



Certified Safety & Health Manager (CSHM)

Examination Guide

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Section 1: Purpose and Scope

The Institute for Safety and Health Management (ISHM) is the credentialing organization that monitors and upholds the prescribed standards for the safety and health management industry. The ISHM recognizes safety and health professionals who demonstrate knowledge of health and safety management skills and techniques through education, experience and examination. Education and experience are reviewed in the application process. The Certified Safety and Health Manager (CSHM) Examination is the final means used to determine that a safety professional is qualified to undertake the role of management in safety and health.

This CSHM Examination Guide provides detailed information about the examination leading to the CSHM credential.

This publication is intended to:

- provide an overview of the ISHM and its certification process as related to the CSHM
- describe the examination, psychometric process and scoring process
- outline the body of knowledge
- review exam preparation methods
- describe exam registration process
- provide an overview of what to expect the day of the exam
- recommend study references and resources
- include a practice examination
- alleviate the reluctance of taking exams by providing an understanding of the examination

It is not intended to serve as the sole basis of preparing to take the CSHM examination.

The CSHM Process

Complete and submit application materials and fees electronically through the ISHM website. ISHM will review the application materials to determine if you have met the academic and experience requirements and are eligible to sit for the CSHM examination. If you are eligible, you will be informed that you can sit for the exam four (4) times in the two-year period immediately following acceptance.

When you are ready to take the examination, contact ISHM (kaylene@ishm.org) for arrangements and invoice for the fee for the CSHM examination.

Taking the Exam

The ISHM examination delivery service provider has hundreds of testing centers in the United States and Canada that are open every business day and some are also open weekends and holiday. You will receive

your unofficial result as soon as you submit the exam. In most cases, the ISHM will send the official results within a week.

If you do not pass the examination, you may register and pay for another CSHM examination (up to three retakes in a two-year period) as soon as you receive your official results. However, you should try to enhance your knowledge of the subject matter before retaking the examination to increase the likelihood of passing.

CSHM Credential

Once you pass the examination, you will be assigned a certification number and will be eligible to use the CSHM credential. You will receive proof of certification in the form of:

- a wall certificate
- a wallet card

The CSHM credential is renewed annually. You must pay an annual fee to retain the use of this credential. You will receive a notice to submit renewal fees in advance. Always notify mikki@ishm.org of email and postal address changes to ensure the notice reaches you. You will also begin to receive a monthly newsletter and be encouraged to join ISHM via LinkedIn for stimulating professional discussions.

Recertification

Every five (5) years you will be reminded to submit the Continuance of Certification (COC) worksheet as proof of having achieved 30 COC points. To maintain certification, a CSHM must provide written evidence of continued professional qualifications by submitting a COC worksheet or successfully completing the CSHM examination.

Section 2: Overview of the CSHM Certification

In the late 1990s the National Safety Management Society (NSMS) recognized the need for a safety and health management credential and established the Certified Safety and Health Manager (CSHM) designation. The Institute for Safety and Health Management (ISHM) was founded by the NSMS in 2003 to administer the CSHM designation.

The CSHM designation is intended to reflect the job functions performed by safety managers. It is the only accredited certification available that focuses entirely on the safety management process. Holders of this designation have passed a rigorous exam that measures their knowledge in four distinct areas:

- General and Business Management
- Management Methods and Systems
- Safety, Health, and Environment Applications and
- Risk Identification, Management and Control.

Accreditation

The CSHM designation is accredited by the **Council of Engineering and Scientific Specialty Boards (CESB)**, a leader in setting quality standards for credentialing organizations. The CESB is a self-sustaining, independent body that accredits certification programs organized and operated consistent with sound credentialing practices, tailored to the needs of engineering and technology specialties.

The ISHM is the credentialing organization that administers the Certified Safety and Health Manager (CSHM) designation according to the standards set by the CESB.

Benefits

The value of professional certification is without a doubt beneficial to one's professional career. The Certified

Safety & Health Manager enables his/her employer to achieve an ingrained safety culture that shows safety starts at the top and is an integral part of the responsibilities of every function of line and staff management.

The CSHM certification reflects one's commitment to the profession. Among the benefits of achieving the CSHM certification are:

- Preparing for the examination, the CSHM has sharpened their knowledge base which may not be used on a regular basis
- Recognition from peers as not only a qualified safety professional but management material
- Recognition by Human Resources as having been qualified for the managerial position in the safety field.
- ISHM provides representation for promoting and protecting the CSHM certification.

Advantages to an employer to hire a CSHM:

- Crucial attention is focused on the safety management process
- The CSHM will remain current in the field by way of the 5-year Continuance of Certification (COC) process
- The employer can be confident that knowledge and skills in safety and health management have been validated.

