



(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 100855

Roll No.

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B. Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15 GROUND IMPROVEMENT TECHNIQUES

Time : 3 Hours]

[Total Marks : 100

Note : Attempt **all** questions. **All** questions carry equal marks.

1 Attempt any FOUR parts :

5×4=20

- (a) What are reclaimed soils. Also suggest materials used for reclamation and their properties.
- (b) Discuss the change in behavior of compacted soils on varying different parameters like moisture, compactive effort, type of compacting equipment and type of soil.
- (c) Discuss suitability of vibratory sheep foot and pneumatic rubber tyred rollers and its performance on soils.
- (d) Name few modern equipments used in measurement of soil properties in field and write notes on them.

- (e) Discuss following :
 - (i) Soil aggregate stabilization mechanism.
 - (ii) Soil-bitumen stabilization.
- (f) Suitability of cement stabilization and factors affecting strength of mix.

2 Attempt any TWO parts : 10×2=20

- (a) What are densification techniques ? When vibro compaction is used name its three methods and explain blasting methods.
- (b) Write notes on :
 - (i) Vibratory probe/Terra probe
 - (ii) Vibrofloatation method
 - (iii) Sand compaction piles
 - (iv) Dynamic compaction
- (c) Discuss limitation of depth of compaction in different methods of compaction viz, drop hammer & vibrofloatation ?

3 Attempt any TWO parts : 10×2=20

- (a) Explain the design steps for dewatering systems ? How soil conditions are improved ? Explain Electro-osmosis method of dewatering.
- (b) What is preloading and which types of soils can be improved by preloading. Explain sensitive clays, expansive soils and cemented soils.
- (c) In which situation vertical drains become essential ? How sand drains are constructed. Write equation for efficiency of vertical drains.

4 Attempt any TWO parts : 10×2=20

- (a) What do you understand by grout monitoring ? How is this done at various times during grouting process.
- (b) Compare the relative advantageous and disadvantageous of permeation grouting using cement grout and chemical grout.
- (c) Where are granular piles used. Explain pile load test method as per IS.

5 Attempt any TWO parts : 10×2=20

- (a) What do you understand by underpinning ? When & how it is done in foundations.
 - (b) What are geosynthetics ? Discuss its types and functions with neat and appropriate sketch.
 - (c) How does geosynthetic function as filter ? How it can be used as protective material from contamination of soils. Explain soil nailing also.
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