



**Certified Safety and Health Manager's
Electronic Certification Guide**

Revised August 2009

CSHM'S CERTIFICATION GUIDE

This Guide is intended to:

- **Provide individuals in the safety and health management field relevant information about the Institute for Safety and Health Management (ISHM) and its certification process**
- **Describe the Institute's codification process and its result -- a typical outline of the safety and health management body of knowledge**
- **Explain various methods of preparing for the Institute's certification examination**
- **Provide a practice examination whereby individuals can gauge mastery of their safety and health management body of knowledge**

This Guide is:

- **Not intended to serve as the sole base of preparing to take the CSHM examination**
- **Just a guide, therefore any errors found in the guide should be directed to ISHM's Managing Director who can clarify those errors or see to it that they are corrected in the next version of the guide (manager@ishm.org)**
- **Is provided in an electronic form so that any interested party can download the guide at no cost.**

History has shown two primary reasons why safety and health management practitioners are reluctant to take certification examinations. First, there is fear of the unknown, such as not knowing what to study or what types of questions will be encountered. Second, is the fear of failure -- not knowing one's level of proficiency prior to taking the examination. These two fears, whether real or imagined, prevent many capable safety and health practitioners from taking certification examination. This guide is designed to help alleviate these fears by providing an understanding of the examination process and sample test items.

This publication offers a starting point for formal training or informal self-development for persons interested in individual or group study in the safety and health management field. Copies of the Certification Guide may be downloaded from the Institutes website: www.ishm.org. The certification program is administered by headquarters staff to which inquiries may be addressed:

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As you proceed through this document, remember it is only a guide. Those seeking professional certification will still need to engage in one or more of the activities described in the guide to properly prepare for the exam.

**SAFETY AND HEALTH MANAGEMENT
PROFESSIONALISM**

1. **National Organization** - The first requirement of a profession is membership in a national organization - a national organization that can speak as a unified voice for its members and foster the development of the field. The National Safety Management Society (NSMS) and The American Society of Safety Engineers (ASSE) represent two such organizations.
2. **Code of Ethics** - The second requirement of a profession is adherence to a code of ethics, which identifies a standard of behavior. ISHM has developed such a code to which all members are expected to adhere.

Safety and Health Managers shall:

- Maintain competency in the practice of their profession
- Be truthful and impartial when addressing safety and health issues
- Practice their profession following recognized scientific and management principles
- Guide affected parties regarding recognized safety and health practices
- Maintain confidentiality when involved in the exercise of safety and health management activities
- Avoid circumstances where a compromise of professional judgment or conflict of interest may arise
- Perform services only in their areas of competence
- Act responsibly to uphold the integrity of the profession

Likewise NSMS and ASSE have developed models of professional excellence, which can be found on the following websites: www.nsms.us/ and www.asse.org.

3. **Body of Knowledge** - The fourth requirement of a profession was a defined body of knowledge. The Institute, through its codification process, defines the safety and health management body of knowledge for practitioners in the field. This body of knowledge is disseminated to professionals through journals and publications.
4. **Credentialing** - The last requirement of a profession was a credentialing organization - an organization that sets professional standards in the field. ISHM's eligibility requirement to take its certification examination and successfully passing that examination fulfills this requirement.
 - a. The Institute for Safety and Health Management (ISHM) is a credentialing organization founded to promote the establishment of professional standards for those functioning as safety and health managers in the work world. ISHM exists to promote the establishment of standards for the profession and recognizes safety and health management professionals who, through education, demonstrated professional experience, and the passing of a comprehensive examination, have met ISHM's requirements for mastering the safety and health management body of knowledge.

The Institute for Safety and Health Management, through its accredited certification program, promotes the advancement of safety and health management through the application of management principles and the integration of safety into all levels and activities of management.

Safety and health management is an integral part of the responsibilities of every function of line and staff management. The Institute identifies professionals who understand the role of the safety and health function in providing valuable support to organizations by preventing performance errors and controlling hazards that may result in loss-producing incidents customarily called "accidents."

The Certified Safety and Health Manager (CSHM) program recognizes the safety and health professionals who demonstrate knowledge of health and safety management skills and techniques through examination, education, and experience. In addition to technical knowledge of safety and industrial

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hygiene a successful safety and health manager must possess working knowledge of a broad range of business and financial principles and an understanding of related issues such as hazard analyses, critical incident investigations, safety audits and surveys, workers' compensation laws and practices, product safety, environmental laws, quality control, and labor relations. The Certified Safety and Health Manager Certification program is designed to provide recognition of those who can apply a broad range of health and safety management tools.

