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Final Exam

Continuing Education Course
#521 Safety in Design

1. What is another phrase for "Safety in Design"?
- ○ a. OSHA
- ○ b. Engineering Controls
- ○ c. Prevention through Design

2. Which is the least effective method for hazard control?
- ○ a. PPE
- ○ b. Engineering Controls
- ○ c. Elimination

3. What is the first fundamental canon of the NSPE Code of Ethics for Engineers?
- ○ a. Conduct themselves honorably.
- ○ b. Hold paramount the safety, health, and welfare of the public.
- ○ c. Report any unsafe conditions.

4. What is an HSE Engineer?
- ○ a. Human Safety & Environment Engineer
- ○ b. Health, Safety & Environment Engineer
- ○ c. Health, Safety & Egress Engineer

5. Which was a topic of safety regulations in the early 1800's?
- ○ a. Electricity
- ○ b. Airplanes
- ○ c. Steam engines

6. What did the first building code address?
- ○ a. Fire safety and roofing
- ○ b. Utilities
- ○ c. Elevators

7. Which are typical columns in a risk register?
- ○ a. Risk, Drawing No., Schedule, Response
- ○ b. Risk, Cost, Safeguards, Status
- ○ c. Risk, Ranking, Response, Status

8. Which factor is more important for risk ranking?
- ○ a. Severity
- ○ b. Likelihood

9. Which approach is considered the most effective for safety in design?

- ○ a. Inherent safety
- ○ b. Eliminate human errors
- ○ c. Fail-safe

10. What is the goal of inherent safety?
- ○ a. Provide redundancy
- ○ b. Provide layers of defense
- ○ c. Eliminate or significantly reduce hazards

11. Changing to a less hazardous chemical is an example of which method?
- ○ a. Minimize
- ○ b. Substitute
- ○ c. Moderate
- ○ d. Simplify

12. Which range should be the largest?
- ○ a. Operating range
- ○ b. Instrument range
- ○ c. Containment range
- ○ d. System design range

13. Which is a common formula for safety factor?
- ○ a. Safety Factor = Capacity / Demand
- ○ b. Safety Factor = Demand / Capacity
- ○ c. Safety Factor = Capacity - Demand

14. Which has the highest common safety factor?
- ○ a. Airplane structure
- ○ b. Sprinkler system
- ○ c. Car chassis
- ○ d. Shaft

15. How are safety factors used in the LRFD method?
- ○ a. Not used
- ○ b. Both sides of the equation
- ○ c. Design factor is used

16. Which is true of a passive safeguard?
- ○ a. Maintains safety by detection
- ○ b. Maintains safety by action
- ○ c. Maintains safety by physical presence

17. Which is NOT a fail-safe example?
- ○ a. Portable spill kit
- ○ b. Control valve with spring return
- ○ c. Elevator brakes
- ○ d. Train brakes that require energy to engage

18. What type of safeguard is a warning sign?
- ○ a. Physical
- ○ b. Functional

○ c. Symbolic

19. In a HAZOP table, which is NOT a normally a column?
○ a. Deviation
○ b. Assignment
○ c. Cause
○ d. Consequences

20. With LOPA, which two measures are compared?
○ a. Safeguard Robustness versus Risk Ranking
○ b. Failures versus Risk Ranking
○ c. Inherent Safety versus Safeguards