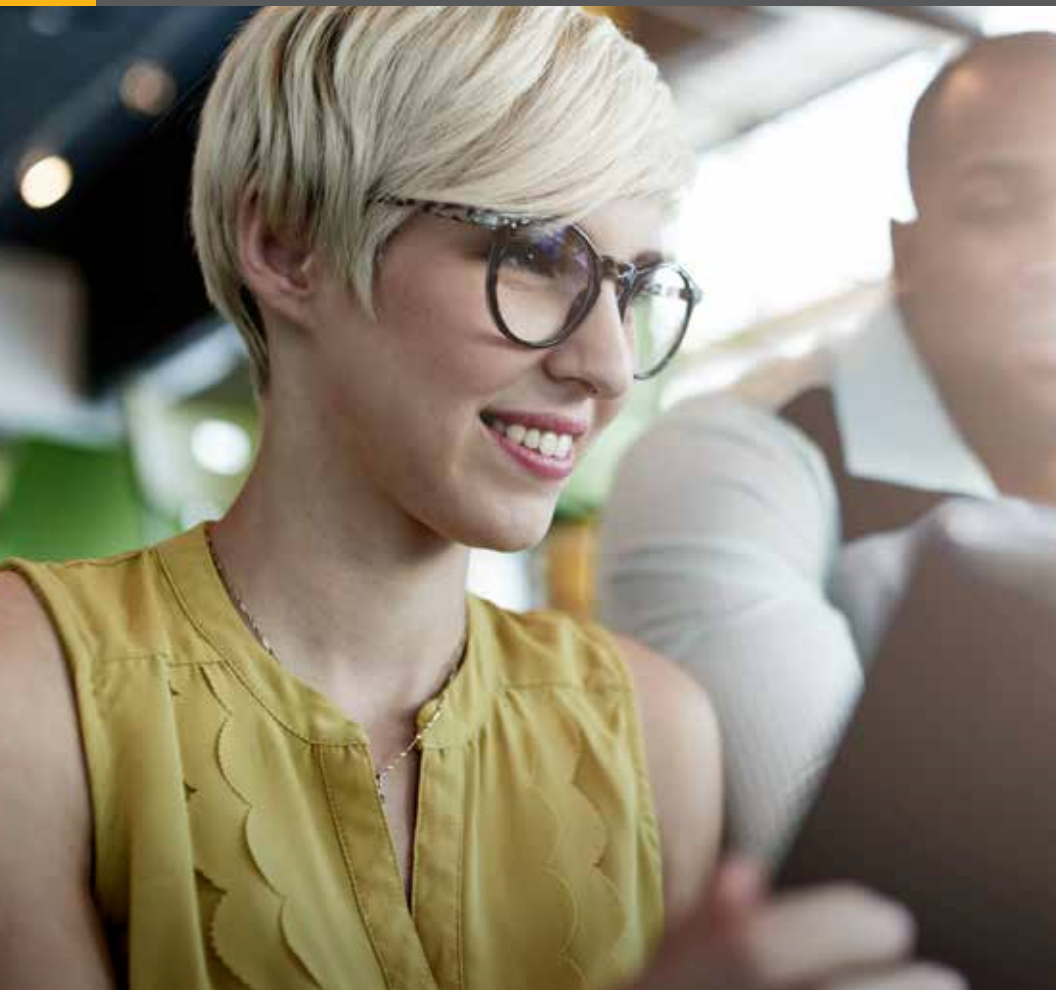
CSSYB

CERTIFIED SIX SIGMA YELLOW BELT



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Certification from ASQ is considered a mark of quality excellence in many industries. It helps you advance your career, and boosts your organization's bottom line through your mastery of quality skills. Becoming a Certified Six Sigma Yellow Belt confirms your commitment to quality and the positive impact it will have on your organization.

Examination

Each certification candidate is required to pass a written examination that consists of multiple-choice questions that measure comprehension of the body of knowledge.

Certified Six Sigma Yellow Belt

CSSYB

Computer Delivered – the CSSYB examination is a one-part, 85-question, two-and-a-half-hour exam and is offered in English only. Seventy-five questions are scored and 10 are unscored.

Paper and Pencil – the CSSYB examination is a one-part, 75-question, two-hour exam and is offered in English only.

For comprehensive exam information on Six Sigma Yellow Belt certification, visit **asq.org/cert**.

Required Experience

The Six Sigma Yellow Belt (CSSYB) certification will be aimed at those new to the world of Six Sigma who have a small role, interest, or need to develop foundational knowledge. Yellow Belts can be entry-level employees who seek to improve their world or executive champions who require an overview of Six Sigma and DMAIC. This certification will adopt the approach of advancing the concept and potential of using Six Sigma tools and methodologies within an organization.

