source of pollutants
17. The method of evaluating potential risk from a process and assessing potential loss is
 (A) Dow fire and explosion index (B) Risk assessment
 (C) HAZOP study (D) Risk analysis
18. The probability of failure mode occurring due to its related cause is
 (A) Severity (S) (B) Occurrence (O)
 (C) Detection (D) (D) Probability (P)
19. The guide word 'AS WELL AS' in HAZOP study which means
 (A) Quantitative increase (B) Quantitative decrease
 (C) Qualitative increase (D) Qualitative decrease
20. Which of the following data is NOT required for hazard identification?
 (A) Land Use (B) Contaminant levels
 (C) Affected population (D) Estimation of risk

21. The main PPE which is used for falling objects is
 (A) Working shields (B) Hard hats
 (C) Aprons (D) Reinforced boots
22. Which of the following special purpose footwear should you wear to avoid a buildup of static electricity?
 (A) Safety toe shoes (B) Electrically conductive shoes
 (C) Foundry shoes (D) Metatarsal guards
23. In order to maintain good health standard at the workplace the following rules must be adhered to
 (A) Cleanliness, adequate sanitary facilities, protection against dangerous substances
 (B) Wellness of workers
 (C) Promoting a positive social climate (D) Promoting good psychological behaviour between the workers
24. Ensuring the safety, health and welfare of the employees is the primary purpose of the
 (A) Factories act, 1948 (B) Payment of wages act, 1936
 (C) Environmental protection act, 1986 (D) Industrial disputes act, 1947
25. Exposure of asbestos fibers may cause which one of the following?
 (A) Asthma (B) Dermatitis
 (C) Glandular fever (D) Asbestosis

PART – B (5 × 10 = 50 Marks)

Answer ALL Questions

Marks BL CO PO

26. a. Explain the objectives, requirements of safety policy and also discuss how it can be developed? Discuss in detail. 10 2 1 1,3
- (OR)**
- b. What is a Safety committee? Discuss about its roles, purpose and benefits. 10 2 1 1,3
27. a. What are hazardous chemicals? Classify in detail with examples. 10 2 2 1,3
- (OR)**
- b. Define Ergonomics. Explain any four types of safe guarding methods followed in industries. 10 2 2 1,3
28. a. Discuss about the accident causation theories. Mention its drawbacks
 (i) Domino theory
 (ii) Multiple causation theory 10 2 3 1,3

(OR)