



EXAM PREPARATION GUIDE

PECB Certified Six Sigma Green Belt

The objective of the “PECB Certified Six Sigma Green Belt” examination is to provide the customer with the necessary skills to successfully apply a rigorous methodology and leverage data-based decision making to plan and complete Six Sigma projects, to improve processes and to solve problems.

The target population for this examination is:

- Managers or consultants involved with and committed to process improvements
- Individuals seeking to improve business, production or service processes
- Six Sigma project team leaders and/or members
- Expert advisors seeking to master the implementation of Six Sigma projects

The exam content covers the following domains:

- **Domain 1:** Fundamental principles of Six Sigma Green Belt
- **Domain 2:** Implementation of a rigorous DMAIC methodology
- **Domain 3:** The use of data-based decision making
- **Domain 4:** Planning and completing Six Sigma projects
- **Domain 5:** Interpretation of statistical tools
- **Domain 6:** Improvement of processes and how to solve organizational problems

The content of the exam is divided as follows:

Domain 1: Fundamental principles of Six Sigma

Main objective: To ensure the improvement of an organizational process by developing more-in-depth understanding of Six Sigma Green Belt methodologies

Competencies	Knowledge statements
<ol style="list-style-type: none">1. Ability to identify and communicate with stakeholders2. Ability to monitor the organizational structure through Six Sigma methodologies3. Ability to explain and illustrate the main concepts of Six Sigma Green Belt4. Ability to apply the best practices of Project Management in a Six Sigma Green Belt project	<ol style="list-style-type: none">5. Knowledge of management principles in regards to Six Sigma6. Knowledge of the basic principles of Six Sigma Green Belt7. Knowledge of the main Six Sigma Green Belt concepts and terminology8. Knowledge of Six Sigma Green Belt concepts that are related to project management terminology, process and best practice9. Knowledge on defining the main problem by validating project scope and by identifying stakeholders

Domain 2: Implementation of a rigorous DMAIC methodology

Main objective: To ensure the efficiency and the effectiveness of an organizational process through DMAIC model

Competencies	Knowledge statements
<ol style="list-style-type: none"> 1. Ability to define the main problem 2. Ability to identify the individual steps of Six Sigma Green Belt improvement process 3. Ability to monitor and evaluate the effectiveness of Six Sigma Green Belt in an organization 4. Ability to establish mechanisms for continuing process improvement 	<ol style="list-style-type: none"> 1. Knowledge on how to select and justify the selected approach and methodology adapted to the needs of the organization 2. Knowledge on how to increase the effectiveness of a project by improving the process 3. Knowledge on how to apply different methodologies to a project 4. Knowledge of the principal approaches to implement a DMAIC model 5. Knowledge on how to conduct and manage a project through Six Sigma Green Belt methodologies

Domain 3: The use of data-based decision making

Main objective: To ensure that process capabilities, products, and services exceed stakeholder' expectations.

Competencies	Knowledge statements
<ol style="list-style-type: none"> 1. Ability to implement data-based decision making 2. Ability to analyze the causes, stratification and the root cause analysis 3. Ability to learn how to construct an individual control chart and a median run chart. 4. Ability to identify, analyze the root-causes of non-conformities and proposed action plans to treat them 	<ol style="list-style-type: none"> 5. Knowledge of tools and techniques to improve a process in a project 6. Knowledge on analyzing the problem through stratification analysis, value add analysis and root cause analysis 7. Knowledge on controlling the sustainability of the project 8. Knowledge on how to implement Six Sigma Metrics 9. Knowledge on how to embed solutions and influence decision making processes

Domain 4: Planning and completing Six Sigma projects

Main objective: To establish and maintain traceability to improve the efficiency of a project

Competencies	Knowledge statements
<ol style="list-style-type: none"> 1. Ability to differentiate between four classic “Families of Measure” 2. Ability to control the traceability and the recurrence of the same problem 3. Ability to differentiate between special and common causes of variation 4. Ability to identify out-of-control situations with the runs rules 	<ol style="list-style-type: none"> 1. Knowledge on the Six Sigma Control Plans 2. Knowledge of the main strategies related to Six Sigma Green Belt 3. Knowledge on how to identify Six Sigma Roles & Responsibilities 4. Knowledge on how to measure productivity and quality of an organization 5. Knowledge on how to analyze PFQT: Productivity, Financial, Quality and Timeliness.

