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QUESTION NO: 1

A good security mechanism should be:

A. Complicated

B. Complex

C. Layered

D. None of the above

ANSWER: C

Explanation:

A good security mechanism should be **Layered**. Layered security, commonly called defense in depth, combines multiple complementary safeguards so that the failure, bypass, or misconfiguration of one control does not leave an application, system, or its data entirely exposed. For example, secure software development practices may be reinforced by identity and access management, multifactor authentication, network segmentation, encryption, logging, monitoring, vulnerability management, backups, and incident-response procedures. Each layer addresses risks at a different point and can either prevent an attack, limit its scope, detect it, or support recovery.

This principle is especially important in software quality and security assurance because no individual technical control is perfect. Threats evolve, implementation defects occur, users make mistakes, and attackers may find ways around a specific safeguard. Designing security in layers produces resilience: an attacker who compromises one control must still overcome additional independent protections, while monitoring and audit layers can provide evidence and timely alerting. NIST describes defense in depth as using multiple layers of security controls, and CISA similarly recommends a layered approach to reduce cyber risk. See NIST's definition of defense in depth and CISA cyber guidance.

QUESTION NO: 2

Which is NOT an objective baseline measure?

A. Lines of code

B. Number of abnormal terminations

C. Help desk empathy with customer's situation

D. Number of programs

ANSWER: C

Explanation:

Help desk empathy with customer's situation is not an objective baseline measure because empathy is a human, qualitative characteristic that depends on judgment about the representative's communication, listening, tone, and apparent understanding of the customer. Although an organization can assess empathy through customer surveys, call-quality reviews, or a defined scoring rubric, the resulting assessment is inherently influenced by respondent perceptions and evaluator judgment. It therefore does not provide the directly observable, consistently countable form of measurement expected of an objective baseline.

A baseline establishes a factual reference point against which future performance can be compared. For a measure to be objective, its definition, collection method, counting rules, time period, and unit of measure should be specified so that different people applying the same process obtain materially consistent results. This supports repeatability and meaningful trend analysis in software quality and service management. Guidance on service metrics emphasizes defining measurable indicators and using them to monitor and improve service performance; see ISO/IEC 20000-1 service management standard and the ITIL guidance resources. Empathy can be valuable as a customer-experience attribute, but it is not itself an objective baseline measure.

QUESTION NO: 3

Which of the following factors should NOT be considered when defining a Control Method?

A. Risk Severity

B. Cost, Effort, and Cycle Time Impact

C. Strength of the Control Method

D. Unavailability of Appropriate Resources and People

ANSWER: D

Explanation:

Unavailability of Appropriate Resources and People is the factor that should not be considered as a basis for defining the control method. A control method should first be selected according to the risk that requires treatment and the control's ability to reduce that risk to an acceptable level. This means defining the needed control in terms of its required strength, its relationship to the severity of the risk, and its practical impact on cost, effort, and delivery cycle time. Those considerations help ensure that the chosen method is proportionate and effective rather than merely convenient.

Resource planning follows the definition of the required control. If the appropriate people or resources are presently unavailable, the organization should address that implementation constraint through scheduling, acquisition, assignment, training, or escalation; it should not weaken or redefine the necessary control solely because the needed capability is unavailable. This separation preserves a risk-based decision process: the control requirement is established by the exposure and the required protection, while implementation planning determines how the organization will provide it. This approach aligns with risk-management guidance that evaluates treatment options in relation to risk and organizational objectives. See NIST SP 800-30 Rev. 1 and ISO 31000 risk management guidance.

QUESTION NO: 4

The Quality Manager is in the business of selling quality.

A. True

B. False

ANSWER: A

Explanation:

True is correct because a Quality Manager must actively build understanding, commitment, and participation in quality across the organization. "Selling quality" does not mean selling a product; it means communicating the business value of quality practices so that executives, project managers, developers, testers, and operational teams support them. This includes demonstrating how prevention, sound processes, measurement, reviews, and continuous improvement contribute to dependable software, reduced rework, lower risk, customer satisfaction, and achievement of organizational objectives.

Quality responsibilities extend beyond performing audits or enforcing procedures. A Quality Manager needs to influence stakeholders, obtain management sponsorship, encourage adoption of standards, and make quality goals meaningful to the people who must carry them out. This advocacy role is especially important when teams face schedule, budget, or delivery pressure, because quality needs to be understood as an integral business concern rather than an optional activity. ISO describes quality management as a means of consistently providing products and services that meet customer and applicable requirements while enhancing customer satisfaction. ASQ likewise identifies leadership, communication, and organizational improvement as central quality-management capabilities. See ISO 9001 quality management principles and ASQ Certified Manager of Quality.

QUESTION NO: 5

Which of the following tools category has a mathematical focus and is related to data collection or interpretation?

A. Management Tools

B. Presentation Tools

C. Statistical Tools

D. None of the above

ANSWER: C

Explanation:

Statistical Tools is correct because this category applies mathematical methods to collect, organize, summarize, analyze, and interpret data. In software quality work, statistical tools enable analysts to turn measurements—such as defect counts, defect density, test results, failure rates, cycle times, and process variation—into evidence that supports quality decisions. Typical methods include descriptive statistics, sampling, distributions, correlation, trend analysis, control charts, and hypothesis testing. These techniques help a quality analyst distinguish normal process variation from meaningful changes, evaluate whether a process is stable or capable, and identify patterns that warrant investigation or corrective action.

Data collection and interpretation are central to statistical practice. The National Institute of Standards and Technology describes statistical process control as using statistical techniques to understand and monitor process behavior, while its Engineering Statistics Handbook presents tools for exploratory data analysis and graphical interpretation. In a CSQA context, categorizing these methods as Statistical Tools correctly reflects their mathematical and data-oriented purpose in measuring and improving software quality. See the NIST/SEMATECH e-Handbook of Statistical Methods and NIST guidance on statistical process control.

QUESTION NO: 6

Which of the following is not normally included in a contract for an outside organization to develop software for your use?

A. Why it is needed

B. What is done

C. When it is done

D. Who does what

E. Penalties for nonperformance

ANSWER: A

Explanation:

Why it is needed is correct because the business rationale for acquiring software is ordinarily established internally by the customer organization before it solicits suppliers and enters into a development agreement. It belongs in business-case, portfolio, funding, or procurement-approval materials, where decision-makers assess the expected value, strategic alignment, risks, and alternatives. Although a supplier may be given high-level background so it can understand the customer's context, a contract's enforceable purpose is to define the agreed work and the terms by which performance will be evaluated and managed, rather than to document the customer's complete justification for making the purchase.

For outsourced software work, the agreement normally operationalizes the procurement decision through a statement of work or comparable specification. It establishes required outcomes, deliverables, measurable performance or acceptance criteria, allocation of responsibilities, and the commercial and schedule arrangements needed to administer delivery. The U.S. Federal Acquisition Regulation describes a performance work statement as stating required results, performance standards, and acceptable quality levels, illustrating the contract-focused nature of such documentation. See FAR 37.602, Performance Work Statement. The related policy for performance-based acquisition also emphasizes describing requirements in terms of results rather than prescribing unnecessary methods: FAR 37.102. Thus, the customer's underlying "why" is generally an input to procurement planning, not a normal contractual provision.

QUESTION NO: 7

What type of graphical chart of individual measured values is organized by frequency of occurrence (from high to low frequency)?

A. Pie Chart

B. Chart

C. Pareto Chart

D. Bar Chart

E. Quality Function Deployment Chart

ANSWER: C

Explanation:

A Pareto Chart is the appropriate graphical tool because it displays categories of measured values as bars arranged in descending order of frequency or impact, from the highest occurrence to the lowest. This ordering makes the chart especially useful for quality analysis: it quickly highlights the relatively small number of defect types, causes, or problem categories that account for the largest share of observed occurrences. Teams can therefore prioritize improvement work where it is likely to produce the greatest benefit. Pareto charts are commonly based on the Pareto principle, often described as focusing on the "vital few" contributors rather than the "trivial many." In addition to descending bars, a Pareto chart frequently includes a cumulative-percentage line, allowing analysts to see how much of the total is represented as categories are added. The American Society for Quality describes a Pareto chart as a bar graph whose bars are arranged from greatest to least frequency, while the International Organization for Standardization identifies Pareto analysis among the fundamental quality tools used to prioritize problems and causes. See the ASQ Pareto Chart resource and ISO 9004 quality-management guidance.

QUESTION NO: 8

Experience has shown statistically that as program modules become more complex:

A. The time to develop the module decreases

B. The amount of effort to test the validity increases geometrically

C. The number of defects has an inverse relationship

D. The tester needs to segment the program

E. The need for a help desk increases

ANSWER: B

Explanation:

The amount of effort to test the validity increases geometrically is correct because module complexity increases the number of control-flow decisions, execution paths, data states, and boundary conditions that must be considered to obtain meaningful test coverage. Complexity is therefore not merely a measure of code size: each additional branch or interaction can combine with existing logic, causing the set of potential behaviors to grow much faster than linearly. The practical effect is that designing test cases, preparing data, executing tests, analyzing results, and performing regression testing all require disproportionately more effort as a module becomes more complex.

This relationship is reflected in cyclomatic complexity, a widely used structural metric based on the number of linearly independent paths through code. Higher cyclomatic complexity indicates more independently testable paths and is associated with increased testing and maintenance difficulty. Quality practice uses such measures to identify modules that need more rigorous review and test planning, since maintaining equivalent confidence in validity requires expanding test coverage as decision logic grows. See the Software Engineering Institute's discussion of software-complexity models and McCabe's complexity-measure publication.

QUESTION NO: 9

Which one of the following is NOT a step for benchmarking to establish a baseline goal?

A. Develop a clearly defined baseline in your organization

B. Select a 'process model' for the organization

C. Identify the organizations you desire to baseline against

D. Compare baseline calculations

ANSWER: B

Explanation:

Select a 'process model' for the organization is the activity that is not a benchmarking step used to establish a baseline goal. Benchmarking establishes a meaningful, measurable reference point by first defining the organization's current performance baseline, identifying suitable comparison organizations or sources of benchmark data, and comparing calculations using consistent definitions and measurement methods. Those activities produce evidence of the performance gap and support setting an improvement target grounded in external or internal comparative data.

