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

Question Paper Code: 49110

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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 minimum bearing capacity of a soil under a given footing occurs when the groundwater table is located at

   (a) the base of the footing
   (b) the ground level
   (c) a depth equal to one one-half the width of footing
   (d) a depth equal to the width of the footing

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. Permeability values of pervious stratum for very fine sand……...

   (a) 1-50 (b) 50-100 (c) 1501-3000 (d) 1001-1500

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. Coarse grained soils are best compacted by a

(a) Sand Drain (b) rubber tyred roller (c) sheep's foot roller (d) vibratory roller

7…… methods of in-situ densification..

(a) rapid impact compaction (b) hand compaction

(c) Electro – osmosis. (d) vibro-flotation

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. …….. is an types of vertical drains used in ground improvement..

(a) Sand Wicks (b) Soil compaction

(c) Soil nailing (d) None of these

10. ……..soil stabilization method is the application of electro-osmosis to draw stabilizing chemicals through soil.

(a) Blanket drains (b) Electro-kinetic

(c) both a&b (d) None of these

PART - B (5 x 2 = 10 Marks)

11. Write a note on black cotton soil..

12. Define dewatering.

13. What is dynamic consolidation?

14. What do you mean by soil reinforcement? .

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

PART - C (5 x 16 = 80 Marks)

16. (a) How will you select the suitable ground improvement technique based on soil conditions. (16)

Or

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

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

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

Or

(b) Explain the types of well point dewatering techniques. (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 geotextiles as seponation with the help of neat sketches. (16)

Or

(b) Explain basic mechanism, needs, advantages and applications of reinforced Earth. (16)

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

Or

(b) (i) Describe in detail the various applications of grouting. (8)

(ii) Write short notes on

(a) Pre-grout investigation
(b) Grout holes pattern. (8)

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