Qualifications

Candidate education and experience must be validated through the application process before taking the examination. Candidates who possess a valid designation of similar education and experience requirements, such as the Certified Safety Professional (CSP), Certified Industrial Hygienist (CIH), or Certified Hazardous Materials Manager (CHMM) may be deemed to meet the academic and experience criteria, and may not be required to submit transcripts, but rather provide proof of certification. Individuals who meet the following criteria may be eligible to sit for the CSHM examination:

Graduate from a Board Approved College or University:

Degree Accredited by a Member of the Council for Higher Education Accreditation	Qualifying Experience Requirement
Board Approved Doctorate in Safety	2 Years
Board Approved Master's in Safety	2 Years
Board Approved Bachelor's in Safety	2 Years
Board Approved Associate in Safety	5 Years

Or College or University Graduate in a **Safety Related Field:**

Degree Accredited by a Member of the Council for Higher Education Accreditation	Qualifying Experience Requirement
Doctoral Degree in Safety Related Field	3 Years
Master's Degree in Safety Related Field	3 Years
Bachelor's Degree in Safety Related Field	4 Years
Associate's Degree in Safety Related Field	6 Years

Or College or University Graduate in **Any Field:**

Degree Accredited by a Member of the Council for Higher Education Accreditation	Qualifying Experience Requirement
Doctoral Degree in Any Field	4 Years
Master's Degree in Any Field	4 Years
Bachelor's Degree in Any Field	5 Years

Associate's Degree in Any Field

ASHM designation + 2 Years

Or Holder of a ***Certification, Designation or Certificate:***

Designation or Certificate

Qualifying Experience Requirement

Certified Safety Professional (CSP), Certified Industrial Hygienist (CIH) and Certified Hazardous Material Manager (CHMM)

Eligible to Sit for the CSHM Exam

Graduate Safety Practitioner (GSP) or Associate Safety Professional (ASP) Designations from the BCSP

3 Years

CHST, OHST, or CLCS Designation from the Council on Certification of Health, Environmental, and Safety Technologists (CCEHST)

ASHM Designation + 2 Years

CAIH Designation from the American Board of Industrial Hygiene (ABIH)

ASHM Designation + 2 Years

Safety Certificate Recognized by the ISHM Board

ASHM Designation + 2 Years

Application Process

1. Complete application form <https://ishm.org/apply/>
2. Attach a copy of a current government issued picture identification card as a PDF
3. Order official college transcripts from the degree granting institution or certification title and number
4. Attach three (3) professional references; use ISHM Reference Forms, <https://ishm.org/ishm-certification-reference-form/>
- 5.

Applications that are not fully completed will not be considered. When ISHM receives the application, you will be invoiced the application fee (\$125.00 United States, \$150.00 USD International). **Application fees are nonrefundable.**

Note: Veterans, follow this link for fee reimbursement from the U.S. Federal Veterans Administration <https://www.ishm.org/sites/default/files/pdf/APPLICATION-FOR-REIMBURSEMENT-OF-CERTIFICATION-TEST-FEES.pdf>

Section 3: Overview of the Examination

Because high quality questions reflect the knowledge and skills that safety management professionals acquire, the CSHM examination questions are developed by volunteer CSHMs following the [ISHM Manual for Writing Test Questions](#). (CSHMs receive 1 COC point for 5 acceptable test questions.) Questions are reviewed, edited and evaluated before they are entered in an examination. A final review of the examination is conducted by the ISHM Exam Committee before being certified for use. Three (3) distinct exams have been developed with core questions in areas that all safety management professionals should be familiar with. Additional questions apply to specialties in the field.

The arduous process of question development and validation ensures that items are:

- clear, unambiguous and grammatically proper
- technically correct

- appropriate in terms of fairness, geographically, ethnically and culturally
- correctly coded to the CSHM exam blueprint

Description of the exam

The three-hour examination consists of 150 multiple-choice questions, allowing approximately 1.2 minutes per question. It is made up of single questions that stand alone and do not depend on multiple-question, scenario-related, background information.

The questions consist of three parts:

1. Stem - states the problem or question to be answered; may be a simple question or statement to be completed, or it may be complex and contain background information leading up to the question or statement.
2. Correct Answer - one of four potential options which represents the only correct response or the best correct response. ("Best" means a panel of experts would agree to this judgment.)
3. Distracters - three distracters serve as incorrect responses. They are plausible, yet wrong, or not the best possible option.

Example:

Stem: Typically, the most unreliable tool utilized in the selection process is:

Correct Answer: *A. employment interview.

Distracter: B. selection test.

Distracter: C. physical examination.

Distracter: D. background check.

Four option multiple-choice questions are used because they:

- are flexible and adaptable
- tend to be more reliable than other formats
- can accommodate a wide range of skills, knowledge and abilities to be measured
- provide good sampling
- have low chance scores

Examination Content

A role delineation survey is conducted every 5 years to define the Body of Knowledge for the examination and for the allocation of questions. Questions are based on content in one or more widely-circulated, reputable references that serve as an authority for the correct answer and for the distracters (esp. non-computational distracters). This does not mean that the question stem itself is derived directly from the published source. Question authors are required to submit reference citations so that an independent party can verify the correct answer and the incorrect answers (the distracters).

Psychometric process

Psychometric services provide expertise in best practices regarding the design and analysis of examination. The ISHM consults with psychometricians in all stages of the examination development process, including the standard setting process which ensures the passing score will accurately reflect the distinction between candidates ready to assume a professional practice as a CSHM, and those not yet ready. In addition, the ISHM can be confident that the process followed to make this distinction meets the industry standard of psychometric defensibility.

Passing Score

The score is based on the number of questions that are answered correctly. A passing (cut score) grade is determined using the expert judgments of a standard setting panel of at least 10 CSHMs. The panelists first conceptualize the *minimally competent*, or *borderline* candidate to make more appropriate and grounded judgments regarding the difficulty of the test questions. It then rates each question with respect to the CSHM candidate who is minimally competent to sit for the exam and should know the correct answer. It reflects the difficulty of the question and the degree to which questions are common for all areas of professional practice.

