

Question bank

Ground Improvement Techniques (BTCE -810)

Part -A

1. What are the advantages of preloading methods?
2. Define coefficient of surcharge.
3. What do you mean by liquefaction?
4. What are solution grouts?
5. What precautions should be taken while mixing a grout?
6. How is the bearing capacity of soil affected by geotextiles?
7. Give applications of soil-lime columns.
8. What is bio technical stabilization?
9. What is the function of sand used in compaction grout?
10. Describe briefly soil nailing technique.
11. What precautions should be taken while mixing a grout.
12. What is the difference between vibro-compaction and vibro-displacement compaction.
13. What are the disadvantages of thermal methods for soil improvement
14. Name various grouting materials.
15. What are displacement piles.
16. What are the merits of dynamic compaction technique?
17. How is the depth of penetration of compaction calculated?
18. Give advantages of compaction grouting.
19. What are suspension grouts?
20. How is the permeability of soil affected by geotextiles?
21. List factors affecting selection of ground Improvement technique.
22. What are vibro techniques?
23. Discuss depth of improvement.
24. Write briefly on preloading techniques.
25. How improvement in slopes can be achieved?
26. Define stone column.
27. Write applications of grouting.

28. What are micro-piles?
29. Name types of geotextiles used in civil engineering
30. What do you understand by Blasting?
31. Explain Pneumatic-Tired rollers.
32. What do you understand by Vibro-Flotation?
33. Discuss Depth of Improvement.
34. What are the advantages of preloading methods?
35. Discuss different type of rollers.

Part -B

1. Describe the vibratory probe technique for compaction.
2. What are the various dynamic compaction equipment used?
3. Explain compaction grouting. To which type of soils is it applicable. What are its advantages and disadvantage?
4. What are geotextiles? What design considerations should be kept in mind while using geotextiles in pavements?
5. Explain the jet grouting process.
6. Explain Dynamic compaction technique for soil stabilization? What are the merits of this technique?
7. Enumerate the effects of soil stabilization by heating
8. Explain the factors influencing the increase in strength of treated soil?
9. Write brief notes on jet grouting and its applications?
10. Is preloading method really a hydraulic modification of the ground or should it be discussed as a mechanical modification? Explain
- 11 Explain various types of vibratory compactors used for compaction.

12. Explain the jet grouting process.
13. Draw a typical layout of a grouting plant. Also mention the basic items required for a grouting plant along with their functions.
14. Which lime is used for soil stabilization? What reactions take place on addition of lime to wet soil? How lime is helpful in soil stabilization?
15. What are the various preloading methods used to accelerate compaction process?
16. Discuss issues concerned with dynamic compaction of ground improvement in soils.

17. Explain soil improvement by thermal treatment.
18. Write note on soil nailing.
19. Give basic mechanism of reinforced earth.
20. How the soil properties improve with use of geotextiles?
21. Explain the jet grouting process.
22. What are geotextiles? What design considerations should be kept in mind while using geotextiles in pavements?
23. What are the effects of soil stabilization by heating?
24. Explain in detail the Pre-loading methods for ground improvement.
25. Describe the vibratory probe technique for compaction.

Part-C

1. Explain the thermal methods of soil stabilization.
2. What are the various techniques used for constructing stone columns? Explain in detail along with figures.
3. Describe in detail various material composites required in the construction of any reinforced soil structure. Give applications of soil reinforcement for ground improvement. 4. What are solution grouts?
4. What are the various techniques used for constructing stone - columns? Explain in detail along with figures.
5. What are the various vibro compaction methods used for densification? Explain in detail.
6. Explain the separation and filtration function of geotextiles. Mention the applications based on these functions.
7. A 3.5 m high and 7m wide embankment is to be built on soft ground with a basal geotextile layer. Calculate the geotextile strength and modulus required in order to prevent block sliding on the geotextile. Assume that the embankment material has a unit weight of 15 KN/m³. The angle of shearing resistance is 33° and the geotextile -soil interface angle of shearing resistance is one third of that value
8. Explain the blasting method of vibro- compaction in detail along with sketches of installation and spacing of explosives.
9. What are geotextiles? What design considerations should be kept in mind while using geotextiles in
 - a) Retaining walls
 - b) Slopes.

10. Explain method of construction of stone column and state its advantages over lime column.
11. What do you mean by grouting and discuss grouting methods.
12. Explain in detail role of geotextiles in clay embankments and pavements with figure
13. Explain in detail the method of construction of stone column and state how it is advantageous over lime column?
14. Explain in detail the behaviour of soil on reinforcing with geotextiles.
15. What are the various vibro- compaction methods used for densification? Explain in detail.