Guide for Writing Potential Exam Questions

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ISHM GUIDE FOR WRITING POTENTIAL EXAM QUESTIONS

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OVERVIEW

Well written questions are necessary for a valid examination. Valid questions target the functions, tasks, knowledge, and skills that professionals demonstrate in practice. That's why the Institute for Safety and

Health Management (ISHM) depends on current certified professionals to submit questions for examinations leading to ISHM credentials.

This document is designed to help volunteers write ISHM exam questions. It explains question construction and supporting information, offers hints for writing questions, and identifies the subjects included on examinations leading to ISHM credentials.

By following the guidelines in this document, you can develop valid questions. All questions submitted to ISHM go through extensive review and evaluation before they are used in an examination. When creating a new exam or updating an existing examination. This process begins with your questions.

MULTIPLE-CHOICE ITEMS

The CSHM and CSMP exams will consist of a variety of multiple-choice items. The multiple-choice item is the most commonly used type of test question in certification exams. Multiple-choice items consist of a stem and four possible options.

> **Item Stem:** The item stem is the introductory statement or question that describes a situation or circumstance related to the knowledge being assessed. Item stems can be written in the form of an incomplete statement as well as in question form.
>
> **Item Choices:** The options complete the introductory statement or answer the question and consist of one correct answer (key) and three incorrect answers or distractors.
>
> **Key:** The key must reflect current practice. In some cases, the key will be the only correct choice, while in other cases the key will be deemed to be the BEST choice when considered against the other choices provided.
>
> **Distractors:** Distractors are the incorrect choices but should be plausible or possible correct answers to candidates who are inexperienced or not knowledgeable enough to choose the best answer.

GENERAL QUESTION-WRITING RULES

Question Item Structure

ISHM exams utilize standard multiple-choice question items with four answer options, one correct (key) and three incorrect (Distractors). Questions that are not in this format will be rejected.

Single Questions. A test item may also be complex and contain background information, such as a graph or table related to the question or statement to be completed. Even if the question is complex and has background information, a single question must be itself complete. Because question items may be selected independently for an examination each question item must be complete in itself.

Clarity. Review the first draft of a question and remove information that is not needed. However, if the purpose of the question is to measure a candidate's precise knowledge additional information may be appropriate for evaluating basic knowledge.

Item Stems. A test item may be a simple question or statement to be completed. ISHM prefers that a stem be formatted as a question (interrogative), rather than as a statement to be completed. Sometimes, this is not possible due to the content of the question stem. However, you should make every effort to phrase the item as a discreet question.

Item stems should:

- be written as short and uncomplicated as possible. The item should be free of irrelevant material. Only supply enough information to answer the question.
- only assess a single piece of knowledge or skill per item.
- always be presented as a complete sentence.
- be well thought-out, clearly worded, and unambiguous.
- Avoid trick items. The exam should test for knowledge, not reading comprehension.
- clearly define the problem. The examinee should know exactly what is being asked.
- always ask a direct question and avoid any lecture or lengthy discussion in the question.
- always contain the central idea and most of the content for the item. The central idea should not be in the options.
- use "should" instead of "would" or "could," for example, "What should be done…?"
- use "must" instead of "can," for example, "What must be done…?"
- avoid using the words "always," "all," and "never."
- present questions positively; avoid negative phrasing
- avoid using words such as: "not," "cannot," "false," "except," or "never," if possible. If they are retained, then they should be represented in **UPPERCASE** bold.
- watch out for double negatives. If a negative must be included in the stem, do not use a negative in the response options. This makes responding to the question very confusing for an examinee.
- not use abbreviations or acronyms not commonly used unless the item is testing that knowledge. Use complete terms and spell out acronyms and abbreviations. It may help to include an acronym in parentheses following the complete term. Acronyms and abbreviations not commonly used will result in the question not being considered.

