

Unit 11 - Week 9

Course outline
How does an NPTEL online course work?
Week 0
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
<input checked="" type="radio"/> Accelerated Pre-Consolidation of Soft Clay Soils Using Geosynthetics
<input type="radio"/> Geosynthetic Encasement for Stronger and Stiffer Stone Columns
<input type="radio"/> Additional Documents
<input checked="" type="radio"/> Lecture Notes
<input type="radio"/> Quiz : Assignment 9
<input type="radio"/> Week 9 Feedback : Geosynthetics And Reinforced Soil Structures
Week 10
Week 11
Week 12
Text Transcripts
Download Videos

Assignment 9

The due date for submitting this assignment has passed. Due on 2020-04-01, 23:59 IST.
 As per our records you have not submitted this assignment.

- 1) Radial consolidation in clay soils is faster than vertical consolidation due to, 1 point
- Permeability of clay is higher in horizontal direction
 - Permeability of clay is higher in vertical direction
 - Reduction in drainage path
 - Increase in drainage path
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
Permeability of clay is higher in horizontal direction
Reduction in drainage path
- 2) Which of the following are correct? 1 point
- In case of sand drain there is no filter component
 - PVDs consist of both filter and drainage layers
 - Sand drains are superior than PVDs as they are made of natural materials
 - None of the above
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
In case of sand drain there is no filter component
PVDs consist of both filter and drainage layers
- 3) What is the purpose of filter in PVD 1 point
- Prevent the escape of fine particles from soil
 - Prevent the escape of coarse particles from the soil
 - Prevent the flow of water
 - Accelerate the flow of water
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
Prevent the escape of fine particles from soil
- 4) Which of the following are correct in case of drain installation? 1 point
- Triangular pattern is more efficient due to larger spacing and better coverage area
 - Square pattern is more efficient
 - Efficiency of both the patterns is the same
 - None of the above
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
Triangular pattern is more efficient due to larger spacing and better coverage area
- 5) Which of the following statements are correct? 1 point
- Vacuum pressure is isotropic
 - Secondary compression can be achieved by using vacuum consolidation
 - Vacuum pressure is anisotropic
 - Secondary compression cannot be achieved
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
Vacuum pressure is isotropic
Secondary compression can be achieved by using vacuum consolidation
- 6) Which of the following statements are correct? 1 point
- Effect of surcharge is maximum at the ground surface and reduces with depth
 - Effect of surcharge is minimum at the ground surface and increases with depth
 - Increase in effective stress due to vacuum pressure is constant with depth
 - Effect of vacuum reduces linearly with depth
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
Effect of surcharge is maximum at the ground surface and reduces with depth
Increase in effective stress due to vacuum pressure is constant with depth
- 7) Which of the following are correct in case of vacuum consolidation 1 point
- Surcharge fill requirement is much lesser
 - Lateral ground movements are compressive
 - Higher surcharge pressures are necessary
 - Lateral ground movement are expansive
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
Surcharge fill requirement is much lesser
Lateral ground movements are compressive
- The given data is applicable for questions 8-10. With the installation of PVD of 100 mm x 5 mm dimension it is desired to achieve 90% consolidation in 1.5 year. Coefficient of consolidation (c_v) of the soil is $10 \text{ m}^2 / \text{year}$.**
- 8) What is the diameter of influence area of PVD? 1 point
- 3.96 m
 - 3.65 m
 - 2.43 m
 - 1.98 m
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
3.96 m
- 9) What is the spacing of PVD if they are arranged in square pattern? 1 point
- 3.80 m
 - 3.51m
 - 4.0 m
 - 2.6 m
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
3.51m
- 10) What is the spacing if PVDs are arranged in triangular pattern? 1 point
- 3.77 m
 - 3.81 m
 - 2.31 m
 - 1.75 m
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
3.77 m
- 11) What are the advantages of stone columns compared to pile foundation? 1 point
- Pile foundations are expensive compared to stone column
 - Stone columns helps to accelerate the consolidation
 - Stone columns increase the liquefaction resistance
 - All of the above
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
All of the above
- 12) Which of the following are correct? 1 point
- Geosynthetic encasement provide additional confinement to the stone columns
 - Encased stone columns behave as semi rigid material
 - Encasement reduces the clogging potential of stone columns
 - Settlements of the treated could be zero.
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
Geosynthetic encasement provide additional confinement to the stone columns
Encased stone columns behave as semi rigid material
Encasement reduces the clogging potential of stone columns
- 13) What are the advantages of encasement? 1 point
- Encasement increases the load capacity and stiffness of stone columns
 - Stress are transferred to deeper depths of foundation soil
 - Higher length of columns are possible
 - All of the above
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
All of the above
- 14) What is the additional confinement generated in a 1.2 m diameter stone column due to geosynthetic encasement having a modulus of 500 kN/m. Assume that the axial strain in the stone column is limited to 5%. 1 point
- 26.8 kPa
 - 22.2 kPa
 - 833.3 kPa
 - 50 kPa
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
22.2 kPa
- 15) If the friction angle of stone aggregate is 38° in the above problem, what is the additional axial capacity of the column due to encasement? 1 point
- 125.1 kN
 - 254.8 kN
 - 105.5 kN
 - 227.2 kN
- No, the answer is incorrect.**
Score: 0
Accepted Answers:
105.5 kN