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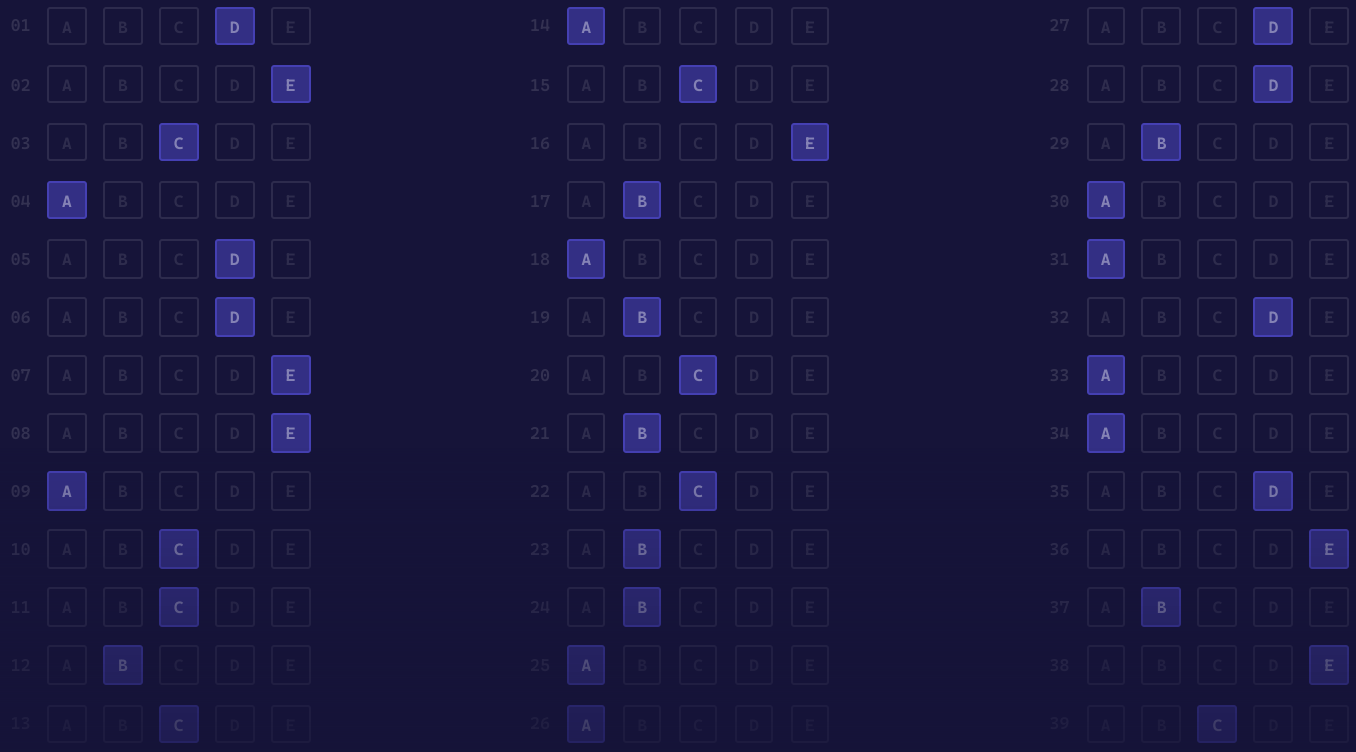

PRACTICE QUESTIONS

ALABAMA CONSTRUCTION

CAC2QF74

AL Foundations, Pilings, and Cofferdams with Retaining Walls Contractor

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

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Before you begin

What this is

9 practice questions for ALABAMA CONSTRUCTION `CAC2QF74`, 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, `CAC2QF74`
- 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

Before placing concrete for a spread footing, the contractor must verify that the bearing soil matches the geotechnical report's assumed allowable bearing capacity. Which of the following is the most appropriate field verification method?

A Perform a Standard Penetration Test (SPT) at every footing location

B Have a qualified geotechnical representative observe the exposed bearing surface and compare it to the design profile

C Pour a test slab of concrete and inspect for cracking after 24 hours

D Increase the footing dimensions by 10% as a safety margin

ANSWER B

WHY Standard practice on foundation work requires the exposed bearing soil to be evaluated by a qualified geotechnical professional and compared against the design assumptions before concrete placement. SPTs at every footing are excessive for routine verification, a 24-hour crack test of a slab does not characterize bearing capacity, and arbitrarily enlarging the footing is not an accepted substitute for verification.

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QUESTION 2 SINGLE CHOICE

A contractor is installing precast prestressed concrete piles to support a bridge bent. The piles must be driven to a design tip elevation and to a specified ultimate bearing capacity verified by the Engineer of Record. Which driving criterion should be specified in the project documents?

A A minimum number of hammer blows per inch of penetration only

B **An ultimate pile capacity verified through a wave equation analysis of pile driving (WEAP) and confirmed by field driving criteria such as blows per foot at a specified hammer stroke, with a dynamic pile load test on a representative pile**

C Driving the pile until the hammer begins to bounce visibly without measuring penetration

D A fixed pile length provided by the pile manufacturer without field verification

ANSWER B

WHY Acceptable pile driving practice requires that driving criteria be developed from a wave equation analysis (WEAP) correlating hammer energy, stroke, and blows per foot to the required ultimate capacity, and that the criteria be confirmed in the field with a dynamic pile load test on a representative production pile. Blows per inch alone is not a capacity measure, visual bouncing is not an engineered criterion, and a manufacturer-fixed length does not satisfy capacity verification.

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QUESTION 3 SINGLE CHOICE

A contractor is installing a cantilever sheet pile retaining wall to support an excavation approximately 12 feet deep in sandy soil with a high water table. Which factor is most critical to the wall's lateral stability?

