Reg. No. : | | | | | | | | | | |

Question Paper Code: 49110

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Elective
Civil Engineering

14UCE910 – GROUND IMPROVEMENT TECHNIQUE

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The collapsible soil is associated with

(a) dune sands (b) laterite soil (c) loess (d) black cotton soil

2. _____ are soils that expand when water is added, and shrink when they dry out.

(a) Liquefiable soils (b) Marshy and soft soils

(c) Collapsible soils (d) Karst deposits

3. Removal of large quantities of water for dam abutments, cutoffs, landslides etc are called as

(a) Sump pumping (b) Electro-osmosis

(c) Drainage galleries (d) Gravity drainage

4. ____is the soil capacity to transmit a fluid to pass through its interconnected void spaces.

(a) Seepage (b) Voids (c) Specific capacity (d) Permeability

5. _____increases both the moist and submerged unit weights of the soil and improves the angle of internal friction

(a) Vibro-flotation (b) Vibro-compaction

(c) Dynamic consolidation (d) Densification

6. _____are installed under a surcharge load to accelerate the drainage of impervious soils and thus speed up consolidation.

(a) Sand Drain (b) Plastic Drains (c) Prefabricated Drain (d) Vertical drain

7._____Increases the bearing capacity over weak subgrades.

(a) Ground stabilization (b) Geofoam (c) Geocomposites (d) Geocells

8._____are more or less rigid bars driven into soil or pushed into boreholes which are filled with grout

(a) Geotextiles (b) Geogrids (c) Soil nails (d) Geomats

9. _____intimate one-phase system retaining an originally designed chemical balance until completion of the relevant reactions.

(a) Suspension grouts (b) Solution Grouts

(c) Point grouting (d) Colloidal solution grouts

10. _____is defined as the process of injecting suitable fluid under pressure into the subsurface soil or rock to fill voids, cracks and fissures for the purpose of improving the soil.

(a) Precompression (b) Dynamic compaction

(c) Grouting (d) Blast Densification

PART - B (5 x 2 = 10 Marks)

11. What is expansive soil? Give one example.

12. Define dewatering.

13. What is dynamic consolidation?

14. Define geosynthetics.

15. What are the methods adopted in construction of stabilized roads?

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail about the geotechnical problem in expensive soil? (16)

Or

(b) (i) What are the factors influencing the selection of ground improvement techniques? (8)

(ii) Explain in detail the role of ground improvement in foundation engineering. (8)

17. (a) (i) Explain the properties and application of flownet. (8)

(ii) Write short notes on Dewatering. (8)

Or

(b) Explain in brief the principle, equipment used with installation and operation procedures including precautionary measures to be adopted in electro-osmotic dewatering. (16)

18. (a) Explain in detail the method of dynamic compaction of cohesionless and dynamic consolidation of cohesive soil. (16)

Or

(b) Write in detail the principle, operation and applications of vibro-compaction method fo ground improvement. (16)

19. (a) Explain in detail about the application of geosynthetics as separation with the help of neat sketches. (16)

Or

(b) Explain in detail about the various applications of reinforced earth for ground improvement with the help of neat sketches. (16)

20. (a) Describe in detail about the various methods of grouting with neat sketches. (16)

Or

(b) Write the case study of stabilization of expansive soil. (16)