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

R 3147

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Seventh Semester

(Regulation 2004)

Civil Engineering

CE 1014 — GROUND IMPROVEMENT TECHNIQUES

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Differentiate alluvial and block cotton soil based on their engineering significance.

2. When the ground improvement is warranted? Why?

3. State the principle of electroosmatic method of dewatering.

4. State the one dimensional and two dimensional fluid flow equation.

5. What is meant by fabric drain? What is it function?

6. When lime piles are advantageous then stone columns why?

7. What function of geotextiles is being recognised as primary function in Embankments and roads. Why?

8. Name any four types of reinforcement materials and its limitations to use in soils.

9. Name any four types of grout and its major application.

10. What is meant by soil? For what soil conditions it is being used.

PART B — (5 × 16 = 80 marks)

11. (a) (i) List the advances of vacuum dewatering than the Electroosmatic one. (8)

(ii) Brief the multiwell point dewatering operations with neat sketches. (8)

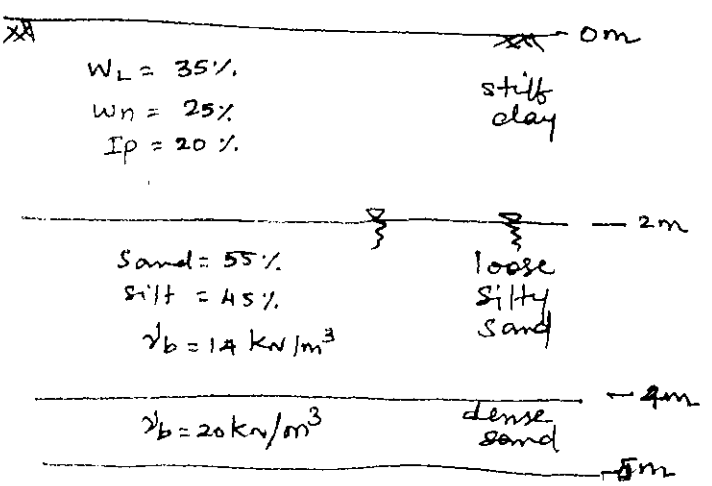
Or

(b) (i) List and discuss about the factors that are to be considered as per I.S. 9759–1981 to control surface water. (8)

(ii) List the necessary controls that are required during construction period for civil engineering works. (8)

12. (a) (i) What kind of ground problem is expected in lateritic soil? How the classification of lateritic soils are done. (8)

(ii) Given below a soil profile. How will you improve thin ground for construction of two-storeyed residential building? Brief. (8)



Or

(b) List different method of ground improvement. Comment on the suitability of any two method based on Gradation characteristics of soil that is to be improved. (4 + 6 + 6)

13. (a) Compare the relative merits and demerits of stone column and preloading with sand drain method of ground improvement for residential type structures.

Or

(b) Compare the relative merits and demerits of dynamic compaction and vibrofloation method of ground improvement for multi-activity structures.

14. (a) (i) List the various problem which warrants, for a reinforcement technique. (8)

(ii) Discuss how the reinforcement helps in sharing the load. (8)

Or

(b) A foundation is to be constructed on a soft clay and silty soil deposits for a ordinary residential building. What type of Geotextiles will you select? How will you place the reinforcement? Discuss. (16)

15. (a) What is meant by solution grouts? How they are classified? Discuss in detail about colloidal solution and combined system. (3 + 3 + 5 + 5)

Or

(b) Brief the grouting procedure in three stages of its design and selection.