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**THE  
QUALITY IMPROVEMENT ASSOCIATE  
SOLUTION TEXT**

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## SECTION II

### QUALITY CONCEPTS - TEST QUESTIONS

2.1. The input component in the SIPOC system would typically include:

- a. Raw materials, electrical power, and human resources
- b. Manpower, machines, materials, and methods
- c. Specifications, money, and data
- d. Kanban cards, takt time, and kaizen methods

Solution: The input component would typically include data, opinions, ideas, orders, specifications, money, customer needs, etc. Answer choices **a**, **b**, and **d** are items used in the process component.

**Answer c is correct.**

Reference: *CQIA Primer*, Section II - 25.

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2.2. Without prior approval, an employee spent \$500 of company money to purchase a device that simplifies work flow in his area. This is an example of:

- a. Management lack of control
- b. Worker waste
- c. Employee empowerment
- d. Employee involvement

Solution: When employees are empowered, they are given the authority to make decisions, exert influence and to be responsible. This requires commitment and support by management, and removing barriers to the employees.

**Answer c is correct.**

Reference: *CQIA Primer*, Section II - 20/24.

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2.3. Which of the following quality guru's statement on quality is "conformance to requirements?"

- a. Dr. Deming
- b. Dr. Juran
- c. Philip Crosby
- d. Dr. Covey

Solution: Philip Crosby defines quality as conformance to requirements.

**Answer c is correct.**

Reference: *CQIA Primer*, Sections II - 2 and III - 39.

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2. 4. Which one of the following best describes machine capability?

- a. The total variation of all cavities of a mold, or spindles of an automatic assembly line
- b. The inherent variation of the machine
- c. The total variation over a shift
- d. The variation in a short run of consecutively produced parts

Solution: Answers **a** and **c** may or may not be good indicators of machine capability. They could have assignable cause variation. Answer **d** is a good choice, but it is not the best definition of machine capability listed. Inherent variation implies that only chance or random variation is present, and is the best answer choice.

**Answer b is correct.**

References: *CQIA Primer*, Section II - 35. *A T & T Statistical Quality Control Handbook*, pages 35 and 202. This question has been modified from published 1974 and 1984 CQE exams.

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2. 5. The first and most important quality planning step is:

- a. Securing resources
- b. Defining the objective
- c. Defining the specifications
- d. Creating the flow chart

Solution: The first and most important quality planning step is to define of the objective. In many cases, the objective is determined by upper management. If the objective is poorly defined, the resources and specifications will not mean much.

**Answer b is correct.**

Reference: *CQIA Primer*, Section II - 12/13 (and logic).

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2. 6. Involvement of the quality function during strategic management planning is usually:

- a. Beneficial to the planning process
- b. Counterproductive to efficient production
- c. Not important in small organizations
- d. Advantageous in minimizing the need for audits

Solution: Input from many functional groups, including quality, is beneficial during strategic management planning. The benefits include incorporation of factors from all disciplines at a time when those factors can be used as inputs to improve the planning process. It has the resultant benefit of "buy-in" by the various departments to support the project.

**Answer a is correct.**

Reference: *CQIA Primer*, Section II - 4/6 (and logic).

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### QUALITY CONCEPTS - TEST QUESTIONS

2. 7. The "quality function" of a company is best described as:

- a. The degree to which the company product conforms to a design or specification
- b. That collection of activities through which "fitness for use" is achieved
- c. The degree to which a class or category of product possesses satisfaction for people generally
- d. Where the quality department fits in the organizational chart

Solution: The key elements to this question are "quality function" and "best described." Answers **a** and **c** are limited definitions of quality. However, neither of these two answers embrace the broader quality function definition. Answer **d** is a distractor choice. Answer **b** is the best choice. Another example might be "all activities through which product and service quality are achieved."

**Answer b is correct.**

References: *CQIA Primer*, Section II - 2/6 (and logic). This question has been modified from a published 1984 CQE exam.