The Six Sigma Yellow Belt certification requires no education or work experience.

Minimum Expectations

In each area of the BoK candidates will understand:

BoK Area I

- Will understand and recognize fundamentals of Six Sigma principles, roles, and value to the organization.
- Will recognize stages of team development and dynamics; understand decision-making tools and communication methods.
- Will be able to apply basic quality tools and metrics to a DMAIC project.

BoK Area II

- Will understand project stakeholders and the definition of SIPOC.
- Will be able to perform basic project management practices to define project goals.
- Will understand VOC and CTQ with respect to project selection and related influence of stakeholders.

- Good understanding of project charter, key communications, and tollgate reviews.
- Will understand project planning, documenting and reporting, and selection of project tools in each phase.

BoK Area III

- Will be able to perform basic data collection activities, using appropriate tools and techniques.
- Will be able to apply basic statistics and calculations (mean, median mode, identification, and calculating).
- Will understand the significance of data integrity and be familiar with and able to identify MSA terminology.

BoK Area IV

- Define how 5S can be used to eliminate waste.
- Describe and distinguish between common and special cause variation.
- Will have a fundamental understanding of root cause analysis (RCA).
- Will be familiar with and able to identify failure mode and effects analysis (FMEA) terminology and process analysis tools.
- Basic understanding of probability and statistical tests (hypothesis testing, etc.) and how it will relate to understanding a process.

BoK Area V

- Will understand and have basic awareness of key improvement techniques such as PDCA cycle, and control tools for project conclusion and sustainment.
- Will be able to explain how a basic control chart works.
- Understand the importance of improvement control and related documentation.

BODY OF KNOWLEDGE

Certified Six Sigma Yellow Belt (CSSYB)

Topics in this body of knowledge (BoK) include additional detail in the form of subtext explanations and the cognitive level at which test questions will be written. This information will provide guidance for the candidate preparing to take the exam. The subtext is not intended to limit the subject matter or be all-inclusive of what might be covered in an exam. It is meant to clarify the type of content to be included in the exam. The descriptor in parentheses at the end of each entry refers to the maximum cognitive level at which the topic will be tested. A complete description of cognitive levels is provided at the end of this document.

I. Six Sigma Fundamentals (21 Questions)

A. Six Sigma Foundations and Principles

Describe the purpose of Six Sigma (reducing variation), its methodology (DMAIC), and its evolution from quality. Describe the value of Six Sigma to the organization as a whole. (Understand)

B. Lean Foundations and Principles

Describe the purpose of lean (waste elimination) and its methodologies (just-in-time, poka-yoke, kanban, value stream mapping). Describe the value of lean to the organization as a whole. (Understand)

C. Six Sigma Roles and Responsibilities

Define and describe the roles and responsibilities of Six Sigma team members (i.e., individual team members, Yellow Belt, Green Belt, Black Belt, Master Black Belt, process owner, champion, sponsor). (Understand)

D. Team Basics

1. **Types of teams**
   Identify the various types of teams that operate within an organization (i.e., continuous improvement, self-managed, and cross-functional) and their value. (Understand)

2. **Stages of development**
   Describe the various stages of team evolution: forming, storming, norming, performing, and adjourning. (Understand)

3. **Decision-making tools**
   Define brainstorming, multivoting, and nominal group technique (NGT), and describe how these tools are used by teams. (Understand)

4. **Communication methods**
   Explain how teams use agendas, meeting minutes, and project status reports, and how they support project success. (Understand)

E. Quality Tools and Six Sigma Metrics

1. **Quality tools**
   Select and use these tools throughout the DMAIC process: Pareto charts, cause and effect diagrams, flowcharts, run charts, check sheets, scatter diagrams, and histograms. (Apply)

2. **Six Sigma metrics**
   Select and use these metrics throughout the DMAIC process: defects per unit (DPU), defects per million opportunities (DPMO), rolled throughput yield (RTY), cycle time, and cost of poor quality (COPQ). (Apply)

II. Define Phase (12 Questions)

A. Project Identification

1. **Voice of the customer**
   Define the voice of the customer and describe how customer needs are translated into quantifiable, critical-to-quality (CTQ) characteristics. (Understand)

2. **Project selection**
   Describe how projects are identified and selected as suitable for a Six Sigma project using the DMAIC methodology. (Understand)

3. **Stakeholder analysis**
   Identify end users, subject matter experts, process owners, and other people or factors that will be affected by a project, and describe how each of them can influence the project. (Understand)

4. **Process inputs and outputs**
   Use SIPOC (suppliers, inputs, process, outputs, customers) to identify and define important elements of a process. (Apply)

