The background of the entire page is a close-up photograph of a test form. The form has a grid of bubbles for marking answers, with letters A, B, C, and D arranged in columns. Numbers 10 through 19 are visible in the left margin. A yellow pencil is positioned diagonally across the center, pointing towards the bottom right. A light blue eraser is in the top left corner. The overall lighting is bright, and the colors are vibrant.

Test Run

Improve your chances of passing an ASQ certification exam

In 50 Words Or Less

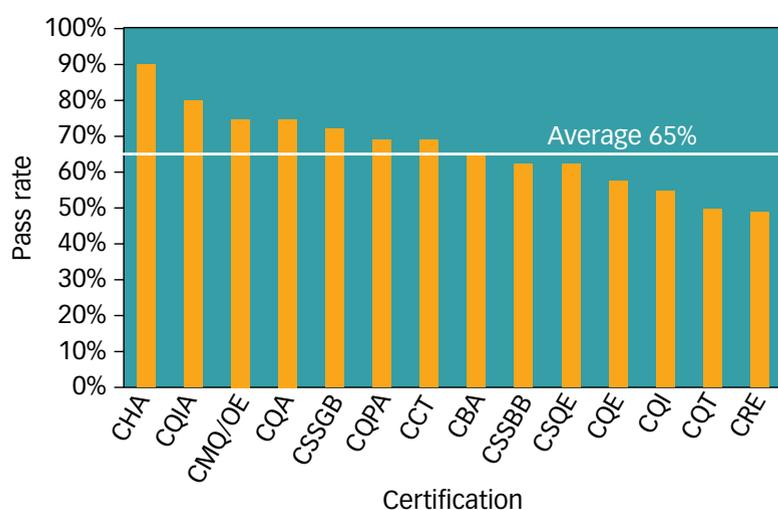
- Passing a certification exam isn't a given, and the challenge isn't always in the test itself.
- The difference between passing and failing often occurs before the exam, so it's important to know the pitfalls before getting started.
- Avoid these danger zones to help ensure a successful outcome.

by Govind Ramu

IN 2008, 14,906 people took ASQ certification exams. Whether by careful preparation, exceptional test-taking skills, a bit of luck or some combination, 9,394 of these people—or 63%—passed. The year before, the percentage was similar: Of 14,422 people who took certification exams, 9,431 passed (65%). The 2009 success rate as of October was also in that neighborhood, with 6,570 passing out of 9,928 test-takers, or 66%.

For a little more perspective, Figure 1 offers a look at the pass rates for ASQ’s 14 certifications. To ensure certifications remain relevant and up to date, ASQ revises each body of knowledge (BoK) every five years. Therefore, the pass rate for each certification in Figure 1 is based on data accumulated since the BoK was last revised. So how can you avoid being one of the certification exam takers who will not pass this year?

Pass rate by ASQ certification / FIGURE 1



- CHA = certified hazard analysis and critical control points auditor
- CQIA = certified quality improvement associate
- CMQ/OE = certified manager of quality/organizational excellence
- CQA = certified quality auditor
- CSSGB = certified Six Sigma Green Belt
- CQPA = certified quality process analyst
- CCT = certified calibration technician
- CBA = certified biomedical auditor
- CSSBB = certified Six Sigma Black Belt
- CSQE = certified software quality engineer
- CQE = certified quality engineer
- CQI = certified quality inspector
- CQT = certified quality technician
- CRE = certified reliability engineer

Notes: Certification pass rates since last body of knowledge change or certification inception, covering five years of data or more. Data from special administrations of exams are excluded from calculations. Certified pharmaceutical good manufacturing practices professional not presented in graph due to fewer data points.

Having been on both sides of the process—developing and taking exams—I have identified common errors and separated them into three categories: planning and preparation, exam strategy and exam taking.

Of course, awareness of common mistakes is just one part of the battle. It's just as important to understand the reasons these mistakes happen and formulate a strategy for preventing them. If enough of us pay close attention to avoiding the following mistakes, perhaps more of us will end up on the right side of the pass/fail bar.

Planning and preparation

Being overconfident: Working in the quality profession for a long period of time can lead some professionals to assume their practical experience automatically gives them the knowledge they need to ace a certification exam. This overconfidence contributed to the high failure rates for ASQ certification exams.