The psychometrician reviews the results generated by the panel and calculates the initial passing score using the modified Angoff procedure. As examinations are modified, and question performance is evaluated, the minimum passing score is routinely adjusted accordingly.

Body of Knowledge

The Body of Knowledge is based on the responses of CSHMs that responded to the most recent Role Delineation Survey. CSHMs were asked to relate their professional time to establish a valid structure (blueprint) for the CSHM examination so that it corresponds to the safety and health management roles or domains and practice areas.

The Body of Knowledge contains a description of four major domains and the practice areas that make up those domains as well as skills and knowledge needed for these practice areas. The previous blueprint was reviewed and reorganized, and additional activities were identified. CSHMs ranked the four domains and assigned a percentage for each, in parentheses, according to its importance to help ensure that ISHM is aligning the certification practices to the needs of the industry.

Body of Knowledge and the percentage of questions in each domain:

Domain I – EHS Leadership and commitment (17%)

Manage safety system elements including policy, responsibility, authority, employee participation, and management review to facilitate an effective safety culture

Knowledge areas and skills

1. Finance, budgeting and cost accounting
2. Mathematics and statistics and data management
3. Process management, material flow, and procurement
4. Personnel development techniques
5. Labor relations, including union/management committees
6. Conflict resolution techniques
7. ISHM Code of Ethics and Professional Conduct
8. General business ethics
9. Organizational theory and behavioral science
10. Group dynamics
11. Behavior modification techniques
12. Management principles of authority, responsibility, and accountability
13. Behavior analysis methods
14. Action plans to influence safety-related behaviors and conditions

Domain II - EHS Planning and Prevention (44%)

Review EHS issues, regulations, resources, hazards, risks and controls; identify and prioritize issues; establish goals; and formulate implementation plans
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Knowledge areas and skills

1. Regulatory compliance requirements and programs
2. Management systems

3. Risk identification and management
4. Workers compensation
5. Risk management and financing
6. General liability and product safety
7. Fire safety, life safety and security
8. Fleet safety
9. Health and wellness
10. Emergency preparedness, crisis planning
11. Sustainability
12. Occupational medicine, medical services
13. Best practices and benchmarking
14. Multi-employer worksite issues
15. Labor laws, ADA, EEO, wage and hour laws

Domain III - Safety, Health and Environmental operations and applications (25%)

Implementation of prevention programs and risk reduction techniques including hierarchy of controls, management of change, procurement management, contractor safety, emergency preparedness, education, training, awareness, communication and documentation.

Knowledge areas and skills

1. Education, training and communication methods and principles
2. Quality systems
3. Lean principles
4. Safety in design, system safety
5. Engineering controls
6. Administrative controls
7. Personal protective equipment
8. Toxicology
9. Industrial hygiene
10. Ergonomics
11. Environmental health
12. Qualitative and quantitative risk assessment
13. Basic scientific concepts, anatomy and physiology, biochemistry, biology, chemistry, mathematics, and physics
14. Properties of flammable, combustible, and reactive materials
15. Mathematics and statistics

Domain IV – Assessment and evaluation (14%)

EHS performance evaluation using monitoring, measurement and assessment methods; incident investigation and root cause determination; audits; and corrective and preventive action

Knowledge areas and skills

1. Auditing
2. Performance metrics
3. Recordkeeping
4. Data analysis
5. Statistics
6. Accident investigation and root cause analysis
7. Leading and lagging indicators

Section 4: PREPARING FOR THE EXAMINATION

Preparation is imperative for examinees. There are several methods available in preparing for the Certified Safety and Health Manager (CSHM) Examination. The CSHM examination measures one's mastery of applying the safety and health management Body of Knowledge, therefore, one cannot train or teach to the examination. Preparation is best accomplished by knowing the concepts in the Body of Knowledge and being able to apply them. Study materials which utilize the same basic question format as described in Section 3 are advantageous because they help familiarize the candidate with the organization of the exam.

ISHM serves as a standard setting and credentialing organization. It does not provide professional development activities. Professional organizations, such as the National Safety Management Society (NSMS), American Society of Safety Engineers (ASSE) and National Safety Council (NSC) can serve as a resource in surveying and selecting a preparation method.

Study Methods

Individual Self-Study – One studies at their own pace to suit their schedule. Individual self-study requires a high degree of personal discipline. One must develop a strategy, schedule preparation and remain on track. The general safety management references listed in the Appendix can serve as a starting point for individual self-study.

Paired Self-Study involves the buddy system. Two examinees are matched up and utilize the same format as the individual self-study. This method is highly flexible while at the same time offering the potential examinees the feeling of not “doing it alone.”

Group Study offers some advantages over individual and paired study. The camaraderie and support of the group can be a great asset. Some key concepts to consider in establishing a study group are:

- Convenient meeting locations and times
- A CSHM to serve as mentor
- Pre-tests using the same examination formats as described in Section 3.
- A study format with a schedule and individual member assignments

Preparation Courses

ISHM has no involvement in the development, content, or distribution of course materials for the CSHM Examination. Some colleges and universities with Public Health or Environmental Health and Safety Programs offer exam prep courses. Other independent trainers or organizations also provide workshops. The below listed organizations have been known to provide training in preparation for the CSHM exam. ISHM does not endorse these organizations, nor does it guarantee that the training provided by them is accurate or complete.