CRITERIA FOR CERTIFICATION

Examination

Certification requires achievement of a passing grade on the CSHM examination. Candidates must meet all education and experience requirements before taking the examination. Candidates who possess a valid certification with similar education and experience requirements (such as a CSP or CIH) may be deemed to meet these education and experience criteria, and will not be required to submit transcripts. The examination will be based on multiple choice questions designed to measure the applicant's knowledge in following four subject areas:

I. General and Business Management (20% of test/30 questions)
1: Finance, budgeting and cost accounting
2: Human resources issues (wage and hour, FMLA, labor law, EEO, ADA)
3: Ethics and law
4: Organization and behavioral sciences
5: Education, training and communication
II. EHS Management Methods and Systems (38% of test/ 57 questions)
6: Regulatory compliance
7: Quality systems (TQM, Lean manufacturing, six sigma)
8: Auditing
9: Safety in design, system safety
10: Performance metrics, recordkeeping, data analysis and statistics
11: Benchmarking
12: Accident investigation and root cause analysis
13: Behavioral safety
14: Management systems (ISO 14000, OHSAS 18000, ANSI Z-10, OSHA VPP)
III. Safety, Health and Environment Applications (11% of test/ 17 questions)
15: Basic sciences
16: Applied sciences
17: Hazard controls
IV. Risk Identification, Management and Control (31%of test/ 46 questions)
18: Workers' Compensation
19: Risk management and financing
20: General liability and product safety
21: Fleet safety
22: Fire safety, life safety, and security
23: Health and wellness
24: Emergency preparedness, crisis planning
25: Sustainability
26: Occupational medicine, medical services, first aid

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PURPOSE

Through its certification program, the Institute promotes the advancement of safety management through the application of management principles and the integration of safety into all levels and activities of management.

Safety and health management is an integral part of the responsibilities of every function of line and staff management. The Institute for Safety and Health Management (ISHM) identifies professionals who understand the role of the safety and health function in providing valuable support to organizations by preventing performance errors and controlling hazards that may result in loss-producing incidents customarily called “accidents.”

Education Requirements

A graduate of a four year college or university, accredited by a member organization of the Council on Higher Education Accreditation (CHEA), with a minimum of a baccalaureate degree is eligible for certification after meeting the experience criteria below. **Applicants who provide transcripts from a college or university located outside the United States will be accepted if the college is accredited by an organization approved by the ISHM Board of Directors**

Experience Requirements

- Certification requires five years or more of professional safety and health management experience (50% or greater safety and health management related activities) acceptable to the Institute.
- Two years of part time experience (25% or greater safety and health management related activities) may be substituted for one full time year.

Experience Substitutes

Graduates of ISHM Board approved Safety and Health Degree programs will receive 3 years of qualifying experience. **[NOTE: Multiple degrees from ISHM Board approved Safety and Health Degree programs will only count for 3 years experience].**

Summary of Requirements

A minimum of a Bachelor's Degree plus five qualifying years of work experience

- An ISHM Board approved safety degree plus two years qualifying experience
- Completion and approval of the application package and submission of fees
- Passing score on the CSHM examination

CERTIFICATION EXAMINATIONS

The Institute’s CSHM certification examination is administered on-line through the ACT network and as such can be scheduled any time the facility and examinee schedule it. Examination application deadlines and dates are posted at the Institutes website (www.ishm.org). The examination consists of 150 multiple-choice questions, each with four possible answers. Three hours are designated to respond to the multiple-choice questions allowing approximately 1.2 minutes per question. A passing ([cut score](#)) is determined using the expert judgments of a standards setting panel. This score will vary depending on the actual examination form utilized.

The certification examination measures an individual’s mastery of the body of knowledge deemed appropriate as a result of a Job Practice Analysis conducted by the Institute. Preparation for the examination is best accomplished by mastering the body of knowledge recognized as appropriate for safety managers. The

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Institute uses exclusively four option multiple-choice items in its certification examinations for a number of reasons:

1. They are flexible and adaptable.
2. They tend to be more reliable than other formats.
3. They can accommodate a wide range of skills, knowledge and abilities to be measured.
4. They provide good sampling.
5. They have low chance scores.
6. They can be machine scored.

Multiple-choice items consist of three parts:

- Stem - The stem states the problem or question to be answered.
- Correct Answer - The correct answer is 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.)
- Distracters - Three distracters serve as incorrect responses. They are plausible, yet wrong, or not the best possible option.

The following is an example of the parts of a multiple-choice item:

Stem: Typically, the most unreliable tool utilized in the selection process is a(n)

Correct Answer: *A. employment interview.

Distractor: B. selection test.