The BoKs are very broad for many certifications because they are based on an extensive analysis of a wide sample of representative jobs. The chances are slim that the regular duties of any single job cover the entire BoK. Besides, many of us have not taken an exam since picking up our diplomas. Trying to answer the exam questions based on experience alone and within the time limit is a big challenge. Do not underestimate the amount of planning and preparation required to pass the exam, no matter how much work experience you have.

Not reading the BoK thoroughly: An important first step is to read the BoK carefully before planning your preparation for the exam. Highlight every keyword and tool mentioned in the BoK, and make sure you have adequate reference materials.

Other than certification-specific handbooks or exam primers, it's not easy to find one book that covers every aspect of a BoK. But keep in mind the handbooks and primers are intended to offer breadth more than depth. Extended reading in many BoK subsections may be required. For each certification, there are a list of references and resources for further reading on the ASQ website at www.asq.org/certification/prepare.html. Just select any certification and click on the “references” link.

Lacking work experience in the BoK sections: Most certifications require experience that covers one or more BoK sections. As stated previously, one job description will not cover every section of a certification

BoK. Even if it did, in our day-to-day responsibilities, very few of us regularly work on every area in a BoK. We use some areas much less frequently than others.

The exam questions are designed to allow test-takers to show their ability to apply book knowledge to a particular situation. Specifically, those sections that are labeled with the cognitive levels of apply, analyze, evaluate and create will be easier for you to address if you can apply your learning to particular situations.

Not understanding the cognitive level for each BoK section: Exam takers often ignore the cognitive level specified for each section of the BoK. Paying close attention to the cognitive levels will help you determine the extent of your planning and preparation. Sections that require higher cognitive levels will require more in-depth preparation.

For instance, when you see “apply,” you can expect questions that contain specific examples. You should be prepared to demonstrate an understanding of when and how you would use ideas, procedures, methods, formulas, concepts and tools in the context of those examples. Similarly, when you see “analyze,” expect questions that will require you to break down information into constituent parts, identify relationships and patterns of organization, and derive the most significant and useful information from a given situation or set of data.

Being unaware of appropriate reference materials: The thing that appears most frequently on the ASQ certification discussion board is a request for help in selecting and evaluating reference materials. There are many materials in the market that cover each BoK, including a long list of references specified by ASQ on its certification pages. But it is not practical (nor easy on the wallet) to purchase so many books.

ASQ's certification handbooks are the best places to start. If you need additional assistance, exam-specific primers and CDs are also available from other reputable service providers. But I caution against considering the handbooks or primers as your only certification references. They will not cover every aspect of the BoK in the depth that is required. As an examinee, you need to take responsibility for determining which references you need to complement your knowledge and experience.

Being unaware of exam practice aids: Exam preparation materials, such as primers and simulated exams, can help you master the art of test taking. Even for exam candidates with a vast knowledge of the subject matter

ASQ CERTIFICATION: A BRIEF HISTORY

The first ASQ certification was developed and offered in 1968. In the four decades that followed, the program has grown to 15 certifications, which are listed below, along with the year of their introduction and the areas they address.

- **1968, certified quality engineer:** principles of product and service, quality evaluation and control.
- **1970, certified quality technician:** quality problems analysis, inspection sampling plans and statistical process control applications.
- **1972, certified reliability engineer:** principles of performance evaluation for product and system safety, reliability and maintainability.
- **1984, certified quality inspector (formerly mechanical inspector):** hardware documentation, lab and calibration procedures, inspection, process performance, data collection and reports.
- **1987, certified quality auditor (CQA):** standards and principles of auditing, questions, evaluations and reports for quality system adequacy.
- **1995, certified quality manager:** champions process improvement initiatives and supports strategic planning and deployment initiatives.
- **1996, certified software quality engineer:** development of software processes, measurement, verification and validation, analytical methods and quality management.
- **1996, CQA—hazard analysis and critical control point (HACCP):** developed to test applicant's knowledge of the HACCP standards.
- **2000, certified quality improvement associate:** designed to test basic knowledge of quality tools and their uses, as well as involvement in quality improvement projects.
- **2001, Six Sigma Black Belt:** designed to demonstrate competency in Six Sigma methods.
- **2002, CQA—biomedical:** understand principles of standards, regulations, directives and guidance for auditing a biomedical system.
- **2003, certified calibration technician:** tests, calibrates, maintains and repairs electrical, mechanical, electromechanical, analytical and electronic measuring/recording equipment for conformance to established standards.
- **2004, certified HACCP auditor (replaced CQA-HACCP).**
- **2005, certified quality process analyst:** paraprofessional who analyzes and solves quality problems and is involved in quality improvement projects.
- **2005, certified biomedical auditor (replaced CQA-biomedical).**
- **2006, certified manager of quality/organizational excellence (replaced certified quality manager):** updated to reflect the broader scope of the quality manager's position.
- **2006, Six Sigma Green Belt:** paraprofessional who works with process development and documentation, collects and summarizes data, and creates and interprets multivari studies.
- **2009, pharmaceutical good manufacturing practices professional certification:** developed to test applicant knowledge of principles as regulated and guided by national and international agencies.

