

Certification Exam Tips, Trips and Traps

by **James J. Rooney**

The decision to sit for an ASQ certification exam is not one to be taken lightly. If you don't properly prepare for the exam, you may not pass. To even consider taking the exam says you are serious about advancing your career. You should therefore be serious about passing the exam and design a strict study regimen to ensure you are fully prepared when you step into the exam room.

I have six ASQ certifications under my belt and will be taking the certified quality auditor-biomedical (CQA-biomedical) exam on Oct. 16. My past experience and plan to take this exam serve as the basis for my advice to you, someone who has decided to sit for a certification exam.

Besides assuming you have made the decision to

sit for an exam, I assume you have read every piece of certification material available, including brochures and websites. Go to www.asq.org to find these materials under the Certification tab. Then read the certification brochure cover to cover. Take time to comprehend the body of knowledge (BoK). Realize ASQ uses the six levels of cognition based on Benjamin Bloom's taxonomy (see "Bloom's Taxonomy," p. 44) to indicate the intended complexity level of the test questions for each topic. The CQA-biomedical exam, for example, is a multiple-choice, 100-question exam that takes four hours to complete. Understanding the exact nature of the challenge is the key to passing the exam.

I also assume you are simply reviewing material for the certification exam, and very little, if any, material in the BoK is completely new to you. I like to say you are resurfacing a highway with new asphalt. There may be a few potholes that need to be filled with gravel, but you are not building the road from the ground up. If large portions of the BoK are new to you, then no amount of review and no refresher course will get you ready to pass the exam. Preparing for such a challenge is beyond the scope of this article.

The questions and answers presented here are derived from my experiences in taking, passing and, yes, failing ASQ certification exams. My suggestions are general guidelines you should modify based on your education and experience. The questions and answers were in no way approved, vetted or even reviewed by ASQ volunteers or staff members



In 50 Words Or Less

- Taking and passing an ASQ certification exam can help you further yourself professionally.
- There are several questions you must consider before you start preparing for the exam.
- Adequate preparation can increase your odds of passing and decrease your test anxiety.

involved in developing or administering certification exams. The insights in this article—good or bad, right or wrong—are solely mine.

When Should I Take the Exam?

“Later, rather than sooner,” is my answer to almost everyone. Many ASQ members see an announcement in their section newsletter that the deadline to apply for an exam or to sign up for a refresher course is coming soon. But that means there are only about three months until the exam date, and you will need more time than that to plan and review. I recommend you begin preparing for the next exam date, which is probably about nine months away. You only want to take the exam once!

How Do I Start Preparing?

Have you been reading *Quality Progress* cover to cover? Have you been reading *Quality Engineering* and other journals that are pertinent to your upcoming exam? If not, start with this issue. It is a low intensity way to keep up to date in the quality profession. Then use the following process to develop a review plan:

Sort the list of topics in the BoK by your level of knowledge about the topic. Start by reviewing the list of major topics in the BoK. Table 1 lists the major topics in the BoK for the CQA-biomedical exam. You can list the subsections, too, if you want a finer resolution of topics.

Then rank the topics according to your knowledge level. Assign a one to the topic you are most familiar with, and assign the highest number to the topic you are least familiar with. For example, there are four major topics in the BoK for my upcoming exam. I assigned a four to the topic I am least familiar with (standards and guidance) and a

one to the topic I am most familiar with (auditing techniques and compliance programs for medical devices). Then I assigned ranking numbers to all the other topics.

Select topics for in-depth review. I usually perform a detailed review of the topics I am least familiar with that comprise approximately 50% of the exam. For the CQA-biomedical exam, I need to review two topics in detail: base law and regulations, and standards and guidance. This was an easy decision because I am not too familiar with these topics, and there is a high number of questions about these topics on the exam.

Develop a review schedule. Now that you have a prioritized list of review topics, you need to develop a review schedule. It will be the roadmap to your success, so you should spend more time on the topics that require a detailed review. I like to assign a minimum of four hours of review time to a subject with which I am most familiar for each 10% of the test. I double the allotted time to eight hours for subjects that need an in-depth review.