Distractor: C. physical examination.

Distractor: D. background check.

Items used on the Institute’s certification examinations were developed by certified safety and health managers who volunteer their services. A final review of each examination form was conducted by the Institute’s Board of Directors. Each examination form is carefully evaluated by the Board before being certified for use.

The three-step process of item development, item review and validation and examination review ensures that items are:

- Clear, unambiguous and grammatically proper
- Technically correct
- appropriate in terms of fairness--geographically, ethnically or culturally
- Important for human resource professionals to know, and
- Correctly coded to the ISHM Content Outline

EXAMINATION PREPARATION METHODS, STRATEGIES AND RESOURCES

An important issue for examinees is preparation. There are a number of methods available in preparing for the ISHM examination. The selection of a method is a matter of individual preference based upon what best fits into one’s lifestyle. In the future, methods will range from the highly informal individual self-study to highly structured courses and workshops offered by professional organizations such as the National Safety Management Society.

Likewise, the strategy used to prepare for the certification examinations is equally important. Just like a world class athlete must “peak” at the precise moment of competition, so must an examinee on examination day. In addition to being able to master the safety management body of knowledge, the examinee should be both mentally and physically prepared to sit for the examination. Strategy is a critical element of preparation. The resources used to prepare are also critical elements of preparation. Sometimes the resources utilized will be a function of the preparation method selected. Other times, the potential examinee will have to select an appropriate resource from a wide range of possibilities. A mistake in selecting resources can significantly impact an examinee’s score.

METHODS

Care must be taken in selecting a method of preparation. Because the ISHM examination measures one's mastery of the application of the safety management body of knowledge, one cannot train or teach to the examination. Instead, preparation is best accomplished by knowing the safety management knowledge requirements and being able to apply them. Methods which utilize the same basic format as that used by ISHM are preferable because they help familiarize the potential test taker with ISHM's organization of the body of knowledge.

ISHM serves as a standard setting and credentialing organization. As such, it does not directly provide professional development activities. Organizations like the National Safety Management Society's executive director can serve as a resource in surveying and selecting a preparation method.

Self-Study

Self-study can either be individual, whereby one studies at her/his own pace to suit his/her own schedule, or it can be a group experience where there are regular meetings, mutual assistance, and lively exchanges of ideas and information among members. No matter which study method is utilized, a key concept is flexibility.

Individual self-study requires a high degree of personal discipline. One must develop a strategy and schedule for preparation and then stay on track. Any of the general safety management references cited in this Guide can serve as a starting point for individual self-study.

A variation of individual self-study is paired self-study. This method involves the buddy system. Two examinees are matched up and utilizing the same format as with individual self-study when preparing to sit for the certification examination. It is a highly flexible method while at the same time offering the potential examinees the feeling of not "going it alone."

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

- convenient meeting locations and times
- a certified safety and health manager to serve as a mentor to the study group
- pre-and post-testing using the same examination formats as in this Guide
- a study format with a schedule and individual member assignments
- the use of multiple resources for preparation

Self-study, whether it is individual, paired or group, serves as an excellent preparation method when flexibility is the key consideration.

College and University Courses

Many colleges and universities with safety programs offer courses which can be taken to help prepare the safety practitioners to take the Certified Safety and Health Manager (CSHM) examination. Often these courses provide subject matter that address safety and health management's current body of knowledge. Those individuals contemplating such an approach are advised to talk with the instructors of these courses to determine the value of taking such a course, when preparing for the examination. These institutions and their instructors can also serve as a resource for current safety and health management texts.

Professional Organizations

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Another resource for current safety and health management textbooks can be found by contacting professional organizations such as: www.asse.org. Or www.nsms.us/. These organizations also may be able to provide contacts within your local when attempting to set up and examination preparation schedule.

EXAMINATION TAKING SKILLS

It is natural for anyone approaching an examination to have some anxieties and nervousness. The anxiety level is likely to be even higher for individuals who have been out of school for several years. The questions on the CSHM examination are multiple-choice (120). The question statement is called the stem and the answers are called choices. Some of the choices are designed to be plausible but incorrect, and they are called distracters

Some will be identification questions, which means that definitions of concepts or facts are being tested. Relationship questions are used to test how one concept is related to or affects another one. Other questions are application in nature, in which a situation is posed and the choices reflect applying certain facts to the situation.

Below are some test-taking suggestions that may aid you in performing up to your capabilities and knowledge.