—William O. Newcomb
Quality engineer/specialist
Westinghouse Electric Co.
Charlotte, NC

and substantial work experience, primers provide concise coverage of material under every BoK subsection.

In addition, simulated exams provide real-time exam experience that will help you learn to stay focused and manage your time. Particularly useful features of simulated exams are rationales for wrong answers and scoring by sections (performance graphs). If you find specific areas in which you need additional study, find a more specialized text.

Managing time poorly during preparation:

When budgeting your time to accommodate your strengths and weaknesses, remember the total amount of preparation time you will need depends primarily upon your knowledge and experience. Unless you know your own strengths and areas that need improvement, you will likely spend too much time on areas for which you don't need to prepare quite as much.

Poor time management during preparation can

prevent you from becoming fully aware of the risk of incorrectly answering questions that are related to your weaknesses. Again, simulated exams from a CD or online are great ways to kickstart exam preparation. A good approach is to take a simulated exam to assess your strengths and weaknesses. Then you can set up a preparation strategy based on the results.

Missing the application deadline: Deadlines are not trivial. ASQ typically extends an application deadline once. After that, the date is final. I have heard many applicants talk about taking an exam, forgetting to apply and being forced to wait another six months

for the next opportunity. Because ASQ allows you to apply for exams in advance, apply as soon as you make your decision. This will keep your mind from wandering and ensure you stay committed to taking the exam.

Rescheduling the exam because of a nonemergency: As a result of improper planning and preparation, some exam takers wait until the week before the exam date and then call ASQ to postpone. Anyone who postpones an exam for a nonemergency reason is likely to continue to postpone again and again before finally giving up. Psychological reasons such as fear of

RECERTIFICATION

Many of the certifications achieved through the exam process require recertification, which verifies that a certified individual has maintained the same knowledge level that was demonstrated when the certification exam was passed. Not all certifications require recertification. These are the ones that do: quality manager/organizational excellence, quality engineer, quality auditor, reliability engineer, software quality engineer, Six Sigma Black Belt, calibration technician, hazard analysis and critical control points auditor and biomedical auditor. Eighteen recertification units (RU) in a three-year period keeps an individual on the path to recertification. How can a member earn credits?

- **Employment**
- **Professional development**
 - Attend seminars, workshops and conferences
- **Education**
 - Company-sponsored in-house courses
 - University/college courses
 - ASQ courses
- **Society involvement**
 - Exam proctor
 - Meeting/workshop attendance (includes local section attendance)
 - Committee member
 - ASQ officer
- **Instructor**
 - Company internal instructing
 - College, university instructing
 - ASQ exam refresher course instructing

Here's an example:

• Full-time employment	10.8 RU
• World Conference on Quality and Improvement attendance (once)	3.0 RU
• Company-sponsored training	4.0 RU
• Local section meetings (per year)	<u>2.7 RU</u>
• Total	<u>20.5 RU</u>

This is only one example, but there are many more combinations. If you have any questions, contact ASQ customer care at 800-935-2231 or 414-272-8575, or visit www.asq.org/certification/recertification/index.html. —W.N.

It's important to answer questions correctly, but it's **just as important** to **manage the exam time wisely.**

failure can also lead to rescheduling. Careful planning and preparation can help overcome this fear.

