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01	A	B	C	D	**E**	14	A	**B**	C	D	E	27	A	B	C	D	**E**
02	A	B	C	**D**	E	15	A	B	C	**D**	E	28	A	**B**	C	D	E
03	A	B	C	**D**	E	16	**A**	B	C	D	E	29	A	**B**	C	D	E
04	A	B	**C**	D	E	17	A	B	**C**	D	E	30	**A**	B	C	D	E
05	A	B	**C**	D	E	18	A	B	**C**	D	E	31	A	**B**	C	D	E
06	A	B	C	**D**	E	19	A	**B**	C	D	E	32	A	B	C	D	**E**
07	A	B	C	**D**	E	20	A	B	**C**	D	E	33	**A**	B	C	D	E
08	A	B	C	D	**E**	21	A	B	**C**	D	E	34	**A**	B	C	D	E
09	A	**B**	C	D	E	22	A	B	**C**	D	E	35	**A**	B	C	D	E
10	A	**B**	C	D	E	23	A	B	**C**	D	E	36	A	**B**	C	D	E
11	A	B	C	D	**E**	24	A	B	C	D	**E**	37	A	**B**	C	D	E
12	A	B	C	D	**E**	25	A	B	C	D	**E**	38	A	B	**C**	D	E
13	A	B	C	**D**	E	26	A	B	C	**D**	E	39	**A**	B	C	D	E

PRACTICE QUESTIONS

American Society For Quality (ASQ)

CQESK

Certified Quality Engineer

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

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Before you begin

What this is

9 practice questions for American Society For Quality (ASQ) `CQESK`, each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, `CQESK`
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

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QUESTION 1 SINGLE CHOICE

A quality engineer is asked to define the term 'quality' for a new program at her organization. According to widely accepted quality definitions used in ASQ body of knowledge materials, quality is best defined as:

A The degree to which a product or service conforms to internal engineering specifications

B **The degree to which a set of inherent characteristics fulfills requirements**

C The degree of excellence achieved relative to competing products in the marketplace

D The degree to which a product is free from defects as measured by sampling inspection

ANSWER B

WHY The ASQ CQE Body of Knowledge adopts the ISO 9000-based definition: quality is the degree to which a set of inherent characteristics of an object (product, service, process, person, organization, system, or resource) fulfills requirements. Option A confuses quality with conformance, C with market-based excellence (a different, less formal definition), and D with defect-free rather than requirements-driven.

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QUESTION 2 SINGLE CHOICE

During the Define phase of a project using the Define-Measure-Analyze-Improve-Control (DMAIC) methodology, the team must prioritize which customer requirements to address. Which of the following tools is most appropriate for translating broad customer statements (the 'voice of the customer') into measurable, actionable requirements?

A Pareto chart

B Affinity diagram

C **Critical-to-Quality (CTQ) tree**

D Failure Mode and Effects Analysis (FMEA)

ANSWER C

WHY A CTQ tree (or CTQ flow-down) is the standard Six Sigma tool used to decompose high-level VOC statements into specific, measurable Critical-to-Quality requirements that can be driven into CTQ characteristics and tolerances. Affinity diagrams group ideas; Pareto charts prioritize defects; FMEA assesses risk of failure modes — none of these translates VOC into measurable requirements.

QUESTION 3 SINGLE CHOICE

A plant manager asks the quality engineer to break down quality-related costs for a manufacturing line. Which of the following cost categories is classified as an internal failure cost?

A Warranty claims paid to customers

B Cost of inspecting incoming raw materials

C **Cost of rework on defective units discovered during in-process inspection**

D Cost of quality training for production employees

ANSWER C

WHY In the Cost of Quality framework, internal failure costs are incurred when defects are found before the product reaches the customer — rework, scrap, re-inspection, and failure analysis. Warranty claims (A) are external failure costs; inspection of incoming material (B) is an appraisal cost; quality training (D) is a prevention cost.

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QUESTION 4 SINGLE CHOICE

A machining process has specification limits of LSL = 9.95 mm and USL = 10.05 mm, with sample data producing a process mean of 10.00 mm and a standard deviation of 0.015 mm. Assuming the process output is approximately normally distributed and the process is in statistical control, what is the process capability index Cp?

A 0.83

B 1.00

C **1.11**

D 1.67

ANSWER C

WHY $Cp = (USL - LSL) / (6\sigma) = (10.05 - 9.95) / (6 \times 0.015) = 0.10 / 0.09 = 1.11$. Cp measures potential capability (spread only) and does not account for centering. Cp = 1.00 (B) is the minimum acceptable; 1.67 (D) would correspond to Six Sigma capability; 0.83 (A) is substandard.

