

Paper Id: 

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**(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 electro-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.