Exam strategy

Having a mind-set to barely pass: ASQ's approach is such that if you score slightly higher than the cutoff score, there is still a possibility of failing the exam. The best approach is to set out to score much higher than the cutoff score. Although exact cutoff scores are confidential, my experiences with the process lead me to believe they are usually less than 85%. It's best to avoid that neighborhood altogether by scoring as high as you can.

Not knowing your weaknesses and strengths prior to the exam date: The use of simulated exams and question banks can help you identify strengths and weaknesses during preparation. It will also allow you to budget more exam time for weaker areas.

Not practicing and timing adequately using simulated exams: It's important to answer questions correctly, but it's just as important to manage the exam time wisely. Ideally, you'll complete the exam in 75 to 80% of the allotted time, using the balance for reviewing answers. To ensure ample practice, I took eight simulated exams as part of my test-taking strategy. Then, before the exam, I completed one final review of all of the questions included in the chosen exam's practice aids.

Not practicing writing with pencil (specific to certified manager of quality/organizational excellence [CMQ/OE] constructive response): Most of us have not used a paper and pencil to write a full page of text since the advent of the PC. Imagine trying this lost skill on the exam day when you need to answer two constructive response questions back to back in 45 minutes. Not a good idea. Your fingers will tire too soon. CMQ/OE exam takers should practice writing eight to 10 constructive responses with a pencil during their preparation to regain legibility and speed.

Selecting the wrong open-book materials: There is no limit to how many books you can take to the exam.

Some examinees walk in with a pencil and eraser. Others bring a two-level cart filled with reference books. The only books not allowed by ASQ during the exam are resources containing a question-and-answer format. This means you may be prevented from using textbooks that have a question-and-answer section or format.

Your exam proctor could strictly interpret the policy and disallow some of the materials you bring, so don't rely on open books too much. It's unlikely any book will contain direct answers to questions from the exam. After taking six certification exams, which translates to a total of 900 questions answered, I have encountered only three questions that came right out of a book.

The questions require application of knowledge and experience. One suggestion is to pick two or three reference books from the list provided for the specific exam and use those same books for preparation and the exam itself. This will help you build a familiarity with the format of the material, and searching for the information you need during the exam will take mere seconds.

Failing to organize open-book materials: Choosing reference books with appendixes covering all of the required statistical tables and a glossary for the BoK is advisable, but do not underestimate the importance of making reference materials more easily accessible.

Compiling a list of relevant references—such as formulas, statistical tables, sampling plan tables and definitions of key terms—is worthwhile, as is cross-referencing the key terms on your list with page numbers from the corresponding books you will use during the exam. Finally, bookmark important pages that contain tables, graphs, example calculations and key definitions.

Not getting adequate rest the night prior to the exam: If you have not invested enough preparation time in the three to four months prior to taking the exam, it is highly unlikely a late-night cram session the night before will make any difference. Even if you prepare well, you can do significant damage to your concentration by not getting a good night's sleep.

Not assessing travel distance or possible obstructions: Notification of acceptance of your exam application will specify the exam venue. Many of us assume that if we have the address, we can simply drive to the venue. But you could encounter construction, an accident or a throng of people trying to reach a concert or sporting event on a college campus.

If you are unfamiliar with the exam location, take a test drive the day before to familiarize yourself with the route and identify any potential issues that could require another route to your exam location. Check your weather forecast the night before to determine if you need to plan extra time for your trip or bring an umbrella. This is another way to minimize last-minute sources of stress.

Not knowing the exam location: Just as you will want to practice your route to the exam site, you should do your best to locate the actual exam room ahead of time. In many situations, it will not be possible to walk into the exam location and familiarize

yourself with the room prior to exam day. Some exams are given in conference rooms and training rooms of organizations that require security access. Some exam rooms are located deep inside a labyrinthine campus building that should have its own map and directions.

At the very least, you should arrive at the exam location well ahead of your scheduled start time and locate the room assigned for taking the exam. Talk to the section exam proctor prior to the exam to learn exactly where the room is located on the campus.

Exam taking

Lacking confidence: The day of the exam is when you should have all the confidence you possibly can. Lack of confidence can result in second-guessing during the exam. Knowing you have completed many simulated exams, as mentioned earlier, can improve your confidence when you finally sit down to take the exam.

