Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech (CE-NEW)/SEM-8/CE-802/1/2010

2010
SOIL STABILISATION & GROUND IMPROVEMENT

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10

   i) Standard proctor test is done to determine

      a) compaction b) consolidation

      c) shear strength d) none of these.

   ii) In surface compaction, which of the following is needed ?

      a) A vibrofloat b) A roller

      c) Geo-synthetics d) Sand pile.

   iii) The technology to improve ground by injecting fluid like material into subsurface soil is known as

      a) grouting b) vacuuming

      c) heaping d) compacting.

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iv) In cohesive soil which of the following methods of stabilization is applicable ?

a) Compaction b) Stone column

c) Vibroflotation d) Blasting.

v) Vibroflotation is an efficient technique to stabilized

a) highly compressive soil

b) cohesion less soil

c) clay

d) none of these.

vi) Preloading is the method of stabilization in which pore water pressure is increased so the effective pressure is

a) decreased b) remaining same

c) increased d) none of these.

vii) Capacity of soil to transmit a fluid to pass through its interconnected void is known as

a) seepage b) shear

c) permeability d) none of these.

viii) For spacing of sand pile S/d is in the range of ..... is applicable with accuracy.

a) 2 to 6 b) 1·5 to 4

c) 1·5 to 3 d) 2·5 to 4

ix) Geo-synthetics-soil reinforcement may be applied in

a) roads b) earth retaining wall

c) slopes d) both (b) & (c).

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x) Rock & cable anchor is used in
   a) lowering the water table
   b) slope stabilization
   c) pavement
   d) sandy soil stabilization.

xi) Well point systems are installed in
   a) compaction b) consolidation
   c) drainage & dewatering d) preloading process.

xii) The aim of soil stabilization is to increase the
   a) seepage b) bearing capacity
   c) shear strength d) both (b) & (c).

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Explain the term 'Reinforced Earth'. Enumerate the advantages of reinforced earth.

3. Write short notes on soil improvement by thermal treatment.

4. What do you meant by the term 'Dewatering' ? Discuss briefly.

5. Write short notes on 'Cement Stabilization'.

6. Discuss various compaction equipments for surface compaction in field.

7. Can one use a geomembrane as a spearator instead of a geotextile beneath a road ?

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GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

8. From given figure

Compute :

a) the time for 90% consolidation of the soft clays without sand wicks

b) the time for 90% consolidation with sand wicks

Given that the spacing of sand wicks is 1 m on a triangular grid and diameter of sandwicks is 100 mm.

9. What is grouting ? Describe one method of grouting with neat sketch.

10. What is soil reinforcement ? How does it stabilized the soil ?

11. What are vertical drains ? Describe with neat sketch.

12. What is chemical stabilization of soil ? Why is it used ? How many types of chemical are generally used ?

13. Compare the use of Sheep's foot and vibratory rollers in the surface compaction of granular soils.

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