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Paper Id: 100243 **Roll No.**

(SEM VIII) THEORY EXAMINATION 2018-19
GROUND WATER IMPROVEMENT TECHNIQUES

Time: 3 Hours *Total Marks: 100*

Note: Attempt all Sections. If you require any missing data, choose suitably.

1. Attempt all questions in brief. **2 x 10 = 20**

a. Name any three methods for in situ densification of cohesive soil.
b. What is ecto-osmosis?
c. What are the application of vibroflotation method?
d. Differentiate between consolidation and compaction?
e. What is soil stabilization? What are its uses?
f. What do you understand by grout monitoring?
g. What are geo-textiles?
h. What do you understand by ground water recharging?
i. Name the different methods of grout injection
j. What are the types of geo-textiles?

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a. How are different types of chemicals used in stabilization? Explain in detail with the help of an example.
b. Comment on the use of vibratory techniques in improving the bearing capacity of cohesive soils in-situ.
c. Explain the open sumps and vacuum well dewatering systems.
d. Write a note on the importance of grout monitoring and the methods of grout control
e. Explain in detail, the underpinning of foundations. Also write the various situations for the underpinning.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Describe critically the use of thermal stabilization as a method for ground improvement.
(b) Write a note on
  (i) Soil aggregate stabilization
  (ii) Soil bitumen stabilization

4. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Explain in detail the method of dynamic compaction of cohesionless and dynamic consolidation of cohesive soil.
(b) Describe the vibroflotation technique of densifying granular soil

5. Attempt any *one* part of the following: **10 x 1 = 10**

(a) What is vertical drain explain the design of vertical drain.
(b) Explain in detail the principle, equipment used, installation and operation and

precaution adopted in electro- osmotic dewatering.

6. Attempt any *one* part of the following: **10 x 1 = 10**

(a) What is grouting write its objectives? Explain different types of grouting techniques

(b) What is a grout? Explain in detail the applications of grouting.

7. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Describe with illustrations the differences between geotextiles and geomembranes.

(b) What are the practical applications of geotextiles? Explain in detail.