Domain 5: Interpretation of statistical tools

Main objective: To develop metrics that help leaders to measure the effectiveness of a project through statistical tools

<p>Competencies</p>	<p>Knowledge statements</p>
<ol style="list-style-type: none"> 1. Ability to implement different methods while collecting data 2. Ability to apply data in different diagrams 3. Ability to determine sample size 4. Ability to measure effort, cost, quality and time of each process 5. Ability to use statistical methods to illustrate the comparison 6. Ability to validate and illustrate process improvement 7. Ability to compare data that are not normally distributed 	<ol style="list-style-type: none"> 1. Knowledge on how to implement data through graphical displays 2. Knowledge on which measure of the tendency can only be used if the data is normally distributed 3. Knowledge on which measure of variability can only be used if the data is normally distributed 4. Knowledge on which measure of central tendency you can always use, regardless of whether the data is skewed or normally distributed 5. Knowledge on how to create graphical displays of nominal data with Pareto diagrams 6. Knowledge on how to create graphical displays of ordinal data with bar charts 7. Knowledge on how to create graphical displays of continues data with histogram

Domain 6: Improvement of processes and how to solve organizational problems

Main objective: To ensure that the organization is achieving efficient results by improving its fundamental methods.

Competencies	Knowledge statements
<ol style="list-style-type: none"> 1. Ability to improve the issues that were identified and implement changes 2. Ability to use a set of methods, arranged in a specific order to create potential ideas or solutions 3. Ability to use a specific methodology; GRES methodology 4. Ability to measure the effectiveness of approaches that were used to develop a project 	<ol style="list-style-type: none"> 1. Knowledge on improving the problem by developing and implementing solutions 2. Knowledge of the characteristics of Six Sigma Green Belt scope in terms of organizational, technological and physical boundaries 3. Knowledge on what is the difference between attitudinal versus structural 4. Knowledge on how to increase the effectiveness of a project by improving the process 5. Knowledge on how to improve the quality of a product by emerging modifications in a process 6. Knowledge on how to align the business processes to achieve organizational goals 7. Knowledge on how to implement and monitor solutions 8. Knowledge on how to maintain improvement in an organization

Based on these 6 domains and their relevance, 150 questions are included in the exam, as summarized in the following table:

		Level of Understanding (Cognitive/Taxonomy) Required		Number of Questions/Point s per competency domain	% of test devoted to each competenc y domain	
		Points per questio n	Questions that measure Comprehension , Application and Analysis			Questions that measure Synthesis and Evaluation
Competency Domains	Fundamental principles of Six Sigma Green Belt	1	10	10	18	12
	Implementation of rigorous DMAIC Methodology	1	20	8	24	16
	The use of data-based decision making	1	15	8	19	13
	Planning and completing the Six Sigma projects	1	20	8	43	29
	Interpretation of statistical tools	1	18	8	20	13
	Improvement of processes and how to solve organizational problems	1	20	8	26	17
	Total points	150			150	100
Number of Question per level of understanding			102	48		
%of Test Devoted to each level of understanding (cognitive/taxonomy)			67	33		
Pass Score		105/150				

The passing score is established at 70%

After successfully passing the exam, candidates will be able to apply for the credentials of “PECB Certified Six Sigma Green Belt”.

TAKE A CERTIFICATION EXAM

Candidates will be required to arrive at least thirty (30) minutes before the beginning of the certification exam. Candidates arriving late will not be given additional time to compensate for the late arrival, and may be denied entry to the exam room (if they arrive more than 5 minutes after the beginning of the exam scheduled time).

All candidates shall present a valid identity card with a picture such as a driver's license or a government ID to the invigilator.

The exam duration is three (3) hours. Non-native speakers receive an additional half an hour.

