



## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

**Sixth Semester, B.E. - Civil Engineering**  
**Semester End Examination; July / Aug. - 2022**  
**Reinforced Earth Structures**

Time: 3 hrs

Max. Marks: 100

### Course Outcomes

The Students will be able to:

CO1: Identify, formulate reinforced earth techniques that are suitable for different soils and in different structure.

CO2: Understand the laboratory testing concepts of Geosynthetics.

CO3: Design RE retaining structures and Soil Nailing concepts.

CO4: Determine the load carrying capacity of Foundations resting on RE soil bed.

CO5: Asses the use of Geosynthetics in drainage requirements and landfill designs

**Note: I) PART - A is compulsory. Two marks for each question.**

**II) PART - B: Answer any Two sub questions (from a, b, c) for a Maximum of 18 marks from each unit.**

Q. No.	Questions	Marks	BLs	COs	POs
<b>I : PART - A</b>		<b>10</b>			
I a.	What are the differentness between soil reinforcement and concrete Reinforcement?	2	L1	CO2	PO1
b.	List out the types of reinforcing elements.	2	L1	CO3	PO1
c.	List out the components of a nailed soil wall.	2	L1	CO4	PO1
d.	Define factor of safety against sliding.	2	L1	CO1	PO2
e.	List out the design criteria to select graded filters.	2	L1	CO5	PO2
<b>II : PART - B</b>		<b>90</b>			
<b>UNIT - I</b>		<b>18</b>			
1 a.	Enumerate the basic mechanism of soil reinforcement.	9	L2	CO1	PO1,2
b.	Enumerate briefly the functions of Geosynthetics.	9	L2	CO1	PO1,2
c.	Enumerate the applications of soil reinforcement.	9	L2	CO2	PO1,2
<b>UNIT - II</b>		<b>18</b>			
2 a.	Enumerate the construction sequence of a reinforced earth wall.	9	L2	CO3	PO1,2
b.	Enumerate the failure mechanism to check for stability of a reinforced earth wall.	9	L2	CO3	PO1,2
c.	Check the reinforced earth wall shown in Fig. 2c for stability against;				
	i) Sliding	9	L3	CO3	PO1,2,3
	ii) Overturning				
	iii) Bearing capacity failure				

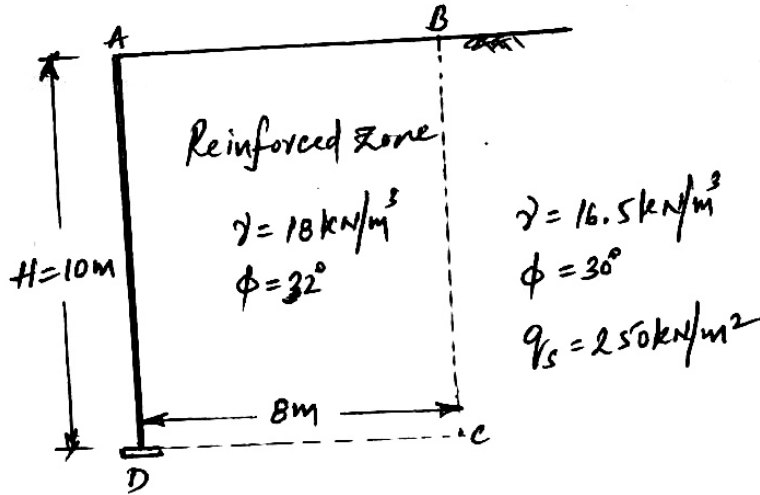


Fig.Q2c

**UNIT - III**

**18**

- |  |   |    |     |        |
|--|---|----|-----|--------|
| 3 a. Enumerate construction sequence for nailed soil wall.                                     | 9 | L2 | CO4 | PO1, 2 |
| b. Enumerate the influence of the reinforcement is to improve the performance of unpaved road. | 9 | L2 | CO4 | PO1,2  |
| c. Enumerate reinforcement of soil beneath foundations.  | 9 | L2 | CO4 | PO1,2  |

**UNIT - IV**

**18**

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|--|---|----|-----|-------|
| 4 a. Enumerate the functional requirements of Geosynthetics. | 9 | L2 | CO4 | PO2,3 |
| b. Enumerate the properties of Geosynthetics.                | 9 | L2 | CO4 | PO2,3 |
| c. Enumerate the types of geosynthetics.                     | 9 | L2 | CO4 | PO2,3 |

**UNIT - V**

**18**

- |  |   |    |     |       |
|--|---|----|-----|-------|
| 5 a. Enumerate briefly the selection of granular filter materials.                     | 9 | L2 | CO5 | PO2,3 |
| b. Enumerate requirements for impervious barrier for liner and covers.                 | 9 | L2 | CO5 | PO2,3 |
| c. Enumerate stability analysis for sliding of geo-membrane over clay in liner system. | 9 | L2 | CO5 | PO2,3 |

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