Being distracted during the exam: I have faced exam situations in which building renovations were happening just outside the room, causing lots of noise and other distractions. Some exam rooms are closer to a highway or expressway than you might be accustomed. Hearing the hum of traffic and horns honking could interrupt your focus on the exam. These are rare situations, but you don't want noise from streets and building renovations to be the reason you didn't pass an exam. I recommend bringing earplugs as a contingency.

Forgetting crucial items: After carefully preparing your open-book materials and planning for contingencies, you do not want to be on the way to the exam only to realize half of the items you planned to bring are still sitting on your kitchen table. Create a checklist of items to take with you on the day of the exam, including reference books, statistical tables, a calculator and blank paper for working out your answers.

Figure 2 is a good starting point when constructing your checklist, but you should take a moment to customize it to meet any other needs you might have during the exam. A dictionary may be useful for those whose first language is not English. The CMQ/OE exam, for example, has constructive response questions, while the certified quality auditor exam involves case studies with some challenging vocabulary. Some test takers also bring an English-language technical dictionary.

Using a calculator that is different from the one you used for practice: First, make sure you consult ASQ's calculator policy (www.asq.org/certification/faq/)

ASQ certification exam checklist / FIGURE 2

Exam location	
<input type="checkbox"/>	ASQ confirmation mail with venue location
<input type="checkbox"/>	Picture ID
<input type="checkbox"/>	Exam venue route map, driving directions, parking location
<input type="checkbox"/>	Exam room location: room number, access, security, phone number
<input type="checkbox"/>	Umbrella or other items based on weather report
Essentials	
<input type="checkbox"/>	Several No. 2 pencils, sharpener, scratch paper
<input type="checkbox"/>	Good eraser, wristwatch
<input type="checkbox"/>	Calculator (refer to ASQ policy), backup calculator if required
<input type="checkbox"/>	Two or three major reference books (bookmarked)
<input type="checkbox"/>	ASQ handbook or other certification primer (bookmarked)
Exam aids	
<input type="checkbox"/>	Formula list
<input type="checkbox"/>	Statistical tables, sampling plans (where appropriate)
<input type="checkbox"/>	Glossary, acronyms, important definitions
<input type="checkbox"/>	Customized cross-reference list
<input type="checkbox"/>	Dictionary
Miscellaneous items (use blank space for additional needs)	
<input type="checkbox"/>	Coffee/juice/bottled water
<input type="checkbox"/>	Coins for vending machine, parking
<input type="checkbox"/>	Aspirin (or any non-drowsy medication)
<input type="checkbox"/>	Earplugs (in case of traffic noise or other distractions)
<input type="checkbox"/>	

GET INVOLVED

In addition to taking the actual ASQ certification exams, there are opportunities to participate in the development of the exams and, in the process, to enhance your career.

Workshops:

- Item writing (write exam questions).
- Item review (review the questions).
- Exam review (take the actual exam and score it before official administration).

Selection criteria for volunteers:

- Good team and communication skills.
- No involvement with teaching/authoring exam review material.
- Can be new to quality or an experienced professional.

Benefits of volunteering:

- Receive one recertification unit per day of workshop.
- Network with peers.
- Reinforce and expand subject knowledge.
- Learn new techniques from other quality professionals.

How to volunteer:

- Contact ASQ at 800-935-2231 or 414-272-8575.
- Contact the division liaison responsible for a specific exam. —W.N.

calculator.html). Then, take the same calculator you used during your preparation. This will save precious time searching for functions.

When you have only about a minute to spend on each question, you do not want to consume any of that time by needing to stop and think, “Is this second function or shift? How do I go to ‘stat’ mode from ‘deg?’ Which button is for sample standard deviation, and which one is for population standard deviation? My other calculator was different. What do I do now?”

Double-check your calculator’s display to ensure it is not fading or failing in any way. Consider replacing your battery before the exam or bringing an identical calculator as a backup. The expense of a new calculator is a small price to pay for eliminating the potential for added anxiety and, as a result, failing the exam.

Not reading the questions properly with the emphasis on key words: During preparation, you work on understanding sample questions and start the practice of underlining the key words in the questions. This underlining technique helps you focus carefully on those words and block out extraneous ones.

Multiple-choice answers typically involve one distracter, two plausible answers and one best answer.

Read all choices carefully and compare them to look for differences. The best answer and one of the plausible answers are likely to be similar, and selecting the best one will require knowledge and experience.

