

B.Tech IV Year I Semester (R15) Regular Examinations November/December 2018

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) What is the principle behind vacuum dewatering?
 - (b) What is soil reinforcement?
 - (c) What are the equipments used for dewatering.
 - (d) What is compaction? When it is adopted?
 - (e) What are the advantages of soil nailing?
 - (f) What is meant by dynamic compaction?
 - (g) Enumerate the major functions of geosynthetics.
 - (h) State the suitability of vibro flots.
 - (i) What are the various methods for determining swell pressure?
 - (j) How is the selection of piles carried out?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 What is the purpose of dewatering? List the methods of dewatering and explain with a neat sketch single stage well point method.

OR

- 3 (a) Explain foundation and blanket drain using a suitable illustration.
(b) What are the characteristics of a grout? With neat sketches explain the method of compaction grouting. List its merits and demerits.

UNIT – II

- 4 Discuss the various characteristics of problematic soils. Explain working principles and soil improvement mechanism using 'Rammed Stone Column' and 'Vibro-Replacement' methods.

OR

- 5 With neat sketches explain in-situ densification methods in cohesive soils. Discuss how the stress history of a soil deposit affects its suitability for preloading with vertical drains

UNIT – III

- 6 Write the chemical reactions that take place in lime treated soils and list the benefits of lime stabilization in soil. Explain the engineering benefits of cement stabilization.

OR

- 7 What are the various admixtures used in stabilization of soil? Discuss the principles and typical gradation specifications of mechanically stabilized bases and surfacing.

UNIT – IV

- 8 What is soil reinforcement? List various materials to be used in soil reinforcement. Discuss the internal stability aspects of reinforced earth walls.

OR

- 9 What are geotextiles? How geo textiles are used in highway embankment construction?

UNIT – V

- 10 Discuss the problems associated with expansive soils on building foundations. Explain how swelling pressure is estimated using constant volume method and from consolidation test.

OR

- 11 Discuss the field conditions that favor the swelling of soils and write its consequences. Write a note on load carrying mechanism of under-reamed pile.