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Question Paper Code: 49110

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

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 expansive 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)