The questions are multiple choice questions. This type of format was chosen because it measures different levels of studying, and has resulted to be an effective assessment tool. The multiple-choice exam can be used to evaluate a candidate's understanding on many subjects, including both simple and complicated concepts. First and foremost, multiple-choice exam will not commonly demonstrate if the candidate's response is right or wrong, additionally it will demonstrate continuance of the learning process. Because of this particularity, the exam is not "open book" and does not measure the recall of data or information. This type of examination can be adapted to the measurement of a wide range of learning objectives including: reasoning, problem solving, exercising judgement, making inferences and demonstrating knowledge of facts through analysis and interpretation of information. At the end of this document, you will find sample exam questions and their possible answers.

The exam is "closed book". The use of electronic devices, such as laptops, cell phones, etc., is not allowed. Candidates are only authorised to use a hard copy dictionary.

All attempt to copy, collude or otherwise cheat during the exam will automatically lead to the exam's failure.

PECB exams are available in English. For availability of the exam in a language other than English, please contact examination@pecb.com.

RECEIVE YOUR EXAM RESULTS

Results will be communicated by email in a period of 2 to 4 weeks, after taking the exam. The results will not include the exact grade of the candidate, only a mention of pass or fail.

Candidates who successfully complete the examination will be able to apply for a certified scheme.

In the case of a failure, the results will be accompanied with the list of domains in which the candidate had a low grade, to provide guidance for exams' retake preparation.

Candidates who disagree with the exam results may file a complaint. For more information, please refer to www.pecb.com

EXAM RETAKE POLICY

There is no limit on the number of times a candidate may retake an exam. However, there are some limitations in terms of allowed time-frame in between exam retakes, such as:

- If a candidate does not pass the exam on the first attempt, he/she must wait 15 days for the next attempt (1st retake). Retake fee applies.

Note: *Students, who have completed the full training but failed the written exam, are eligible to retake the exam once for free within a 12 month period from the initial date of the exam.*

- If a candidate does not pass the exam on the second attempt, he/she must wait 3 months (from the initial date of the exam) for the next attempt (2nd retake). Retake fee applies.
- If a candidate does not pass the exam on the third attempt, he/she must wait 6 months (from the initial date of the exam) for the next attempt (3rd retake). Retake fee applies.

After the fourth attempt, a waiting period of 12 months from the last session date is required, in order for candidate to sit again for the same exam. Regular fee applies.

For the candidates that fail the exam in the 2nd retake, PECB recommends to attend an official training in order to be better prepared for the exam.

To arrange exam retakes (date, time, place, costs), the candidate needs to contact the PECB partner who has initially organized the session.

CLOSING FILES

Closing a file is equivalent to rejecting a candidate's application. As a result, when candidates request that their file be reopened, PECB will no longer be bound by the conditions, standards, policies, candidate handbook or exam preparation guide that were in effect before their file was closed.

Candidates who want to request that their file be reopened must do so in writing, and pay the required fees.

EXAMINATION SECURITY

A significant component of a successful and respected professional certification credential is maintaining the security and confidentiality of the examination. PECB relies upon the ethical behaviour of certificate holders and applicants to maintain the security and confidentiality of PECB examinations. When someone who holds PECB credentials reveals information about PECB examination content, they violate the PECB Code of Ethics. PECB will take action against individuals who violate PECB Policies and the Code of Ethics. Actions taken may include permanently barring individuals from pursuing PECB credentials and revoking certifications from those who have been awarded the credential. PECB will also pursue legal action against individuals or organizations who infringe upon its copyrights, proprietary rights, and intellectual property.

SAMPLE EXAM QUESTIONS AND POSSIBLE ANSWERS

1. The DMAIC model is defined as:
 - A. Deliver, measure, analyze, install and control
 - B. Define, measure, analyze, improve and control**
 - C. Define, measure, analyze, initiate and control

2. What type of data is illustrated by discrete distributions?
 - A. Variable data
 - B. Ordinal data**
 - C. Continuous data

3. The team prepares Data Management Plan during which of the following phase:
 - A. Define phase
 - B. Measure phase**
 - C. Improve phase

4. To calculate 99.97% statistical control limits, the practical use of sigma level should be:
 - A. +/- 3 sigma**
 - B. +/- 2 sigma
 - C. +/- 1 sigma

5. Cause and effect diagram is used for:
 - A. Identifying root cause**
 - B. Generating ideas
 - C. Reducing duplicate ideas