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2. 8. The best evidence of acceptable quality is:

- a. Complete compliance to design requirements
- b. A low rejection rate
- c. A satisfied customer
- d. Long-term usefulness

Solution: The key question phrase is "best evidence." The customer's perception of quality is the single most important factor for market share and profitability. Answers **a**, **b** and **d** could all be true, and the customer may still be dissatisfied.

**Answer c is correct.**

Reference: *CQIA Primer*, Section II - 2/3 and Section IX - 11/14.

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2. 9. The purpose of a quality manual is to:

- a. Provide a basis for every quality decision
- b. Standardize the methods and decisions of a department
- c. Optimize company performance and the effectiveness of the quality department
- d. Make it possible to handle every situation in exactly the same manner

Solution: Answers **a** and **d** are too specific and are basically untrue statements. Answer **b** is not a bad choice, but it is somewhat narrow in scope. The quality manual may apply for many departments. It may standardize the policies and systems, but it might not standardize all decisions. Answer **c** is a broader and more appropriate definition of the purpose of a quality manual.

**Answer c is correct.**

References: *CQIA Primer*, Section II - 11 (and logic). This question has been modified from a published 1978 CQE exam.

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### QUALITY CONCEPTS - TEST QUESTIONS

2. 10. A thorough cause-and-effect analysis of quality problems will usually indicate that a major percentage of the basic factors affecting poor quality performance are:
- Operator controllable
  - Management controllable
  - Union controllable
  - Customer controllable

Solution: This question requires a general understanding of common versus assignable cause variation. W. Edwards Deming and others have estimated that approximately 85% - 94% of existing problems are part of the system and are, therefore, management controllable.

**Answer b is correct.**

References: *CQIA Primer*, Section II - 31/34 and Section III - 24. This question has been modified from a published 1974 CQE exam.

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2. 11. The principal purpose of a policy statement concerning quality is:
- It defines the company's interest in the quality of products and services
  - It assigns major quality responsibilities
  - It clarifies most quality related words and phrases
  - It describes basic quality oriented operating procedures

Solution: The key question phrase is "principal purpose." Answers **b**, **c**, and **d** are somewhat restrictive and tend to address the objectives of lower level quality procedures. A quality policy statement details the company's interest, support, and commitment to quality.

**Answer a is correct.**

Reference: *CQIA Primer*, Section II - 4.

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2. 12. Establishing the quality policy for the company is typically the responsibility of:
- The marketing department
  - Top management
  - The customer
  - The quality manager

Solution: The key question phrase is "typically the responsibility." Although the quality manager, marketing department and the customer may have input, the quality policy is ultimately the responsibility of top management.

**Answer b is correct.**

References: *CQIA Primer*, Section II - 4. This question has been modified from a published 1974 CQE exam.

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### QUALITY CONCEPTS - TEST QUESTIONS

2.13. In planning for quality, an important consideration at the start is:

- a. The relation of the total cost of quality to the net sales
- b. The establishment of a company quality policy or objective
- c. Deciding precisely how much money is to be spent
- d. The selling of the quality program to top management

Solution: The key question phrase is "at the start." Answers **a** and **c** relate to a quality cost effort and quality improvement funding. They may be important factors but are not required at the start. The wording of answer **d** makes it a poor choice as well. In an enlightened world, top management should have pre-knowledge that quality is of strategic importance. They should not have to be "sold" and should look upon the attainment of quality as a process, not a program.

**Answer b is correct.**

References: *CQIA Primer*, Section II - 4/5. This question has been modified from a published 1974 CQE exam.

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2.14. The company has a good SPC program in manufacturing, however, a customer has a product failure in his hands. The cause was a result of changing vendors. This would be a/an:

- a. Vendor cause problem
- b. Common cause
- c. Assignable cause
- d. Bad inspection procedure

Solution: The tone of this question has been established to represent a special cause or common cause problem. The vendor cause (answer **a**) and bad inspection procedures (answer **d**) are specific items, but they are not what the question is looking for. A common cause (answer **b**) problem indicates that the system is at fault. An assignable cause (answer **c**) results from a special cause; in this case, a new vendor.

