



Reg. No. :

Name :

**Eighth Semester B.Tech. Degree Examination, January 2018
(2013 Scheme)
13.806.3 : REINFORCED EARTH (C)**

Time : 3 Hours

Max. Marks : 100

Instruction : Answer all questions in Part A and any one full question from each module (Part B).

PART – A

1. Discuss briefly on equivalent confining stress concept.
2. List the components of reinforced soil walls. Briefly discuss on different types of facing units.
3. List the aspects required for simple construction relevant to earth retaining structures.
4. Explain the factors governing the usage of natural geotextiles.
5. Explore the advantages of reinforced soil retaining structures over the conventional soil structures. **(4×5=20 Marks)**

**PART – B
Module – I**

6. Briefly discuss on modern developing concept of earth reinforcement and soil structures with case examples. **20**

OR

7. Discuss the application areas of (a) bridge works (b) dams (c) foundations and (d) highways for the use of earth reinforcement. **20**



Module – II

8. Discuss the forces acting on the retaining wall for consideration of external stability and mechanisms of overall safety against sliding, overturning and bearing failure. 20

OR

9. A 7 m high wall is to be built using sand fill and polymer grid reinforcement. The sand has $\phi = 30^\circ$, $\gamma = 18 \text{ kN/m}^3$ and is to be used for the wall and the backfill. A surcharge loading of 25 kPa is to be allowed for; the maximum safe bearing pressure for the foundation soil is 350 kPa. Three grids of different design strengths are available: grid A at 24 kN/m, grid B at 16.5 kN/m and grid C at 10.5 kN/m (all have a bond coefficient f_b of 0.9). The fill will be compacted in layers 250 mm thick. Check the reinforced soil wall against external and internal stability. 20

Module – III

10. List the methods used for constructing reinforced soil structures. Describe the construction sequence involved in any one method used with neat schematics. 20

OR

11. a) How to locate the failure surface in the reinforced soil beneath a shallow strip foundation? 10
- b) What are the assumptions needed to obtain the force that develops in the reinforcing ties? How to determine whether the ties at any depth below shallow foundation will fail or not either by breaking or by pull-out? 10

Module – IV

12. Write short notes on concept of (a) geocell applications (b) encased stone columns, (c) prefabricated vertical drains and (d) geotubes. 20

OR

13. a) Explore the applications of jute geotextiles as reinforcement, separator, filter, drainage and others. 12
- b) Explore the advantages and disadvantages of natural jute geotextiles. 8
-