

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019**

**Course Code: CE464**

**Course Name: REINFORCED SOIL STRUCTURES AND GEO - SYNTHETICS**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two full questions, each carries 15 marks.*

Marks

- |   |  |     |
|---|--|-----|
| 1 | a) Explain the historical applications of the reinforced soil.                             | (5) |
|   | b) Briefly define the different types of geosynthetics.                                    | (5) |
|   | c) What are the advantages and dis-advantages of geosynthetics?                            | (5) |
| 2 | a) Explain creep and long-term performance of geosynthetics.                               | (7) |
|   | b) Explain the physical properties of geosynthetics.                                       | (8) |
| 3 | a) Explain any three factors that affect the performance and behaviour of reinforced soil. | (9) |
|   | b) Explain the functions of geosynthetics.   | (6) |

**PART B**

*Answer any two full questions, each carries 15 marks.*

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|---|--|------|
| 4 | a) Explain and draw Mohr's circle for Equivalent Confining stress Concept and Pseudo Cohesion Concept. | (8)  |
|   | b) Explain with the help of a figure, the basic mechanism of reinforced soil.                          | (7)  |
| 5 | a) Explain Tie back wedge analysis and Coherent gravity analysis with detailed figures.                | (10) |
|   | b) What are the benefits of using Geo-synthetics in pavements?   | (5)  |
| 6 | a) Check the RE wall of 6m height for external stability. The allowable bearing pressure is 300kPa.    | (10) |

Wall fill	Back fill
$\Phi=35^\circ$	$\Phi=30^\circ$
$\gamma=20 \text{ kN/m}^3$	$\gamma=18 \text{ kN/m}^3$

The RE wall carries a surcharge load of 24kPa. Assume  $\delta=26^\circ$

- |  |     |
|--|-----|
| b) Explain the concept of expanding soil mass. | (5) |
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**PART C**

*Answer any two full questions, each carries 20 marks.*

- 7 a) List the assumptions made in Binquet and Lees's analysis with neat figures. (8)  
b) List the advantages and disadvantages of natural geotextiles. (7)  
c) Enumerate the potential uses of coir geotextiles in the Indian context. (5)
- 8 a) What is PVD? Sketch a typical cross section of PVD. (10)  
b) Describe its applications in Geotechnical Engineering for Ground Improvement. (10)
- 9 a) What is soil nailing? Draw a labelled diagram of typical soil nailing system. (10)  
b) Explain the different types of erosion control products. (10)

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