

01	☐ A	☒ B	☐ C	☐ D	☐ E
02	☒ A	☐ B	☐ C	☐ D	☐ E
03	☐ A	☒ B	☐ C	☐ D	☐ E
04	☒ A	☐ B	☐ C	☐ D	☐ E
05	☐ A	☒ B	☐ C	☐ D	☐ E
06	☐ A	☐ B	☐ C	☒ D	☐ E
07	☒ A	☐ B	☐ C	☐ D	☐ E
08	☐ A	☐ B	☐ C	☐ D	☒ E
09	☐ A	☐ B	☒ C	☐ D	☐ E
10	☐ A	☐ B	☐ C	☐ D	☒ E
11	☐ A	☒ B	☐ C	☐ D	☐ E
12	☐ A	☐ B	☒ C	☐ D	☐ E
13	☐ A	☐ B	☐ C	☒ D	☐ E

14	☒ A	☐ B	☐ C	☐ D	☐ E
15	☒ A	☐ B	☐ C	☐ D	☐ E
16	☐ A	☐ B	☒ C	☐ D	☐ E
17	☐ A	☐ B	☒ C	☐ D	☐ E
18	☐ A	☐ B	☐ C	☒ D	☐ E
19	☐ A	☐ B	☐ C	☒ D	☐ E
20	☐ A	☐ B	☐ C	☐ D	☒ E
21	☐ A	☐ B	☒ C	☐ D	☐ E
22	☒ A	☐ B	☐ C	☐ D	☐ E
23	☐ A	☐ B	☐ C	☐ D	☒ E
24	☐ A	☐ B	☐ C	☐ D	☒ E
25	☐ A	☐ B	☐ C	☐ D	☒ E
26	☐ A	☐ B	☒ C	☐ D	☐ E

27	☐ A	☒ B	☐ C	☐ D	☐ E
28	☐ A	☒ B	☐ C	☐ D	☐ E
29	☐ A	☐ B	☐ C	☒ D	☐ E
30	☐ A	☐ B	☐ C	☒ D	☐ E
31	☐ A	☐ B	☐ C	☒ D	☐ E
32	☐ A	☐ B	☐ C	☐ D	☒ E
33	☐ A	☐ B	☐ C	☒ D	☐ E
34	☐ A	☒ B	☐ C	☐ D	☐ E
35	☐ A	☐ B	☐ C	☐ D	☒ E
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)

CQEPL2

Certified Quality Engineer

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

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9 practice questions for American Society For Quality (ASQ) CQEPL2 , 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.

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Send us three things and we will check it:

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- the email address on your order

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QUESTION 1

SINGLE CHOICE

Which quality guru is credited with developing the Plan-Do-Check-Act (PDCA) cycle, also known as the Deming cycle?

- ☐ A Joseph Juran
- ☒ B W. Edwards Deming
- ☐ C Philip Crosby
- ☐ D Armand Feigenbaum

ANSWER B

WHY W. Edwards Deming introduced the PDCA cycle as a framework for continuous improvement. Juran is known for the trilogy of quality planning, control, and improvement; Crosby is associated with the concept of 'zero defects' and 'quality is free'; Feigenbaum coined the term 'total quality control.'

QUESTION 2

SINGLE CHOICE

A shipment contains 10 components, of which 3 are defective. If 2 components are selected at random without replacement, what is the probability that both selected components are defective?

- ☐ A 0.0333
- ☒ B 0.0667
- ☐ C 0.0900
- ☐ D 0.3000

ANSWER B

WHY Using the multiplication rule for dependent events: $P(\text{both defective}) = (3/10) \times (2/9) = 6/90 = 0.0667$. Option A ($1/30 \approx 0.0333$) incorrectly uses replacement, and option D (0.30) is the probability that only the first component is defective, not both.

QUESTION 3

SINGLE CHOICE

In a two-factor full factorial design with 3 levels per factor, how many experimental runs are required?

- ☐ A 4
- ☐ B 6
- ☒ C 9
- ☐ D 12

ANSWER C

WHY A full factorial design requires all combinations of factor levels. The number of runs is calculated as L^k , where L is the number of levels and k is the number of factors. With 3 levels and 2 factors: $3^2 = 9$ runs.

QUESTION 4

SINGLE CHOICE

An X-bar and R chart is used to monitor a process. The center line for the X-bar chart is set at the process mean of 50.0, and the upper control limit is 53.5. If a sample mean of 54.2 is plotted, what action should the quality engineer take?