- | | |
|-------------------------------|---|
| * Eastern Kentucky University | www.eku.edu search CSHM Test Prep Course |
| * Geigle Communications LLC | http://www.oshatrain.org/comm/program_comparison.html |
| * Georgia Tech University | www.gatech.edu |
| * Safety Sam & Associates | (702) 399-7373 |

Other Resources

Another resource for textbooks and courses is Professional organizations such as [American Society of Safety Engineers](#) and [National Safety Council](#) . They may also be able to provide contacts within your area when attempting to set up an examination study group.

Section 5: REGISTRATION PROCESS AND WHAT TO EXPECT

To maintain the integrity of the exam administration and subsequent investigation, the proctor is responsible for documenting specific occurrences during the examination. ISHM policies and procedures for administering examinations have two related goals: providing candidates comparable opportunities to demonstrate their

abilities and preventing anyone from gaining an unfair advantage. To promote these objectives, ISHM reserves the right to investigate when, in the sole discretion of the ISHM, a testing irregularity occurs:

- cheating is suspect,
- there is an apparent discrepancy in identity,
- plagiarism or misconduct is evident,
- aberrancies in performance are detected for which there is no satisfactory explanation, or
- the results are believed to be invalid for any other reason.

Questionable conduct before, during or after testing may be disputed through legal channels including copyright legislation, civil liability and/or criminal litigation.

Exam Registration

When the CSHM application is approved or the required period of time has passed since you have been certified as an ASHM, contact manager@ishm.org to inform ISHM that you are ready to take the exam. You will receive an invoice for the exam fee (\$200 first exam, \$100 exam retake) and be directed to schedule a time, date and location for the exam. The exam must be taken within one year of application acceptance. If circumstances arise, a candidate may request to purchase a 3-month extension for \$50.

Testing Sites

United States – COMIRA sites (hundreds of sites in the US). Comira is a full service testing company for licensure, certification, assessment and educational testing programs. They provide expertise throughout the entire testing lifecycle, including [test development](#), [computer-based testing](#) and [result management](#). Over 500 testing centers with technology support provide trusted computer-based testing. To locate a convenient testing centers in the United States, go to the COMIRA website Candidate Center page, <http://candidate.comirateesting.com/comira/>, select the Institute for Safety and Health Management link, click on the Safety and Health Manager Certification link and enter your zip code. Inform ISHM (kaylene@ishm.org) of your selection and that you are ready to sit for the examination.

International – Arrangements can be made at a centrally convenient testing site when candidates are prepared to take the examination. Contact ISHM (kaylene@ishm.org) to review options. Exams administered outside of the United States will be in US English.

Examination Day

Bring to the Exam testing site:

- Exam username and password
- Government issued valid photo identification
- Emergency contact information

Permissible Items:

- Closed book
- Scrap paper and pencils; scrap paper to be collected by the proctor and destroyed after the exam

Prohibited: Cell phones, pagers and calculators must be turned off and stored in a secure location before entering the examination room. You may not access personal belongings until you complete the exam.

Exam Instructions

- Upon entering the test site show the proctor your government issued photo identification, present emergency contact information and sign the roster sheet.
- You will be accessing an unsecure browser; do not navigate away from it.
- The exam website is ishm.proexams.com. When the proctor unlocks the system, enter the username and password you received with the exam scheduling confirmation.
- 3 hours are allotted to complete the 150-multiple choice question exam; the exam interface has a countdown timer to help you judge your time.
- The 3- hour time limit does not start until you begin the exam.
- Do not skip the short 5 question sample test which gives you a feel for how it works. This does not count against your exam time.
- There is a calculator and a section where you can park questions you are not sure of.
- You can view a log of unanswered and answered questions at any time.
- If you experience a technical difficulty, notify the proctor immediately and close the browser as doing so pauses the exam automatically and no time is lost.
- Before reporting technical issues to tech support, close the browser, reboot the computer and log back in to resume the exam. If the issue persists, ask the proctor to contact technical support.
- When you have completed your exam and hit the submit button, the screen will display pass or fail and your unofficial score.
- The exam will cease automatically at the 3-hour mark. If you do not complete the exam before it times out, all progress and submitted work will be saved.
- When finished, you will be asked to sign out of the test center and leave the room until everyone has completed their exam.

Test Taking Suggestions

- Trust your first impressions. There is a correct answer to each question and it is believed that your first impression of the correct answer will be a better choice.
- Avoid over analyzing. Do not read too much into an answer.
- If you are stumped by a question, continue to the next question so you don't lose valuable time and rush through the questions at the end.
- Don't look for answer patterns. The psychometric testing process ensures that questions do not fall into patterns.
- Length of an answer is a false clue.
- Eliminate obvious distracters. When you first read the question, you should be able to eliminate two of the answers as incorrect. If you cannot decide between the other two, cross out the two you determined to be distracters, move on to the next question and return to the unanswered questions later.
- Identify what you believe the answer will be before reading the choices.
- Use "educated guesses." If you still cannot decide on a correct answer after eliminating one or two distracters, choose one anyway.
- There is no penalty for guessing on the exam. You will be penalized for NOT choosing an answer.
- Review your answers when you complete the exam.
- Don't rush. You will not receive more points for finishing first.

Appeals

An applicant who has been barred from finishing the exam shall have the right to a personal appeal. Direct the appeal to the CEO of ISHM. He will investigate within 5 days of receipt of the appeal. The appeal shall be limited to the examination process and the issues related to terminating the exam prior to completion. The Executive Director shall forward the results of his findings to the ISHM Executive Committee who will have 10

days to review the appeal. The decision of the Executive Committee shall be final, and the decision of the Committee shall be forwarded to the person filing the appeal within 5 days of their decision.