1. Mark on the test booklet. The test booklet is for you to use to take the test. Therefore, mark on it by making short notes, doing simple calculations, placing a mark by the implausible answer, or putting question marks by questions you do not answer the first time through the exam.
2. Trust your first impressions. There is a correct answer to each question. It is widely believed that your first impression of the correct answer will be a better choice.
3. Avoid over analyzing. Be careful that you do not “read” too much into an answer.
4. If uncertain, leave blank and return. If you cannot decide on an answer, mark the question in the margin of the exam booklet and return to it after attempting to answer all of the questions on the exam. It is possible that later questions may trigger information useful for those “undecided” questions.
5. Don’t stop. If you are stumped by a question, continue on to the next item. Otherwise, you may lose valuable time and rush through the more difficult questions at the end of the exam.
6. Don’t look for answer patterns. The psychometric testing process used by the Institute ensures that questions do not fall into patterns. Contrary to some myths, “c” will not necessarily be the most frequent answer.
7. Length of an answer is a false clue. One test taking myth is that the longer an answer, the more likely it is to be correct. However, it often is more difficult to write incorrect distracters than the correct answer, so it is just as likely that the longest answer is incorrect as it is correct.
8. Eliminate obvious distracters. For most questions there are two distracters that usually appear to be incorrect, one that is likely to be plausible but incorrect, and then one that is not plausible. When you first read a question, you generally 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 and then move on to the next question and return to the unanswered question later.
9. Identify your answer before reading the choices. After reading the question, try to identify what you believe the answer will be before reading the choices. By doing this, you will more likely have one answer stand out as being correct.
10. Use “educated guesses.” If you still cannot decide on a correct answer after eliminating one or two choices, choose one anyway. There is no penalty for guessing on the exam. There is a penalty for not choosing an answer.
11. Don’t worry about what you don’t know. If you don’t know the answer to a question, don’t continue to fret over it and let it affect your approaching other questions positively.
12. Review your answers. After going through all the questions on the exam, go back and answer the questions you omitted the first time. Also, be sure that you answered all questions and that you marked the appropriate answers to each question.

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13. Don't rush. You do not receive more points for finishing first; use the time allowed for the exam to the extent you need so that you give yourself sufficient time to review and check your answers. Also, someone who finishes early may know less than you do, so don't feel self-conscious about being among the last to turn in your exam.
14. Don't worry after the test. Many people feel drained and inadequate after taking a long exam. That feeling is not necessarily directly related to doing poorly on the exam.

CERTIFIED SAFETY AND HEALTH EXAMINATION PRACTICE ITEMS

The Certified Safety and Health Examination Practice Items are intended to familiarize prospective examinees with the style and format of the CSHM examination questions. There are 58 objective practice items contained in this Guide, whereas the actual CSHM examination contains 150 objective items. The 150 test items will have the following weighted breakdown.

- General and Business Management (**20% of test/30 questions**)
- EHS Management Methods **and Systems (38% of test/57 questions)**
- Safety, Health and Environment Applications (**11% of test/17 questions**)
- Risk Identification, Management and Control (**31% of test/46**)

Exams administered outside the United States will be in US English. Exam questions for candidates in this category will contain fewer questions that pertain only to the United States (i.e. OSHA, NIOSH, etc.)

None of these practice items will be found on the actual CSHM certification examination. These practice items are only meant to be representative of the type of items found on the certification examination. Following the practice items is a quick scoring key and the rationales for the answers.

Remember to select the BEST answer. Good luck!

I. GENERAL AND BUSINESS MANAGEMENT

1. **Other than hazard analysis, what is the other aspect that should be looked at?**
 - a. **Injury reports**
 - b. **Statistical data**
 - c. **Risk assessment**
 - d. **Fatalities**

2. **Which type of leadership 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. **If you wanted your employees to strive for higher standards of performance and have more confidence in the ability to meet challenging needs, you would implement what kind of leadership?**
 - 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-state 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 state so they are all the same
 - c. Make all operations conform to the strictest state law
 - d. Make operations in each state responsible for compliance with that state's laws
6. Common law differs from statutory law in that:
- a. Statutory law is 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 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. Conduct workplace surveys
 - c. Review regularly scheduled inspections for needs
 - d. Conduct an employee opinion survey

10. The main purpose of Safety and Health training is:

- a. To support organizational objectives
- b. To inform and communicate to employees
- c. To comply with OSHA regulations
- d. To maintain a good image in the community

II. EHS MANAGEMENT METHODS AND SYSTEMS

11. The terms accidents and injuries are often used interchangeably. Actually the meanings are:

- a. Synonymous
- b. Different
- c. Diametrically opposed
- d. Identical

12. A tool that enables a team to identify, explore and graphically display the possible causes of an accident or hazardous conditions is:

- a. A fishbone diagram
- b. An affinity diagram
- c. A matrix diagram
- d. An interrelationship diagram

13. This horrible disaster triggered widespread public demand for more factory safety laws and an increase of factory safety inspection system to be sure they were enforced.

