<table>
<thead>
<tr>
<th>Domain 1</th>
<th>Mathematics • 18%</th>
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</thead>
<tbody>
<tr>
<td><strong>Topic 1</strong></td>
<td>Chemistry and Industrial Hygiene Calculations</td>
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<tr>
<td><strong>Knowledge of:</strong></td>
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<tr>
<td>1. Corrosives</td>
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<td>2. Flammables</td>
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<td>3. Toxic materials</td>
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<td>4. Chemical reactions</td>
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<tr>
<td><strong>Topic 2</strong></td>
<td>Electrical Calculations</td>
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<tr>
<td><strong>Knowledge of:</strong></td>
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<tr>
<td>1. Power, impedance, energy, and resistance</td>
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<td>2. Arc flash</td>
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<td>3. Circuits</td>
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<tr>
<td><strong>Topic 3</strong></td>
<td>Radiation Calculations</td>
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<tr>
<td><strong>Knowledge of:</strong></td>
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<tr>
<td>1. Decay</td>
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<td>2. Half-life</td>
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<td>3. Source strength</td>
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<tr>
<td><strong>Topic 4</strong></td>
<td>Structural and Mechanical Calculations</td>
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<tr>
<td><strong>Knowledge of:</strong></td>
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<tr>
<td>1. Loading and storage capacity</td>
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<td>2. Rigging and load</td>
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<tr>
<td><strong>Topic 5</strong></td>
<td>Engineering Control Calculations</td>
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<tr>
<td><strong>Knowledge of:</strong></td>
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<tr>
<td>1. Ventilation and system design</td>
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<td>2. Fire suppression and system design</td>
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<td>3. Noise</td>
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<td>4. Climate conditions (e.g., WBGT, wind chill, heat stress)</td>
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<td>5. Fall protection</td>
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<tr>
<td><strong>Topic 6</strong></td>
<td>Physics Calculations</td>
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<tr>
<td><strong>Knowledge of:</strong></td>
<td></td>
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<tr>
<td>1. Movement (e.g., acceleration, velocity, momentum)</td>
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<td>2. Friction</td>
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<td>3. Kinetic and potential energy</td>
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<td>4. Gas laws</td>
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</table>
### Topic 7
**Financial Principles**

**Knowledge of:**
1. Cost benefit analysis (e.g., cost of risk)
2. Life cycle cost
3. Net present value
4. Return on investment

### Topic 8
**Statistics**

**Knowledge of:**
1. Descriptive statistics (e.g., central tendency, variability)
2. Correlational statistics (e.g., Pearson’s r, Spearman’s rho)
3. Inferential statistics (e.g., chi-square, t-test)
4. Probability (e.g., odds of success, Poisson)

### Topic 9
**Performance Metrics and Indicators**

**Knowledge of:**
1. Lagging indicators (e.g., incidence rates, lost time, direct costs of incidents)
2. Leading indicators (e.g., inspection frequency, safety interventions, employee performance evaluations, training frequency, near miss, near hit, and close call reporting)
3. Effects of losses

### Domain 2
**Safety Management Systems • 23%**

#### Topic 1
**Risk Management and Hazard Control Process**

**Knowledge of:**
1. Identification methods
2. Risk analysis and examination
3. Selection of control methods (e.g., financial justification, hierarchy of controls)
4. Implementation of controls
5. Monitoring and reevaluation
6. Risk transfer (e.g., insurance, incident management)

#### Topic 2
**Management Processes**

**Knowledge of:**
1. Emergency, crisis, disaster response planning, business continuity
2. Incident investigation (e.g., data collection, analysis)
3. Inspections and audits

#### Topic 3
**Project Management**

**Knowledge of:**
1. Evaluation of cost, schedule, performance, and risk
2. Assigning responsibilities and accountability
### Topic 4
**System Safety**

**Knowledge of:**
1. Risk analysis methods (e.g., job safety analysis, hazard and operability analysis, failure mode and effects analysis, fault tree analysis, fishbone, what-if and checklist analysis, change analysis)
2. Process safety management

### Topic 5
**Fleet Safety**

**Knowledge of:**
1. Driver behavior (e.g., defensive driving, distracted driving)
2. Vehicle inspections
3. Safety features (e.g., restraint systems, automatic and anti-lock braking systems)
4. Crash and collision investigation

