

ASQ CERTIFIED QUALITY MANAGER BODY OF KNOWLEDGE

The topics in this new BOK include additional detail in the form of subtext explanations and cognitive level. These details will be used by the Exam Development Committee as guidelines for writing test questions and are designed to help candidates prepare for the exam by identifying specific content within each topic that may be tested. The subtext is not intended to limit the subject matter or be all-inclusive of what might be covered in an exam but is intended to clarify how the topics relate to a Quality Manager's role. The descriptor in parentheses at the end of each entry refers to the maximum cognitive level at which the topic will be tested. A more complete description of cognitive levels is provided at the end of this document.)

I. Leadership (30 questions)

A. Organizational Leadership

1. Organizational development

Basic organizational design: matrix, flat, parallel, Big Q/little q; upper management, middle management, quality council; union influence (Application)

2. Organizational culture

Characteristics that determine or identify organizational culture, e.g., union vs. non-union; proactive vs. reactive; expected standards of behavior (Analysis)

3. ASQ Code of Ethics

Behaviors and actions presented in scenarios that require response in accordance with the code (Application)

4. Techniques for facilitating or managing organizational change

Various change agent methodologies (Evaluation)

5. Organizational roadblocks

The inherent structures of an organization (e.g., its cultures and constructs) that present basic barriers to improvement, and methodologies for overcoming them (Application)

6. Constraint management

Identifying and removing constraints and bottlenecks through the use of affinity diagrams, force field analysis, and other management tools (Knowledge)

7. Negotiation techniques

Tools that help conflicting parties (departments, groups, leaders, staff) recognize common goals and how to work together to achieve them (Analysis)

8. Motivation techniques

Quality approaches that support and sustain employee enthusiasm (Evaluation)

9. Conflict resolution techniques

Consensus techniques, brainstorming, effort/impact, multivoting, interest-based bargaining, etc. (Evaluation)

10. Employee empowerment

Effective techniques for teams and individuals, job enrichment vs. job enlargement, etc. (Application)

B. Team Processes

1. Types of teams

Process improvement teams, work groups, self-managed teams, temporary/ad hoc teams, etc. (Synthesis)

2. Team formation and evolution

The stages of team development: forming, storming, norming, performing (Synthesis)

3. Team-building techniques

Basic steps in team building: goals, introductions, agendas (both stated and hidden), handling distractions, disruptions, behaviors, etc. (Synthesis)

4. Team facilitation techniques

Coaching and guidance and the facilitator's limits and responsibilities (Synthesis)

5. Team leadership techniques

Sponsor and champion roles, team involvement, etc. (Synthesis)

6. Team performance evaluation

Goals, objectives, and metrics that support team success (Evaluation)

7. Team reward and recognition

When, why, and how to reward teams; common pitfalls and ways to avoid them (Evaluation)

II. Strategy Development and Deployment (30 questions)

A. Environmental Analysis

1. Legal and regulatory factors

Broad variability across industries requires coverage of basic or generic concepts only (Comprehension)

2. Market forces, industry trends, competitive analysis

Competitive forces that drive strategy development: entry of new competitors, threat of substitutes, bargaining power of buyers and suppliers, rivalry among existing competitors (Synthesis)

3. Stakeholder groups

Employees, suppliers, customers, local community, shareholders; how to align stakeholder needs with the objectives of the organization (Application)

4. Technology trends and internal capabilities

The effect of external technology trends and internal capabilities on strategy formation (Analysis)

5. S.W.O.T. (strengths, weaknesses, opportunities, and threats) analysis

How to identify and prioritize; how to deploy appropriate action in response (Evaluation)

6. Customer/employee surveys and feedback

Not how to create a survey but how to use the resulting information strategically; how to translate data to action (Evaluation)

7. Internal capability analysis

How to measure resources, skills, and process capabilities; need vs. have, etc. (Synthesis)

B. Strategic planning and assessment

1. Strategic planning techniques and models

Definitions of strategy and strategic planning; identification/formulation of strategic themes; use of Baldrige criteria and ISO 9000 as models (Application)

2. Competitive comparisons and benchmarks

Identifying and using valid comparisons and basic benchmarking methodologies (Synthesis)

3. Formulating quality policies

Recognizing the ripple effect that changes in quality policy have on the organization as a whole, on individual areas or departments, and on customers, suppliers, employees, etc. (Analysis)