Selecting a process model is a separate organizational-design or process-improvement activity. A process model can be useful for documenting, categorizing, or governing work, but its selection does not itself create the baseline measurement or perform the comparative analysis required for benchmarking. The essential result of baseline benchmarking is a valid comparison of current performance with a relevant reference population, expressed through comparable metrics such as defects, cycle time, cost, or customer outcomes. The American Society for Quality describes benchmarking as comparing an organization's processes and performance metrics with those of other organizations, while APQC provides benchmarking resources centered on comparative performance data and measures. See ASQ's Benchmarking resource and APQC Benchmarking.

QUESTION NO: 10

Which has frequently been referred to as the most difficult task in getting people to use the process?

A. Determining the need for a process

B. Writing the process

C. Testing the process

D. Deploying the process

E. Improving the process

ANSWER: D

Explanation:

Deploying the process is correct because a process creates value only when the people expected to perform the work actually understand it, accept it, and use it consistently in day-to-day activities. Deployment is much more than publishing a procedure or making a template available. It requires planned communication, role-based education, accessible supporting tools, management sponsorship, coaching during initial use, and feedback mechanisms that identify practical adoption barriers. Teams may need to change familiar habits, coordinate work differently, and incorporate new evidence or quality controls into schedules that are already under pressure. These human and organizational factors make implementation and sustained use particularly challenging.

Effective deployment also includes monitoring whether the intended users are following the process and whether it is achieving its objectives, then using feedback to refine implementation support. This aligns with process-improvement guidance that treats organizational deployment, adoption, and institutionalization as essential to realizing process capability rather than as a simple documentation activity. The CMMI Institute's process-improvement resources describe the

importance of institutionalized practices, while the ISO quality-management standard overview emphasizes implementation, competence, awareness, and continual improvement as operational requirements.

QUESTION NO: 11

Of the following steps, which step of implementing an IT quality function will be performed continually?

A. Selecting a Quality Manager

B. Driving the implementation of the quality environment

C. Developing a charter

D. Locating organizationally the IT quality function

ANSWER: B

Explanation:

Driving the implementation of the quality environment is the continuing activity because an effective quality function is not established merely by issuing a charter, appointing a manager, or placing the function within the organization. It must be actively sustained through ongoing leadership, communication, deployment of quality practices, measurement of results, corrective action, and improvement of the quality system as organizational needs and delivery practices evolve. The quality manager and the quality organization provide structure and accountability, but implementation requires continued effort to ensure that policies are adopted, staff are enabled to use them, quality objectives remain aligned with business goals, and improvement actions are completed.

This reflects the quality-management principle of continual improvement. ISO describes continual improvement as a core quality-management principle and notes that organizations should improve overall performance and maintain a sustained focus on improvement. In practical IT quality work, driving the environment includes monitoring process performance, using findings and metrics to prioritize improvements, and reinforcing quality responsibilities across projects and operations. This makes it an enduring management and operational responsibility rather than a one-time setup decision. See the ISO overview of ISO 9001 quality management and the ASQ continuous-improvement resource.

QUESTION NO: 12

Risk mitigation is a strategy intended to:

A. Reduce the probability or impact of a risk

B. Eliminate all uncertainty from a project

C. Document a risk without taking action

D. Transfer all project responsibility to the customer

E. Increase the acceptable level of risk

ANSWER: A

Explanation:

Risk mitigation is intended to reduce either the likelihood of a risk event, the impact if it occurs, or both. In software projects, mitigation actions may include prototyping a technically uncertain component, adding automated tests to a high-risk interface, using proven technology, conducting early reviews, or establishing fallback procedures. Mitigation differs from risk acceptance, where the organization consciously takes no additional action beyond monitoring, and from risk transfer, where another party assumes some responsibility for the consequences. ISO 31000 describes risk treatment as selecting and implementing options to modify risk. See ISO 31000 Risk Management.

QUESTION NO: 13

Which of the following factor does NOT have any impact on an organization's internal control needs?

A. Type of Industry

B. Size of the Company

C. Management Philosophy

D. Employee Morale

ANSWER: D

Explanation:

Employee Morale is the best answer because the question concerns the factors used to determine an organization's *need for* internal controls—that is, the scope, formality, and design of its control system. Control needs are ordinarily established from organizational and operating characteristics, including the nature of the business, its scale, risk exposure, regulatory obligations, and management's approach to governance and control. Employee morale may be an important operational and human-resources concern, and it can affect how consistently people follow established procedures. However, it is not normally a primary design determinant for deciding what internal controls an organization needs. Internal controls should be designed around objectives and risks, then supported by a suitable control environment and organizational culture. COSO's Internal Control—Integrated Framework describes internal control as a process designed to provide reasonable assurance regarding objectives in operations, reporting, and compliance, with risk assessment informing control activities. The GAO's Green Book likewise emphasizes tailoring an internal-control system to the entity's objectives, risks, structure, and operating environment. These sources support distinguishing employee morale from the core factors used to establish internal-control requirements. See the COSO Internal Control guidance and the GAO Standards for Internal Control in the Federal Government.

QUESTION NO: 14

Which of the following is the correct definition of the quality attribute reliability?

A. Extent to which a program can be expected to perform its intended function with required precision

B. Extent to which access to software or data by unauthorized persons can be controlled

C. Extent to which a program can be used in other applications

D. Extent to which a program satisfies its specifications and fulfills the userâ€™s mission objectives

ANSWER: A

Explanation:

“Extent to which a program can be expected to perform its intended function with required precision” is the correct definition of reliability in the traditional software-quality-factor terminology used in CSQA-oriented material. Reliability concerns the probability or expectation that software will continue to operate correctly when it is used, rather than merely demonstrating a function once. It therefore incorporates dependable execution of the intended behavior and the required level of precision over operational use. A reliable program produces consistent, correct results and avoids failures under its stated conditions of operation.

This aligns with the modern ISO quality model, in which reliability is the degree to which a system, product, or component performs specified functions under specified conditions for a specified period of time. The ISO model further treats attributes such as maturity, availability, fault tolerance, and recoverability as aspects of reliability. The wording in the correct definition is a concise, classic formulation of that same principle: dependable performance of intended functionality at the required precision level. See ISO/IEC 25010 software product quality model and the NIST glossary definition of reliability.

QUESTION NO: 15

A weakness in an information system, which is a point where the software systems are easiest to penetrate, is called a:

A. Risk

B. Vulnerability

C. Threat

D. Control

E. Exposure

ANSWER: B

Explanation:

Vulnerability is correct because it is a weakness in an information system, its software, its configuration, or its controls that could be exploited to compromise security. Examples include an unpatched software defect, weak authentication configuration, insecure input handling, or overly broad access permissions. Such a weakness can provide an entry point or means through which an attacker may gain unauthorized access, alter data, interrupt services, or otherwise affect confidentiality, integrity, or availability.

This usage matches the standard security terminology used in quality and security analysis. NIST defines a vulnerability as a weakness in an information system, system security procedures, internal controls, or implementation that could be exploited or triggered by a threat source. The CSQA context similarly requires analysts to recognize weaknesses that can affect software quality, security, and operational reliability so they can be identified, assessed, and remediated during testing and quality assurance activities. See the NIST definition of vulnerability and NIST's Guide for Conducting Risk Assessments.

QUESTION NO: 16

A payroll application requires that each new employee hired have a unique Employee ID and password and that all characters in a field are either numeric or alphabetic. This is an example of a:

A. Logical Test

B. Limit Test

C. Validity Test

D. Completeness Test

E. None of the above

ANSWER: C

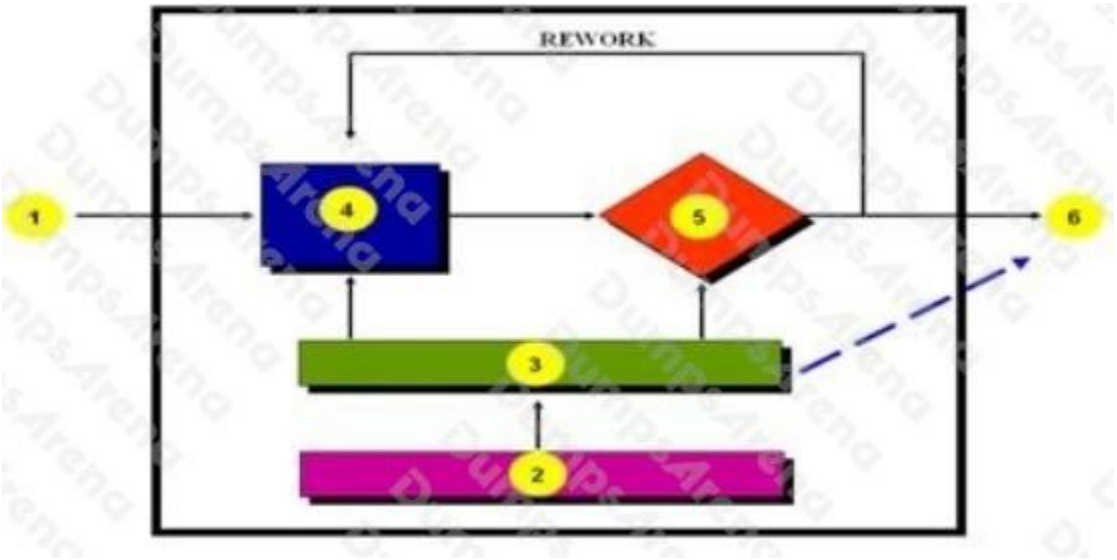
Explanation:

Validity Test is correct because the stated requirements define whether entered data is acceptable according to the application's established rules. An Employee ID must be unique, so the system must validate that the proposed identifier does not duplicate an existing employee record. The password requirement similarly requires a value that conforms to the application's defined identification and access-control rules. Requiring every character in a field to be numeric or alphabetic is a character-set validity rule: the input is accepted only when each character belongs to the permitted set.

