

UNIT - II : Mechanical Modification - Deep Compaction Techniques

1. Mechanical ground modification is primarily used to

- a) Increase soil moisture content
- b) Improve soil density and strength
- c) Increase soil plasticity
- d) Reduce soil temperature

Ans: b

2. Deep compaction techniques are generally adopted for

- a) Surface treatment only
- b) Improving soil at greater depths
- c) Pavement marking
- d) Concrete curing

Ans: b

3. Blasting densification is most suitable for

- a) Soft clay
- b) Loose granular soils
- c) Organic soils
- d) Peat soils

Ans: b

4. Vibro-compaction is effective in

- a) Cohesive soils
- b) Loose saturated sands
- c) Expansive clays
- d) Organic soils

Ans: b

5. The equipment used in vibro-compaction is called

- a) Grout pump
- b) Vibroflot
- c) Roller
- d) Pile hammer

Ans: b

6. Dynamic compaction is also known as

- a) Deep soil mixing
- b) Dynamic tamping
- c) Soil stabilization
- d) Electro-osmosis

Ans: b

7. Dynamic tamping involves

- a) Injecting grout
- b) Applying electrical current
- c) Repeated dropping of heavy weights
- d) Soil freezing

Ans: c

8. The effectiveness of dynamic compaction depends on

- a) Weight and drop height
- b) Soil color
- c) Temperature
- d) Rainfall only

Ans: a

9. Dynamic compaction is most suitable for

- a) Loose granular soils
- b) Highly plastic clays
- c) Peat deposits
- d) Organic soils

Ans: a

10. Vibro-compaction improves soil by

- a) Chemical reaction
- b) Densification through vibration
- c) Heating
- d) Freezing

Ans: b

11. Compaction piles are generally installed to

- a) Increase soil density
- b) Increase water content
- c) Reduce bearing capacity
- d) Increase compressibility

Ans: a

12. Sand compaction piles are commonly used in

- a) Soft clay deposits
- b) Rock formations
- c) Concrete structures
- d) Asphalt pavements

Ans: a

13. The primary objective of blasting densification is to

- a) Create fractures
- b) Compact loose granular deposits
- c) Increase permeability only
- d) Remove groundwater

Ans: b

14. Vibro-compaction can increase

- a) Void ratio
- b) Settlement
- c) Relative density
- d) Plasticity index

Ans: c

15. Dynamic compaction can improve soil to a depth of

- a) Less than 1 m
- b) 2–3 m only
- c) Several meters below ground surface
- d) Surface layer only

Ans: c

16. Which technique uses vibrations to rearrange soil particles?

- a) Grouting
- b) Vibro-compaction
- c) Lime stabilization
- d) Electro-kinetic treatment

Ans: b

17. The major advantage of dynamic compaction is

- a) Low improvement depth
- b) Economical treatment of large areas
- c) Applicable only to clays
- d) Requires no equipment

Ans: b

18. Compaction piles improve soil through

- a) Drainage only
- b) Reinforcement and densification
- c) Heating
- d) Chemical stabilization

Ans: b

19. Which of the following is not a deep compaction technique?

- a) Vibro-compaction
- b) Dynamic tamping
- c) Blasting
- d) Cement grouting

Ans: d

20. The main benefit of deep compaction techniques is

- a) Increased compressibility
- b) Reduced bearing capacity
- c) Improved strength and reduced settlement
- d) Increased groundwater level

Ans: c



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Fill in the Blanks

1. Shallow compaction is generally used for _____ soils.
Answer: surface
2. Deep compaction improves soil at greater _____.
Answer: depths
3. Vibro compaction is suitable for _____ soils.
Answer: granular
4. Dynamic compaction is also called dynamic _____.
Answer: tamping
5. Heavy weights are dropped from a height in _____ compaction.
Answer: dynamic
6. Blasting compaction is mainly used in loose _____.
Answer: sands
7. Compaction reduces soil _____.
Answer: voids
8. The effectiveness of compaction is measured by soil _____.
Answer: density
9. Vibroflot equipment is used in _____ compaction.
Answer: vibro
10. Deep compaction increases soil _____ capacity.
Answer: bearing
11. Compaction piles are also called _____ piles.
Answer: displacement
12. Mechanical modification primarily improves soil _____.
Answer: strength
13. Dynamic compaction is economical for large _____.
Answer: areas
14. Loose sandy soils are improved by _____ compaction.
Answer: vibro
15. Mechanical densification reduces future _____.
Answer: settlement
16. Blasting creates temporary soil _____.
Answer: vibrations
17. Relative density of sand increases after _____.
Answer: compaction
18. Compaction improves soil _____.
Answer: stiffness
19. Deep compaction techniques are used before _____ construction.
Answer: foundation
20. Mechanical methods mainly alter soil _____ arrangement.
Answer: particle