

320652(20)

B. E. (Sixth Semester) Examination, Nov.-Dec. 2018

(New Scheme)

(Branch : Civil)

GEOTECH ENGINEERING-II

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Part (a) of each unit carries two marks is compulsory. Attempt any two parts carries of seven marks from each unit. Terzaghi Bearing capacity factors table and Taylor stability number tables are allowed.

Unit - I

- 1. (a) Define finite and infinite slopes. 2
- (b) Explain with sketch the concept of Swedish slip circle method for purely cohesive soil and soil possessing both cohesion and friction. 7

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- (c) Explain with sketch in detail friction circle method for analyzing of finite slopes. 7
- (d) Calculate the factor of safety with respect to cohesion of a clay slope laid at 1 in 2 to a height of 10 m, if the angle of internal friction, $\phi = 10^\circ$, $C = 25 \text{ kN/m}^2$, $\gamma = 19 \text{ kN/m}^3$. What will be the critical height of the slope in the soil. 7

Unit - II

- 2. (a) Define Backfill. 2
- (b) Define the following terms :
 - (i) Surcharge and surcharge angle 2+1
 - (ii) Retaining wall 2
 - (iii) Coefficient of earth pressure 2
- (c) Explain active earth pressure for the case of dry or moist cohesionless backfill with no surcharge. Show the pressure distribution diagram. 7
- (d) Compute the intensities of active and passive earth pressure at depth of 8 mtrs in dry cohesionless sand with an angle of internal friction of 30° and γ of 18 kN/m^3 . What will be the intensities of active

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and passive earth pressure if the water level rises to ground level. Take saturated unit wt. of sand as 20 kN/m³.

7

Unit - III

3. (a) Define footing and foundation. 2

(b) Define the following :

(i) Bearing capacity 1

(ii) Gross pressure intensity 2

(iii) Net pressure intensity 2

(iv) Safe bearing capacity 2

(c) Discuss the effect of water table on bearing capacity of soil. http://www.csvtuonline.com 7

(d) A strip footing 1 m wide at its base is located at a depth of 0.8 m below the ground surface. The properties of the foundation soil are :

$r = 18 \text{ kN/m}^3, C = 30 \text{ kN/m}^2, Q = 20^\circ$

Determine the safe bearing capacity using factor of safety 3. Use Terzaghi Analysis. Assume that the soil fails by local shear. 7

Unit - IV

4. (a) What do you mean by end bearing piles? 2

(b) Explain shapes and components parts of well foundation with sketches. 7

(c) Explain briefly types of caissons in well foundation. 7

(d) In a 16 pile group, the pile diameter is 45 cm and centre to centre spacing of the square group is 1.5 m, $\bar{C} = 50 \text{ kN/m}^2$. Determine whether the failure would occur with the piles acting individually or as a group. Neglect bearing at the tip of the pile. All piles are 10m long. Take $m = 0.7$. 7

Unit - V

5. (a) What do you mean by Expansive soil? 2

(b) Explain briefly general characteristics of an expansive soil. 7

(c) What are the problems associated with an expansive soil and contaminated soil. 7

(d) What do you mean by CNS soils? What are the characteristics of CNS soils. 7

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