Item response options. Each distractor, without exception, should provide a complete, plausible answer to the question stem question or a full choice to complete the question stem statement. A plausible distractor is one that could be reasonably expected to be selected by someone without any knowledge of the subject covered in the question. In addition, answer selections with terms such as "All of the above", "None of the above", or combinations of other choices, such as "Both Answer A and Answer B" are not acceptable.

Here are some basic guidelines in writing the item response options that an examinee selects as their answer.

- The correct answer(s) must be 100% correct, 100% of the time.
- The distractors are clearly not the correct answer(s) when the best answer(s) is selected.
- Responses should always be independent and mutually exclusive.
- All distractors must be plausible to someone who does NOT possess the skills being tested.
- There is only one correct answer for each multiple-choice item.
- Avoid using: “Don’t know,” “All of the above,” or “None of the above” as distractors or answers.
- Avoid giving clues through use of faulty grammatical construction or terms such as “never” and “always.”
- Keep the length of options fairly consistent

Test Item Content.

Questions applicable to the examination. Questions for ISHM examinations must apply to the blueprint for the examination. Items for the CSHM examination must correspond to one of the four domains and the knowledge areas and skills that apply to each domain. Select only subjects that fall within the areas described in the examination blueprints [Appendix I]. ISHM validates its examinations to ensure that they cover only topics that are relevant and important in practice. ISHM follows accepted psychometric practices to identify the subject areas from a representative sample of practicing safety professionals. In order to test whether or not a proposed topic would lead to a good question, first make sure it is covered in the examination outline. Then, ensure the topic is relevant to professional practice.

Write to include knowledge and skill in all aspects of safety, health, environmental, and security practice. Questions should address not only safety, but also industrial hygiene, health, environmental protection, ergonomics, fire protection, security, and other related fields in the broader discipline of professional safety practice, as long as the questions conform explicitly to the designated examination blueprint.

Questions that reflect current practice. Questions should reflect methods and practices currently in use. Do not use material that is so new or *avant garde* that it is not yet generally accepted in practice; on the other hand, avoid out-of-date methods and practices or material that does not relate to the majority of professionals. Questions should be appropriate to examination candidates. It is important to consider the characteristics of the examination for which questions are submitted along with the minimum qualifications of candidates for the examination.

Higher-order thinking. Do not test rote knowledge of codes, standards, and regulations. Professional level practice requires general knowledge and skill and application of methods when there are no specific standards. Design questions to focus on higher-order thinking, such as application of a principle or analysis of a problem. Draw on situations that test the ability of a candidate to effectively use and apply knowledge of the field and to perform in situations beyond basic knowledge of regulatory compliance. Questions quoting text from laws, regulations, codes, or standards are generally not acceptable.

Test understanding, not recall. Write questions that test the depth of understanding of a theory, method, or procedure, or require a candidate to apply information to new situations. These questions may require selecting the best procedure from among several, applying a particular principle or theory to a specific problem, or using a formula. Application questions include computations appropriate to the examination. The question stems on application questions often include data or background information.

Universal principles. Do not write questions that are based on textbook, verbatim phrasing or based on opinions of a single author or text. An exam taker should not have to memorize a particular textbook to answer a question correctly. Though questions must cite a textbook as a reference, the application of knowledge tested by the question must be universal in practice. Questions testing knowledge of text- or author-specific concepts are not acceptable. In addition, questions using author-specific or text-specific buzzwords and terminology or requiring knowledge of author-specific or text-specific buzzwords and terminology are not acceptable.

International use. Write questions for international applicability. Because the examination items may be used internationally, write question items that are universally applicable. Avoid questions about regulations or laws that apply only in the USA.

QUESTION SUBMISSION PROCESS

Questions must be submitted using the form shown in Appendix II.

Reference for the Correct Answer and Distractors. Every question must cite as an authority for the correct answer and for the distractors one or more of the published examination references that are listed by ISHM for the examination. (Having a reference does not mean that the question stem itself is derived directly from the published source. Every question must have complete reference citations so that an independent party can verify that the correct answer is, in fact, correct and that the incorrect answers (the distractors) are, in fact, incorrect. The citations shall include sufficient information to verify the validity of the answers.