- a. The Stock Market Crash of 1929
- b. The Empire State Building fire
- c. The 1906 San Francisco Earthquake
- d. The Triangle Shirtwaist Company fire

14. 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

15. 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

16. The idea that a building and its fire safety could benefit from a systems analysis came from:

- a. ANSI
- b. OSHA
- c. NFPA
- d. NIOSH

17. According to Peterson, what is NOT a drawback of audits?

- a. They stifle autonomy
- b. They force uniformity
- c. They force performance
- d. They are subjective

18. Calculate the incidences rate for a company if the recordable accidents are 40 and the total man hours worked are 1,500,000:

- a. 2.6
- b. 5.3
- c. 8.7
- d. 10.2

19. The origin of benchmarking may go back as far as 500 B.C. to a Chinese proverb that states, “If you know your enemy and know yourself, you need not fear the result of _____”

- a. Personal Evaluation
- b. Competition
- c. A hundred battles
- d. A civil war

20. If you as a safety manager are trying to increase the motivation and satisfaction of people at your workplace then you are trying what?

- a. Job placement
- b. Responsibility of workers
- c. Satisfaction of workers
- d. Job enrichment

21. 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

22. According to William C. Pope, the three causal factors of an accident are:

- a. Training, oversight, inadequate system
- b. Defect, management, training
- c. Error, defect, oversight

d. Regulation, error, attitude

- 23. 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 factor in assigning safety personnel?**
- a. The accident rate of organization**
 - b. The seriousness of accidents suffered by the organization**
 - c. The potential for mishaps in the organization**
 - d. The type of industry the organization is involved in**
- 24. According to Pope, prior to 1960, safety and accident prevention used what type of approach to reduce injuries?**
- a. Situational Leadership Approach**
 - b. Engineering Approach**
 - c. Classical Management Approach**
 - d. Contingency**
- 25. 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 process of the waiting period of just compensation**
 - c. To eliminate negligence issues by assuring the employees payment regardless of how injuries occurred**
 - d. Compensate workers for injuries caused by accidents arising out of and in the course of employment**
- 26. Which of the following agencies publishes TLVs and PELs?**
- a. ACGIH and OSHA**
 - b. OSHA and MSHA**
 - c. ACGIH and MSHA**
 - d. NIOSH and OSHA**
- 27. The Occupational Safety and Health Act was enacted in:**
- a. 1946**
 - b. 1954**
 - c. 1970**
 - d. 1982**

- 28. The responsibility for research to determine criteria requirements and to provide more advanced occupational safety and health implementation methods in general, is assigned to the National Institute for Occupational Safety and Health, which is under the:**
- Department of Labor**
 - National Institute of Health**
 - Occupational Safety and Health Administration**
 - Department of Health and Human Services**
- 29. Several ANSI standards were originally incorporated into the OSHA standards under the OSHA Act. Which of the following is TRUE of other ANSI standards, including those developed since OSHA was created?**
- OSHA may use noncompliance with as ANSI standard as evidence of a violation of the general duty clause of the OSHA Act**
 - ANSI standards are recommendations only and may be ignored as long as an employer is in compliance with all OSHA standards**
 - Employers must comply with all “shall” provisions of ANSI standards**
 - The ANSI standards must be considered by OSHA when developing new OSHA standards**
- 30. OSHA encourages the states to assume the fullest responsibility for administering and enforcing their own OSHA laws. However, in order to assume this responsibility, such states must:**
- Develop a program and tell OSHA**
 - Have standards they feel are pertinent to their own state**
 - Develop and submit their plan to Federal OSHA**
 - Develop, submit and receive approval from OSHA before they can implement their state plan**
- 31. The Superfund and Reauthorization Act (CERCLA) was a response to an environmental disaster at _____.**
- Love Canal, New York**
 - Times Beach, Missouri**
 - Bhopal, India**
 - Seveso, Italy**
- 32. Which U.S. President founded the Environmental Protection Agency (EPA)?**
- Carter**
 - Reagan**
 - Nixon**
 - Clinton**
- 33. Housekeeping requirements for safe construction sites include all of the following EXCEPT:**
- Keeping site reasonably dry and clear of debris, scrap and protruding nails**
 - Providing containers for the collection and separation of waste, trash, oily rags and any other refuse.**
 - 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.

34. After an OSHA compliance officer has made an inspection of a construction project and a citation is issued, which of the following actions **MUST** be performed by the employer in order with the law?

