



Reg. No. : .....

Name : .....

**Eighth Semester B.Tech. Degree Examination, October 2014**  
**(2008 Scheme)**  
**Branch : CIVIL ENGINEERING**  
**08.807.10 (Elective – V) : Reinforced Earth (C)**

Time : 3 Hours

Max. Marks :100

**Instructions :** Answer **all** questions from the Part – **A** and **any one** question **each** from **each** Module from the Part – **B**.  
**All** questions in Part – **A** carry **equal** marks.

PART – A

1. Briefly describe the mechanism of mobilization of reinforcement strength in the case of  
i) Geogrid      ii) Geotextile      iii) Metallic Strips.
2. List the various processes by which  
i) Non-woven geosynthetics and    ii) Geogrids are manufactured.
3. Differentiate between uniaxial, biaxial and triaxial geogrids.
4. What are the major raw materials that are used for the manufacture of soil reinforcements ?
5. What are the possible modes of failure of a soil-reinforcement system ?
6. List the assumptions made by Binquet and Lee in their analysis of reinforced earth beds.
7. Discuss the corrosion of steel meshes vis-à-vis degradation of polymeric reinforcements in reinforced soil structures.
8. Differentiate between filtration and drainage functions of geosynthetics with examples. **(8×5=40 Marks)**

**PART – B****Module – I**

9. a) Discuss the influence of reinforcement on the stress distribution within soil. 10  
b) Discuss the factors affecting the behaviour of reinforced earth. What are the advantages of reinforced soil construction? 10
10. a) Explain the selection and use of different types of fill material for reinforced soil construction. 10  
b) What are the different types of reinforcing materials? 10

**Module – II**

11. What are the modes of failure of reinforced soil retaining walls? Explain a Tie Back wedge analysis of reinforced soil retaining walls bringing out various assumptions involved. 20
12. A reinforced soil retaining wall is to retain 6m high soil ( $\phi = 36^\circ$ ,  $\gamma = 16\text{kN/m}^3$  for the foundation and the back fill). The allowable bearing pressure on the foundation is 200 kPa. Surface of the backfill is horizontal and is subjected to a uniform surcharge pressure of 26 kPa. Geogrid reinforcement with a tensile strength of 120 kN/m shall be used. Design the reinforced soil wall. Take an interaction factor of 0.6. Well graded river sand is proposed to be used as the reinforced soil fill material ( $\phi = 40^\circ$ ,  $\gamma = 18\text{kN/m}^3$ ). 20

**Module – III**

13. Discuss various construction methods of reinforced retaining walls. 20
14. What are natural geotextiles? Give examples. Mention the applications of natural geotextiles citing their advantage over polymer based geosynthetics. 20
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