For example, I need to do an in-depth review of the section on standards and guidance. This section accounts for 20% of the test, so my review time would be four hours for each 10%. That puts me at 8 hours of review time, but I need to double that because I need to do an in-depth review. In all, I need to spend 16 hours reviewing standards and guidance.

Table 2 shows my breakdown of review time by topic. My total review time is 66 hours. By this I mean actual review time. You’ll need to schedule additional time for obtaining reference materials and researching current regulations.

Table 3 presents my review schedule. You’ll notice I incorporated some time to acquire reference materials, and my review time is scheduled to end just before the exam date. I am confident in my ability to execute this plan because I have previously taken and passed certification exams. If you are taking your first certification exam, you should plan to finish your review four weeks before the exam date. Why? Because you will encounter topics that require additional review time, and it will take longer than you think to track down additional reference materials. A business trip or time off for personal reasons can also affect your schedule.

Your review plan should consist of a schedule organized by topic. Take about 30 minutes to devel-

TABLE 1 Topics in the BoK

CQA-biomedical BoK section	Number of test questions	Knowledge level
Base law and regulations	45	3
Standards and guidance	20	4
Auditing techniques and compliance programs for medical devices	15	1
Technical knowledge	20	2

op a good schedule. It will reduce your anxiety level and save you hours of unnecessary reviewing.

The amount of review and preparation time required to pass a certification exam is different for each individual. Some can pass the exam with two weeks of preparation and others may need six to 12 months. The required preparation time depends on the following factors:

- Your understanding of quality fundamentals.
- Your understanding of the topics on the certification exam.
- The relevance of your work experience to the exam.
- The productivity of your review time.

Initially, plan on reviewing eight hours per week. This may sound like too much at first, but remember the certification exam will typically cover 10 to 15 quality topics and each topic will require a minimum of four hours of review time. After your first month of reviewing, check your progress. If, at this time, you believe you will have no problem passing the exam, then continue reviewing eight hours per week. If passing looks difficult or unachievable, you should increase your review time to 12 to 16 hours per week or more.

Set aside time in your schedule for practicing problems. Avoid reviewing in front of the television or at home while you are watching the kids. You need a quiet place where you can concentrate. If necessary, go to a library, a bookstore or your office to review. Many teaching professionals believe it takes at least three passes through a book before a person knows the material. Plan your time accordingly.

Before buying review materials, check with your friends and co-workers to find out what they used, and borrow as many books from them as you can. You should also check your local university library about borrowing possibilities. If you cannot find preparation materials to borrow, you will need to purchase them to solve practice problems. The materials you will need to purchase depend on your certification exam. ASQ has a variety of learning offerings to help you prepare for the exam. (Go to www.asq.org and click on Education.)

Should I Take a Review Course?

How do you determine if a review course is right for you? Begin by asking yourself the following questions:

TABLE 2 Review Time by Topic

CQA-biomedical BoK section	Percentage of test	Type of review	Review time in hours
Base law and regulations	45	In-depth	36
Standards and guidance	20	In-depth	16
Auditing techniques and compliance programs for medical devices	15	Regular	6
Technical knowledge	20	Regular	8

TABLE 3 Review Schedule

Task	Start date	End date	Hours
Create study plan, and obtain and organize reference materials.	6/1/04	8/13/04	16
Review base law and regulations.	8/14/04	9/10/04	36
Review standards and guidance.	9/11/04	9/24/04	16
Review auditing techniques and compliance programs for medical devices.	9/25/04	10/1/04	6
Review technical knowledge.	10/2/04	10/8/04	8
Perform final review and make preparations.	10/9/04	10/15/04	8
Take exam.	10/16/04	10/16/04	4

Do I find it difficult to plan and organize complex projects? Developing a plan to pass a certification exam can be complicated and overwhelming for some people. If you expect to have difficulty, a review course can help you develop a plan. In this case, make sure the course you select includes planning. Some courses cover only problem solving.

Will I be able to stick to my review plan if I do not have a course instructor assigning problems? Sticking to your plan requires self-discipline. If you typically need someone's assistance in sticking to a plan to achieve your goals, a review course can help. Homework will be assigned in both classroom and home review courses.

Can I afford it? These courses typically cost between \$300 and \$1,000. There are good ones and bad ones. It pays to do your research.

