Unit 9 - Week 7

Assignment 7

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-18, 23:59 IST.

1) It is required to design the reinforcement quantity for a steep embankment resting on a competent soil. The height of the slope is 10 m and constructed with a slope angle of 70°. The properties of the soil are $c = 0, \phi = 30^{\circ}$ and $\gamma = 20kN/m^3$. A uniform surcharge of 20 kPa acts on top of the slope. What is the total resistance force to be provided by the reinforcement layers to increase the factor of safety of the slope to 1.3. Consider normal and tangential components of the reinforcement force in your calculations. Assume planar failure wedge at 30° from horizontal. *1 point*

- 219 kN/m
- 174 kN/m
- 255 kN/m
- 156 kN/m

No, the answer is incorrect.
Score: 0
Accepted Answers:
174 kN/m

2) A steep reinforced embankment of 7 m height having a slope angle of 70° is to be constructed using a soil having properties of $c = 0, \phi = 35^{\circ}$ and $\gamma = 20kN/m^3$. Assume that the soil is completely dry. A uniform surcharge of 15 kPa is acting on the slope surface. What is the force coefficient to estimate the quantity of reinforcement as per the bi-linear wedge method of analysis? (Use the design charts provided in the lecture). *1 point*

- 0.14
- 0.11
- 0.19
- 0.22

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.14

3) In the above problem, what is the quantity of reinforcement to be provided? *1 point*

- 69 kN/m
- 168 kN/m
- 84 kN/m
- 138 kN/m

No, the answer is incorrect.
Score: 0
Accepted Answers:
84 kN/m

4) In Problem No. 2, what is the minimum length of reinforcement to prevent both pullout and sliding failure? Use the design charts provided. *1 point*

- 4.30 m
- 3.30m
- 5.5 m
- 6.5 m

No, the answer is incorrect.
Score: 0
Accepted Answers:
3.30m

5) If reinforcement layers are provided at uniform vertical spacing of 0.8 m, what is the force developed in reinforcement layer provided at a depth of 6 m from the top of the embankment? *1 point*

- 18.9 kN/m
- 135 kN/m
- 53.4 kN/m
- 15 kN/m

No, the answer is incorrect.
Score: 0
Accepted Answers:
15 kN/m

6) In problem No. 2, what is the force coefficient if the pore pressure coefficient is 0.25? *1 point*

- 0.28
- 0.32
- 0.20
- 0.42

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.28

7) In problem No. 2, what is the total quantity of reinforcement to be provided if the pore pressure coefficient is 0.25? *1 point*

- 168 kN/m
- 137 kN/m
- 212 kN/m
- 118 kN/m

No, the answer is incorrect.
Score: 0
Accepted Answers:
168 kN/m

8) What is the length of reinforcement to be provided to prevent both pullout and sliding failure if the pore pressure coefficient is 0.25? *1 point*

- 3.30 m
- 4.7 m
- 3.9 m
- 5.3 m

No, the answer is incorrect.
Score: 0
Accepted Answers:
4.7 m

9) According to Skempton's analysis, the outward shear movement of embankment soil over smooth foundation soil reduces bearing capacity due to *1 point*

- increase in water content
- decrease in unit weight of soil
- lack of frictional resistance
- lack of foundation soil compaction

No, the answer is incorrect.
Score: 0
Accepted Answers:
lack of frictional resistance

10) When a thin layer of soft clay in between the relatively rigid geocell layer and rigid foundation soil is analysed using slip lines fields under the condition, *1 point*

- Height of embankment should be less than four times thickness of clay layer.
- Height of embankment should be greater than four times thickness of clay layer.
- Base width of embankment should be less than four times thickness of clay layer.
- Base width of embankment should be greater than four times thickness of clay layer.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Base width of embankment should be greater than four times thickness of clay layer.