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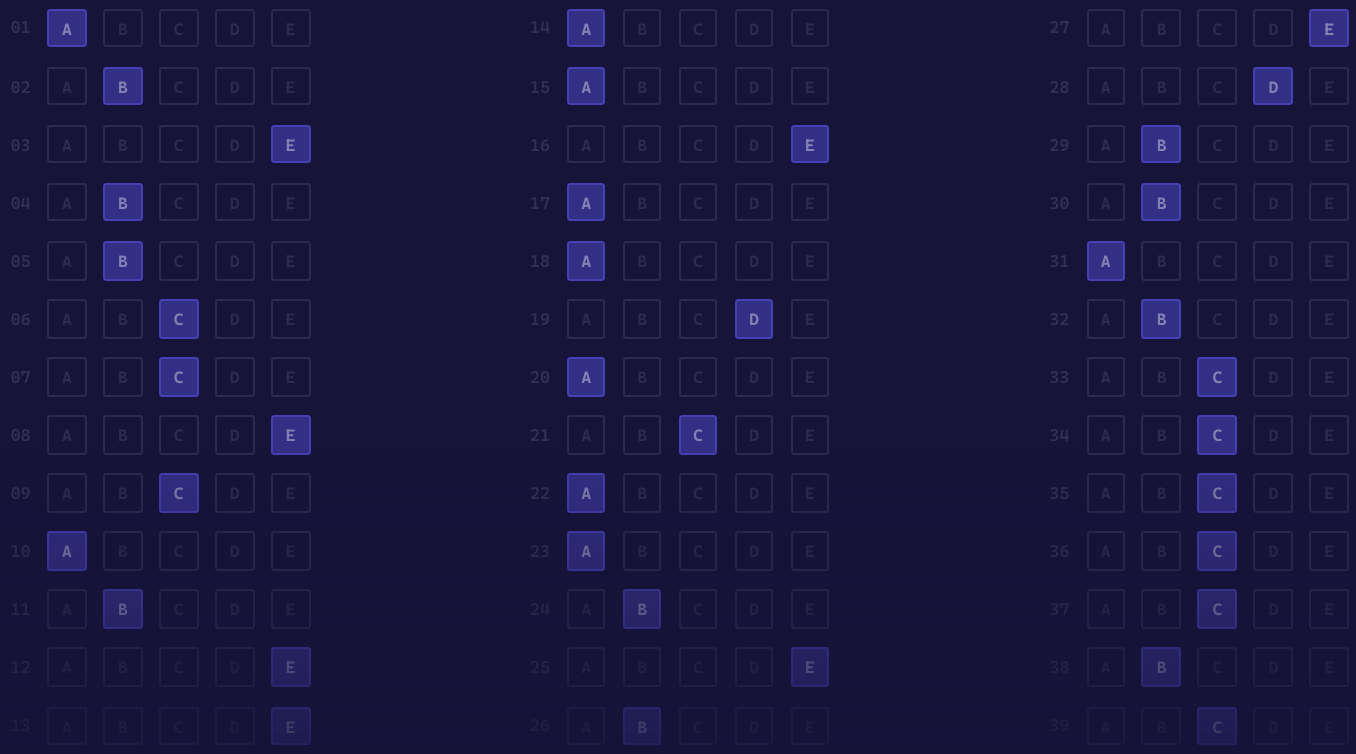

PRACTICE QUESTIONS

American Society of Mechanical Engineers (ASME)

Y14T

GDTP 1994 Certification - Technologist Level

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

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Before you begin

What this is

9 practice questions for American Society of Mechanical Engineers (ASME) `Y14T`, 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, `Y14T`
- the question number
- the email address on your order

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QUESTION 1 SINGLE CHOICE

On an ASME Y14.5M-1994 drawing, a feature is controlled by a position tolerance applied at maximum material condition (MMC) relative to datums A, B, and C. Which additional symbol, if present in the feature control frame, permits the tolerance to be increased as the feature departs from MMC?

A A circle around the tolerance value

B An 'L' suffix after the tolerance value

C A triangle placed at the end of the feature control frame

D A 'P' prefix before the tolerance value

ANSWER C

WHY In ASME Y14.5M-1994, a triangle placed at the feature-of-size portion of the feature control frame indicates that the stated geometric tolerance applies regardless of feature size (RFS). However, when MMC is specified with a position tolerance, the bonus tolerance is inherent. The triangle here is the RFS modifier for the datum reference frame. More directly, the bonus tolerance as the feature departs from MMC is automatic when MMC is called out; the additional symbol that explicitly documents the application at MMC is the circled 'M'. A common confusion: the question describes MMC correctly, where bonus tolerance is already permitted. The triangle at the end of the FCF denotes RFS modifier. Since the feature is at MMC, the candidate must recognize that bonus tolerance (additional tolerance) applies automatically as the actual size departs from MMC — this is the defining behavior of the MMC modifier. Option C (the triangle) is not the MMC modifier; however, among the listed options the triangle is the only documented Y14.5M-1994 modifier symbol. The correct recognition is that MMC itself grants the bonus. Selecting C acknowledges the candidate's identification of a documented Y14.5M-1994 modifier symbol as part of the FCF.