In software quality and testing, validity checking verifies that data conforms to defined formats, types, domains, and business constraints before it is accepted or processed. These checks protect the quality and integrity of payroll data by preventing invalid identifiers and improperly formed field values from entering the system. This aligns with input-validation guidance that applications should enforce allowlisted input formats and character sets, as described by the OWASP Input Validation Cheat Sheet. Uniqueness is also an integrity constraint commonly enforced through unique keys or constraints in a data store; see the Microsoft documentation on unique constraints.

QUESTION NO: 17

-- Exhibit –



-- Exhibit --

In the diagram of the tester's work bench, the box labeled (4) is the:

A. Input(s)

B. Deliverable(s)

C. Policy

D. Check Procedures

E. Do Procedures

ANSWER: E

Explanation:

Do Procedures is correct because the numbered box identifies the operational portion of the tester's workbench: the activities the tester performs to transform the supplied test-work inputs into test-work results. These procedures include the defined testing tasks, such as preparing test conditions, executing tests, recording results, and managing the associated test evidence. A workbench model distinguishes this active work from the items received by the process, the controls used to verify the work, the governing policies, and the outputs produced when the work is complete.

This distinction is important in CSQA's process-oriented view of quality work. A repeatable testing process must state not only what artifacts enter and leave the process, but also the documented procedures that personnel actually perform. Identifying the "Do Procedures" area therefore directs attention to execution of the prescribed testing work, supporting consistency, traceability, and repeatability across projects. The CSQA credential is administered within Software Certifications' quality assurance certification program; see CSQA Certified Software Quality Analyst. Additional quality-assurance professional resources are available from QAI Worldwide.

QUESTION NO: 18

As per Deming's principle 'improve supervision', which one of the following should be discouraged?

A. Supervisor calls the worker's attention to every defect

B. Supervisor has more time to help people on the job

C. Supervisor uses statistical methods

ANSWER: A

Explanation:

“Supervisor calls the worker's attention to every defect” should be discouraged because Deming’s leadership principle redefines supervision as helping people perform work successfully, rather than policing individuals or reacting to each isolated error. A supervisor who repeatedly calls out every defect directs attention toward blame, correction after the fact, and individual performance. This does not address whether the process, tools, instructions, workload, training, or variation in the system produced the defect. Deming emphasized that most quality problems arise from the system for which management is responsible, so effective supervision requires leadership that removes barriers and improves the conditions in which people work. In practice, supervisors should use evidence about process performance to identify recurring patterns, assist workers in resolving systemic causes, and enable better results. This approach builds capability and quality into the work instead of making defect detection and individual admonishment the central supervisory activity. Deming’s Point 7, “Institute leadership,” states that the aim of supervision should be to help people and machines do a better job; the Deming Institute’s explanation of the point is available at The Deming Institute: The 14 Points. Additional quality-management context is provided by ASQ: Deming’s 14 Points for Total Quality Management.

QUESTION NO: 19

Which of the following is / are used for determining the magnitude of the Risk?

A. Using Personal Opinion or Team Consensus

B. Using a Risk Formula

C. Using Annual Loss Expectation (ALE) Estimation

D. All of the above

E. None of the above

ANSWER: D

Explanation:

All of the above is correct because risk magnitude can be determined through qualitative, semi-quantitative, or quantitative assessment approaches. A team’s informed professional judgment or consensus can be used to assign relative likelihood and impact ratings, particularly where reliable numerical data is limited. This is a common qualitative risk-analysis technique and provides a consistent basis for prioritizing risks.

A risk formula also supports magnitude estimation by combining relevant factors—most commonly the likelihood of an event and the consequence or impact if it occurs. Organizations may express this through a risk score, matrix, or weighted calculation, depending on their risk model and tolerance criteria.

Annual Loss Expectancy estimation is a quantitative method that expresses anticipated loss over a year. It is typically calculated as Single Loss Expectancy multiplied by Annualized Rate of Occurrence. This gives decision-makers a monetary basis for comparing risk exposure and selecting cost-justified treatments. NIST recognizes both qualitative and quantitative approaches to assessing risk and emphasizes determining likelihood and impact as inputs to risk determination. See NIST SP 800-30 Rev. 1 and NIST’s Annual Loss Expectancy glossary entry.

QUESTION NO: 20

Your IT director has asked you to write a policy on security for the organization. What type of control is that security policy?

A. Preventive

B. Detective

C. Corrective

D. None of the above

ANSWER: A

Explanation:

Preventive is correct because a security policy establishes mandatory rules, responsibilities, and acceptable-behavior requirements before a security incident occurs. Its purpose is to guide personnel and management toward secure decisions and practices, thereby reducing the opportunity for unauthorized, unsafe, or noncompliant activity. For example, a policy may require strong authentication, prohibit sharing credentials, define data-classification obligations, and require approval before access is granted. These rules are intended to stop or reduce security problems at their source rather than merely identify them after the fact or restore operations following an incident.

Security policies are also commonly described as administrative or management controls because they direct how people, processes, and technical safeguards must operate. That administrative classification does not conflict with their preventive function: the policy supplies the governance and expectations that help prevent security violations and establish the basis for consistent enforcement. NIST explains that information-security policy provides management direction and support for security, while its security-control framework includes policy and procedure requirements that establish and communicate organizational expectations. See NIST SP 800-12 Rev. 1 and NIST SP 800-53 Rev. 5.

QUESTION NO: 21

In critical listening, the listener is:

A. Sympathetic to the speaker's point of view

B. Performing an analysis of what the speaker said

C. Selecting pieces of information

D. Getting a complete message with minimal distortion

E. None of the above

ANSWER: B

Explanation:

Performing an analysis of what the speaker said is correct because critical listening is an evaluative form of listening. The listener does more than receive and accurately recall the message: they actively examine the speaker’s claims, supporting evidence, assumptions, reasoning, credibility, and possible bias. This analysis helps the listener decide whether the information is sound, relevant, sufficiently supported, and appropriate to accept or act upon. Critical listening is especially important in professional quality settings, where decisions may depend on whether reported facts, metrics, findings, requirements, or recommendations can be trusted.

Effective critical listening also requires attention to the complete message and its context. A listener considers not only the words used, but also whether conclusions logically follow from the evidence and whether important information may be missing. The goal is a reasoned judgment based on what was communicated rather than an automatic agreement or purely emotional response. Communication-learning resources describe critical listening as listening to evaluate a message and assess the validity of its arguments and evidence. See Oregon State University’s communication text on listening and Northern Virginia Community College’s critical-listening guidance.

QUESTION NO: 22

Which of the following question(s) is associated with the post-implementation review?

A. Is the quality what we wanted?

B. Did the process work?

C. Did buying a tool help improve the process?

D. Did automation help speed up the process?

E. All of the above

ANSWER: E

Explanation:

All of the above is correct because a post-implementation review evaluates whether an implemented solution delivered the intended results and whether the means used to deliver those results were effective. It considers the quality of the resulting product or service by asking whether the delivered quality matches the quality objectives and stakeholder expectations. It also reviews the process itself, including whether the defined workflow, controls, practices, and implementation approach operated effectively in production.

The review should additionally assess improvement initiatives and investments made during implementation. This includes determining whether acquiring a tool produced a measurable process improvement and whether automation reduced cycle time or otherwise made work faster and more efficient. These questions connect implementation decisions to actual operational outcomes, rather than merely confirming that the solution was deployed. The findings provide lessons learned, identify corrective or follow-up actions, and support evidence-based decisions for future quality and process-improvement efforts. This is consistent with project closure and benefits-review practice, which evaluates outcomes against objectives and captures learning for subsequent work. See the Project Management Institute's guidance on project closeout and lessons learned and the UK Government Green Book guidance on evaluation.

QUESTION NO: 23 - (SIMULATION)

What is "requirements tracing" and why is it important?

Type your answer in the box provided. Use options on the box toolbar to edit your response as needed before moving to the next question.

ANSWER: See the explanation for the answer

Explanation:

Requirements tracing is the process of identifying, documenting, and maintaining links between each requirement and related project artifacts, such as business objectives, design specifications, code components, test cases, test results, defects, and released features. These links are often maintained in a requirements traceability matrix (RTM).

It is important because it:

Verifies that every approved requirement is implemented and tested.
Ensures that tests and delivered functionality can be traced back to a valid requirement, helping prevent scope creep and unnecessary features.
Supports impact analysis when requirements change by showing which designs, code, tests, and documents are affected.
Improves test coverage, defect investigation, change control, auditability, and compliance.
Provides evidence that the system satisfies stakeholder and contractual requirements.

Effective tracing is typically both **forward** (requirement to design, code, and tests) and **backward** (test or delivered feature back to its originating requirement).

QUESTION NO: 24

"Establish Functional Improvement Objectives" is a step in the _____ of benchmarking.

A. Planning Phase

B. Analysis Phase

C. Integration Phase

D. Action Phase

ANSWER: C

Explanation:

"Integration Phase" is correct because this phase converts the results of benchmarking analysis into organizational commitment and meaningful performance targets. Once an organization has compared its practices and results with those of benchmark partners, it must communicate the findings, obtain acceptance from relevant stakeholders, and establish functional objectives that reflect the performance gap and desired future state. These objectives give business and technical functions a shared, measurable direction for improvement rather than leaving benchmarking as a purely analytical exercise.

The classic Xerox/Camp benchmarking model identifies integration as the point at which benchmark findings are incorporated into management processes and translated into functional goals. Establishing functional improvement objectives therefore links external best-practice evidence to internal quality-improvement priorities, allowing subsequent action planning and implementation to be focused on agreed targets. This is consistent with the American Productivity & Quality Center's benchmarking guidance, which emphasizes using comparative insights to set performance goals and drive improvement: APQC Benchmarking. For additional background on benchmarking as a structured approach for comparing performance and improving practices, see the ASQ benchmarking resource.