**Answer c is correct.**

Reference: *CQIA Primer*, Section II - 31/33.

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2.15. From an organizational perspective, what is the highest form of partnering with employees?

- a. Employee involvement
- b. Task teams
- c. Cost reduction projects
- d. Stock option plans

Solution: Partnerships can be formed with employees, just as they are with suppliers or other companies. Task teams (answer **b**) may or may not be partnerships. Cost reduction projects (answer **c**) and stock option plans (answer **d**) are not partnership arrangements. Employee involvement (answer **a**) is usually a high form of partnership.

**Answer a is correct.**

Reference: *CQIA Primer*, Section II - 20/23.

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2.16. The single most important factor in establishing an effective company training effort is:

- a. Top management support
- b. Willingness of an employee to learn
- c. Immediate supervisor's support
- d. Good instruction and materials

Solution: The key phrase is "single most important factor." This question pertains to a company training effort. Answers **b**, **c** and **d** are all important elements of a company training effort. However, top management support is the most important and crucial factor.

**Answer a is correct.**

Reference: *CQIA Primer*, Section II - 20/22.

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2.17. In case of conflict between contract specifications and shop practice:

- a. Company procedures normally prevail
- b. Good judgment should be exercised
- c. The customer is always right
- d. Contract specifications normally apply

Solution: When a contract is accepted, the contract requirements override existing specifications and most internal company practices. Answer **a** is incorrect. The exercise of good judgment may not be a specific enough answer choice. Answer **b** is also incorrect. The customer is always right is a well used expression, but contract specifications apply.

**Answer d is correct.**

References: *CQIA Primer*, Sections II and IX (general references). Refer also to Juran, J.M., *Juran's Quality Handbook*, Chapter 23. This question has been modified from a published 1984 CQE exam.

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2.18. Product quality is best described as:

- a. A composite of characteristics that meet an expectation
- b. A product characteristic which includes reliability
- c. The summation of material and component quality
- d. A product characteristic established by the designer

Solution: Product quality is more than a single product characteristic such as reliability. Answer **b** is incorrect. The material component or design quality does not state whether or not the product will meet customer expectations. Thus, answers **c** and **d** are incomplete. A composite of characteristics that meet an expectation is the best description of product quality.

**Answer a is correct.**

Reference: *CQIA Primer*, Section II - 2/3 and Section IX - 11/14 (and logic).

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2.19. Any process of importance or complexity should have:

- a. A written documented procedure
- b. An established measurement of nonconforming product
- c. A method of achieving corrective action
- d. A connection to the organization's mission statement

Solution: Answer **a** is a correct statement. The process may not provide a product, making answer **b** invalid. Likewise, the process may not need corrective action (answer **c**). An organization may have a million processes, not all of which connect directly to the organization's mission statement, thus answer **d** is incorrect.

**Answer a is correct.**

Reference: *CQIA Primer*, Section II - 27/28 (and logic).

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2.20. A process flow chart is ideal for:

- a. Displaying both work and information flow
- b. Determining when parts are defective
- c. Prioritizing problems within a work system
- d. Determining if two or more variables are related

Solution: Familiarity with process flow charts is required to answer this question. Answer **b** is incorrect. The specification limits or inspection standards are used to determine if parts are defective. If one wishes to prioritize problems, the Pareto diagram is the tool to use. Therefore, answer **c** is incorrect. Answer **d** is also incorrect since the scatter diagram is used to determine whether or not there is a relationship between variables. The best answer choice presented is answer **a**.

**Answer a is correct.**

Reference: *CQIA Primer*, Section II - 27/30 and Section VII - 4/6.

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2.21. For employee involvement efforts to succeed, what may be needed?