- a. Consult an attorney for legal advice regarding the citation
- b. Post the citation near the place where the violation occurred.
- c. Advise top management of the inspection and the item(s) noted in the citation
- d. Discuss the citation and the item(s) noted at the next job site safety meeting.

III. SAFETY, HEALTH, AND ENVIRONMENT APPLICATIONS

35. 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

36. 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

37. Holding an object between the tips (pads or sides) of the thumb and one or more fingers is referred to as:

- a. Precision Grip
- b. Power Grip
- c. Hook Grip
- d. Relaxed Grip

38. Which of the following best describes the effect of leukemia on the blood?

- a. Over production of red blood cells and Platelet phoresis
- b. Over production of white blood cells
- c. Platelet phoresis
- d. Over production of white blood cells and Platelet phoresis

39. The delay between exposure and observable effects is _____.

- a. Down time
- b. Latency period
- c. Effect delay
- d. Synergism

40. Which analysis method is the most effective at determining root cause problems in a given system?

- a. Preliminary Hazard Analysis
- b. Job Safety Analysis
- c. Fault Tree Analysis
- d. Failure Mode Effect Analysis

41. 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

42. 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. Sensorineural
- b. Socioculus
- c. Presbycusis
- d. Tinnitus

43. 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

44. 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

45. 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%

46. On the job injuries and illness cost money, time, and effort. What is the most practical way to manage these losses?
- Good labor contracts
 - Aggressive claims handling
 - Effective safety and loss control programs
 - Changing state laws
47. Safety personnel should focus on three main goals to manage and control their workers' compensation costs. Which one of the following is NOT one of those goals?
- Prevent accidents
 - Have a good insurance carrier
 - Control costs through aggressive and fair claims handling
 - Respond to accidents promptly and efficiently
48. Which of the following is NOT a component of Risk Management?
- None of the following
 - Risk Identification and risk analysis
 - Elimination or reducing risks
 - Financing risk and administrating the risk management process
49. The three theories of liability include:
- Warranty, Negligence, Strict Liability
 - Strict Liability, Design Defects, Merchantability
 - Negligence, Warranty, Implied Liability
 - Strict Liability, Negligence, Design Defect
50. Expressed warranty is:
- A written statement made by the manufacturer to the purchaser, guaranteeing the product will or will not perform and meet certain criteria
 - A written statement made by the manufacturer to the purchaser, issuing personal hazards that may not meet specific standards
 - A written statement made by the manufacturer to the purchaser, guaranteeing the product has been tested for defects
 - A written statement made by the manufacturer to the purchaser, stating the intended use and life of the product
51. Which of the following is the major cause of vehicle accidents?
- Improper driving procedures by the company driver
 - Improper driving procedures by the other person
 - Road and/or weather conditions
 - Mechanical failures

52. In regard to a safe driving program, management is responsible for which of the following:
- All of the following
 - Developing written standards for driving of company vehicle
 - Conducting regular driver training and requiring immediate reporting and investigation of every accident
 - Having corporate performance goals and keeping driver records
53. The lighting system failed, causing a short, which resulted in a fire. What class of fires would this be?
- Class A
 - Class B
 - Class C
 - Class D
54. Flash point is defined as the _____ temperature that will produce a vapor concentration high enough to propagate a flame when a source of ignition is present.
- Lowest
 - Highest
 - Normal
 - Absolute
55. Mesothelioma is associated with
- Welders
 - Asbestos Workers
 - Beryllium Workers
 - Excessive Vibration
56. The process of pooling 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?
- SMBO
 - Crime prevention through environmental design (CPTED)
 - Safe Construction
 - Planned Protection
57. Emergencies can arise in an organization at any time and from many different causes. The best safety management tool for minimizing disaster is to:
- Hire only safe workers
 - Have a written comprehensive management plan
 - Keep in good contact and relations with the local fire department
 - Purchase only safe equipment and materials

58. The concentration at which combustible vapors can ignite is:

- a. Vapor point**
- b. Flash point**
- c. Fire point**
- d. Ignition point**

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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

A 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 state responsible for compliance with that state's laws.

Ethics are a study of what you represent and law is a set of rules governing society or in this case the workplace. Failure to comply with a jurisdiction's law could lead to criminal violations, civil violations and unnecessary lawsuits. When in Rome do as the Romans do!

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 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 safety function every person involved with a particular organization must be considered. This includes every level of the organization as well as its customers and the community as a whole; only focusing on the organization can be considered alienating business behavior.

9. Answer: a. all of the following

10. Answer: b. To inform and communicate to employees

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The employees' health and safety is the safety manager's number one responsibility. All others come after the employee's safety and health.