C. Deployment

1. Assure integration between strategic and other plans

Horizontal and vertical deployment between plans by mid-level and functional management; resolving conflicts between new strategic outlook and existing programs, etc. (Application)

2. Deploy strategic goals and objectives into operational plans and improvement projects

Translating goals into action plans and ensuring that they support the organization's mission, strategies, and objectives (Application)

3. Resource allocation planning activities

Monitoring resources in terms of priorities and adjusting as necessary (Analysis)

4. Metrics and goals that drive organizational performance

Recognizing the pervasive, cascading effect that strategy has throughout the organization; using balanced scorecards, house of quality, and other organization-wide measures and tools (Evaluation)

III. Quality Management Tools (20 questions)

A. Problem-solving tools

1. The seven quality control tools

Use, interpret, correct, and explain Pareto charts, cause and effect diagrams, flowcharts, control charts, check sheets, scatter diagrams, and histograms (Evaluation)

2. The seven management and planning tools

Use, interpret, correct, and explain affinity diagrams, tree diagrams, process decision program charts (PDPCs), matrix diagrams, interrelationship digraphs, prioritization matrices, and activity network diagrams (Evaluation)

3. Root cause analysis, Plan-Do-Check-Act (PDCA) and other, like models

Use, interpret, and explain various elements of these approaches (Evaluation)

4. Tools for innovation and creativity

Various creative-thinking techniques and exercises for decision-making and problem-solving (Application)

5. Cost of quality

Prevention, appraisal, and internal & external failure cost categories; how each category is affected by various quality, continuous, or process improvement approaches (Application)

B. Process management approaches

1. Process goals

How process goals are established, monitored, and measured (Application)

2. Cycle-time reduction

How cycle-time reduction can be used to identify defects and non-value-added activities using Kaizen-type methods to reduce waste in space, inventory, labor, and distance (Analysis)

3. Process analysis and documentation

Process mapping, written procedures, work instructions, flowcharting, etc. (Analysis)

4. Theory of constraints

Finite resources, increased expectations, do-more-with-less, etc. (Comprehension)

5. Theory of variation

Common and special causes of variation, including six sigma approach (Comprehension)

C. Measurement: Assessment and Metrics

1. Statistical analysis

Apply basic statistical techniques (e.g., measures of central tendency, range, variance, types of distribution, checksheet output) to data sets, charts, and other statistical summaries in order to make decisions and monitor projects and processes (Analysis)

2. Trend analysis

Identify and interpret trends in tabular data sets, graphs, charts, etc., and distinguish different kinds of trends (e.g., cyclical, seasonal, shift, environmental) (Analysis)

3. Process capability

Read charts and interpret data to determine whether a process is in statistical control and capable as measured by C_p and C_{pk} indices (Analysis)

4. Reliability and validity

Classical measurement theory as it relates to reliability and validity, including content-, construct-, and criterion-related strategies for supporting inferences made about data, especially in relation to the development and use of survey instruments and results (Comprehension)

5. Qualitative assessment

Subjective measures (e.g., verbatim comments from customers, observation data, focus group output) and how they differ from objective measures; when measurements should be made in categories rather than in terms of numeric averages (Evaluation)

6. Analysis and use of survey results

Evaluate survey results and ensure that they are applied appropriately (Evaluation)

7. Benchmarking: internal and external

Philosophy, tools, and techniques (Evaluation)

IV. Customer-Focused Organizations (20 questions)

A. Customer identification and segmentation

1. Internal customers

Who they are, how to work with them effectively to improve process and services, and how an organization's treatment of its internal customers influences its processes for external customers (Analysis)

2. External customers

How to distinguish different customer types (distributor, consumer, end-user) and recognize their various influences on products and services (Analysis)

B. Customer relationship management and commitment

1. Determining and assuring customer satisfaction

How to capture, differentiate, and use complaints and output from focus groups, surveys, and interviews; how to use customer value analysis, guarantee and warranty information, corrective actions, etc., to measure and improve satisfaction (Analysis)

2. Customer service principles

The proven values of rapid response, courtesy, politeness, smiles, attention to detail, etc. (Application)

3. Multiple-customer management

Recognizing or establishing priorities, resolving conflicting requirements and demands, managing capacity and resources caused by multiple customers (Applications)

4. Customer retention/loyalty

How to measure the value of existing customers and the financial impact of losing customers (Comprehension)