- a. Increased employee incentives
- b. Increased basic training company wide
- c. Employee understanding of how they can make a difference
- d. The initiation of pilot projects

Solution: This is a question with specific answers and general concept answers to choose from. The objective is to find the best answer. Increasing employee incentives indicates that one believes that incentives are a way to guarantee success (answer **a**). It is a very specific solution and may not be correct. Increased training is a good choice (answer **b**), but not the best choice. Answer **c**, having employees understand how they can make a difference, is a basic step toward success. Answer **d**, is another specific and somewhat restrictive solution. The best answer is **c**.

**Answer c is correct.**

Reference: *CQIA Primer*, Section II - 20/24 and IX - 5.

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2.22. The advantage of a written procedure is:

- a. It provides flexibility in dealing with problems
- b. It handles unusual conditions much better
- c. It is a perpetual coordination device
- d. It minimizes coordination activities with other departments

Solution: A written procedure is a specified way to perform an activity. It tells what is to be done, by whom, and where. A work instruction expands the procedure to include how and when (the specific materials and equipment to be used; as well as how it is to be controlled and documented). Together they are ideal perpetual coordination devices, since everything is documented as to specifics.

**Answer c is correct.**

References: *CQIA Primer*, Section II - 27/30. This question has been modified from a published 1984 CQE exam.

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2.23. A work instruction does NOT give information about which one of the following?

- a. The steps necessary to perform certain work
- b. Which specifications are applicable
- c. The identity of the person who does the work
- d. Normal set-up information

Solution: Note that a negative response is requested. Work instructions may indicate which specifications are applicable, normal set-up information, and the steps necessary to perform certain work. The identity of the person who does the work is NOT included in the work instruction. A procedure will detail the "who" and "where" for an activity. Even so, the procedure will state that the assistant mill operator will take a sample every four hours at the rewind station. It will not say that Tom Jones will take the sample.

**Answer c is the correct, incorrect, choice.**

Reference: *CQIA Primer*, Section II - 27/30.

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2.24. Individual training needs are most effectively developed when:

- a. They consider the difference between an individual's desired and current abilities
- b. They concentrate on middle management instruction to ensure their cooperation
- c. They are combined with incoming employee testing
- d. They focus on what an individual must achieve for advancement

Solution: The key phrase in this question is "most effectively developed." The weakest two answer selections are **b** and **c**. Both answers **a** and **d** deserve serious consideration. A close review of these two selections would indicate that answer **a** is the best choice. Answer **d** could be considered to be a subset of answer **a**.

**Answer a is correct.**

Reference: *CQIA Primer*, Section II - 23/24 and IX - 5 (general references only).

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2.25. Consider the following improvement options:

- I. Changing company culture
- II. Continuous process improvement
- III. Important quality projects

Which of the following statements can be factually made regarding these items?

- a. Only II is a never ending process
- b. Only I and III have specific endings
- c. Only I and II are never ending processes
- d. II is more important than I and III

Solution: The three choices are distinctive but somewhat intertwined. The best answer choice is that items **I** and **II** are never ending processes. An important quality project (**III**) may have a specific ending. Answers **a** and **b** are incorrect. Answer **d** is possibly a second best selection but the changing of company culture may be necessary to ensure support for continuous process improvement.

**Answer c is correct.**

Reference: *CQIA Primer*, general reference in Sections II, III and IV (and logic).

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2.26. Quality training programs should be characterized by:

- a. An emphasis on real company quality problems
- b. A concentration on the special definitions in the quality control profession
- c. Strict compliance with written quality procedures
- d. Memorization of quality procedure requirements

Solution: Answers **b**, **c** and **d** are too restrictive in scope. Answer **a** is the best choice. Although this question is quality driven, most training efforts have greater success when they are directed towards real life applications and benefits.

**Answer a is correct.**

Reference: *CQIA Primer*, Section II - 22/24 and Section IX - 5 (partial coverage).