

**AQ - 2935**

First Semester M. E. (Civil) (Geotech. Engg.) Examination

**GROUND IMPROVEMENT TECHNIQUES**

1 SFGE 1

P. Pages : 2

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) All questions carry equal marks.  
(2) Due credit will be given to neatness and adequate dimensions.  
(3) Assume suitable data wherever necessary.  
(4) Illustrate your answer wherever necessary with the help of neat sketches.  
(5) Answer any **five** questions.  
(6) Use pen of Blue/Black ink/refill only for writing the answer book.

1. Attempt the following :—

- (a) Explain with the help of neat sketch the basic building blocks for clay minerals. Write a short note on clay water relationship. 8
- (b) Explain with the help of neat sketch the structure and properties of following clay minerals :
- (i) Kaolinite
- (ii) Illite
- (iii) Mont morillonite. 8

2. Attempt the following :—

- (a) Explain the principle of bituminous stabilization. Also explain the various type of bituminous stabilization and the factors affecting bituminous stabilization. 8
- (b) Explain the mechanism of cement stabilization. Explain the various factors affecting the cement stabilization. 8

**AQ-2935**

**P.T.O.**

3. Attempt the following :—

- (a) Explain the ground improvement in loose sand adopting blasting technique, where this method is most suitable. Also state its advantages and disadvantages. 8
- (b) Explain Ground improvement technique with the help of vibroflotation technique. Draw the neat sketch showing vibroflotation, compression process and equipment. 8

4. Attempt the following :—

- (a) Explain :
  - (i) Construction of lime column with the help of neat sketch.
  - (ii) How to determined the total settlement of lime column group. 8
- (b) Explain how the bearing capacity of single lime column and the bearing capacity of lime column group is determined. 8

5. Attempt the following :—

- (a) How to choose best methods for stabilization of expansive soil and explain all methods. 8
- (b) Explain sand drain with the help of neat sketch. 8

6. Attempt the following :—

- (a) What is meant by soil fracture with their applications. Also explain the various steps in planning of various projects. 8
- (b) Draw a neat sketch of grouting plant and equipment and explain its working. 8