A The color of the sheet piling for site aesthetics

B **The embedment depth of the sheet piling below the excavation subgrade, which must be sufficient to develop passive earth pressure resistance and control seepage**

C The thickness of the protective coating on the visible face of the wall

D The spacing of the timber walers used to support the excavation face above grade

ANSWER B

WHY For a cantilever sheet pile wall, the embedment depth below the excavation is the dominant stability parameter because it mobilizes passive resistance on the embedded portion and controls the seepage path (and thus piping/boiling) under the wall in sandy soils with a high water table. Color, coating thickness, and waler spacing above grade are not primary stability concerns.

QUESTION 4 SINGLE CHOICE

For a mechanically stabilized earth (MSE) retaining wall, the primary function of the soil reinforcement strips or geogrids is to:

A Provide a decorative facing pattern on the wall surface

B **Transfer tensile loads from the facing into the retained soil mass to develop frictional or bearing resistance against pullout**

C Replace the need for a leveling pad at the base of the facing

D Act as a waterproof membrane behind the facing panels

ANSWER B

WHY MSE wall reinforcements (steel strips, geogrids, or geotextiles) carry tensile loads from the facing panels into the reinforced soil mass, where they develop pullout resistance through friction and bearing. They are not decorative, do not substitute for a leveling pad, and are not a waterproofing element; drainage and waterproofing are addressed by separate components.

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QUESTION 5 SINGLE CHOICE

A drilled shaft (caisson) is being constructed to support a column load. After drilling to the design tip elevation, the contractor observes that the bottom of the shaft contains a significant amount of loose, wet soil. What is the correct action before placing concrete?

A Place concrete immediately to displace the loose material and rely on the concrete to push it aside

B **Clean out the shaft bottom using appropriate methods (such as a cleanout bucket or tremie concrete placement technique) and, if required, perform a shaft inspection before placing concrete**

C Backfill the shaft with lean concrete and redrill to the original tip elevation

D Increase the shaft diameter by 6 inches to encapsulate the loose zone

ANSWER **B**

WHY Loose or wet soil at the base of a drilled shaft must be removed to ensure end-bearing on competent material and to limit settlement; cleaning with a cleanout bucket (or using the tremie method for wet shafts) followed by inspection is standard practice. Placing concrete directly over loose material reduces end resistance, lean-concrete backfill with redrilling is not an accepted remedy, and arbitrarily enlarging the diameter does not address the contaminated base.

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QUESTION 6 SINGLE CHOICE

During underpinning of an adjacent structure's foundation, the contractor must ensure that the underpinning piers carry the existing loads continuously and safely. Which statement about underpinning sequencing is correct?

A All underpinning pits can be excavated simultaneously along the entire wall, with shoring installed only at the end

B Underpinning must be performed in limited, sequenced segments (pits) so that at no time is an excessive length of the existing foundation unsupported, and the pits are backfilled and the loads transferred before adjacent pits are opened

C Underpinning should be performed only after the entire adjacent foundation has been demolished

D Underpinning pits should be left open indefinitely to monitor settlement before being closed

ANSWER B

WHY Underpinning is performed in short, sequenced pits (often called 'pins' or 'needles') to limit the unsupported length of the existing footing at any one time; each pit is excavated, the pier is installed, the load is transferred, and the pit is backfilled before the next adjacent segment is opened. Opening the entire wall at once risks collapse, demolishing the foundation eliminates the need to underpin, and leaving pits open is unsafe and impractical.

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QUESTION 7 SINGLE CHOICE

An OSHA-compliant excavation in which workers will enter must be protected by a protective system when the excavation is deeper than what minimum depth, and there is no indication of a potential cave-in?

A 3 feet

B 5 feet

C 8 feet

D 10 feet

ANSWER B

WHY Under OSHA 29 CFR 1926 Subpart P, excavations deeper than 5 feet require a protective system (sloping, benching, shoring, or a shield) unless the competent person classifies the soil as stable rock. The 5-foot threshold is the long-standing trigger; 3 feet is too shallow, while 8 and 10 feet are not the regulatory minimums.

QUESTION 8 SINGLE CHOICE

A cast-in-place concrete retaining wall is being backfilled. Which backfill and drainage detail is most important to reduce hydrostatic pressure behind the wall?

A Using native clay backfill compacted to 95% of maximum dry density to minimize permeability

B Installing a granular drainage layer with a perforated drainpipe at the base of the wall, wrapped in filter fabric, and placing free-draining granular backfill behind the wall

C Backfilling with the excavated soil and relying on weep holes through the wall stem alone

D Sealing the back face of the wall with a waterproof membrane and filling the remainder of the trench with native soil

ANSWER B

WHY Reducing hydrostatic pressure behind a retaining wall requires a free-draining granular backfill zone and a properly installed perforated drainpipe (with filter fabric to prevent fines from clogging the pipe) at the base of the wall. Clay backfill traps water, weep holes alone are insufficient without a continuous drainage path, and waterproofing on the back face alone does not relieve accumulated water pressure.

QUESTION 9 SINGLE CHOICE

A contractor is preparing a site for a shallow spread footing on a sandy soil deposit. Which soil property is most directly used to determine the allowable bearing capacity of the soil?

A Plasticity index of the fines fraction

B Standard penetration test (SPT) N-value corrected for overburden pressure

C Shrinkage limit of the soil

D Liquid limit of the soil

ANSWER B

WHY For cohesionless sandy soils, the SPT N-value corrected for overburden and other factors (N1,60) is the primary index used with empirical correlations (such as those by Meyerhof or Bowles) to estimate allowable bearing capacity. The plasticity index, shrinkage limit, and liquid limit are Atterberg limits primarily used to classify fine-grained (cohesive) soils, not to evaluate the bearing capacity of clean sands.

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