### Topic 6
**Safety Programs**

**Knowledge of:**
1. Hazard Communication and Globally Harmonized System
2. Workplace violence
3. Control of hazardous energy
4. Excavation, trenching, and shoring
5. Confined space
6. Physical security
7. Fall protection
8. Wellness programs
9. Substance abuse

### Domain 3
**Ergonomics • 13%**

**Topic 1**
**Human Factors**

**Knowledge of:**
1. Fitness for duty
2. Organizational, behavioral, and psychological influences
3. Stressors
4. Risk factors (e.g., repetition, force, posture, vibration)
5. Work design
6. Aging workforce

**Topic 2**
**Measurement and Monitoring**

**Knowledge of:**
1. Quantitative methods (e.g., anthropometry, NIOSH lift equation)
2. Qualitative methods (e.g., Rapid Upper Limb Assessment [RULA], Rapid Entire Body Assessment [REBA])
### Topic 3
**Controls**

**Knowledge of:**
1. Material handling (e.g. manual, powered equipment, lifting devices)
2. User-centered design
3. Human-machine interface
4. Work practice controls (e.g., job rotation, work hardening)
5. Written plans, procedures, and training

### Domain 4
*Fire Prevention and Protection • 11%*

#### Topic 1
**Fire and Explosion Hazards**

**Knowledge of:**
1. Chemical
2. Electrical (e.g., static electricity, surge)
3. Natural hazards (e.g., lightning, flooding, drought)
4. Structural (e.g., combustible, non-combustible)
5. Mechanical (e.g., heat generated by friction)
6. Hot work (e.g., welding, cutting, brazing)

#### Topic 2
**Fire Controls**

**Knowledge of:**
1. Fire Science (e.g., combustible dust fire pentagon, fire triangle, fire tetrahedron)
2. Detection
3. Suppression
4. Segregation and separation (e.g., flammable materials storage, ventilation)
5. Housekeeping
6. Grounding and bonding

#### Topic 3
**Fire and Emergency Management**

**Knowledge of:**
1. Written plans, procedures, and work practices (e.g., Incident Command system, fire brigade)
2. Life safety (e.g., elements of design)

### Domain 5
*Occupational Health • 11%*

#### Topic 1
**Biological Hazards and Controls**

**Knowledge of:**
1. Sources (e.g., viral, bacterial, parasitic, fungus)
2. Exposure assessment
3. Control strategies
### Domain 6

*Environmental Management • 15%*

#### Topic 1

**Environmental Hazards**

**Knowledge of:**
1. Disaster preparedness (e.g., manmade, natural)
2. Environmental hazards awareness (e.g., biological [mold], chemical, waste, vermin)
3. Remediation
4. Water (e.g., storm, waste, permitting)
5. Air (e.g., quality, IAQ, permitting)
6. Land and conservation (e.g., solid waste, recycling, sustainability)

#### Topic 2

**Engineering Controls**

**Knowledge of:**
1. Air Pollution
2. Segregation and separation
3. Substitution and selection of alternative design strategies
4. Hazardous materials containment and design
5. Water pollution
6. Above ground (AST) and underground (UST) storage tanks
7. Ventilation (e.g., HVAC, local exhaust)
8. Land pollution

#### Topic 3

**Administrative Controls and Practices**

**Knowledge of:**
1. Conservation (e.g., reuse, recycle, reduce)
2. Housekeeping
3. Warnings (e.g., signs, signals)
4. Written plans, procedures, work practices (e.g., decontamination)
5. Environmental management system standards
6. Sustainability
## Topic 4
### Hazardous Waste Storage and Disposal

**Knowledge of:**
1. Transportation (e.g., placarding, manifesting)
2. Storage and documentation
3. Spill prevention, containment, and response
4. Waste removal, treatment, and disposal

## Domain 7
*Training, Education, and Communication • 9%*

### Topic 1
#### Training and Education Methods

**Knowledge of:**
1. Adult learning theory and techniques
2. Data collection, needs analysis, and feedback
3. Behavior and performance modification
4. Presentation tools (e.g., computer based, group meeting)
5. Assessing competency

### Topic 2
#### Communication and Group Dynamics

**Knowledge of:**
1. Interpersonal communication (e.g., cross generation)
2. Methods of facilitating teams
3. Multidisciplinary teamwork
4. Negotiation strategy
5. Conflict resolution
6. Mentoring