Section 6: Repeating Examination

Rules and Fees

When a CSHM candidate fails the examination, they may re-take the exam for the reduced fee of \$100 each time.

Examination for Continuation of Certification (COC) Points

Fifteen (15) COC points can be earned by re-taking and passing the CSHM examination. If a CSHM was grandfathered in and did not take the exam, 15 points can be earned for taking the exam subsequently.

Course Instructor Exceptions

A professional trainer who is interested in preparing either an online course or a classroom session for the ISHM exams may be permitted to sit for the exam without applying for certification. The ISHM Board of Directors will vote on each request individually.

CSHMs who are interested in preparing course materials may re-take the CSHM examination to better familiarize themselves with the examination.

All course instructors approved to take the exam may take the examination without limit, provided they pay the fee every time. As with any applicant, the cost of the first exam is \$200. Subsequent exams will cost \$100.

APPENDIX

A. Safety Management References

These reference materials are recommended because they provide information relative to safety and health management topics. Although exam questions may cover similar subject matter they are not necessarily drawn from the specific material in these references. The exam may also feature a few questions about subjects not covered in traditional safety and health management references such as finance or labor relations as examples.

1. **Industrial Hygiene**–[Fundamentals of Industrial Hygiene](#), Barbara A. Plog, Patricia J. Quinlan, NSC Publication.
2. **Ergonomics**–[Fitting the Task to the Human](#), Kroemer, k.H.E.: and Grandjean, E.
3. **Safety Engineering**–[Safety and Health for Engineers](#), Roger L. Brauer, Van Nostrand Publication.
4. **Safety and Accident Prevention**–[Occupational Safety & Health for Technologists](#).
5. **Business Management**–[Understanding Business, 10th Edition](#), Nickels, McHugh, NcHugh
6. **Training**–[The Trainer’s Handbook](#), Lawson
7. **Emergency Management**–[Introduction to Emergency Management](#), Haddow, G.D.; Bullock, J.A. and Coppola, D.P.
8. **Motor Fleet Safety**–[Motor Fleet Safety Manual](#), John E. Brodbeck, NSC Publication.
9. **Risk Management**– [Fundamentals of Risk Management: Understanding, Evaluating & Implementing Effective Risk Management](#), Hopkin
10. **Human Resource Management**–[Human Resource Essentials](#), Gensing-Prophal

11. **Management Systems-Integrated Management Systems: Leading Strategies and Solutions**, Pardy, W., & Andrews, T.
12. **Environmental Management-Principles of Environmental Science Inquiry and Applications**, Cunningham, W.P. & Cunningham, M.A.
13. **Safety Management-Safety Management: A Human Approach**, Petersen, 3rdEdition

B. Sample Questions

The Certified Safety and Health Manager Examination Practice Items are intended to familiarize prospective examinees with the style and format of the CSHM examination questions. There are 36 objective practice items, whereas the actual CSHM examination contains 150 objective items. These practice items will not be found on the actual CSHM certification examination. They are only a representation of the type of items found on the certification examination. A quick scoring key and the rationales for the answers are at the end.

Remember to select the BEST answer

I. GENERAL AND BUSINESS MANAGEMENT

1. A hazard analysis can be used to evaluate a potential hazard; what other information should be considered?
 - a. Injury reports
 - b. Statistical data
 - c. Risk assessment
 - d. Fatality investigations
2. Which leadership style will have the most positive effect on subordinate satisfaction for employees who work on stressful, frustrating or dissatisfying tasks?
 - a. Supportive
 - b. Achievement-Oriented
 - c. Participative
 - d. Contingency
3. Which leadership style will help employees to strive for higher standards of performance and have more confidence in their ability to meet challenging needs?
 - a. Directed
 - b. Achievement-Oriented
 - c. Participative
 - d. Performance
4. Which of the following is TRUE concerning goals:
 - a. All of the following are true
 - b. Employees who are assigned value goals perform better than those employees who are given specific goals
 - c. Employees given moderately difficult or easily attainable goals perform better than those given high challenging goals
 - d. Pay and feedback lead to improved performance only when they lead individual employees to set high goals
5. Which of the following are recognized strategies for multi-national companies to use in dealing with the diversity of statutory laws governing it?

- a. All of the following
 - b. Lobby to change the laws in each country so they are all the same
 - c. Make all operations conform to the strictest country law
 - d. Make operations in each country responsible for compliance with that country's laws
6. Common law differs from statutory law. Which of the following statements is TRUE?
- a. Statutory law passed by a legislature
 - b. Statutory law is defined over a period of years by judges
 - c. Common law refers to a law that is often violated
 - d. Common law is a statute that amends a state constitution
7. What functional area is typically responsible for functions related to design, construction, standards, and repair?
- a. Engineering
 - b. Facilities
 - c. Logistics
 - d. Research and Design
8. Who are the customers of the occupational safety function?
- a. All employees in an organization
 - b. All employees in an organization and the community as a whole
 - c. The safety manager, supervisor, peers, and subordinates
 - d. From the CEO-level of management to the line worker
9. Some ways the safety management professional can determine training needs is to:
- a. All of the following
 - b. surveys
 - c. Review regularly scheduled inspections for needs
 - d. Conduct an employee opinion survey

