Unit 5 - Week 4

Course outline

How does an NPTEL online course work?

Week 1

Week 2

Week 3

Week 4

- Lecture 16: Pile Foundations under Lateral Loads: Elastic Method for Cohesionless Soils
- Lecture 17: Pile Foundations under Lateral Loads: Elastic Method for Cohesive Soils including degradation of modulus of subgrade reaction (k)
- Lecture 18: Pile Foundations under Lateral Loads: Numerical Examples
- Lecture 19: Dynamic Analysis of Piles under Vertical and Horizontal Vibrations
- Lecture 20: Dynamic Analysis of Piles under Horizontal Vibration: Continue with Numerical Example
- Quiz : Assignment 4

Week 5

Week-6

Week-7

Week 8

Download Videos

Weekly Feedback

Assignment 4

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

Due on 2020-10-14, 23:59 IST.

1) In a soil deposit, the subgrade modulus increases linearly with depth. For elastic analysis, a pile is classified as a long pile if length L > nT (where T is relative stiffness factor). Value of n is *1 point*

- 3
- 4
- 5
- 10

No, the answer is incorrect.
Score: 0
Accepted Answers:
5

2) In a soil deposit the subgrade modulus increases linearly with depth and given that coefficient of subgrade modulus is $1*10^7$ N/m^3. Relative stiffness factor T for an RCC pile of length 8 m and flexural rigidity $32*10^7$ Nm^2 is: *1 point*

- 0.5 m
- 1 m
- 2 m
- 3 m

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

3) In a soil deposit, the subgrade modulus increases linearly with depth. For elastic analysis, when the pile head is free to rotate, the maximum displacement will occur at *1 point*

- Pile head
- Pile tip
- At middle depth
- Little below pile head

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

4) In a soil deposit, the modulus of subgrade reaction is constant with the depth and its value is $2*10^7$ N/m^2. Relative stiffness factor R for an RCC pile of length 8 m and flexural rigidity $32*10^7$ Nm^2 is: *1 point*

- 1 m
- 2 m
- 3 m
- 4 m

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

5) In a clay deposit, the modulus of subgrade reaction (k) varies with shear strain. When shear strain increases, value of k *1 point*

- Increases
- Decreases
- remains constant
- may increase or decrease

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

6) In a soil deposit, the subgrade modulus increases linearly with the depth. Normally the pile is critical in *1 point*

- Displacement
- Bending Moment
- Soil Reaction
- Depends on the soil and pile

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

7) For dynamic analysis of the soil-pile system, one of the approaches is to represent this system as a set of discrete (lumped) masses, spring and dashpot. Biggest disadvantage of this approach is that *1 point*

- Nonlinearity of the soil cannot be considered
- Computationally involving
- Geometrical damping is difficult to account
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Geometrical damping is difficult to account

8) When a pile is subjected to vertical vibration, when its length increases, the natural frequency of the system *1 point*

- Increases
- Decreases
- Remains constant
- None of the above

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

9) In a soil deposit, the modulus of subgrade reaction is constant with the depth and the soil-pile system is divided into segments of equal length Δx. For dynamic analysis of the system for lateral loads, each soil layer is represented by a spring. The values of the stiffness of these springs (except at top and bottom) will be *1 point*

- Linearly increases with depth
- Linearly decreases with depth
- Same for all the springs (irrespective of depth)
- Nonlinearly increases with depth

No, the answer is incorrect.
Score: 0
Accepted Answers:
Same for all the springs (irrespective of depth)

10) For the dynamic analysis of a soil-pile system for lateral load, it is important to determine its natural frequency. For this nondimensional frequency factors for first mode of vibration F_{CL1} and F_{SL1} are defined. The variation of these factors with maximum depth factors (z_{max}) is best represented as: *1 point*

- Linearly increases with (z_{max})
- Linearly decreases with (z_{max})
- Constant with (z_{max})
- Nonlinearly increases with (z_{max}) and then almost constant

No, the answer is incorrect.
Score: 0
Accepted Answers:
Nonlinearly increases with (z_{max}) and then almost constant