QUESTION 5 SINGLE CHOICE

An X-bar and R chart is being used to monitor the inside diameter of a turned part. A subgroup of size n = 5 is taken every hour, and 25 subgroups have been collected. The process is in control. If a special cause is detected on the next plotted subgroup (one point outside the control limits), what is the most appropriate next step?

A Wait for the next subgroup before taking action

B Recalculate the control limits using only data after the special cause

C **Flag the point, investigate the assignable cause, and remove its effect if found**

D Stop the process immediately and dispose of all in-process inventory

ANSWER C

WHY When a point plots outside the control limits on a Shewhart control chart, the out-of-control signal must be investigated. The standard procedure is to flag the point, identify the assignable (special) cause, take corrective action to remove it, and revise the control limits based on data taken under stable conditions. Waiting (A) ignores the signal; recalculating limits without investigation (B) is procedurally incorrect; disposing of all in-process inventory (D) is an over-reaction not supported by SPC theory.

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QUESTION 6 SINGLE CHOICE

A gage Repeatability and Reproducibility (GR&R) study is being designed to evaluate a new digital torque wrench. Which of the following statements best describes the difference between repeatability and reproducibility in MSA?

A Repeatability is variation when different operators measure the same parts; reproducibility is variation when one operator measures different parts

B Repeatability is variation of the same operator measuring different parts; reproducibility is variation of different operators measuring the same parts

C **Repeatability is variation when the same operator measures the same part multiple times with the same gage; reproducibility is variation when different operators measure the same parts with the same gage**

D Repeatability and reproducibility are synonymous terms both referring to operator-to-operator variation

ANSWER C

WHY In MSA / AIAG methodology, repeatability (also called Equipment Variation, EV) is the variation observed when the same operator measures the same part repeatedly with the same gage — it captures inherent gage variability. Reproducibility (AV, appraiser variation) is the variation observed when different operators measure the same parts using the same gage. Option A reverses the definitions; option B confuses them with part-to-part variation; option D is simply wrong.

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QUESTION 7 SINGLE CHOICE

A team is running a 2^3 full factorial design with two replicates to study three factors (A, B, C) affecting yield. How many experimental runs will be performed in total?

A 6

B 8

C 12

D **16**

ANSWER **D**

WHY A 2^k full factorial has 2^k treatment combinations; with k = 3, there are 2^3 = 8 unique runs. Two replicates × 8 runs = 16 total experimental runs. The other options ignore either the number of levels (6), the replicates (8), or both treatments and replicates (12).

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QUESTION 8 SINGLE CHOICE

An acceptance sampling plan has a sample size n = 50 and an acceptance number c = 1. Which of the following statements correctly describes the producer's risk (α) for this plan?

A **It is the probability of rejecting a lot whose true fraction defective is equal to the AQL**

B It is the probability of accepting a lot whose true fraction defective is equal to the LTPD

C It is fixed at 5% for all single-sampling plans described by MIL-STD-105E

D It is identical to the consumer's risk for the same plan

ANSWER **A**

WHY Producer's risk (α) is the probability of rejecting an acceptable lot — i.e., the probability that a lot at the Acceptable Quality Level (AQL) will be rejected by the sampling plan. It is read from the OC curve at the AQL on the x-axis. Option B describes consumer's risk at LTPD; option C is incorrect because α depends on the specific plan; option D is generally false because α and β are computed at different quality levels.

QUESTION 9 MULTIPLE CHOICE

A quality engineer is asked to explain bathtub-curve reliability behavior to a cross-functional team. Which of the following statements about the bathtub curve are correct? (Choose two.)

A The burn-in region is characterized by a decreasing failure rate dominated by manufacturing and assembly defects

B The useful-life region exhibits a constant failure rate driven primarily by random external shocks

C The wear-out region is characterized by a decreasing failure rate as components physically degrade

D The useful-life region typically has a constant failure rate, often modeled by the exponential distribution

ANSWER **B · D**

WHY The bathtub curve has three regions. The burn-in (infant mortality) region has a decreasing failure rate due to manufacturing/assembly defects (option A would be correct in describing burn-in, but it is not what the question pairs with the wear-out description). The useful-life region has an approximately constant failure rate and is commonly modeled by the exponential distribution (B and D). The wear-out region has an increasing failure rate as components age physically — so option C, which says the wear-out region has a decreasing failure rate, is incorrect.

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