1. Which of the following factors primarily influences the selection of a foundation type?

a) Architectural design
b) Soil condition
c) Construction cost
d) Climate variations

Answer: b) Soil condition
Explanation: The soil condition directly affects the stability and load-bearing capacity of foundations, making it a primary consideration in selecting the appropriate type of foundation.

2. What is the objective of a sub-soil exploration program?

a) To increase construction costs
b) To determine soil color
c) To assess soil characteristics
d) To improve architectural aesthetics

Answer: c) To assess soil characteristics
Explanation: Sub-soil exploration aims to evaluate soil properties such as strength, composition, and bearing capacity to inform foundation design.

3. What method is commonly used for soil exploration involving the removal of soil samples from boreholes?

a) Rotary drilling
b) Auger boring

c) Remote sensing
d) Sonic drilling

Answer: a) Rotary drilling
Explanation: Rotary drilling involves the use of a rotating drill bit to penetrate the soil and extract samples, allowing for detailed analysis of soil composition and properties.

4. Which type of sampling provides the most representative soil samples for analysis?

a) Disturbed sampling
b) Hand auger sampling
c) Undisturbed sampling
d) Bucket auger sampling

Answer: c) Undisturbed sampling
Explanation: Undisturbed sampling preserves the natural structure and composition of soil, providing the most accurate representation for analysis.

5. Which field penetration test involves driving a split-barrel sampler into the ground using a hammer?

a) Standard penetration test (SPT)
b) Cone penetration test (CPT)
c) Dynamic cone penetration test (DCPT)
d) Standard cone penetration test (SCPT)

Answer: a) Standard penetration test (SPT)
Explanation: The SPT involves driving a split-barrel sampler into the soil at the bottom of a

borehole using a hammer, measuring the resistance encountered.

6. What is the purpose of a bore log in sub-soil exploration?

a) To track the depth of drilling equipment
b) To provide a detailed record of soil properties
c) To estimate construction costs
d) To assess architectural aesthetics

Answer: b) To provide a detailed record of soil properties
Explanation: A bore log documents the soil strata encountered during drilling, along with relevant properties such as composition, moisture content, and density.

7. Which geophysical method involves sending electrical currents into the ground to detect subsurface anomalies?

a) Ground-penetrating radar (GPR)
b) Seismic refraction
c) Electrical resistivity tomography (ERT)
d) Magnetometry

Answer: c) Electrical resistivity tomography (ERT)
Explanation: ERT measures the electrical resistivity of soil to identify variations in subsurface composition, aiding in foundation design and exploration.

8. What is the primary purpose of writing a sub-soil exploration report?

a) To entertain readers

b) To document soil color variations
c) To provide detailed findings and recommendations
d) To showcase architectural designs

Answer: c) To provide detailed findings and recommendations
Explanation: A sub-soil exploration report summarizes the findings of the exploration program, including soil characteristics, foundation recommendations, and other relevant information.

9. Which method of exploration involves rotating a hollow drill bit to penetrate the soil and extract samples?

a) Wash boring
b) Hand auger sampling
c) Rotary drilling
d) Sonic drilling

Answer: c) Rotary drilling
Explanation: Rotary drilling uses a rotating drill bit to bore into the soil and extract samples for analysis.

10. What is the primary purpose of conducting field penetration tests during sub-soil exploration?

a) To estimate architectural aesthetics
b) To assess soil composition
c) To measure construction costs
d) To evaluate soil strength and bearing capacity

Answer: d) To evaluate soil strength and bearing capacity
Explanation: Field penetration tests such as SPT, SCPT, and DCPT are conducted to assess the strength and load-bearing capacity of soil, crucial for foundation design.

11. Which type of sampling is preferred for determining soil properties without disturbing its natural structure?

a) Disturbed sampling
b) Hand auger sampling
c) Undisturbed sampling
d) Bucket auger sampling

Answer: c) Undisturbed sampling
Explanation: Undisturbed sampling preserves the natural structure of soil, providing accurate data on its properties without alteration.

12. Which geophysical method utilizes sound waves to investigate subsurface soil layers?

a) Ground-penetrating radar (GPR)
b) Seismic refraction
c) Electrical resistivity tomography (ERT)
d) Magnetometry

Answer: b) Seismic refraction
Explanation: Seismic refraction involves analyzing the propagation of sound waves through soil layers to determine their composition and depth.

13. In sub-soil exploration, what parameter is measured by the standard penetration test

(SPT)?

a) Electrical resistivity
b) Soil moisture content
c) Soil density
d) Soil strength

Answer: d) Soil strength
Explanation: The SPT measures the resistance of soil to penetration, providing an indication of its strength and load-bearing capacity.

14. Which exploration method involves the use of high-frequency radio waves to detect subsurface features?

a) Ground-penetrating radar (GPR)
b) Seismic refraction
c) Electrical resistivity tomography (ERT)
d) Magnetometry

Answer: a) Ground-penetrating radar (GPR)
Explanation: GPR uses high-frequency radio waves to detect subsurface features such as soil layers, voids, and buried objects.

15. What is the primary purpose of conducting a wash boring exploration?

a) To clean soil samples
b) To estimate soil density
c) To investigate soil layers

d) To enhance construction aesthetics

Answer: c) To investigate soil layers
Explanation: Wash boring involves flushing out soil cuttings with water to examine soil layers and composition, aiding in sub-soil exploration and foundation design.