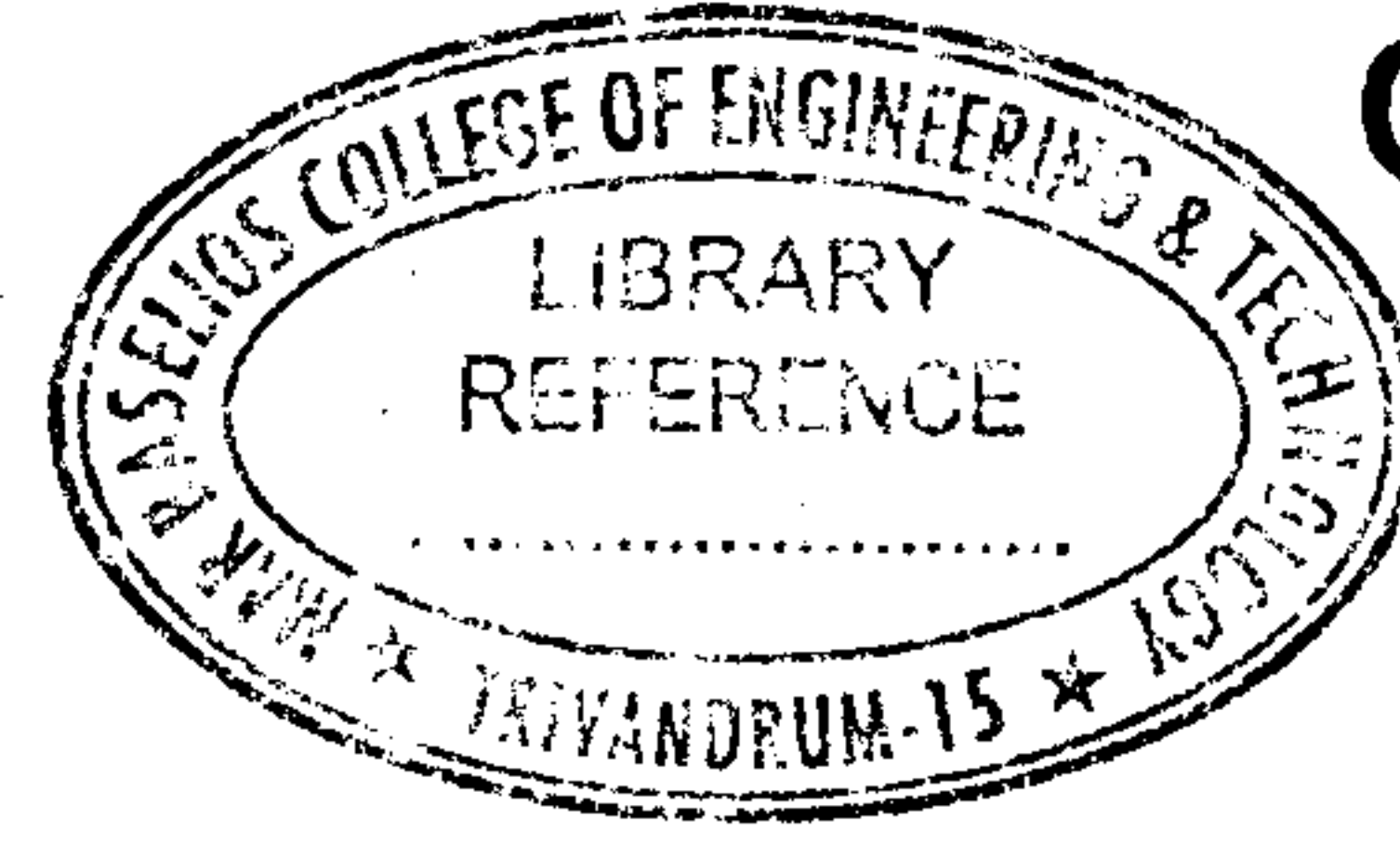




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C – 2350

Reg. No. :

Name :

**Eighth Semester B.Tech. Degree Examination, May 2017
(2013 Scheme)**

13.806.3 : REINFORCED EARTH (C)

Time : 3 Hours

Max. Marks : 100

- Instructions :** 1) Answer *all* questions from Part – A and *any one full* question from *each* Module from Part – B.
2) *All* questions in Part – A carry *equal* marks.

PART – A

1. Explain the historical background of soil reinforcement technique. Give two classic examples.
2. Explain Henry Vidal's concept of reinforced earth.
3. Write a brief explanation on geogrids.
4. What types of soils are considered to be most suitable for the construction of reinforced earth ? Give examples.
5. Briefly describe the manufacturing process of geotextiles. **(4×5=20 Marks)**

PART – B

Module – I

6. a) If the ultimate tensile strength of a geogrid from an index test is 82 kN/m, then determine the allowable tensile strength to be used in the design of a geotextile-reinforced retaining wall. Differentiate between index test and performance test. Give examples. **(4+6)**
b) With neat sketches explain pseudo-cohesion concept and equivalent confining stress concept in reinforced soil. Why reinforcing clayey soil is difficult with some reinforcements ? **10**

OR

7. List and discuss the parameters affecting the behaviour of reinforced soil beds. **20**

P.T.O.

**Module – II**

8. a) Clearly stating the assumptions made and with neat sketches explain internal stability analysed using Tie-back wedge and coherent gravity methods. 10
- b) Evaluate cohesive soils and certain industrial wastes as back fill materials in the construction of reinforced earth retaining walls. 10

OR

9. Design a reinforced earth retaining wall to retain a 6 m height of fill. The wall is backfilled with granular soil having $\gamma = 18.2 \text{ kN/m}^3$ and angle of shearing resistance of $\phi = 34^\circ (N_\gamma = 35)$, using galvanized metallic strip as reinforcement. Safety factor against tension and pullout failure = 2.0. Galvanized metallic reinforcement has the following particulars : horizontal spacing = 0.8 m; width of steel strips = 10 cm; thickness of steel strips = 5 mm; ultimate tensile strength of strips = 24 kN/cm^2 ; coefficient of friction between reinforcement and backfill soil = 0.4; no water table; no surcharge. 20

Module – III

10. Write an explanation on Binqet and Lee's analysis. Explain the design procedure of reinforced soil beds developed by Binqet and Lee to design reinforced soil beds. 20

OR

11. With neat sketches explain :
- i) Concertina method and
- ii) Telescope method of construction of reinforced earth retaining walls. 20

Module – IV

12. a) Explain how geosynthetics are nowadays useful in the safe disposal of municipal and hazardous wastes. 12
- b) Write a note on soil nailing. 8

OR

13. Write an explanation on the application areas natural geotextiles. What are the advantages and disadvantages ? 20
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