QUESTION NO: 25

Which of the following activities should occur before processes are defined to ensure that the most critical processes are defined first.

A. Do

B. Design

C. Implementation

D. Check

E. None of the above

F. Plan

ANSWER: F

Explanation:

Plan is correct because planning establishes which business and quality processes merit definition first, before detailed process work begins. This activity identifies organizational objectives, stakeholders, risks, expected value, dependencies, and available resources. Those inputs allow the organization to rank candidate processes according to criticality—for example, their effect on customers, regulatory obligations, product quality, operational risk, and delivery commitments. The resulting priorities define a sensible scope and sequence for process definition, ensuring that limited improvement and documentation effort is directed first to the processes that matter most.

This is consistent with the Plan–Do–Check–Act improvement model: planning determines objectives and the methods needed to achieve them before execution and subsequent evaluation. It is also consistent with the ISO quality-management process approach, which requires organizations to determine needed processes and manage their sequence and interaction in support of the quality-management system. Planning is therefore the appropriate prerequisite for selecting and defining the most critical processes first. See the ASQ overview of the PDCA cycle and ISO's ISO 9001 quality-management guidance.

QUESTION NO: 26

Which party(s) is responsible to ensure protection of intellectual property rights included within a contract for software development?

A. The contracting organization

B. The organization that will develop software

C. Both the contracting organization and the organization that will develop the software

ANSWER: C

Explanation:

Both the contracting organization and the organization that will develop the software are responsible for ensuring that intellectual-property rights are protected through the software-development contract. A sound contract must clearly identify the intellectual property each party brings into the engagement, such as pre-existing code, tools, designs, documentation, data, trademarks, and proprietary methods. It should also establish ownership and permitted use of newly created work products, including source code, deliverables, derivative works, and related documentation.

This is a shared responsibility because each party has intellectual-property interests and obligations that must be accurately represented and protected. The contracting organization must state its ownership, confidentiality, licensing, and acceptance requirements, while the development organization must respect those requirements and disclose or properly license any third-party or pre-existing materials it proposes to use. Both parties also need to agree on controls for confidentiality, assignment or licensing of rights, reuse restrictions, and handling of open-source components. Clear mutual agreement reduces disputes and enables each party to enforce the contractual rights it needs. The World Intellectual Property Organization discusses the importance of addressing IP ownership and contractual arrangements in technology transactions: WIPO IP Licensing. Guidance on protecting software and related intellectual property is also available from the U.S. Copyright Office: Copyright Protection FAQ.

QUESTION NO: 27

_____ is a process that transfers decision making from management to employees.

A. Coaching

B. Mentoring

C. Empowerment

D. Modeling

ANSWER: C

Explanation:

Empowerment is the process of giving employees the authority, autonomy, resources, and accountability to make decisions within their areas of responsibility. Rather than requiring management approval for every operational decision, empowered employees can act on their knowledge, respond more quickly to issues, and take ownership of process and quality outcomes. In a software-quality environment, this supports timely defect resolution, continuous improvement, and shared responsibility for meeting customer and organizational requirements.

Effective empowerment is more than simply delegating tasks. Management establishes clear goals, decision boundaries, appropriate training, access to information, and feedback mechanisms, then allows people closest to the work to exercise judgment. This transfer of decision-making authority can improve engagement and help teams identify and address quality risks earlier. The American Society for Quality describes employee empowerment as giving workers responsibility and authority to make decisions, while the Project Management Institute recognizes empowerment as a leadership practice that enables team members to make decisions and perform effectively. See ASQ's employee involvement resource and PMI's discussion of team empowerment.

QUESTION NO: 28

Which task or tasks are helpful in building support for quality?

A. Estimate the cost of quality

B. Meet daily on quality

C. Reward quality work

D. All of the above

E. A and C above

ANSWER: D

Explanation:

All of the above is correct because sustained support for quality requires management visibility, practical economic information, and positive reinforcement. Estimating the cost of quality makes quality performance understandable in business terms by identifying expenditures for prevention and appraisal as well as losses associated with failures. This information helps leaders prioritize improvement work and recognize that investing in prevention can reduce more expensive defect-related outcomes. Meeting daily on quality keeps quality concerns visible, enables rapid escalation and resolution of issues, and reinforces that quality is an operational responsibility rather than an occasional audit activity. Rewarding quality work provides recognition for behaviors that prevent defects, improve processes, and deliver reliable results, helping establish quality as a shared organizational value. Used together, these practices create management commitment and employee engagement, which are essential to a durable quality culture. The American Society for Quality describes cost of quality as a way to categorize and understand quality-related costs: ASQ Cost of Quality. Its quality-management guidance also emphasizes leadership involvement and engagement in effective quality systems: ASQ Quality Management System.

QUESTION NO: 29

Process inventories can be developed by:

A. Referencing existing manuals

B. Conduct affinity group sessions

C. Survey employees

D. All of the above

E. A and C above

ANSWER: D

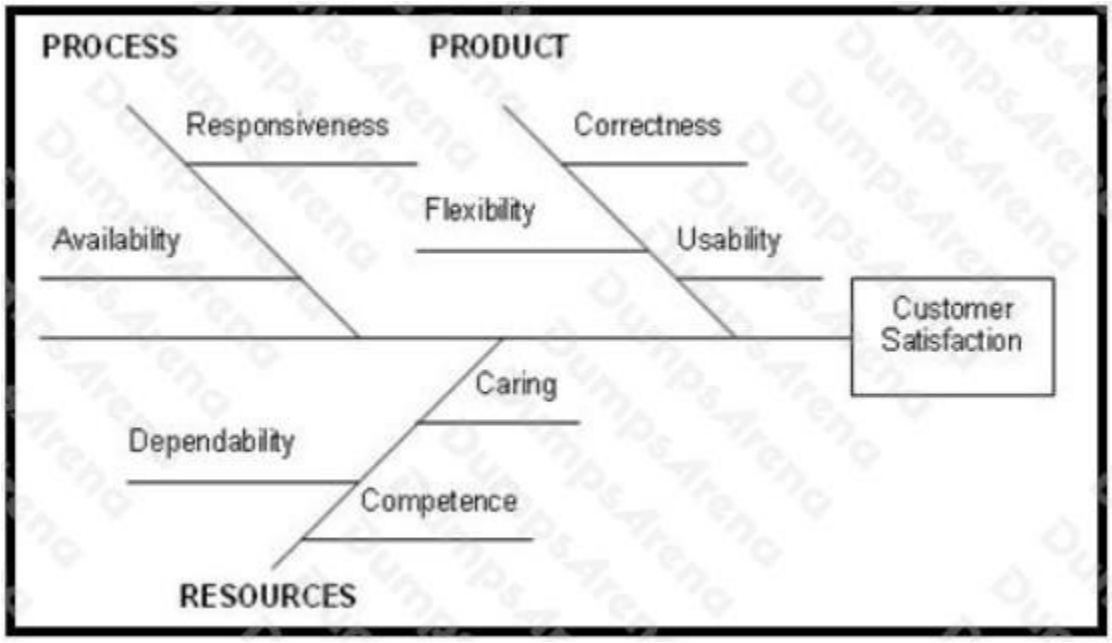
Explanation:

All of the above is correct because a process inventory is a structured catalog of an organization's processes, and creating one normally requires gathering information from several complementary sources. Existing manuals, procedures, work instructions, and organizational documentation provide an initial view of formally defined processes and their intended scope. Affinity-group sessions bring together knowledgeable stakeholders to identify, organize, and group related activities, helping establish a shared process hierarchy. Employee surveys extend the discovery effort to people who perform or support the work, capturing processes that may be informal, locally adapted, or absent from current documentation.

Using these methods together gives the inventory both breadth and practical accuracy. Documentation establishes a baseline, collaborative sessions reconcile terminology and relationships among processes, and surveys obtain wider confirmation from across the organization. This is consistent with process-management practice: process identification and mapping depend on collecting knowledge from process participants and reviewing the information already available. The resulting inventory can then support process ownership, analysis, measurement, improvement priorities, and quality-management planning. See the ASQ overview of process mapping and the APQC Process Classification Framework for established approaches to identifying and organizing business processes.

QUESTION NO: 30

-- Exhibit –



-- Exhibit --

The diagram is an example of a(n):

A. Process Map Diagram

B. Affinity Diagram

C. Force Field Diagram

D. Flowchart

E. Cause-and-Effect Diagram

ANSWER: E

Explanation:

The correct classification is **Cause-and-Effect Diagram**, commonly called a fishbone or Ishikawa diagram. This quality-analysis tool organizes possible causes of a defined problem or effect into structured categories that branch toward the stated outcome, creating the characteristic fishbone appearance. Quality teams use it to support root-cause analysis: they first identify the effect that needs investigation, then brainstorm and group potential contributing factors so that relationships can be explored systematically. The diagram is especially useful when a defect, failure, delay, or other undesirable outcome may have several interacting sources rather than one obvious cause. Its purpose is not merely to depict sequence or workflow, but to help a team identify, categorize, and investigate candidate causes before validating the actual root cause with evidence. The American Society for Quality describes the fishbone diagram as a visual method for identifying many possible causes for an effect or problem and sorting ideas into useful categories. See ASQ's Fishbone Diagram resource. The technique originated with Kaoru Ishikawa and remains one of the classic basic quality tools; further background is available from the W. Edwards Deming Institute.

QUESTION NO: 31

Which of the following is a characteristic of hardware compatibility?

A. Disk Storage Unit Capacity

B. Version of Operating System in Use

C. Name of Operating System

D. Program Compatibility

ANSWER: A

Explanation:

Disk Storage Unit Capacity is a hardware-compatibility characteristic because it describes a physical resource supplied by the target computer system. Compatibility assessment verifies that the environment can support the software's stated technical requirements, including the available capacity of persistent storage devices for application installation, operating data, generated files, logs, databases, backups, and normal operation. A system can otherwise be correctly configured but still be unsuitable if its disk capacity is insufficient for the software's required footprint or expected data volume. Therefore, disk storage capacity is a concrete, measurable hardware attribute that quality analysts should identify in requirements and validate during installation and environment-compatibility testing. This aligns with established software product-quality guidance: ISO/IEC 25010 treats compatibility as a product-quality characteristic concerned with successful operation in a shared environment, while installation and operational prerequisites commonly specify available disk space as a hardware requirement. The NIST Security Content Automation Protocol reference also identifies disk storage as a platform and system inventory attribute relevant to evaluating managed computing environments. See ISO/IEC 25010 product quality model and NIST Security Content Automation Protocol.

