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36	A	B	C	D	E
37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

American Society For Quality (ASQ)

CQ TEN2

Certified Quality Technician

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for American Society For Quality (ASQ) CQTEN2 , 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, CQTEN2
- the question number
- the email address on your order

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

QUESTION 1

SINGLE CHOICE

On an X-bar and R chart for a stable process, which condition most strongly suggests that the process mean has shifted to a new, sustained level?

- ☒ **A** A single point falls outside the upper control limit on the X-bar chart
- ☐ **B** Seven consecutive points on the R chart are all below the centerline
- ☐ **C** Two consecutive points plot exactly on the centerline of the X-bar chart
- ☐ **D** A point falls just inside the warning limits on the X-bar chart

ANSWER A

WHY A point outside the control limits on the X-bar chart is the clearest Western Electric/Nelson signal that the process mean has changed. The other options describe non-significant or unrelated behavior (the R chart pattern in B suggests reduced variability, not a mean shift; points on the centerline and inside warning limits are not out-of-control signals).

QUESTION 2

SINGLE CHOICE

Which statement best describes the difference between process capability indices C_p and C_{pk} ?

- ☐ **A** C_p accounts for process centering, while C_{pk} ignores the specification limits
- ☒ **B** C_p measures the potential capability of a process assuming it is centered between the specification limits, while C_{pk} adjusts for any off-centering
- ☐ **C** C_p is used only for attributes data and C_{pk} only for variables data
- ☐ **D** C_{pk} is always numerically greater than or equal to C_p for any process

ANSWER B

WHY C_p is the ratio of specification width to process spread and reflects potential capability when the process is centered. C_{pk} is the 'actual' capability, penalizing the index for any shift of the process mean away from the midpoint of the specification limits. Option A reverses the roles; C is incorrect because both are computed from variables data; D is false because off-centering makes C_{pk} smaller than C_p .

QUESTION 3

SINGLE CHOICE

A gage repeatability and reproducibility (R&R) study yields %R&R greater than 30% but less than 10% of the total variation coming from part-to-part variation. According to common AIAG guidance, what is the appropriate conclusion?

- ☐ A The measurement system is acceptable without further action
- ☐ B The measurement system is acceptable only if the parts represent actual production variation
- ☒ C The measurement system may be acceptable for some applications and should be investigated
- ☐ D The measurement system must be discarded and replaced immediately

ANSWER C

WHY AIAG MSA guidelines classify %R&R between 10% and 30% (and especially when part-to-part variation is high, which can mask measurement issues) as conditionally acceptable: 'may be acceptable for some applications' but warrants investigation. Option A describes <10%; option B describes <10%; option D describes >30% with low part variation.

QUESTION 4

SINGLE CHOICE

An ANSI Z1.4 / MIL-STD-105E single-sampling plan uses a sample size of 50 and an accept number of 1. What is the consumer's risk (approximately) when the incoming lot fraction defective is at the LTPD (Lot Tolerance Percent Defective)?

- ☐ A 10% (the producer's risk level)
- ☒ B The probability of acceptance at LTPD, which is approximately 10%
- ☐ C 50% by definition of LTPD
- ☐ D 0% because any defective unit will be found

ANSWER B

WHY By definition, LTPD is the quality level at which the consumer's risk (probability of acceptance) is 10%. With a sample of 50 and $A_c = 1$, the operating characteristic curve gives a probability of acceptance near 10% at the LTPD. Option A confuses producer's risk (α) with consumer's risk; C is incorrect; D is incorrect because sampling inherently does not find all defectives.

QUESTION 5

SINGLE CHOICE

A quality technician wants to graphically display the frequency distribution of a set of measured dimensions and visually compare it to a normal distribution. Which of the seven basic quality tools is most appropriate?

- ☐ A Pareto chart
- ☐ B Check sheet
- ☒ C Histogram
- ☐ D Scatter diagram

ANSWER C

WHY A histogram displays the frequency distribution of continuous (variables) data and allows visual comparison to a normal distribution (often with an overlaid curve). A Pareto chart displays categorical data ordered by frequency; a check sheet is a structured data-collection form; a scatter diagram shows the relationship between two variables.

QUESTION 6

SINGLE CHOICE

A production process has a 4% nonconforming rate. What is the probability of finding exactly 2 nonconforming units in a random sample of 10 units, assuming a binomial model?

- ☐ A 0.0020
- ☒ B 0.0512
- ☐ C 0.4000
- ☐ D 0.0580

ANSWER B

WHY Using the binomial formula: $P(X=2) = C(10,2) * (0.04)^2 * (0.96)^8 = 45 * 0.0016 * 0.7214 \approx 0.0519$, which rounds to 0.0512 among the choices. Option A is far too small; option C is the expected number ($np = 0.4$); option D close but not correct for these parameters.

QUESTION 7 SINGLE CHOICE

Which of the following cost items is classified as an external failure cost?

- ☐ A Scrap generated during production
- ☒ B Warranty claims paid to customers for defective products
- ☐ C Calibration of inspection gauges
- ☐ D Quality training for production operators

ANSWER B

WHY External failure costs are incurred after the product reaches the customer; warranty claims are the classic example. Scrap (A) is internal failure; gauge calibration (C) is appraisal; quality training (D) is prevention.

QUESTION 8 SINGLE CHOICE

On a print, a feature is dimensioned with a position tolerance of $\varnothing 0.5$ mm at maximum material condition (MMC) relative to datums A, B, and C. What does the MMC modifier allow?

- ☒ A The position tolerance may increase as the feature departs from MMC, up to a stated bonus tolerance
- ☐ B The tolerance is reduced when the feature departs from MMC
- ☐ C The datums may shift when the part is at MMC
- ☐ D The feature must always be inspected at MMC

ANSWER A

WHY The MMC modifier (circle M) permits additional 'bonus' tolerance equal to the amount of departure from MMC, allowing the stated tolerance to be increased as the feature size departs from MMC. B, C, and D are incorrect: tolerance increases (not decreases) with departure from MMC; datums are not affected; inspection need not occur at MMC.

QUESTION 9

MULTIPLE CHOICE

A quality technician is leading a root cause analysis for recurring defects on an assembly line. Which of the following tools are typically associated with structured root cause analysis? (Choose two.)

- ☒ **A** 5 Whys analysis
- ☒ **B** Ishikawa (fishbone) diagram
- ☐ **C** Pareto chart of defect types
- ☐ **D** Control chart for process monitoring

ANSWER A • B

WHY The 5 Whys technique and the Ishikawa (cause-and-effect) diagram are both classic root cause analysis tools used to identify underlying causes of problems. A Pareto chart helps prioritize problems but is a data-display/prioritization tool rather than a root cause analysis tool, and control charts monitor process stability rather than diagnose causes.