11. Answer: d. Different

An accident is defined as an unforeseen event that usually causes physical harm due to fate, chance or destiny. An injury is a form of hurt, damage, or loss usually to a person.

12. 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.

13. Answer: d. The Triangle Shirtwaist Company Fire

Triangle Shirtwaist Company Fire occurred on March 25, 1911. This tragedy remains the worst factory fire in the history of New York City. 146 Women died as the result of locked fire exits and fire fighters were unable to rescue workers trapped high above ground level. Public outrage triggered the creation of the Bureau of Fire Investigation and also placed the need for more stringent safety laws as a national concern.

14. Answer: b. Management oversight and Risk Tree

15. 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 back-track 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.

16. Answer: c. NFPA

In NFPA 921: Guide for Fire and Explosion Investigations – Standards on Types of Building Construction, suggestions are made that a systems safety analysis be performed during the design and construction of buildings.

17. Answer: d. They are subjective

Audits represent an objective measure of compliance with regulations, however they do not provide the only measure nor necessarily the best measures of how a safety program is dealing with problems in the work environment.

18. 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 man-hours worked (OSHA constant), then dividing by the number of actual man hours worked.

$$\frac{\# \text{ of incidents} \times \text{OSHA constant for man hours worked}}{\# \text{ of actual man hours worked}} = \text{I.R.}$$

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

19. Answer: c. A hundred battles

Sun Tzu, a Chinese general, wrote “If you know your enemy and know yourself, you need not fear the result of a hundred battles” Modern day benchmarkers sometimes only heed half of Sun Tzu’s admonition, they know their ‘enemy’ without fully knowing their own company. A major objective of benchmarking is to measure, quantitatively, the gap between the benchmark company and your own.

20. 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.

21. 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 are also underlying factors that may contribute to unsafe acts and conditions. They may include: lack of skill, improper training or failure of operational procedures.

22. Answer: c. Error, defect, oversight

Accidents rarely happen from a single cause. Accidents 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.

23. Answer: b. The seriousness of accidents suffered by the organization

The higher the severity of incidents, the more money the company will pay out in worker compensation, insurance, and other related costs. A full-time safety professional can analyze past incident data and identify unsafe acts or conditions that may lead to further serious incidents.

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24. 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 weather the equipment was used correctly.

25. Answer: d. Compensate workers for injuries caused by accidents 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.

26. Answer: d. NIOSH and OSHA

NIOSH established Threshold Limit Values for exposures and OSHA established Permissible Exposure Limits. Both are used to determine safe exposure levels in work environments for a variety of chemicals.

27. Answer: c. 1970

Congress passed the Occupational Safety and Health Act of 1970, requiring employers to provide workplaces free from serious recognized hazards and to comply with occupational safety and health standards.

28. Answer: d. Department of Health and Human Services

The Department of Health and Human Services is comprised of twelve agencies and nine staff divisions. The National Institute for Occupational Safety and Health (NIOSH) is included among these agencies.

29. Answer: d. The ANSI standards must be considered by OSHA when developing new OSHA standards

In accordance with a Memorandum of Understanding signed by the two agencies, ANSI and OSHA will maintain a mechanism for consultation in the planning of occupational safety and health standards development activities in the areas of mutual concern to the extent consistent with OSHA policy and section 6 of the OSHA Act.

30. Answer: d. Develop, submit and receive approval from OSHA before they can implement their state plan

Under Section 18(b) of the OSH Act, states are allowed to assume responsibility for a safety and health program. These programs must enforce the same level of compliance but are encouraged to promote a stricter safety and health policy.

31. Answer: a. Love Canal, New York

Love Canal was an abandoned and leaking hazardous waste dump that threatened human health and contaminated the environment. It was the first site of its kind to be declared a National Disaster. Discovery of environmental health damage from disposal sites such as Love Canal, New York prompted Congress to pass CERCLA, most commonly known as Superfund. CERCLA's purpose is to identify and clean up chemically contaminated sites that pose a significant environmental health threat.

32. Answer: c. Nixon

President Richard Nixon founded the U.S. EPA as an independent agency in 1970. The EPA's mandate is to ensure compliance with laws and develop regulations designed to protect the environment. Its primary responsibilities include protection of natural resources, soil, water and air compartments through control and reduction of air and water pollution by radioactive materials, pesticides, and other hazardous material.

33. 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.

34. Answer: b. Post the citation near the place where the violation occurred

According to 29 CFR 1903.16, "upon receipt of any citation under the Act, the employer shall immediately post such citation, or a copy thereof, unedited, at or near each place an alleged violation referred to in the citation occurred..."