QUESTION NO: 32

The IT tool that teams can use to identify root causes of a problem is:

A. Nominal Group Technique

B. Cause and Effect Diagram

C. Quality Function Deployment

D. Force Field Analysis

E. Affinity Diagram

ANSWER: B

Explanation:

Cause and Effect Diagram is correct because it is a structured root-cause analysis tool designed to help a team identify, organize, and investigate the potential causes of a defined problem or effect. Also called an Ishikawa or fishbone diagram, it starts with the observed effect—for example, a production defect, delayed release, or service outage—and branches outward into categories of possible contributing causes. In an IT or software-quality setting, teams can adapt categories to topics such as people, process, technology, requirements, test data, environments, configuration, and measurement. The visual structure encourages the group to move beyond symptoms, consider multiple causal paths, and document candidate causes that can subsequently be validated with evidence and data. This makes it particularly useful in defect prevention, incident analysis, corrective-action work, and continuous process improvement. ASQ describes the fishbone diagram as a cause-analysis tool used to identify many possible causes for an effect or problem and to sort ideas into useful categories. The U.S. Department of Health and Human Services also identifies cause-and-effect diagrams as a root-cause-analysis method for organizing possible contributing factors. See ASQ's Fishbone Diagram resource and CMS guidance on root cause analysis.

QUESTION NO: 33

What should post-implementation audits NOT be used for?

A. Determine if system objectives were met

B. Determine if standards were followed

C. Determine who is to blame for project problems

D. Determine if IT quality objectives were achieved

ANSWER: C

Explanation:

Post-implementation audits should not be used to determine who is to blame for project problems. Their value lies in an objective, constructive assessment of the implemented system and the delivery process, with the aim of improving future projects and ongoing operations. A useful review examines whether intended business and quality objectives were achieved, whether controls and standards were applied, whether expected benefits are being realized, and what lessons can be incorporated into organizational practices.

A blame-oriented exercise discourages candid reporting of issues, risks, assumptions, and process weaknesses. Team members may become reluctant to share the information needed to identify root causes, which reduces the audit's ability to produce meaningful corrective actions. Instead, findings should focus on evidence, processes, controls, decisions, and systemic improvement opportunities. This supports a learning culture in which defects and delivery problems can be analyzed openly and translated into preventive improvements. The UK government's project-delivery guidance describes lessons learned as a structured means of capturing knowledge for future work, while ISACA emphasizes that audit work is intended to provide objective assurance and support improvement. See UK Government lessons learned guidance and ISACA guidance on audit independence.

QUESTION NO: 34

Mode is the measures of central tendency. What does it represent?

A. Average of the items in the population

B. Sum of the items in the population

C. Items are repeated most frequently

D. Item at which half the items in the population are below this item and half the items are above this item

ANSWER: C

Explanation:

The mode represents the value, item, or category that occurs most frequently in a data set. It is a measure of central tendency because it identifies the observation with the greatest frequency, rather than calculating an arithmetic average or locating the midpoint of ordered observations. For example, if a defect-report sample contains severity values of High, Medium, High, Low, and High, the mode is High because it is recorded more often than any other severity. In software quality analysis, mode is especially useful for categorical or nominal data, such as the most common defect type, the most frequently affected application component, or the most commonly reported failure cause. Unlike measures that require numeric values, the mode can summarize both numerical and nonnumerical data. A data set may have one mode, more than one mode when multiple values tie for the highest frequency, or no mode when every value occurs equally often. The National Institute of Standards and Technology defines the mode as the most frequently occurring value, and the U.S. Census Bureau likewise describes it as the value occurring most often in a distribution. See NIST's definition of mode and the U.S. Census Bureau glossary.

QUESTION NO: 35 - (SIMULATION)

In a measurement program 'managing by process' means to use processes to achieve the desired results. This phase consists of steps to implement measurement in a process by identifying the contributors to achieving the desired process results.

If a desired process result is to produce a work product on-time, identify three process contributors that could positively or negatively impact producing the work product on-time. For each of the contributors explain how you would measure it.

Type your answer in the box provided. Use options on the box toolbar to edit your response as needed before moving to the next question.

ANSWER: See the explanation for the answer

Explanation:

Desired process result: produce the work product on or before its committed delivery date.

Three process contributors and measures are:

Requirements stability / scope changes. New, changed, unclear, or late-approved requirements create additional work and rework and can delay delivery. Measure the number of requirements changes after the baseline, the number of open/ambiguous requirements, and the total effort or schedule days added by approved changes. For example: `requirements volatility = changed requirements / total baseline requirements × 100`.
Planned work effort and resource availability. A product will be late if the work estimate is too low or the required staff are unavailable. Measure planned versus actual effort (hours), planned versus actual staffing capacity, and the estimate variance by milestone. For example: `effort variance = (actual hours − planned hours) / planned hours × 100`. Also track whether the required roles are staffed when scheduled.
Defects and rework during reviews/testing. Defects found late consume time that was planned for completion and may cause missed dates. Measure defects found by work-product review or test, defect severity, rework hours, and defect closure time. A useful indicator is `rework percentage = rework hours / total actual hours × 100`; increasing high-severity defects or rework hours signals risk to the delivery date.

These measures should be collected at defined milestones and compared with the plan so corrective action can be taken before the committed delivery date is missed.

QUESTION NO: 36

Which of the following quality control practices would be considered a validation method?

A. Code Inspections

B. Desk Checking

C. Design Reviews

D. Error Guessing

E. Unit Testing

ANSWER: E

Explanation:

Unit Testing is a validation method because it executes an implemented unit of software and evaluates its actual behavior against expected results. Validation addresses whether the product, or a component of it, meets its intended use and specified needs through objective evidence obtained from use or testing. At the unit level, developers run executable tests against a discrete component—such as a function, class, module, or service—and compare observed outputs, state changes, error handling, and other behavior with defined expectations. This is a quality-control activity because it detects defects in the working software early, before the component is integrated with other units. It also provides repeatable evidence that the unit performs its required functions under selected conditions. The distinction is important: validation relies on exercising the software, rather than only examining a static work product. The ISTQB glossary defines validation as confirmation by examination and provision of objective evidence that requirements for a specific intended use have been fulfilled, and recognizes testing as a means of validation. See the ISTQB definition of validation and the ISO 9000 quality-management terminology.

QUESTION NO: 37

Which of the following planning activities is associated with the quality planning question

"where do we want to go"?

A. Capabilities and Opportunity Planning

B. Policies and Procedure Planning

C. Priorities and Schedules Planning

D. Objectives and Goals Planning

E. Budgeting and Resource Planning

ANSWER: D

Explanation:

Objectives and Goals Planning is the planning activity that answers “where do we want to go?” Quality planning starts by defining the intended future state: the quality outcomes the organization seeks, the measurable targets that demonstrate achievement, and the business or customer needs those targets support. Goals establish the broad direction, such as improving product reliability or customer satisfaction. Objectives translate that direction into specific, measurable results, such as reducing escaped defects or meeting a defined response-time target within a stated period.

Establishing objectives and goals gives subsequent planning work a clear destination. Teams can then determine the methods, priorities, schedules, capabilities, resources, and controls needed to reach that destination. Without explicit quality goals and objectives, planning can identify activities and allocate effort, but it cannot reliably determine whether those activities advance the desired quality outcome. This aligns with quality-management guidance that treats quality objectives as planned, measurable commitments connected to an organization’s quality policy and strategic direction. The American Society for Quality describes quality planning as the process of identifying quality standards and determining how to satisfy them, while ISO’s quality-management principles emphasize setting objectives and directing the organization toward intended results. See ASQ’s Quality Planning resource and ISO’s ISO 9001 quality-management overview.

QUESTION NO: 38

If a software development contract includes a clause on foreign attachments, which of the following would be considered a foreign attachment?

A. A software system developed by an organization in another country

B. An application component developed by a different contractor than the one contracted to build software using that component

C. The customer's right to discontinue service with the contractor

D. Having the hardware installed by an individual from a country other than where the software will be operated

ANSWER: B

Explanation:

An application component developed by a different contractor than the one contracted to build software using that component is a foreign attachment because it is an externally supplied item that the primary contractor must incorporate, interface with, or otherwise rely on in delivering the contracted system. In software contract and quality terminology, “foreign” does not mean originating in a different nation; it means outside the direct development responsibility and control of the contractor performing the principal work. Such an attachment may be a reusable component, subsystem, product, interface, library, or other deliverable supplied by a separate organization. A foreign-attachments clause is important because it establishes how responsibility will be handled for acceptance, integration, documentation, licensing, maintenance, defect correction, configuration control, and support of the externally developed component. The prime contractor’s work can depend materially on the attachment’s quality and compatibility, even though that contractor did not create it. This interpretation aligns with software acquisition and supplier-management practices, which require organizations to identify externally provided products and manage their integration and acceptance criteria. See the ISO/IEC/IEEE 12207 software life-cycle processes overview and the ISO 9001 guidance on control of externally provided processes, products, and services.

QUESTION NO: 39

Which of the following is the correct definition of productivity?