B. Project Management (PM) Basics

1. **Project charter**
   Describe the purpose of a charter and its components: problem statement, project scope, baseline data, and project goal. (Understand)

2. **Communication plan**
   Explain the purpose and benefits of a communication plan and how it can impact the success of the project. (Understand)

3. **Project planning**
   Define work breakdown structure (WBS) and Gantt charts, and describe how they are used to plan and monitor projects. (Understand)

4. **Project management tools**
   Select and use various PM tools: activity network diagrams, affinity diagrams, matrix charts, relations charts, and tree diagrams. (Understand)

5. **Phase reviews**
   Explain how tollgate or phase reviews are used throughout the DMAIC life cycle. (Understand)

III. Measure Phase (15 Questions)

A. Basic Statistics

Define, calculate, and interpret measures of central tendency (mean, median, mode) and measures of dispersion (standard deviation, range, variance). (Apply)

B. Data Collection

1. **Data collection plans**
   Describe the critical elements of a data collection plan, including an operational definition, data sources, the method to be used for gathering data, and how frequently it will be gathered. Describe why data collection plans are important. (Understand)

2. **Qualitative and quantitative data**
   Define and distinguish between these types of data. (Understand)

3. **Data collection techniques**
   Use various data collection techniques, including surveys, interviews, check sheets, and checklists to gather data that contributes to the process being improved. (Apply)

C. Measurement System Analysis (MSA)

1. **MSA terms**
   Define precision, accuracy, bias, linearity, and stability, and describe how these terms are applied in the measurement phase. (Understand)

2. **Gauge repeatability and reproducibility (GR&R)**
   Describe how and why GR&R is used in the measurement phase. (Understand)

IV. Analyze Phase (15 Questions)

A. Process Analysis Tools

1. **Lean tools**
   Define how 5S and value analysis can be used to identify and eliminate waste. (Understand)

2. **Failure mode and effects analysis (FMEA)**
   Define the elements of severity, opportunity, and detection, and determine how they are used to calculate the risk priority number. Describe how FMEA can be used to identify potential failures in a process. (Understand)

B. Root Cause Analysis

Describe how the 5 Whys, process mapping, force-field analysis, and matrix charts can be used to identify the root causes of a problem. (Understand)

C. Data Analysis

1. **Basic distribution types**
   Define and distinguish between normal and binomial distributions and describe how their shapes (skewed and bimodal) can affect data interpretation. (Understand)

2. **Common and special cause variation**
   Describe and distinguish between these types of variation. (Understand)

D. Correlation and Regression

1. **Correlation**
   Describe how correlation is used to identify relationships between variables. (Understand)

2. **Regression**
   Describe how regression analysis is used to predict outcomes. (Understand)

E. Hypothesis Testing

Define and distinguish between hypothesis terms (i.e., null and alternative, type I and type II error, p-value and power). (Understand)

V. Improve and Control Phases (12 Questions)

A. Improvement Techniques

1. **Kaizen and kaizen blitz**
   Define and distinguish between these two methods and describe how they can be used to make improvements to any process in an organization. (Understand)

2. **Plan-do-check-act (PDCA) cycle**
   Define and distinguish between the steps in this process improvement tool. (Understand)

3. **Cost-benefit analysis**
   Explain the importance of this analysis and how it is used in the improve phase. (Understand)

B. Control Tools and Documentation

1. **Control plan**
   Describe the importance of a control plan for maintaining improvements. (Understand)

2. **Control charts**
   Describe how $\bar{X}$-R charts are used for monitoring and sustaining improved processes. (Understand)

3. **Document control**
   Describe the importance of documenting changes to a process and communicating those changes to stakeholders. (Understand)

LEVELS OF COGNITION

Based on Bloom's Taxonomy—Revised (2001)

In addition to **content** specifics, the subtext for each topic in this BoK also indicates the intended **complexity level** of the test questions for that topic. These levels are based on "Levels of Cognition" (from Bloom's Taxonomy—Revised, 2001) and are presented below in rank order, from least complex to most complex.

REMEMBER | Recall or recognize terms, definitions, facts, ideas, materials, patterns, sequences, methods, principles, etc.

UNDERSTAND | Read and understand descriptions, communications, reports, tables, diagrams, directions, regulations, etc.

APPLY | Know when and how to use ideas, procedures, methods, formulas, principles, theories, etc.

ANALYZE | Break down information into its constituent parts and recognize their relationship to one another and how they are organized; identify sublevel factors or salient data from a complex scenario.

EVALUATE | Make judgments about the value of proposed ideas, solutions, etc., by comparing the proposal to specific criteria or standards.

CREATE | Put parts or elements together in such a way as to reveal a pattern or structure not clearly there before; identify which data or information from a complex set is appropriate to examine further or from which supported conclusions can be drawn.

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