Not following the 30-60-90 seconds rule: Many exam takers adhere closely to the 30-60-90 seconds rule. The idea is to attempt questions one by one and initially answer those you can deal with quickly.

On your first round through the exam, answer all of the 30-second questions. If you need more than 30 seconds to figure out an answer, move to the next question. Once all the 30-second questions are answered, use the same approach to answer all 60-second questions. The following round is for questions that take 90 seconds. Finally, address the questions that take two minutes or longer to answer.

Based on my experience, 30% of the questions should be answered within 30 seconds or less, 50% of the questions within 60 seconds or less, 15% of the questions within 90 seconds or less and the remaining 5% of questions in two to four minutes per question. This approach should total approximately 150 minutes, leaving about 90 minutes for careful review of the entire exam.

QUESTIONS AND ANSWERS

Experience is the best teacher. Share the lessons you’ve learned from taking ASQ certification exams or, if you’re thinking about taking your first exam, questions you have about preparation or test taking. Just log on to www.qualityprogress.com and leave a comment on this article’s page.

Do not neglect the importance of unwinding and celebrating the accomplishment of taking an ASQ certification exam.

A word of caution: While using this approach, you will be filling in your answer sheet out of sequence. Make sure you do not lose alignment between the exam questions and your answer sheet.

Referring to open books for almost all questions: Relying too much on open books during the exam is the result of poor preparation or may signify a lack of confidence. As discussed earlier, there's no magic reference book that contains answers to all ASQ exam questions. Only with background knowledge, relevant experience, exam preparation and practice can you pass the exam. Referring to open books for every question wastes exam time and is tiring.

Not having enough time to answer every question: All exam questions carry equal weight in determining your exam score. Laboring for five or 10 minutes on your first attempt at any answer will not be worthwhile if it takes time away from addressing other questions.

Because there is no penalty for a wrong answer, select any answer and move on when you are stumped by a question. Similarly, if you are near the end of your allotted examination time and still have unanswered questions, fill in any answer. On average, you'll answer 25% of them correctly.

Not having enough time for revisions: If you're not well prepared, you're taking your first certification exam or the exam is difficult, you may end up tight on time for review. As you fill in your initial answers, it's a good idea to make an identification mark near the questions you should review. This way, in your next pass through the entire exam, you can focus on the questions you have identified before reviewing the others. This ensures you'll be as efficient as possible when time is short.

Making too many changes to answers during revisions: If you take too much time to answer the exam questions, you may not have time to review your answers. On the other hand, if you are too quick, leaving plenty of time to spare, you may have time to re-

view more than once. In the latter case, the danger is that you'll be tempted to revise your answers too many times. If you're unsure, stick with your first choice.

After the exam

As part of your own continuous improvement regimen, make a mental note of the certification BoK sections you found to be particularly difficult during the exam. Regardless of the exam outcome or future plans to take additional certification exams, strengthening these areas will help with professional development.

Along with the exam questions and the answer sheet, the exam proctor will provide you with a separate sheet you can use to report ambiguous questions or errors. Make sure you take this opportunity to offer feedback; it helps with ASQ's scoring process, as well as ongoing assessments and improvements to exam questions.

After you turn in your answer sheet, there's one more mistake to avoid. Do not neglect the importance of unwinding and celebrating the accomplishment of taking an ASQ certification exam. Regardless of the outcome, you can be proud you followed through on your commitment. Even before you are notified of your results, reflect on the knowledge and experience you gained, and reward yourself for your months of preparation.

Achieving an ASQ certification should not be the end result. Instead, look at it as a milestone in a process of lifelong learning about quality. And regardless of whether you decide to take another exam, make sure the journey continues. **QP**



GOVIND RAMU is a senior quality manager and Six Sigma Master Black Belt at JDS Uniphase Corp. in Milpitas, CA, and is a licensed professional engineer. Ramu has a mechanical engineering degree from Bangalore University in India and a certificate in elements of statistical quality control and operations research from the Indian Statistical Institute in Chennai, India. An ASQ member since 1998 and an ASQ Fellow, Ramu holds six ASQ certifications: quality manager, quality engineer, Six Sigma Black Belt, quality auditor, software quality engineer and reliability engineer. He is co-author of *The Certified Six Sigma Green Belt Handbook* (ASQ Quality Press, 2008).