A. The ratio of output of a process to input

B. The work effort that produces a product

C. The step-by-step methods followed to ensure that standards are met

D. The length of time to produce a product

E. The ratio of input of a process to output

ANSWER: A

Explanation:

The ratio of output of a process to input is the correct definition of productivity. Productivity measures how efficiently a process transforms resources into results: it compares what is produced, delivered, or completed with the resources consumed to produce it. Inputs can include labor hours, cost, materials, equipment time, or computing capacity; outputs can include completed software functions, tested requirements, resolved defects, or other defined deliverables. For example, if a test team executes more valid test cases per staff hour while maintaining the same quality criteria, its productivity has increased. The metric is useful in software quality management because it enables a team to establish a consistent baseline, monitor trends, identify opportunities for process improvement, and make informed capacity estimates. Both the output and input measures must be clearly defined and measured consistently for the ratio to be meaningful. This output-to-input relationship is the standard quality-management meaning of productivity, as reflected in the American Society for Quality's productivity resource and the Encyclopaedia Britannica definition of productivity.

QUESTION NO: 40

A quality tool used to determine and understand the forces that drive and restrain a change.

A. Force Field Analysis

B. Cause and Effect Diagram

C. Matrix

D. Playscript

ANSWER: A

Explanation:

Force Field Analysis is the correct quality and change-management tool because it systematically identifies the factors supporting a proposed change (driving forces) and the factors opposing it (restraining forces). Developed from Kurt Lewin's field theory, the technique helps a team understand the current balance that maintains a situation and assess what must change for an improvement initiative to succeed. Teams typically list the forces on opposing sides, assess their relative strength, and then plan actions to strengthen important drivers, reduce key restraints, or both. This makes the tool particularly useful when implementing process changes, quality-improvement initiatives, or organizational changes that depend on stakeholder acceptance and operational readiness. Rather than merely naming a problem, Force Field Analysis supports practical change planning by revealing the conditions that may enable or block adoption. The method is described in change-management guidance from the NHS, including its use for examining forces for and against a change, and is also summarized by Mind Tools as a framework for evaluating pressures that support or resist a proposed change. See NHS England's Force Field Analysis guide and Mind Tools: Force Field Analysis.

QUESTION NO: 41

The COSO Enterprise Risk Management model's _____ component ensures that management has a process in place to set objectives and that the chosen objectives support and align with the organization's mission/vision.

A. Information and Communication

B. Objective Setting

C. Risk Assessment

D. Control Activities

ANSWER: B

Explanation:

Objective Setting is correct. In COSO's original Enterprise Risk Management—Integrated Framework, objective setting is a distinct component that precedes event identification, risk assessment, risk response, and control activities. Management establishes objectives so that risks can be identified and assessed in relation to meaningful organizational aims. COSO describes objectives as needing to support and align with the entity's mission and risk appetite, while also being consistent with the organization's broader strategy. This creates the basis for risk management: an organization cannot determine whether uncertainty could affect achievement until it has clearly defined what it intends to achieve. Objective setting also considers objectives across strategic, operations, reporting, and compliance categories, helping management connect enterprise-level direction with measurable operational goals. The wording of the question corresponds specifically to the eight-component structure of COSO's 2004 ERM framework, in which Objective Setting was explicitly named as a component. COSO's later 2017 update integrates objective setting more closely with strategy and performance, but it retains the central principle that risk management must be linked to mission, vision, strategy, and objectives. See COSO's Enterprise Risk Management guidance and the Enterprise Risk Management—Integrating with Strategy and Performance executive summary.

QUESTION NO: 42

Many managers use a metrics dashboard to present measurement data to the user of that data. Another name for a dashboard is:

A. Subjective Measures

B. Objective Measures

C. Valid Measures

D. Key Indicators

E. Reliable Measures

ANSWER: D

Explanation:

Key Indicators is correct. A management metrics dashboard consolidates the relatively small set of measurements that are most important for monitoring performance, progress, quality, risk, or operational outcomes. These prominent measures are commonly called key indicators—often expanded as key performance indicators (KPIs)—because they provide an at-a-glance indication of whether an area is meeting its intended targets and where management attention may be needed. The dashboard is therefore not merely a repository of every available metric; it is a focused presentation of the indicators that support timely decisions by the intended data users. In software quality management, key indicators can include such measures as defect trends, test progress, requirements coverage, incident resolution performance, and customer-reported quality results. A dashboard makes these indicators understandable through concise visual status and trend reporting, enabling managers to identify significant changes and act on them. This usage is consistent with established performance-management terminology, which defines KPIs as quantifiable measures used to evaluate success against objectives. See the ISO 9000 quality-management vocabulary standard for the quality-management context and the U.S. CIO Council IT Dashboard Guidance for dashboard use in communicating key performance information.

QUESTION NO: 43

Though priority assigned to a defect is usually subjective, but are dependent on user input(s) or factor(s) such as:

A. Importance of the defect

B. Resources available to fix

C. Risk

D. A and B

E. A, B, and C

ANSWER: E

Explanation:

The combined consideration of importance of the defect, resources available to fix, and risk is correct because defect priority determines the relative order in which a reported problem should be addressed. This is a business and project-management decision rather than a purely technical measurement. User and stakeholder input helps establish the defect's importance, including its impact on critical workflows, customers, contractual commitments, and release objectives. The team must also consider the resources available to fix the issue, such as qualified staff, time remaining, budget, environment availability, and the effort needed to implement and verify a safe correction. Risk is equally central: a defect that threatens data integrity, security, regulatory obligations, service continuity, or a high-value business process normally warrants earlier attention. Considering these factors together enables a rational prioritization decision that balances stakeholder value, delivery constraints, and potential exposure. This aligns with the software-testing distinction that priority reflects the urgency with which a defect should be resolved, while severity reflects its impact. See the ISTQB glossary definition of priority and the ISO/IEC/IEEE 29119-3 test documentation standard for recognized testing and defect-management context.

QUESTION NO: 44

An objective baseline relies on judgment being applied in making the measure.

A. True

B. False

ANSWER: B

Explanation:

False is correct because an objective baseline is established from measures that can be observed, counted, calculated, or otherwise verified consistently without depending on an individual assessor's personal judgment. In software quality work, objective measures include such items as the number of defects found, requirements implemented, test cases executed, elapsed time, or a calculated defect-removal rate. The measurement method, scope, units, and collection conditions should be defined so that different qualified people obtain materially the same result from the same evidence. That repeatability makes the resulting baseline suitable for comparing future project, process, or product performance against known historical results.

A baseline is a documented reference point used to evaluate variation and improvement over time. For it to be objective, its underlying data must be obtained through explicit measurement rules rather than through opinions, impressions, or qualitative ratings. Judgment may be involved in designing the measurement process or interpreting trends after collection, but it is not what produces the objective measure itself. This distinction supports consistent quality reporting and meaningful management decisions. See ASQ's discussion of a baseline and the ISTQB glossary entry for measure.

QUESTION NO: 45

If you had seven programs and the size in 'function points' were 5, 10, 15, 20, 30, 40, and

90. What is the mean size of those seven programs in function points?

A. 20

B. 30

C. 40

D. 50

E. 60

ANSWER: B

Explanation:

The correct answer is **30**. The arithmetic mean is calculated by adding every observed program size and dividing that total by the number of programs. Here, the seven function-point values total 210: 5 + 10 + 15 + 20 + 30 + 40 + 90 = 210. Dividing 210 by the seven programs gives 30 function points. Therefore, 30 is the average size across this set of programs.

Function points are a functional-size measure: they express the amount of functionality delivered to a user independently of the technology used to implement it. When a collection of program sizes is summarized with a mean, each program contributes one observation to the calculation, including the 90-function-point program. The resulting mean is useful as a simple descriptive baseline for estimating, reporting, or comparing the typical size of work items in a defined population. The National Institute of Standards and Technology describes the sample mean as the sum of observations divided by the number of observations; that definition directly applies here. For background on functional sizing and function-point standards, see NIST: Mean and IFPUG.

QUESTION NO: 46

A help desk employee is allowed to hire a courier to deliver a report needed quickly by a user; but only up to a cost of $100. This means that the employee is being _____.

A. Mentored

B. Empowered

C. Trained

D. Included

ANSWER: B

Explanation:

Empowered is correct because the help desk employee has been given defined authority to make a service-related decision independently: arranging a courier when needed, within a stated spending limit of $100. Empowerment means delegating the authority, discretion, and resources needed for an employee to act promptly in support of customers or users, while maintaining appropriate organizational boundaries and accountability. In this situation, the monetary cap establishes the scope of that authority rather than requiring the employee to seek approval for every urgent delivery. This type of delegation supports timely service restoration and user satisfaction, both of which are central concerns in service-quality management. It also represents a controlled decision right: the employee can address an urgent need directly, but cannot commit the organization beyond the authorized threshold. The U.S. Office of Personnel Management describes empowerment as giving employees the authority and responsibility to make decisions, while the IT service-management practice of service level management emphasizes agreed service targets and responsibilities that enable effective delivery. See U.S. OPM: Empowerment and Atlassian: Service Request Management.

QUESTION NO: 47

Risk management is not an independent auditing process.

A. True

B. False

ANSWER: A

Explanation:

“True” is correct because risk management is a continuing management discipline, not an independent audit activity. Its purpose is to identify, analyze, evaluate, treat, monitor, and communicate risks so that informed decisions can be made throughout the system or software life cycle. In a software-quality context, this includes recognizing threats to quality objectives—such as defects, schedule slippage, inadequate test coverage, supplier issues, security exposure, or requirements volatility—and assigning actions, owners, and follow-up controls.

Risk management must be integrated into governance, planning, development, testing, release decisions, and operational oversight. It supports management in deciding which risks are acceptable and which require mitigation. Although audit results, assessments, and compliance reviews can provide important inputs to the risk process, they are distinct activities. An independent audit evaluates evidence and reports on conformance or control effectiveness; risk management uses such information, along with many other sources, to continually manage uncertainty and its effects on objectives.

This distinction is consistent with ISO 31000 risk-management guidance, which frames risk management as integrated organizational decision-making, and NIST SP 800-37 Rev. 2, which describes risk management as an ongoing lifecycle process.