5. Anticipate customer expectations, priorities, needs

Dissatisfiers, satisfiers, excitors/delighters; projecting future needs (Applications)

6. Deploy the voice of the customer through QFD

How to develop, deploy, and manage the house of quality matrix and other, like models (Analysis)

V. Supplier Performance (10 questions)

A. Supplier selection strategies and criteria

Internally developed rating programs, external certification standards or models, and their affect on an organization's overall strategy (Application)

B. Techniques for communicating requirements to suppliers

Planned, regular meetings; reporting procedures (routine and emergency); stated expectations and potential consequences (awareness of criticality) (Application)

C. Techniques for assessment and feedback of supplier performance

Key measures of supplier performance (e.g., quality, price, and delivery/level of service) and metrics (e.g., defect rates, functional performance, timeliness, responsiveness, availability of technical support) (Application)

D. Supplier improvement strategies

Audits (e.g., surveillance) and corrective and preventive action plans (Analysis)

E. Supplier certification programs

Steps in the certification process, ongoing review, and measures of performance (Application)

F. Partnerships and alliances with suppliers

Steps to developing partnerships and alliances (Application)

G. Logistics and supply chain management

How purchased products and services impact final product assembly or total service package, including ship-to-stock, just-in-time, etc. (Comprehension)

VI. Management (30 questions)

A. Principles of Management

1. Principles of management

Planning, leading, controlling, organizing, staffing, monitoring, etc. (Application)

2. Total quality management (TQM)

The basic philosophies of Deming, Juran, Crosby, Feigenbaum, and other contributors to the philosophy of quality approaches in an organization-wide system of management (Application)

3. Management styles

Theories X, Y, and Z; Myers-Briggs type indicator; how to identify different learning styles and respond appropriately (Application)

4. Organizational structures

How management styles and models are influenced by an organization's size, industry type, competition, etc. (Evaluation)

5. Business systems and interdependence of functions

Internal functional responsibilities such as human resources, engineering, sales and marketing, finance, R&D, purchasing, accounting, etc.; cross-functional collaboration, systems management theories (e.g., how optimizing a process may result in sub-optimizing a system) (Application)

6. Staffing

Selection processes, performance evaluations, professional development, goals, objectives, quality responsibilities, and job/position descriptions (Application)

B. Communications

1. Communication techniques

Vertical and horizontal methods of communication; written, verbal, non-verbal; communication effectiveness: strategies, media choices, appropriate vehicles for different situations, open- and closed-questioning techniques, listening strategies, etc. (Application)

2. Information systems

How to use information systems (technology) to support a sound performance measurement system; how to use data to monitor organizational goals and objectives (Analysis)

3. Knowledge management

How to capture and share learning, including storing, organizing, and accessing information to enhance an organization's operating performance; the data-information-knowledge development cycle; availability of information and knowledge; how to develop and support a learning organization; how to develop and manage core competencies (Comprehension)

C. Projects

1. Project justification and prioritization techniques

Calculate and explain a benefit-cost analysis (e.g., return on investment (ROI), return on assets (ROA), benefit-cost ratios) using simple math, round numbers; fundamental knowledge of decision analysis and portfolio analysis as applied to project decisions (Analysis)

2. Project planning and estimation

PERT charts, Gantt charts, critical path method (CPM), work breakdown structure (WBS) and estimation techniques (Application)

3. Monitor and measure project activity

Measurement techniques that ensure successful completion against the plan; risk management activities, stage/gate processes, milestones, etc. (Evaluation)

4. Project documentation and related procedures

Repeatable processes and other PDCA-type activities (Application)

D. The Quality System

1. The quality function mission

Various dimensions of quality; the position and role the quality function has in a quality-driven organization; how the quality function aligns with the organization's broader mission (Application)

2. Quality plan deployment in the organization

How the quality plan meshes with other processes in the organization (Application)

3. Review the effectiveness of the quality system

Managerial review tools and metrics: e.g., management by walking around (MBWA), internal audits, skip-level meetings, employee and customer feedback systems (Evaluation)

E. Quality Models

1. Malcolm Baldrige National Quality Award (MBNQA) Criteria for Performance Excellence

How companies use the principles of the MBNQA criteria for performance excellence as a management model (Analysis)

2. ISO 9000

How companies use ISO 9000 as a systems management model (Comprehension)

3. Major industry and other international standards

QS (automotive), TL (Telecommunications), JCAHO (Joint Commission on Accreditation of Health Care Organization), NCQA (National Committee for Quality Assurance), etc.; how these standards must be considered in the development of an organization's quality system, plans, and programs (Comprehension)