II. EHS MANAGEMENT METHODS AND SYSTEMS

10. The terms incidents and injuries are often used interchangeably. Actually the meanings are:
- a. Synonymous
 - b. Different
 - c. Diametrically opposed
 - d. Identical
11. A tool that enables a team to identify, explore and graphically display the possible causes of an incident or hazardous conditions is:
- a. A fishbone diagram
 - b. An affinity diagram
 - c. A matrix diagram
 - d. An interrelationship diagram
12. The system safety method, MORT, stands for:
- a. More Observation and Repetitive Training
 - b. Management Oversight and Risk Tree
 - c. Management Obstacles and Responsive Techniques
 - d. Management Objectives and Regulatory Training
13. One method often used in system safety programs for complex systems is:
- a. Fault tree analysis
 - b. Fishbone analysis
 - c. Pareto chart analysis
 - d. Audit analysis
14. Calculate the incidences rate for a company if the recordable incidents are 40 and the total hours worked are 1,500,000:

- a. 2.6
 - b. 5.3
 - c. 8.7
 - d. 10.2
15. Which of the following techniques would be most likely to increase the motivation and satisfaction of people at work?
- a. Job placement
 - b. Responsibility of workers
 - c. Satisfaction of workers
 - d. Job enrichment
16. What are the two main causes of incidents in the workplace?
- a. Unsafe acts and unsafe people
 - b. Unsafe people and unsafe machines
 - c. Unsafe conditions and unsafe machines
 - d. Unsafe acts and unsafe conditions
17. According to William C. Pope, the three causal factors of an incident are:
- a. Training, oversight, inadequate system
 - b. Defect, management, training
 - c. Error, defect, oversight
 - d. Regulation, error, attitude
18. There are several factors that are often used to determine when an organization should have the services of a full time Safety Professional. Which of the following is generally acknowledged to be the prime-determining fact or in assigning safety personnel?
- a. The incident rate of organization
 - b. The seriousness of incidents suffered by the organization
 - c. The potential for serious injuries in the organization
 - d. The type of industry the organization is involved in
19. According to Pope, prior to 1960, safety and incident prevention used what type of approach to reduce injuries?
- a. Situational Leadership Approach
 - b. Engineering Approach
 - c. Classical Management Approach
 - d. Contingency
20. The main goal of Worker's Compensation law is to:
- a. All of the following
 - b. To give the employee the opportunity to plead his case and speed up the waiting period for just compensation
 - c. To eliminate negligence and product liability claims
 - d. Compensate workers for injuries caused by incidents arising out of and in the course of employment
21. Housekeeping requirements for safe construction sites include all of the following EXCEPT:
- a. Keeping site reasonably dry and clear of debris, scrap and protruding nails
 - b. Providing containers for the collection and separation of waste, trash, oily rags and any other refuse.
 - c. Removing combustible scrap at regular intervals
 - d. Storing all flammable wastes in a barrel or similar container with open top for convenient deposit and frequent removal.

III. SAFETY, HEALTH, AND ENVIRONMENT APPLICATIONS

22. Which of the following is a term used to describe the condition "epicondylitis"?
- a. Trigger finger

- b. Rotator cuff
 - c. Roofer's wrist
 - d. Carpenter's elbow
23. The most common of the work related musculoskeletal disorders, and in economic terms, the most costly is:
- a. Carpal Tunnel Syndrome
 - b. Tendonitis
 - c. Epicondylitis
 - d. Low Back Pain
24. The delay between exposure and observable effects is _____.
- a. Down time
 - b. Latency period
 - c. Effect delay
 - d. Synergism
25. Which analysis method is the most effective at determining potential problems in a given system?
- a. Preliminary Hazard Analysis
 - b. Job Safety Analysis
 - c. Fault Tree Analysis
 - d. Failure Mode Effect Analysis
26. Dilution ventilation is used to:
- a. Control a contaminant at its source
 - b. Control fumes from lead fusing
 - c. Control low toxicity vapors
 - d. Control asbestos
27. As one ages, there is a vascular and neural degeneration of the inner ear that results in a decrease in hearing ability. This condition is called:
- a. Sensoneural
 - b. Socioculus
 - c. Presbycusis
 - d. Tinnitus
28. Which of the methods listed below is not allowed in supplying air for SCBA, airline respirators, or combination units?
- a. Filtered breathing air grade "D" or higher
 - b. Manifold cylinders of high pressure air
 - c. Oil pumped compressed air with filtering
 - d. Hospital grade oxygen
29. Which is the most effective method of reducing contamination to workers?
- a. PPE
 - b. Administration controls
 - c. Fans
 - d. Engineering controls

IV. RISK IDENTIFICATION, MANAGEMENT AND CONTROL

30. What percentage of all injuries to people happens on the job?
- a. 1/5 –20%
 - b. 1/4 –25%
 - c. 1/2 –50%
 - d. 3/4 –75%
31. On the job injuries and illness cost money, time, and effort. What is the most practical way to manage these losses?
- a. Make sure safety is part of labor contracts
 - b. Aggressive claims handling