QUESTION NO: 48

ISO / IEC 15504: Process Assessment is formerly known as:

A. PDCA

B. SPICE

C. ITIL

D. ISMS

ANSWER: B

Explanation:

SPICE is correct because ISO/IEC 15504 originated as the international standard commonly known by the acronym SPICE, meaning Software Process Improvement and Capability dEtermination. The standard provides a structured framework for assessing the capability of software and system-development processes. Its process-assessment approach supports organizations in understanding how well defined, managed, performed, and continuously improved their processes are. The ISO/IEC 15504 family was developed from the SPICE project and is therefore routinely referred to in training materials, quality literature, and historical discussions as “ISO/IEC 15504 (SPICE).” The framework was especially significant to software quality analysts because it enables evidence-based process evaluation and provides capability levels that can guide process-improvement initiatives and supplier assessments. ISO/IEC 15504 has subsequently been superseded by the ISO/IEC 330xx family of process-assessment standards, but SPICE remains the former and widely recognized name associated with ISO/IEC 15504. ISO describes the replacement family and its process-assessment scope in its ISO/IEC 33001 overview; the ISO catalogue also identifies the withdrawn ISO/IEC 15504-1 standard under the title Information technology — Process assessment.

QUESTION NO: 49

Consensus is reached when all participants:

A. Unanimously agree

B. Refuse to agree

C. Accept the agreed-upon resolution

D. Allow the majority to decide

ANSWER: C

Explanation:

Consensus is reached when all participants **accept the agreed-upon resolution**. In quality-management and team decision-making practices, consensus is a collective commitment to support a decision after participants have had an opportunity to express their concerns, discuss alternatives, and work toward a resolution. It does not require every person to regard the outcome as their personal first choice or to hold an identical opinion. Rather, each participant can accept that the decision is suitable for the group's purpose and agree to implement or support it.

This distinction matters in software quality work because reviews, inspections, risk assessments, and process-improvement meetings often involve stakeholders with different priorities. A practical consensus process enables the team to move forward with an accepted decision while ensuring relevant concerns have been heard and addressed sufficiently. The International Organization for Standardization defines consensus as general agreement characterized by the absence of sustained opposition to substantial issues, rather than unanimity. Similarly, the Project Management Institute describes consensus as an agreement that participants can support, even when it is not every participant's preferred solution. See the ISO 9000 terminology entry and the PMI discussion of consensus decision-making.

QUESTION NO: 50

As COTS software is demonstrated in operation and the evaluators watch and listen to the demonstration to evaluate the ease with which the operation process can be learned, they are evaluating what aspect of computer software?

A. Quality of Communication

B. Ease of Use of Instruction Manual

C. Understandability

D. Knowledge to Execute

E. Effectiveness of Help Routines

F. Learnability

ANSWER: F

Explanation:

Learnability is the applicable software-quality aspect because the evaluation explicitly concerns how easily users can learn the operational process. In a COTS demonstration, evaluators can observe whether the system presents its workflow, terminology, controls, and task sequence in a manner that allows a prospective user to acquire the knowledge needed to use it successfully. This is an important usability consideration because a product may provide the required functions but still impose excessive training time or user effort before those functions can be used productively.

ISO/IEC 25010 identifies learnability as a usability subcharacteristic. It concerns the degree to which a product enables specified users to learn to use it effectively, efficiently, and with satisfaction in a specified context of use. Watching and listening during a demonstration is therefore a reasonable evaluation technique: it helps assess whether the operating model and the path through common tasks are readily learnable before an organization commits to the COTS product. See the ISO/IEC 25010 quality-model overview and the ISO/IEC 25010 standard record.

QUESTION NO: 51

If the input product to a workbench does not meet the entry criteria, it should be accepted to save time and reworked later in the process.

A. True

B. False

ANSWER: B

Explanation:

False is correct because entry criteria are a quality-control gate for a workbench activity. They define the minimum conditions an input product must satisfy before work begins, such as required completeness, availability, consistency, approval status, and readiness for the intended task. When those conditions are not met, the appropriate action is to identify the gap, return or hold the input for correction, and proceed only once the criteria have been satisfied or an explicitly authorized exception has been made.

Accepting deficient input simply to begin sooner does not normally save time. It transfers defects and uncertainty into downstream work, where they can cause rework, invalid results, interrupted processing, and additional coordination effort. Applying entry criteria protects the integrity of the workbench output and supports early defect prevention, which is a core quality-management principle. Quality gates also provide objective evidence that a process is ready to start and that its resulting deliverables can be trusted.

This use of defined entry and exit criteria is consistent with the testing-process guidance published by ISTQB Certified Tester Foundation Level and with the process-quality emphasis of ISO 9001 quality management systems.

QUESTION NO: 52

A measure can be reliable, but invalid. An unreliable measure cannot be valid.

A. True

B. False

ANSWER: A

Explanation:

True is correct because reliability and validity describe related but distinct qualities of a measurement. Reliability is the degree to which a measurement produces consistent results under comparable conditions. For example, a software-quality measurement process may repeatedly produce the same defect count or the same test-execution result when applied in the same way. That consistency alone does not establish that the measure represents the intended quality characteristic, which is validity. A measure may therefore be highly repeatable while consistently measuring the wrong attribute, using an unsuitable definition, or omitting important aspects of the intended concept.

Validity requires evidence that the interpretations and decisions based on measurement results are appropriate for the stated purpose. Consistency is a necessary foundation for this: if results vary unpredictably because of measurement error, the measure cannot provide dependable evidence about the attribute it claims to assess. Consequently, reliability is necessary but not sufficient for validity. This relationship is a standard measurement principle and is directly relevant when selecting and evaluating software-quality metrics, test measures, and assessment instruments. See the APA overview of testing standards and NCBI's discussion of reliability and validity.

QUESTION NO: 53

To validate that the COTS software will meet the functional and structural needs of the user, both _____ and _____ Testing is performed.

A. Correctness; Maintainability

B. Correctness; Reliability

C. Security; Reliability

D. Reusability; Flexibility

ANSWER: A

Explanation:

Correctness; Maintainability is correct because validation of commercial off-the-shelf software must address both what the product does for its users and how viable it is to operate, modify, and support within the acquiring organization's

environment. Correctness testing establishes that the selected COTS product performs the required business functions accurately and conforms to the applicable functional requirements, rules, interfaces, and expected results. This supplies the evidence that the product meets the user's functional needs.

Maintainability testing addresses the product's structural and supportability needs. Even where source code is unavailable or vendor-controlled, an acquiring organization must evaluate whether the product can be configured, patched, upgraded, diagnosed, adapted to changing business needs, and maintained without unreasonable effort or operational risk. These characteristics are essential when a COTS product will be integrated into a longer-lived system rather than merely evaluated for an isolated demonstration. ISO/IEC 25010 identifies functional suitability and maintainability as distinct product-quality characteristics, providing a recognized quality model for this type of assessment. See the ISO/IEC 25010 quality-model overview and the NIST software-quality standards overview.

QUESTION NO: 54

Which category of control methods is the most acceptable to the individual?

A. Automatic

B. Auditors

C. Peer Reviews

D. Supervisory

E. Third Party

ANSWER: A

Explanation:

Automatic control methods are the most acceptable to the individual because they apply predefined rules consistently, impersonally, and as part of the normal work process. Examples include required-field validation, edit checks, access restrictions, workflow routing, automated test execution, and build controls. Since the control is embedded in the process or tool, it does not ordinarily require a person to directly challenge, monitor, or judge another person's work. This tends to reduce the sense of personal scrutiny and makes compliance feel like a routine condition of performing the task.

In software quality practice, automated controls also provide repeatability: the same condition produces the same control response each time it is encountered. That consistency supports quality objectives while limiting variation caused by individual judgment. The CSQA body of knowledge emphasizes the use of effective quality controls within software processes, and automated controls are especially useful where routine enforcement and objective evidence are needed. See the CSQA certification overview and ISACA's discussion of automated controls and the audit process.

QUESTION NO: 55

Which of the following is an example of a prevention cost?

A. Executing system tests

B. Training developers in defect-prevention techniques

C. Correcting defects found during integration testing

D. Providing support for production failures

E. Inspecting completed program code

ANSWER: B

Explanation:

Training developers in defect-prevention techniques is correct because prevention costs are incurred to avoid defects and nonconformities before they occur. Quality planning, process improvement, standards development, training, and root-cause analysis are common prevention activities. Their purpose is to improve the capability of the process and reduce the likelihood that defects will be introduced.

Testing and inspection are appraisal costs because they evaluate products or work products. Repairing defects before release is an internal failure cost, while resolving customer-reported problems after release is an external failure cost. These four categories together form the traditional cost-of-quality model. See ASQ guidance on Cost of Quality.

QUESTION NO: 56

Which of the following is NOT a component of a workbench? (A workbench is a graphic representation of a process.)

A. Entrance Criteria (Inputs)

B. Exit Criteria (Deliverables)

C. Work Procedures

D. Check Procedures

E. Process Contract

ANSWER: E

Explanation:

Process Contract is the correct answer because it is not a structural component of the workbench model. In the CSQA process framework, a workbench provides a visual, operational description of how a process is performed and controlled. It identifies the conditions that must exist before work begins, the inputs made available to the process, the procedures used to perform the work, the procedures used to verify or check the work, and the deliverables and conditions required for completion. Together, these elements make the process repeatable, measurable, and suitable for quality control.

A process contract is instead an agreement or definition of expectations associated with a process, such as responsibilities, commitments, or service expectations. While such an agreement may support process management and governance, it is not one of the workbench's depicted process components. Therefore, it does not belong in the graphic representation of the process itself. This distinction is consistent with the CSQA body of knowledge's focus on defining process work, controls, entry conditions, and completion criteria through workbench-style process documentation. See the CSQA certification overview and QAI Worldwide for certification and quality-process context.

QUESTION NO: 57

If you found, through testing software, that your IT project team was building software with an average of 58 defects per 1000 function points, this would be a:

A. Baseline

B. Benchmark

C. Complexity Metric

D. Size Measure

ANSWER: A

Explanation:

Baseline is correct because the stated value is an internally observed measure of the project team's current or historical performance: an average defect density of 58 defects per 1,000 function points. A baseline records a quantified starting point or established level of performance that the organization can use in later planning, monitoring, process improvement, and comparison of subsequent projects. Once the team has collected this measure consistently, it can estimate expected defect

levels for similarly sized work, detect meaningful movement in quality performance, and assess whether improvement initiatives reduce defect density over time.