Confidentiality and security. To be effective and credible, certification examinations and the question development process for them must maintain confidentiality and security. Therefore, question writers who submit questions to ISHM for use on examinations must agree in advance to destroy all physical and electronic copies of submitted questions and scenarios and any related physical or electronic materials. Confidentiality is governed by the ISHM Code of Ethics and Professional Conduct and enforced in accordance with the ISHM Bylaws. You must agree not to reveal the specific content of questions you have submitted or the content of questions that other question writers have discussed with you or have asked you to evaluate. This includes, but is not limited to, the sharing of such information during private instruction, workshops, or training programs; and/or the development, modification, or enhancement of training programs, courses, software, and workshops. By submitting a question or scenario to ISHM you are agreeing to these terms.

Submitted questions. Questions submitted to ISHM become the sole property of ISHM. Question writers must agree that they will not disclose the content of submitted questions, submit them to other organizations, or use them for any other purpose. In addition, questions submitted must be the question writer's original work and shall not be copied from materials copyrighted, owned, or created by other people or organizations. Question writers who submit questions shown not to be their original work may incur severe administrative and legal penalties. By submitting the question or scenario to ISHM, you are agreeing to these terms.

Continuance of certification credit. Every Professional with an accredited certification must participate in the respective recertification program. The recertification program uses a point system based on a variety of activities to help ensure that certificant stay current in professional practice. Writing questions for potential use on ISHM examinations is a very cost effective way to earn COC points. ISHM awards one COC point for every five questions accepted. There is no limit to the number of COC points certificants may earn through this form of question development. After you have submitted questions have been accepted, ISHM will send you a formal notice of acceptance and issue your COC credit. That letter will serve as your only proof of credit should ISHM audit your certification activities.

Contact Information. Since it is possible to earn Continuance of Certification (COC) or Certification Maintenance (CM) credit for writing valid questions, it is important to include full contact data for every question submitted. Record your current contact information. In addition to ensuring proper COC credit, questions may arise about your test question, and reviewers/editors may need to contact you for resolution. Additionally, please let us know if you are requesting COC points.

Question review process. There is a lengthy process to prepare questions for use on examinations. Questions go through several technical/editing reviews to verify technical content, to ensure that the questions read well while not providing clues to the correct answer, and to ensure that the questions are current and valid, and will perform well on an examination. Questions that meet or exceed ISHM's high quality standards are potentially used on an examination. When an examination edition is created or updated, ISHM selects these high quality questions to meet the examination specification and to achieve a good distribution among domains, topics/tasks, knowledge, and skills. The questions you submit are never used directly on an examination without first undergoing the technical/editing review process.

Submit questions to ISHM at any time. ISHM accepts hard copies of question submissions as well as electronic format.

Questions may be sent to:

Institute for Safety and Health Management
13560 E. 49th Ln
Yuma, AZ 85367
info@ishm.org / 928-344-5221

APPENDIX I

Examination blueprint

Certification requires achievement of a passing grade on the CSHM or CSMP examination. Candidates must satisfy all of the application requirements and be approved by ISHM to take the examination before doing so. The examinations are based on multiple choice questions designed to measure the applicant's knowledge and skills in subject areas that are defined by the examination blueprints. The blueprints are developed and periodically updated to assure that they accurately represents the knowledge and practice areas of the profession.

CSHM Examination Blueprint

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

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

APPENDIX II

ISHM TEST QUESTION DRAFT FORM

Name_____ Date_____

ID#_____

Request COC points YES_____ NO_____

Exam: CSHM_____ CSMP_____

A. Domain _____

B. Knowledge area _____

C. Stem of question:

D. Correct Answer (Key):

E. Three Distractors

F. Amplifying information

 References

 Substantiate Correct Answer