How do I find a good course? Check with your local ASQ section, the ASQ division that maintains

Bloom's Taxonomy

Benjamin Bloom created this six-level taxonomy for categorizing the level of abstraction of questions that commonly occur in education. Certification exams have questions that fall within particular levels, and the taxonomy provides a useful structure in which to categorize the questions. Since you know the levels of questions that will appear on your exam from the body of knowledge, you can use this information to better plan your review.

Knowledge

- Observation and recall of information.
- Knowledge of dates, events and places.
- Knowledge of major ideas.
- Mastery of subject matter.
- Question cues: list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when and where.

Comprehension

- Understand information.
- Grasp meaning.
- Translate knowledge into new context.
- Interpret facts and compare and contrast.
- Order, group and infer causes.
- Predict consequences.
- Question cues: summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss and extend.

Application

- Use information.
- Use methods, concepts and theories in new situations.
- Solve problems using required skills or knowledge.
- Question cues: apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment and discover.

Analysis

- Seeing patterns.
- Organization of parts.
- Recognition of hidden meanings.
- Identification of components.
- Question cues: analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain and infer.

Synthesis

- Use old ideas to create new ones.
- Generalize from given facts.
- Relate knowledge from several areas.

- Predict, draw conclusions.
- Question cues: combine, integrate, modify, rearrange, substitute, plan, create, design, invent, discuss what if, compose, formulate, prepare, generalize and rewrite.

Evaluation

- Compare and discriminate between ideas.
- Assess value of theories and presentations.
- Make choices based on reasoned argument.
- Verify value of evidence.
- Recognize subjectivity.
- Question cues: assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare and summarize.

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Bloom, B.S., editor, *Taxonomy of Educational Objectives: The Classification of Educational Goals: Handbook I, Cognitive Domain*, Addison Wesley, 1956.

the BoK, local colleges and ASQ headquarters. After you have compiled a list of courses, screen them for quality. Check to see which courses are approved by your local ASQ section, and check the instructor's qualifications. For a certification review course, make sure the instructor's background includes a combination of quality and educational

experience and the appropriate ASQ certification.

After you have narrowed your course list down to one or two offerings, obtain an outline for each course. Review each outline for completeness and organization. If the outline is disorganized and you cannot follow it, chances are the course will also be disorganized.

Should I take a practice exam? Why would anyone want to pay to take a practice exam in a review course and go through this agonizing process twice? Because taking a practice exam will help you determine whether you have chosen the correct reference books to take to the exam. Taking a practice exam will also help you:

- Learn how to manage your time during the exam.
- Identify areas for which you need more preparation.
- Reduce your anxiety during the real exam.

ASQ has introduced a new feature to help certified quality manager, reliability engineer and software quality engineer exam takers know what to expect on exam day. It is a sample exam comprised of 75 questions that were used in previous exams and will not be used again. It also includes the actual instruction sheet that is used in a real exam. (For more information, go to www.asq.org and click on Certification.)

The sample exams are free, and I recommend taking one at least two weeks prior to the exam date. You can also take a practice exam at the beginning of your review to help you plan your studying. I only recommend this route if you are certain you are well versed in the BoK for your particular certification. Otherwise, poor performance on a practice exam can be demoralizing. Poor performance can also lead you to study topics to improve your performance on the practice exam rather than focusing on the BoK.

How Many Books Should I Take To the Exam?

ASQ doesn't limit the number of reference materials you can bring to a certification exam, so you should bring the main reference books you used to review topics and solve problems during your personal exam review. It is well worth carrying these five to 10 books to the exam to ensure you can find the information you need to answer the questions. Mark the important pages, and keep a list on the inside front cover of pages containing important tables.

Milk crate style containers are great for carrying reference books and supplies to the exam because they are inexpensive, durable and easy to carry. They also stack well.

So, what books do I plan to use during the CQA-biomedical exam? For starters, I will take my three trusty stalwarts: Dennis Arter's *Quality Audits for Improved Performance*, A.V. Feigenbaum's *Total Quality Control* and J.M. Juran's *Quality Handbook*. These classics contain a wealth of information about quality and auditing. I am very familiar with them and can quickly locate information in each.