Function points provide a size-normalization mechanism, so expressing defects per 1,000 function points makes the result a useful quality metric across software products of differing sizes. The International Function Point Users Group describes function point analysis as a standardized approach to measuring the functional size of software: IFPUG Functional Sizing. Establishing and using measurement baselines is also consistent with software measurement practice described by the Software Engineering Institute's measurement resources: SEI Software Engineering.

QUESTION NO: 58

Severity levels for defects should be defined at the start of the project:

A. To maintain common understanding

B. To assign severity of defects consistently

C. To maintain common understanding and assign severity consistently

D. None of the above

ANSWER: C

Explanation:

Severity levels should be agreed at the beginning of a project **to maintain common understanding and assign severity consistently**. A severity classification expresses the degree of impact a defect has on the component or system. Establishing objective definitions and examples early gives developers, testers, product stakeholders, and defect triage participants a shared basis for interpreting terms such as critical, major, and minor. This common understanding prevents a reported defect from being rated differently merely because different people use different personal criteria.

Consistent severity assignment is essential for reliable defect reporting, trend analysis, release-readiness decisions, and prioritization discussions. Teams can then compare defects meaningfully, identify the concentration of high-impact problems, and communicate product risk clearly. Severity is distinct from priority: severity concerns the impact of the problem, while priority concerns the urgency or order in which it should be addressed. Defining severity levels in the project's defect-management process before defects are reported supports disciplined quality control throughout the lifecycle. The ISTQB glossary defines severity in terms of impact and provides the relevant testing vocabulary; see the ISTQB definition of severity. Additional guidance on defect-management activities is available from the ISTQB Certified Tester Foundation Level materials.

QUESTION NO: 59

In terms of benefit compared to the control's cost, identify the correct sequence of controls in ascending order of cost.

A. Preventive Control, Detective Control, Corrective Control

B. Detective Control, Corrective Control, Preventive Control

C. Preventive Control, Corrective Control, Detective Control

D. Preventive Control, Detective Control, Corrective Control

ANSWER: A

Explanation:

Preventive Control, Detective Control, Corrective Control is the appropriate ascending cost sequence because the earlier a control operates in the error or incident lifecycle, the more economically it can avoid downstream impact. Preventive controls are designed to stop defects, unauthorized actions, or undesirable events before they occur. Their cost is generally limited to incorporating safeguards into processes, systems, standards, training, or access rules. Detective controls operate after an event or defect has occurred, requiring monitoring, logging, testing, reviews, and investigation to identify the condition and

determine its scope. Corrective controls are normally the most costly because they address the consequences after detection: containment, recovery, repair, data correction, rework, root-cause remediation, and potentially business disruption. This reflects the quality-management principle that preventing problems at their source has a better benefit-to-cost relationship than finding and repairing them later. NIST describes preventive, detective, and corrective control functions in its security-control framework, while its risk-management guidance emphasizes selecting controls in light of impact and cost. See NIST SP 800-53 Rev. 5 and NIST SP 800-37 Rev. 2.

QUESTION NO: 60

Effort required to couple one system with another is called:

A. Maintainability

B. Flexibility

C. Usability

D. Interoperability

ANSWER: D

Explanation:

Interoperability is correct because it concerns the capability of a software system to work with other systems through defined interfaces, protocols, data formats, and services. In classic software-quality-factor terminology, interoperability is expressed in terms of the effort required to couple one system with another. That effort includes establishing compatible interfaces, enabling data exchange, coordinating interactions, and ensuring that each system can use the exchanged information as intended.

This concept is especially important when software must integrate with external applications, platforms, devices, databases, or partner services. A system with strong interoperability can be connected and operated with those surrounding systems with comparatively little integration effort. The wording in the question directly reflects this quality attribute rather than a general measure of ease of use or ease of modification.

Current quality models retain the same essential idea. ISO/IEC 25010 identifies interoperability as a characteristic within compatibility and defines it around exchanging information and using information exchanged between systems. This modern definition provides a standards-based counterpart to the traditional quality-factor phrasing used in software quality education and certification material. See the ISO/IEC 25010 quality model overview and the CSQA certification overview.

QUESTION NO: 61

Which of the following is NOT a QFD Horizontal Deployment?

A. Functional Deployment

B. Information Deployment

C. Customer Deployment

D. Task Deployment

ANSWER: C

Explanation:

Customer Deployment is not a QFD horizontal deployment. In this usage of Quality Function Deployment, horizontal deployment concerns systematically translating already-understood requirements across operational perspectives: functions that must be provided, information needed to support those functions, and tasks needed to implement or control the work. The objective is to preserve traceability while progressively converting needs into actionable technical and process-level work.

Customer deployment occurs before that horizontal translation. It identifies, captures, organizes, and prioritizes the voice of the customer, ensuring that the requirements entering QFD represent the relevant customer groups and their expressed or implied needs. Those customer needs are then used as the input to the matrices and deployment activities. This distinction is important for a software quality analyst because customer understanding establishes the basis for requirements quality, whereas horizontal deployment provides the structured path from those requirements to functions, information, and implementation tasks. QFD therefore maintains a clear link between customer value and the development work that delivers it. See the ASQ overview of Quality Function Deployment and the QFD Institute introduction to QFD.

QUESTION NO: 62

A histogram is a bar graph.

A. True

B. False

ANSWER: A

Explanation:

True is correct. A histogram is a bar-graph form used to show the frequency distribution of quantitative data. It groups numeric observations into consecutive intervals, often called bins or classes, and uses the height of each bar to show how many observations fall within that interval. This makes the histogram a valuable quality-analysis tool because it gives an immediate visual picture of a process's variation, including its typical range, concentration of results, spread, and distribution shape. Quality professionals use histograms to investigate measurements such as defect counts, response times, transaction values, or product dimensions and to identify patterns that may warrant additional analysis.

Although histograms have characteristics that distinguish them from categorical bar charts—particularly that the intervals are numeric and adjacent bars ordinarily touch—they are commonly and accurately described in quality-management references as a type of bar graph. The American Society for Quality defines a histogram as the most commonly used graph for showing frequency distributions, while NIST describes it as a bar chart representation of data distribution. In the context of CSQA quality tools, the statement correctly recognizes the histogram as a bar-graph visualization for frequency data. See ASQ's Histogram resource and the NIST Engineering Statistics Handbook.

QUESTION NO: 63

Which of the following tool(s) can be applied to determine the change in process scope?

A. Brainstorming

B. Cause and Effect Diagram

C. Flow Charts

D. All of the above

ANSWER: D

Explanation:

All of the above is correct because determining a process-scope change typically requires both defining the potential change and understanding its effects on the existing workflow. Brainstorming supports the initial identification of affected activities, inputs, outputs, stakeholders, boundaries, and possible improvement ideas. A cause-and-effect diagram helps structure the investigation of factors that create or influence the need for a scope change, making dependencies and contributing conditions visible. Flow charts provide a visual representation of the current process and, when updated to reflect the proposed state, make it possible to identify changed steps, handoffs, decision points, and interfaces. Used together, these tools give a quality analyst complementary information: ideas and impacts to investigate, causes and relationships to consider, and the operational workflow boundaries that will be altered. This combination is consistent with established quality-improvement practice, which uses brainstorming to generate and organize improvement opportunities, cause-and-

effect diagrams to explore contributing factors, and flowcharts to understand and analyze process flow. See the American Society for Quality's overview of brainstorming and its guidance on flowcharts.

QUESTION NO: 64

What early quality pioneer developed the "Quality Trilogy" of Quality Planning, Quality

Control, and Quality Improvement?

A. William Perry

B. Joseph Juran

C. Dr. Deming

D. Philip Crosby

E. Bill Gates

ANSWER: B

Explanation:

Joseph Juran developed the Quality Trilogy: quality planning, quality control, and quality improvement. This framework presents quality management as three interconnected managerial processes. Quality planning begins by identifying customers and their needs, establishing product or service features that meet those needs, and designing processes capable of delivering the intended results. Quality control evaluates actual performance against the planned objectives and takes action on significant differences. Quality improvement focuses on achieving breakthrough gains by selecting improvement projects, diagnosing causes, developing remedies, and establishing controls to sustain the gains.

Juran's trilogy is especially relevant to software quality because it treats quality as a managed, organization-wide discipline rather than as an activity performed only during testing or inspection. It connects requirements and process design to operational measurement and structured improvement, which are core concerns of quality analysts. The Juran Institute describes the trilogy as Juran's foundational quality-management concept, and ASQ identifies Juran as the quality leader associated with the Quality Trilogy. See the Juran Institute's Quality Trilogy overview and ASQ's Juran Trilogy resource.

QUESTION NO: 65

Procedures describe how methods, _____, techniques, and people are applied to perform a process?

A. Tools

B. Applications

C. Software

D. None of the above

ANSWER: A

Explanation:

Tools correctly completes the statement because a procedure specifies the operational details for carrying out a process: how people apply defined methods, use supporting tools, employ techniques, and coordinate their work to produce a repeatable result. In software quality work, tools may include test-management systems, defect-tracking applications, static-analysis utilities, measurement tools, and automation frameworks. A procedure makes the process actionable by establishing the expected sequence of activities, responsibilities, inputs and outputs, controls, and the resources used while performing the work.

This distinction is important in a quality-management environment. A process defines a set of related activities that transforms inputs into intended outputs, while documented procedures provide the practical instructions needed to perform

that process consistently. Identifying the tools to be used helps ensure that practitioners execute the procedure in a controlled, repeatable manner and can generate the records or evidence needed for quality assurance. This use of documented procedures aligns with recognized quality-management guidance on defining and controlling operational processes. See the ISO 9001 quality-management standard overview and ASQ's Quality Glossary for related process and procedure terminology.