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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

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

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