- ☐ A Conclude the process is in control; the variation is due to common causes.
- ☐ B Stop the process immediately and inspect every unit produced.
- ☒ C Investigate the assignable cause because the point exceeds the upper control limit.
- ☐ D Recalculate the control limits using the new sample data.

ANSWER C

WHY When a point falls outside the control limits, it signals the presence of an assignable (special) cause of variation. The appropriate action is to investigate and identify the assignable cause. Option B describes overreaction; option A is incorrect because the point indicates the process is out of statistical control.

QUESTION 5 SINGLE CHOICE

An acceptance sampling plan with $n = 50$, $c = 2$ is being used. What is the producer's risk (α) for a lot with fraction defective $p = 0.01$?

- ☐ A The probability of accepting a lot with $p = 0.01$
- ☒ B The probability of rejecting a lot with $p = 0.01$
- ☐ C The probability of accepting a lot with $p = 0.05$
- ☐ D The probability of rejecting a lot with $p = 0.05$

ANSWER B

WHY The producer's risk (α) is the probability of rejecting a good lot, typically defined using the Acceptable Quality Level (AQL). For a lot with fraction defective equal to the AQL (often $p = 0.01$ in this context), α is the probability of rejection, computed from the Poisson approximation as $P(X > 2)$ where $X \sim \text{Poisson}(0.5) \approx 0.0144$.

QUESTION 6 SINGLE CHOICE

In a Gauge Repeatability and Reproducibility (GR&R) study, which source of variation represents the difference in average measurements taken by different operators using the same gauge on the same part?

- ☐ A Repeatability
- ☒ B Reproducibility
- ☐ C Part-to-part variation
- ☐ D Total variation

ANSWER B

WHY Reproducibility (R) is the variation due to different operators (or measurement systems) measuring the same part. Repeatability is the variation observed when the same operator measures the same part multiple times with the same gauge. Part-to-part variation is the actual variation among the parts themselves.

QUESTION 7 SINGLE CHOICE

Under ISO 9001:2015, which principle emphasizes the importance of evidence-based decision making?

- ☐ A Customer focus
- ☐ B Leadership
- ☒ C Evidence-based decision making
- ☐ D Relationship management

ANSWER C

WHY ISO 9001:2015 is built on seven quality management principles. Evidence-based decision making is one of these principles, emphasizing that effective decisions are based on the analysis of data and information. The other listed options are also QMS principles, but they address different aspects of management.

QUESTION 8 SINGLE CHOICE

Which lean concept refers to any activity that consumes resources without creating value for the customer?

- ☐ A Kaizen
- ☒ B Muda
- ☐ C Poka-yoke
- ☐ D Kanban

ANSWER B

WHY Muda is the Japanese term for waste — any activity that consumes resources but does not create value for the customer. The seven classic types of muda include defects, overproduction, waiting, transportation, inventory, motion, and over-processing. Kaizen means continuous improvement; poka-yoke means mistake-proofing; kanban is a signaling system.

QUESTION 9

MULTIPLE CHOICE

A process has specification limits of 10.0 ± 2.0 mm. After collecting 25 samples of size 4, the sample means yield a grand average of 10.0 mm and the average range is 1.0 mm. (For $n = 4$, the d_2 constant is 2.059.) Which of the following statements are correct? (Choose two.)

- ☒ **A** The estimated process standard deviation is approximately 0.486 mm.
- ☒ **B** C_p equals C_{pk} , indicating the process is centered on the specification midpoint.
- ☐ **C** The process capability index C_{pk} is less than C_p .
- ☐ **D** The process is not capable because C_{pk} is greater than 2.0.

ANSWER A - B

WHY The process standard deviation is estimated as $\hat{\sigma} = \bar{R}/d_2 = 1.0/2.059 \approx 0.486$ mm (option A is correct). With the process mean (10.0) equal to the specification midpoint (10.0), the process is centered, so $C_p = C_{pk}$ (option B is correct). $C_p = (USL - LSL)/(6\hat{\sigma}) = 4.0/(6 \times 0.486) \approx 1.37$. Option C is incorrect because the process is centered. Option D is incorrect because $C_{pk} \approx 1.37$, not greater than 2.0, and a C_{pk} of 1.37 is considered capable but not exceptional.