- c. Effective safety and loss control programs
 - d. Good insurance coverage
32. In regard to a safe driving program, management is responsible for which of the following:
- a. All of the following
 - b. Developing written standards for driving of company vehicle
 - c. Conducting regular driver training and requiring immediate reporting and investigation of every incident
 - d. Having corporate performance goals and keeping driver records
33. The lighting system failed, causing a short, which resulted in a fire. What class of fires would this be?
- a. Class A
 - b. Class B
 - c. Class C
 - d. Class D
34. Mesothelioma is associated with
- a. Welders
 - b. Asbestos Workers
 - c. Beryllium Workers
 - d. Excessive Vibration
35. The process of pooling security ideas and viewpoints of architects, security and safety professionals and local police and fire officials in a coordinated effort to produce a facility with planned defenses before the actual construction is known as what?
- a. SMBO
 - b. Crime prevention through environmental design (CPTED)
 - c. Safe Construction
 - d. Planned Protection
36. Emergencies can arise in an organization at any time and from many different causes. The best safety management tool for minimizing disaster is to:
- a. Screen candidates and hire only safe workers
 - b. Have a written comprehensive management plan
 - c. Keep in good contact and relations with the local fire department
 - d. Purchase only safe equipment and materials

ANSWERS AND RATIONALES FOR PRACTICE QUESTIONS

1. Answer: c. Risk Assessment The hazard analysis identifies the potential hazards that exist, the risk assessment also may identify potential hazards, but it will also put a value on the risk associated with the potential hazards.
2. Answer: a. Supportive
supportive leadership role would be the most effective type of leadership because it enables the employees to discuss the problems with management. It allows for feedback and open lines of communication.
3. Answer: b. Achievement-oriented
Achievement-oriented leadership encourages a high level of performance with challenging goals emphasizing excellence and demonstrating confidence in employee ability.
4. Answer: d. Pay and Feedback lead to improved performance only when they lead individual employees to set high goals. Performance related pay (feedback) offers a means of rewarding outstanding performance, maintaining accountability, providing incentives for effort and productivity, and attracting and retaining good staff in a competitive market.

5. Answer: d. Make operations in each country responsible for compliance with that country's laws. Failure to comply with a jurisdiction's law could lead to criminal violations, civil violations and unnecessary lawsuits. However, the uniqueness of country requirements makes using the "strictest" law for all countries impractical. Although compliance with local laws is a minimum, many multinational companies also have safety policies with stricter standards than some countries may require.

6. Answer: a. Statutory law is passed by a legislature
The distinctive feature of common law is that it represents the law of the courts as expressed in judicial decisions. The grounds for deciding cases are found in precedents provided by past decisions, as contrasted to the civil law system, which is based on statutes and prescribed texts.

7. Answer: b. Facilities
Facilities are concerned with the general layout and overall operation of particular buildings or structures. Engineering, logistics, and research and design are usually applied to a specific concern or problem.

8. Answer: b. All employees in an organization and the community as a whole
When discussing the role of the occupational safety function every person involved with a particular organization must be considered. This includes all employees, their families, the organization's customers and the community as a whole; only focusing on the work can miss important opportunities to protect employees and promote a safety culture.

9. Answer: a. all of the following

10. Answer: b. Different
An incident is defined as an event that has the potential to cause physical harm. An injury is a form of hurt, damage, or loss usually to a person resulting from an event. Some incidents do not involve an injury.

11. Answer: a. A fishbone diagram
The fishbone diagram is an analysis tool that provides a systematic way of looking at effects and causes that create or contribute to those effects. The value of the fishbone diagram is to assist teams in categorizing the many potential causes of problems or issues in an orderly way in order to identify root causes.

12. Answer: b. Management oversight and Risk Tree

13. Answer: a. Fault Tree Analysis
Fault tree analysis can identify possible system reliability or safety problems at design time. It also allows the user to backtrack a single incident to its entire potential root causes. These causes may be unrelated and may be missed in other systems. As well, fault tree analysis allows the user to "see" the entire system that is being examined.

14. Answer: b. 5.3
The incident rate is the number of recordable injuries as delineated by the U.S. Occupational Safety and Health Administration (OSHA) per hundred employees. The incident rate is calculated by multiplying the number of recordable injuries by 200,000 hours worked (OSHA constant), then dividing by the number of actual hours worked.

of incidents x OSHA constant for hours worked = I.R.

of actual hours worked

$$\frac{40 \times 200,000}{1,500,000} = 5.3$$

1,500,000

15. Answer: d. Job enrichment

Fredrick Herzberg coined Job enrichment; it describes making the work environment less dissatisfying to the worker. Grievances, decreases productivity, and even strikes are examples of how a dissatisfying work environment can hurt an organization. One can enrich the job by allowing the opportunity for a worker to gain a sense of achievement, responsibility, advancement, and growth.

16. Answer: d. Unsafe acts and unsafe conditions

Unsafe acts and unsafe conditions are the broad definitions of the main causes of accidents. Unsafe acts include: unsafe methods, using damaged equipment, or failing to use PPE. Unsafe conditions include: not using guards on machines or equipment, defective design or construction, or inadequate use of PPE. There may also be many underlying factors and root causes that contribute to unsafe acts and conditions. They may include: lack of skill, improper training or failure of operational procedures.

17. Answer: c. Error, defect, and oversight

Incidents rarely happen from a single cause. Incidents are multi-factorial and arise through a clearly defined sequence of events, which involve performance errors, changes, oversights and omissions. Errors, defects, and oversights relate directly to the production process. They manifest themselves as losses in the form of poor quality, excessive waste, etc.

18. Answer: c. The potential for serious injuries in the organization

Staffing is driven by potentially serious injuries, not by actual adverse history. If a hazardous operation such as a chemical plant or refinery has a good safety record they do not eliminate staff because there are no injuries. It is the potential hazard level and also the regulatory compliance demands that come with the high potential hazards that drive the staffing.]