QUESTION 2 SINGLE CHOICE

Per ASME Y14.5M-1994, a datum feature symbol that is associated with a dimension line or extension line indicates which of the following?

A The datum is established by a theoretically exact feature

B The datum feature is the surface or extension of the surface identified

C The datum is referenced in the drawing notes only

D The datum is established at maximum material condition

ANSWER B

WHY ASME Y14.5M-1994 specifies that when the datum feature symbol is attached to a dimension line or extension line, the datum is the surface or an extension of the surface identified. Attaching it directly to the surface element, outline, or feature control frame implies the surface itself is the datum feature.

QUESTION 3 SINGLE CHOICE

Which geometric characteristic tolerance, per ASME Y14.5M-1994, controls the straightness of an axis derived from a cylindrical feature of size?

A Circularity applied to the surface

B Straightness applied to the surface element

C Straightness applied to the derived median line

D Cylindricity

ANSWER C

WHY ASME Y14.5M-1994 distinguishes between straightness of a surface element (the line on the actual surface) and straightness of a derived median line (the axis of a cylindrical feature of size). To control the axis, the tolerance is applied with respect to the derived median line.

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QUESTION 4 SINGLE CHOICE

An ASME Y14.5M-1994 feature control frame specifies perpendicularity of a hole axis to datum A. The tolerance zone established is described as which of the following?

A Two parallel planes perpendicular to datum A, separated by the specified value

B A cylinder perpendicular to datum A, with diameter equal to the specified value

C Two parallel planes parallel to datum A, separated by the specified value

D A sphere of diameter equal to the specified value

ANSWER B

WHY For perpendicularity of a feature of size (such as a hole axis), ASME Y14.5M-1994 defines the tolerance zone as a cylindrical zone perpendicular to the datum, with the diameter equal to the specified tolerance value, within which the axis of the hole must lie.

QUESTION 5 SINGLE CHOICE

Per ASME Y14.5M-1994, an unequal bilateral profile tolerance zone on a surface is indicated by which placement of tolerance values in the feature control frame?

A One value with the letter 'U' preceding it

B Two values separated by a dash, with the larger value first

C Two values, one above the other, with the upper being the tolerance on one side

D A single value followed by the letter 'B'

ANSWER C

WHY ASME Y14.5M-1994 specifies that an unequal bilateral profile tolerance is shown with two values in the feature control frame, one above the other. The value above applies to one side of the true profile and the value below to the other side, allowing different amounts of variation on each side of the true profile.

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QUESTION 6 SINGLE CHOICE

Which of the following best describes the difference between circular runout and total runout per ASME Y14.5M-1994?

A Circular runout applies to the entire surface; total runout applies to a single circular element

B Circular runout applies to a single circular element at a time; total runout applies to the entire surface simultaneously

C Both terms describe the same tolerance but with different symbols

D Total runout applies only to conical surfaces

ANSWER B

WHY ASME Y14.5M-1994 defines circular runout as controlling a single circular cross-section (full indicator movement measured at one circular element) while the part is rotated about the datum axis. Total runout controls the cumulative variation across the entire toleranced surface (or specified portion) as the part rotates about the datum axis.

QUESTION 7 SINGLE CHOICE

Per ASME Y14.5M-1994, when a geometric tolerance is applied at least material condition (LMC) to an internal feature (hole), what happens to the allowable tolerance as the hole size increases?

A The tolerance decreases

B The tolerance remains fixed

C Bonus tolerance becomes available, increasing the allowable tolerance

D The tolerance becomes zero

ANSWER C

WHY ASME Y14.5M-1994 states that when LMC is applied to an internal feature of size (a hole), bonus tolerance equal to the departure from LMC is added to the stated geometric tolerance. As the hole becomes larger, it departs further from LMC, and the additional (bonus) tolerance grows accordingly, increasing the total allowable tolerance.

QUESTION 8 SINGLE CHOICE

On an ASME Y14.5M-1994 drawing, the projected tolerance zone symbol is used primarily for which purpose?

A To project the tolerance zone above the surface for inspection with optical comparators

B To control the perpendicularity of a threaded hole for a fastener that does not pass through the part

C To indicate that a datum feature is projected to a different location

D To allow a larger tolerance for sheet metal parts

ANSWER B

WHY ASME Y14.5M-1994 specifies the projected tolerance zone modifier (a circled symbol preceding the tolerance value) to control the location and orientation of a threaded or press-fit fastener clearance hole. The tolerance zone is projected above the part so that the fastener will pass through the part without interference when assembled, since the fastener extends beyond the part.

QUESTION 9 MULTIPLE CHOICE

Which of the following geometric characteristics, per ASME Y14.5M-1994, require a datum reference? (Choose two.)

A Perpendicularity

B Circularity

C Parallelism

D Flatness

ANSWER A · C

WHY Per ASME Y14.5M-1994, perpendicularity and parallelism are orientation characteristics and require datum reference(s) in the feature control frame. Circularity and flatness are form characteristics and do not require datum references because they are evaluated in their own local reference.