

UNIT - III : Hydraulic Modification and Dewatering

1. Hydraulic modification of soil mainly involves

- a) Heating of soil
- b) Control and removal of water from soil
- c) Soil reinforcement
- d) Chemical stabilization

Ans: b

2. The primary objective of dewatering is to

- a) Increase groundwater level
- b) Lower the water table
- c) Increase soil plasticity
- d) Increase moisture content

Ans: b

3. Dewatering is commonly adopted during

- a) Landscaping
- b) Deep excavations
- c) Painting works
- d) Masonry works

Ans: b

4. The simplest method of dewatering is

- a) Deep wells
- b) Electro-osmosis
- c) Sumps and ditches
- d) Well points

Ans: c

5. A well point system is generally used in

- a) Shallow excavations
- b) High rock formations
- c) Concrete structures
- d) Pavements only

Ans: a

6. Deep well systems are suitable for

- a) Small excavations
- b) Deep excavations with high groundwater table
- c) Surface drainage only
- d) Clay stabilization

Ans: b

7. Vacuum dewatering is effective in

- a) Coarse gravel
- b) Fine-grained soils
- c) Hard rock
- d) Concrete pavements only

Ans: b

8. Electro-osmosis is mainly used in

- a) Gravel deposits
- b) Fine-grained cohesive soils
- c) Dense sand
- d) Rock masses

Ans: b

9. Electro-osmosis works on the principle of

- a) Mechanical vibration
- b) Water movement under electric potential
- c) Chemical reaction
- d) Thermal expansion

Ans: b

10. The movement of pore water towards the cathode is known as

- a) Consolidation
- b) Percolation
- c) Electro-osmosis
- d) Seepage

Ans: c

11. Filtration in geotechnical engineering is used to

- a) Increase soil density
- b) Prevent soil particle migration
- c) Increase permeability only
- d) Reduce soil strength

Ans: b

12. Geotextiles used as filters allow

- a) Soil and water to pass
- b) Neither soil nor water to pass
- c) Water to pass while retaining soil particles
- d) Only air to pass

Ans: c

13. Drainage systems are provided to

- a) Increase pore water pressure
- b) Reduce pore water pressure
- c) Increase settlement
- d) Increase plasticity

Ans: b

14. Preloading is mainly used to

- a) Increase immediate settlement
- b) Accelerate consolidation settlement
- c) Reduce soil density
- d) Increase water content

Ans: b

15. Vertical drains are commonly installed in

- a) Soft clay deposits
- b) Hard rock formations
- c) Dense gravel deposits
- d) Concrete foundations

Ans: a

16. The function of vertical drains is to

- a) Increase drainage path length
- b) Shorten drainage path and accelerate consolidation
- c) Increase groundwater table
- d) Reduce permeability

Ans: b

17. Prefabricated Vertical Drains (PVDs) are also called

- a) Sand piles
- b) Wick drains
- c) Lime columns
- d) Stone columns

Ans: b

18. Seepage control measures are adopted to

- a) Increase water flow
- b) Reduce uncontrolled groundwater movement
- c) Increase permeability
- d) Increase pore pressure

Ans: b

19. Which of the following is a hydraulic ground improvement technique?

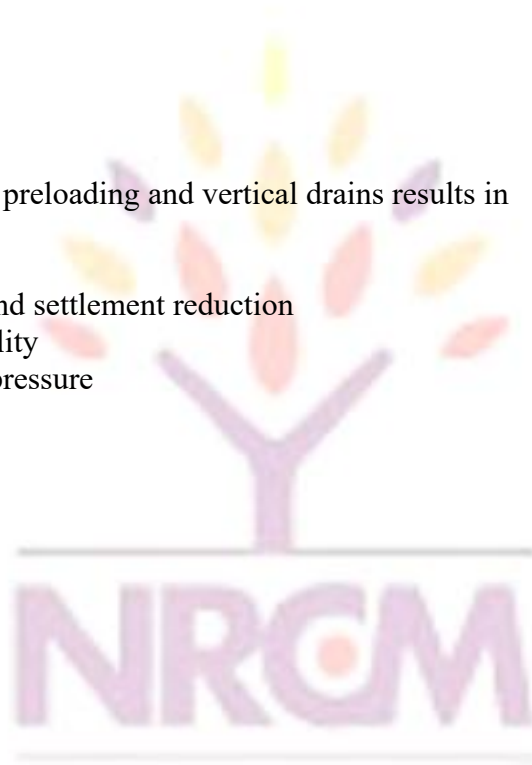
- a) Vibro-compaction
- b) Dynamic tamping
- c) Dewatering
- d) Soil nailing

Ans: c

20. The combined use of preloading and vertical drains results in

- a) Slower consolidation
- b) Faster consolidation and settlement reduction
- c) Increased compressibility
- d) Increased pore water pressure

Ans: b



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UNIT – III: Hydraulic Modification

Fill in the Blanks

1. Dewatering is carried out to lower the _____ table.
Answer: water
2. Well point systems are used for _____.
Answer: dewatering
3. Hydraulic modification mainly controls groundwater _____.
Answer: flow
4. Electro-osmosis is useful in _____ soils.
Answer: clayey
5. Preloading is used to reduce future _____.
Answer: settlement
6. Vertical drains accelerate soil _____.
Answer: consolidation
7. Sand drains are a type of _____ drain.
Answer: vertical
8. Electro-kinetic dewatering uses electrical _____.
Answer: current
9. Filtration prevents movement of soil _____.
Answer: particles
10. Geosynthetics are widely used for _____ control.
Answer: drainage
11. Consolidation occurs due to expulsion of _____.
Answer: water
12. Dewatering improves excavation _____.
Answer: stability
13. Preloading is commonly applied on soft _____.
Answer: clay
14. Geotextiles act as filters and _____.
Answer: separators
15. Groundwater seepage can be controlled by _____.
Answer: drainage
16. Vacuum preloading creates negative _____.
Answer: pressure
17. Hydraulic modification reduces pore water _____.
Answer: pressure
18. Vertical drains shorten the drainage _____.
Answer: path
19. Electro-osmosis moves water towards the _____.
Answer: cathode
20. Dewatering systems improve construction _____.
Answer: conditions