VII. Training and Development (10 questions)

A. Alignment with strategic planning and business needs

Identifying and linking training plans with the needs of the organization; limits and requirements of training plans (Application)

B. Training needs analysis

What tools are used to develop needs analyses and when to use them (Comprehension)

C. Training materials and curriculum development

Appropriate resources and methodologies; knowledge of adult learning principles (Comprehension)

D. Methods of training delivery

Lectures, workbooks, on-the-job training, videos, computer-based instruction and effectiveness of each method in different settings (Comprehension)

E. Techniques for evaluating training effectiveness

Kirkpatrick's 4 levels of evaluating training effectiveness and other, like measures (Analysis)

Six Levels of Cognition based on Bloom's Taxonomy (1956)

In addition to **content** specifics, the subtext detail 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, 1956) and are presented below in rank order, from least complex to most complex.

Knowledge Level

(Also commonly referred to as recognition, recall, or rote knowledge.) Being able to remember or recognize terminology, definitions, facts, ideas, materials, patterns, sequences, methodologies, principles, etc.

Comprehension Level

Being able to read and understand descriptions, communications, reports, tables, diagrams, directions, regulations, etc.

Application Level

Being able to apply ideas, procedures, methods, formulas, principles, theories, etc. in job-related situations

Analysis

Being able to break down information into its constituent parts and recognize the parts' relationship to one another and how they are organized; identify sublevel factors or salient data from a complex scenario

Synthesis

Being able to put parts or elements together in such a way as to show 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

Evaluation

Able to make judgments regarding the value of proposed ideas, solutions, methodologies, etc., by using appropriate criteria or standards to estimate accuracy, effectiveness, economic benefits, etc.

Body of Knowledge (BOK) for the Constructed-Response Portion of the Certified Quality Manager Exam

Candidates will be presented with two open-ended questions selected from the following areas and will have 45 minutes in which to write responses to both situations presented. Candidates may split their time spent on the problems, as they like. Their responses will be graded on their knowledge of quality management, as it relates to the content areas listed below, and in the following skills and abilities: communication; critical-thinking, including the ability to analyze and synthesize information; personnel management; and, general management.

A. Contribute to the Strategic Planning and Deployment Process

Represent the quality system in the strategic planning process; facilitate and train leaders in planning strategies; assure that the voice of the customer is heard; provide structure and methodology for the strategic planning process

1. Participate in formulating the organization's overall strategic plan
2. Develop quality strategies to help the organization achieve its strategic goals
3. Develop and maintain an organizational focus on the importance of performance excellence
4. Formulate quality-related policies and procedures that support the strategic plan
5. Collaborate with other departments on the development of methods for strategic plan deployment throughout the organization
6. Develop and implement performance improvement plans that support organization's goals, including developing short- and long-term plans and their impact on various stakeholders
7. Identify and obtain the resources necessary for implementing performance improvement plans within the context of organizational constraints
8. Collaborate on the development and delivery of training programs for improved performance

B. Develop and Maintain a Customer Focus (Internal and External Customers)

1. Use customer expectations as a basis for product and service design and delivery
2. Establish and use communication channels (listening posts, feedback mechanisms, etc.) with customers as a resource for quality system requirements
3. Evaluate customer feedback for continuous improvement opportunities
4. Involve customers in the design and implementation of product, service, and process improvements

C. Manage the Quality Organization/Department

1. Define the mission of the quality organization/department, including linking it to the larger organization's mission
2. Establish the goals and objectives of the quality organization/department
3. Manage the budget and resource requirements of the quality organization/department
4. Develop the quality staff, including selection, evaluation, and professional growth

D. Assess Performance Information

1. Develop and implement plans to evaluate the effectiveness of the quality system
2. Assess the effectiveness and efficiency of organizational performance
3. Design and implement feedback loops to provide performance information to the organization for continuous improvement
4. Use results of assessments to continuously improve systems and processes

E. Develop Systems for Managing Supplier Performance

1. Develop and implement an overall supplier management program, including supplier assessments and monitoring follow-up actions
2. Use supplier performance information to continuously improve effectiveness of the value chain, including audits, performance data, JIT, dock-to-stock, etc.
3. Partner with suppliers, including information-sharing, involving suppliers in design, providing training, collaborating, etc.