35. Answer: d. Carpenter's elbow

Epicondylitis is a chronic condition of inflammation affecting the epicondyle, or the site of attachment of tendons to the elbow. 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, and not pathology of the shoulder. Roofer's wrist is associated with the wrists and usually develops from long-term deviation from neutral wrist position.

36. 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.

37. Answer: a. Precision Grip

The description of the grip in the question conforms to holding a pencil. This is the best grip for precise manipulation, since the acting muscles are those of the fingers, which are the best for fine control movements.

38. Answer: d. Overproduction of white blood cells and Platelet phoresis

Leukemia is malignant cancer of the bone marrow and blood, and like all cancers it involves the uncontrolled growth of abnormal cells. In most cancers, these out-of-control cells form tumors, but in the case of leukemia, the problem occurs with blood cells.

Signs of acute leukemia may include easy bruising or bleeding, paleness or easy fatigue, recurrent minor infections or poor healing of minor cuts.

39 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.

40. 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.

41. Answer: c. Control low toxicity vapors

Dilution ventilation is difficult to achieve because it relies on a ‘sweeping’ effect by bringing fresh air into a room at a source point and exhausting air at another source in the room. There are several factors that can affect the integrity of dilution ventilation such as 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 float throughout the room, and this is bad if the material being handled is toxic or hazardous.

42. 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.

43. 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.

44. 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 negative protection measures and can be helpful if engineering controls cannot be applied.

45. Answer: c. 1/2 - 50%

Statistics show that the most common work injuries are orthopedic injuries, principally back and hand injuries. Other types of work injuries are:

1. Industrially caused cancers
2. Respiratory problems such as asthma
3. Hearing loss due to acoustic trauma/noise exposure on the job
4. Depression and other psychiatric conditions which arise as a consequence and outgrowth of physical injuries on the job
5. Heart conditions including heart attacks and coronary artery blockage, heart attacks triggered by physical stress on the job.

46. Answer: c. **Effective safety and loss control programs**

On the job injuries and illnesses cost money, usually workers compensation pays for the physical damages of people and the insurance provider pays for a property damages. Insurance premiums alone can bankrupt an organization. There are four significant attributes of an effective loss control or safety program that insurance companies look at:

1. **Management attitudes**
2. **All exposures to hazards in operations are evaluated and recommendations are made to improve or eliminate hazards**
3. **Improvements in your operations and programs**
4. **Accident frequency is more important than severity**

47. Answer: b. **Have a good insurance carrier**

Having a good insurance carrier is not a goal that safety personnel should focus on to manage and control their workers' compensation costs. Having a good insurance carrier is upper management's responsibility. This is not a Safety personnel's responsibility. A safety personnel's responsibility includes, preventing incidents through inspections, audits, and incident investigations. By responding to incidents promptly and efficiently is a number one priority. Cost control through aggressive and fair claims handling is any goal of any effective loss control program.

48. Answer: a. **None of the following**

Risk Management has five components: Risk identification, risk analysis, elimination or reduction of risks, financing of risks, and administration of the risk management process. Risk management applies to the general operation of business and therefore risk is applied to a financial decision. Risk management can be divided into pre-loss and post-loss objectives.

49. Answer: a. **Warranty, Negligence, and Strict Liability**

Warranty addresses performance of a product regarding implied or explicit claims made for that product by the manufacturer or seller. Negligence is the conduct of a person or corporate body through acts of omission or commission. Strict liability focuses on the qualities of the product that caused injury and the plaintiff does not have to prove liability. Negligence and strict liability are part of tort law and warranty is part of contract law.

50. Answer: a. **A written statement made by the manufacturer to the purchaser, guaranteeing the product will or will not perform and meet certain criteria**

In court, the plaintiff must establish that the product failed to meet the seller's representations or warranty. An example would be a claim made by an automobile dealer that the windshield of the new automobile was shatterproof. The consumer is then injured when the glass is hit by a stone while driving and shatters.

51. Answer: a. **Improper driving procedures by the company driver**

Although many reasons contribute to accidents, the fact is that most actions can be traced back to the driver failing to perform appropriate actions behind the wheel. The National Safety Council has documented over the years that failure to comply with traffic laws is a major contributor of motor vehicle accidents

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52. Answer: a. all of the following

53. 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

54. Answer: a. Lowest

Lowest is the best possible answer and is the only correct and logical answer.

55. Answer: b. Asbestos workers.

56. 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 polices 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 have to try to walk around.

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

All of 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.

58. Answer: b. Flash point

The definition of flash point is the concentration at which combustible vapors can ignite.