

# Creating High Quality, Valid, and Reliable Certification Exams

At first glance, you might think that writing certification exam questions is a no-brainer. Sure, most anyone can think up a question to ask. However, there is a significant difference between simply “thinking up” questions and calling that a “certification” test and the development of high quality, legally-defensible, valid, and reliable certification program exams. As you continue to invest in your future within the IT industry, it makes sense to educate yourself and understand the differences.

The key to establishing a valid testing program is to ensure the appropriate content is being tested. This is accomplished by following recognized industry guidelines for test development. These guidelines provide the means to help ensure that the content of the domain (area of study) is properly covered, that the proper constructs (knowledge, skills, abilities, or attributes) are being measured, and the test is free from bias. Additionally, validation measurements such as group review, content approval by recognized subject matter experts, and statistical analyses of performance data help to ensure that a certification program truly measures what it intends to measure and that the resulting certification credential is fair, meaningful, and provides credibility to the examinees.

## Critical developmental steps incorporated into high-level certification and professional licensure programs

STEP	DESCRIPTION
<b>Domain Analysis</b>	This is often referred to as a job-task analysis, or a competency analysis. The purpose of this step is to identify the knowledge, skills, abilities, and judgments necessary within a given testing domain. The ability and performance level required for certification is established as well as the specific testing objectives.
<b>Exam Blueprint</b>	An exam blueprint is created to define exactly how many questions should be on the exam for each objective or content area, based on its relative level of importance.
<b>Creation of Questions</b>	Question creation should be done in accordance with the latest research on how to maximize the effectiveness of certification testing questions.
<b>Technical Validation</b>	This step is performed by a group of subject matter experts who must come to a consensus that the items are appropriate, technically accurate, congruent to the purpose and objectives of the exam, and relevant to the purpose of the test.
<b>Statistical Validation</b>	Statistical validation is performed on empirical data from the administration of the exam. Only questions that properly discriminate between high performers and low performers should be used for certification. The higher the examinee’s ability, the higher their probability should be to answer any given question correctly. The statistical analysis validates that each question on the exam is performing appropriately.
<b>Cut Score</b>	Analyses are performed to ensure that the “passing score” is appropriate for both the difficulty of the collective set of questions on the exam and for the specific level of competency expected to be considered “certified.”

“Low-stakes exams”, such as assessments or practice tests, do not often follow these steps and therefore, cannot be called true certifications. However, a high quality, highly credible certification program, with staying power in the market, will make the necessary investments to follow this industry recognized exam development process.

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Those who utilize certifications as a means for qualifying individuals (job selection, promotion, etc.) are relying on the credibility of a rigorous certification process. Additionally, examinees expect an accurate representation of their skills and abilities. Test sponsors (such as Teradata Corporation) rely on the test results in order to make sound business decisions and maintain the credibility of their entire certification program.

The process to create high quality, high value certification exams is rigorous, lengthy, and requires the appropriate knowledge and commitment to a long-term program. Teradata's IT Certification Program has been developed following the rigorous standards outlined above. Teradata® has been offering high quality certification to the IT market since 1999 and continues to invest in a process that provides additional value to Teradata customers and partners globally. Teradata provides the only recognized and authorized Teradata certification in the industry.

This article has been provided to the Teradata Certified Professional Program by **Certification Management Services (CMS)** for the education and benefit of Teradata certification customers.

## About CMS:

CMS was founded in 2006 by two psychometricians, who each have over 12 years experience designing, building, and validating IT industry certification exams. CMS works closely with companies such as Teradata to ensure their exams meet the national testing standards set forth by the National Council for Measurement in Education (NCME), the American Psychological Association (APA), and the American Educational Research Association (AERA). Within the past 12 years, CMS psychometricians have worked with nearly every major IT certification program. Additionally, CMS has provided test development services for professional licensure, education, corporate testing, and performance-based testing programs.

For additional information about CMS and their industry-wide services, please visit [www.certmanserv.com](http://www.certmanserv.com).

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