19. Answer: b. Engineering Approach

An engineering approach was consistently used as a way to reduce incidents. It was the engineer's job to design equipment that was safe to operate, regardless of whether the equipment was used correctly.

20. Answer: d. Compensate workers for injuries caused by incidents arising out of and in the course of employment

Before the Worker's Compensation law, workers who were injured on the job were not compensated in any manner. The worker could sue the company, but the view of the courts was the worker assumed all risks associated with the job and was responsible for all injuries arising out of and in the course of employment.

21. Answer: d. Storing all flammable wastes in a barrel or similar container with open top for convenient deposit and frequent removal . According to 29 CFR 1926.25(c), containers used for garbage and other oily, flammable, or hazardous wastes, such as caustics, acids, harmful dusts, etc. shall be equipped with covers.

22. Answer: d. Carpenter's elbow

Epicondylitis, also called tennis elbow, is a chronic condition of inflammation affecting the outside of the elbow where the tendons are attached. Repeated gripping or twisting can cause inflammation at the site where the tendons attach. Trigger finger is a condition affecting the finger, usually associated with these triggering a vibrating power tool with some force. The rotator cuff is the group of tendons around the shoulder process. Roofer's wrist is associated with the wrists and usually develops from long-term deviation from neutral wrist position.

23. Answer: d. Low Back Pain

Liberty Mutual Insurance Company reported their worker's compensation claim expenses as being roughly 33% musculoskeletal disorders (MSDs) in the OSHA ergonomics documents. MSD claims are often more expensive than other claims. By far the largest amount of money and lost time for MSDs is from low back pain because of their higher prevalence relative to other MSDs. Low back pain MSDs make up 15% of all Liberty Mutual's worker compensation claims and 23% of their compensation costs.

24 Answer: b. Latency Period

This delay can be observed in serious occupational diseases such as asbestosis and silicosis, which can have effects not realized until years and even decades after exposure.

25 Answer: d. Failure Mode Effect Analysis (FMEA) FMEA is an easy to use and yet powerful pro-active engineering quality method that helps you to identify and counter weak points in the early conception phase of products and processes. The structured approach makes it easy to use and even for non-specialist a valuable tool. The benefits obtained encompass by large the investments in time and resources to execute the analysis.

26. Answer: c. Control low toxicity vapors.

Dilution ventilation relies on bringing fresh air into a room and mixing it with contaminated air to lower the concentration of the contaminant. There are several factors that can affect the effectiveness of dilution ventilation such as mixing efficiency, cross drafts, worker positions, and proper air flows at the source and the exhaust. To control toxic materials such as lead or asbestos, a capturing hood or enclosing hood should be used, as they are more effective at capturing contaminant at its source. With dilution ventilation, there is a good possibility that contaminant may spread throughout the room, and this is undesirable if the material being handled is toxic or hazardous

27. Answer: c. Presbycusis

Presbycusis is mostly due to aging, as it usually gradually decreases a person's ability to hear high-level pitched sounds. This gradual change may be due to prolonged exposure to high sound levels over many years. A person who suffers from presbycusis may experience such symptoms as having difficulty understanding someone talking to them, especially when there is background noise.

28. Answer: d. Hospital Grade Oxygen

Hospital grade oxygen is not allowed to be used for supplying air to a SCBA. Filtered breathing air grade "D" or better, high pressure manifold cylinders, and oil pumped compressed air are all acceptable means of providing air to a SCBA as long as the precautions mentioned in OSHA's respiratory standard are met.

29. Answer: d. Engineering Controls

Engineering controls are the most proactive and effective methods of reducing exposure. They reduce risk by controlling or eliminating contamination at their source. Administration controls and PPE are secondary protection measures and can be helpful if engineering controls cannot be applied.

30. Answer: c. ½ -50% 12

Statistics show that the most common work injuries are orthopedic injuries, principally back and hand injuries. Other common types of work injuries are: Industrially caused cancers, Respiratory problems such as asthma, Hearing loss due to acoustic trauma/noise exposure on the job, Depression and other psychiatric conditions which arise as a consequence and outgrowth of physical injuries on the job, Heart conditions including heart attacks and coronary artery blockage, heart attacks triggered by physical stress on the job.

31. Answer: c. Effective safety and loss control programs

On the job injuries and illnesses cost money, both in direct costs such as workers' compensation payments, and indirect costs such as investigation time, replacement training, product damage, and lower morale. It is better to prevent losses through a safety program than to try to reduce the expenses after the injury has happened.

32. Answer: a. all of the following

33. Answer: c. Class C

Class A –used for paper combustibles

Class B –used for combustible liquids from gasoline etc.
Class C –fire extinguisher used to extinguish electrical fires
Class D –used to extinguish combustibles metals

34. Answer: b. Asbestos workers.

35. Answer: b. Crime prevention through environmental design (CPTED)

Crime prevention through environmental design takes into account everyone's viewpoints into the security of the building. It is done during the planning stage of the building and grounds. This helps security because it has features built in by the architects with safety professionals and local police ideas still fresh in their head when designing. Instead of trying to put safety first after the building is already built with design flaws that employees must try to work around.

36. Answer: b. Have a written comprehensive management plan

All the other answers are good ideas but no matter how safe you think you are, an incident can happen. Therefore, the only way to be prepared is to have a written comprehensive management plan