

UNIT – V : Soil Reinforcement, Ground Anchors, Rock Bolting and Soil Nailing

1. Soil reinforcement is the process of

- a) Increasing water content in soil
- b) Improving soil strength by introducing reinforcing elements
- c) Reducing soil density
- d) Increasing soil plasticity

Ans: b

2. The primary purpose of soil reinforcement is to

- a) Reduce bearing capacity
- b) Improve stability and strength
- c) Increase settlement
- d) Increase pore water pressure

Ans: b

3. Which of the following is commonly used as a reinforcing material?

- a) Steel strips
- b) Geogrids
- c) Geotextiles
- d) All of the above

Ans: d

4. Reinforced soil structures mainly resist

- a) Tensile forces through reinforcement
- b) Compressive forces only
- c) Hydraulic forces only
- d) Thermal stresses only

Ans: a

5. Geogrids are primarily used for

- a) Drainage
- b) Reinforcement
- c) Waterproofing
- d) Filtration only

Ans: b

6. Ground anchors are used to

- a) Increase groundwater flow
- b) Provide additional stability to retaining structures
- c) Reduce soil density
- d) Increase permeability

Ans: b

7. Ground anchors transfer load to

- a) Weak soil layers
- b) Stable soil or rock strata
- c) Water table
- d) Surface soil only

Ans: b

8. Rock bolting is commonly adopted in

- a) Tunnels and rock slopes
- b) Soft clay deposits
- c) Agricultural fields
- d) Pavement construction only

Ans: a

9. The primary function of a rock bolt is to

- a) Drain water
- b) Hold rock masses together
- c) Increase soil moisture
- d) Reduce compaction

Ans: b

10. Soil nailing is generally used for

- a) Stabilizing excavations and slopes
- b) Deep foundation construction
- c) Soil classification
- d) Groundwater control

Ans: a

11. Soil nails are usually made of

- a) Timber
- b) Plastic pipes
- c) Steel bars
- d) Concrete blocks

Ans: c

12. Soil nailing improves stability by

- a) Increasing pore pressure
- b) Providing tensile resistance
- c) Increasing settlement
- d) Reducing friction

Ans: b

13. Which technique is suitable for stabilizing steep excavations?

- a) Vibro-compaction
- b) Soil nailing
- c) Dynamic compaction
- d) Blasting

Ans: b

14. Reinforced earth structures are widely used in

- a) Retaining walls
- b) Bridge abutments
- c) Embankments
- d) All of the above

Ans: d

15. The pullout resistance of reinforcement depends on

- a) Soil-reinforcement interaction
- b) Color of soil
- c) Temperature only
- d) Moisture content only

Ans: a

16. Ground anchors may be classified as

- a) Temporary and permanent
- b) Active and passive
- c) Mechanical and hydraulic
- d) Surface and deep

Ans: a

17. Rock bolting improves

- a) Stability of rock masses
- b) Groundwater recharge
- c) Soil plasticity
- d) Soil permeability

Ans: a

18. A major advantage of soil nailing is

- a) Rapid construction and economy
- b) Increased settlement
- c) Reduced stability
- d) Increased pore pressure

Ans: a

19. Which of the following is an in-situ ground reinforcement technique?

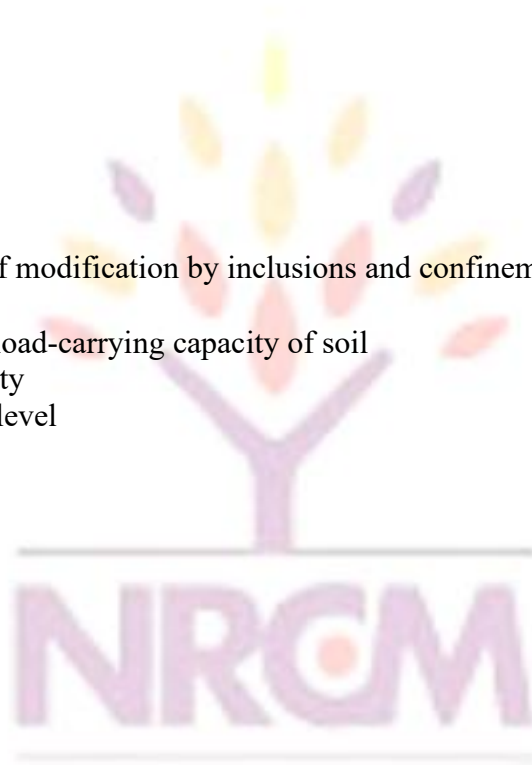
- a) Soil nailing
- b) Rock bolting
- c) Ground anchoring
- d) All of the above

Ans: d

20. The main objective of modification by inclusions and confinement is to

- a) Improve stability and load-carrying capacity of soil
- b) Increase compressibility
- c) Increase groundwater level
- d) Reduce soil strength

Ans: a



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UNIT – V: Modification by Inclusions and Confinement

Fill in the Blanks

1. Soil reinforcement increases soil _____.
Answer: strength
2. Reinforced soil contains additional reinforcing _____.
Answer: elements
3. Metal strips are used as soil _____.
Answer: reinforcements
4. Geogrids are synthetic soil _____.
Answer: reinforcements
5. Soil reinforcement improves slope _____.
Answer: stability
6. Ground anchors provide resistance against _____.
Answer: movement
7. Rock bolts are installed in _____ masses.
Answer: rock
8. Soil nailing is commonly used for _____ stabilization.
Answer: slope
9. Geogrids improve load _____.
Answer: distribution
10. Reinforced earth walls are an example of soil _____.
Answer: reinforcement
11. Ground anchors transfer load to stable _____.
Answer: strata
12. Soil nails are generally made of _____.
Answer: steel
13. Rock bolting increases rock mass _____.
Answer: stability
14. Reinforcement reduces lateral _____.
Answer: deformation
15. Geosynthetic reinforcement improves soil _____.
Answer: performance
16. Soil nailing is an in-situ ground _____.
Answer: reinforcement
17. Strip reinforcement develops friction with the _____.
Answer: soil
18. Confinement increases soil _____ resistance.
Answer: shear
19. Reinforced soil structures are widely used in retaining _____.
Answer: walls
20. Modification by inclusions enhances overall ground _____.
Answer: stability