I also plan to use *The Biomedical Quality Auditor Handbook* because it focuses on the understanding of domestic and international regulations and the concepts and principles of biomedical quality auditing. I am writing this article during my review, so I am still considering a few additional texts. (Note: It is not recommended you spend time writing articles for *Quality Progress* while reviewing for a certification exam!)

Can I Take Self-Developed Reference Materials?

Yes. As you prepare for the exam, you can create your own reference book using a three-ring binder. Use separators with tabs for each topic. Just remember: No collections of questions and answers or review course quizzes are permitted.

You should also check the certification area on ASQ's website. I checked the reference section for the CQA-biomedical exam and found links to many of the regulations, standards and guidance materials covered in the exam. I followed the links and printed copies to use during my review and the exam.

What Should I Do the Week Before the Exam?

1. Make sure you can find the exam site. Getting lost on the way to the site is a bad start to the day. Know the route you are going to drive, where you are going to park and where the building and exam room are located.
2. Fill the gas tank in your car the day before the exam.

How Do I Take a Multiple-Choice Exam?

1. Survey the exam.
2. Glance at all the pages. If any are missing, tell the proctor.
3. Write the halfway time and the halfway question number at the top of a sheet of paper.
4. Read the directions carefully.
5. Ask the proctor for clarification if the directions are unclear.
6. Answer the easy questions first so you don't miss any because you ran out of time. It builds confidence and may help you remember answers to hard questions later.
7. Skip difficult questions and mark them for return with an X in the margin of the test booklet. Then answer questions you are somewhat sure about and mark them with a ? in the margin of the test booklet.
8. Follow these guidelines for answering questions:
 - Cross out both negatives of a double negative.
 - Underline dogmatic terms. Statements containing them are usually false because few things in the world meet the requirements of "always, never or best."
 - If the statement contains "and," both clauses have to be true for the statement to be true. If the statement contains "or," only one clause has to be true for the statement to be true.
 - Try to recall the answer before reading the choices.
 - As you are reading the choices, circle the letters of the choices that seem to be the best.
 - Read all the choices.
 - Select the best choice. If two or more choices sound correct, choose the most specific one. For example, "A triangle has three sides," is better than, "A triangle has more than two sides."
9. Ignore the number of A's, B's, C's or D's you marked.
10. Use all the time allowed.
11. Make sure to answer all the questions (there is no penalty for guessing), all your choices are clearly marked and the numbers on the answer sheet correspond to the exam question numbers.
12. Rework all the questions if you have time. First work on the unanswered questions marked with an X, then rework the questions marked with a ?. If you have time, rework the rest of the questions.

3. Obtain enough cash to pay for parking and snacks.
4. Pack your reference books, pencils, eraser, watch, calculator and extra batteries.

How Do I Get Ready on the Day Of the Exam?

1. Set your alarm so you allow enough time to get to the exam without worrying—then add 30 to 45 minutes.
2. Psych yourself up—be confident.
3. Eat something light to give you energy and prevent an empty stomach from annoying you and those around you.
4. Glance over your notes.
5. Drive to the exam site.
6. Relax at the site immediately before the exam. Read the newspaper and sip a cup of coffee.
7. Avoid conversations about the subject matter—they can throw you off balance.
8. Don't review during the last hour before the exam. Just relax.
9. Get to the exam room early enough to get a good seat and make sure the clock is in view, the lighting is OK and distracting friends are not sitting near you. Then relax for a minute before starting.
10. Manage your exam anxiety. Some anxiety is good for motivation, but you should still try to take your mind off self-defeating thoughts before the exam begins. Picture your summary notes and go over key concepts and terms in your mind. Think briefly about the relaxed aftermath, take several slow, deep breaths and concentrate on relaxing your whole body.

After the Test?

My recommendation is to first treat yourself to a nice lunch or dinner. Later that day, complete the sentence, "Changes I will make to improve my results on the next exam are ...," and list three specific changes you will make in preparing for your next exam. Include how and when you will make those changes.

Planning and preparation are the keys to passing a certification exam. The major contributor to test anxiety is lack of preparation. Most test anxious people have poor study habits and have not adequately prepared for the test. Knowledge about taking exams can help you relax during the actual exam, and I hope these guidelines help you feel comfortable in the testing situation.

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