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Roll No. :

320652(20)

B. E. (Sixth Semester) Examination, April-May 2021

(New Scheme)

(Civil Engg. Branch)

GEOTECH ENGINEERING-II

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Part (a) of each question is compulsory. Attempt any one part from (b) and (c).

Unit-I

1. (a) Define infinite and finite slope. 2
- (b) Explain with sketch the concept of Swedish circle method and force triangle of friction circle method. 14

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- (c) At cut 9 m deep is to be made in a clay with a unit weight of 18 kN/m^3 and a cohesion of 27 kN/m^2 . A hard stratum exists at a depth of 18 m below the ground surface. Determine from Taylors charts if a 30° slope is safe. If a factor of safety of 1.50 is desired, what is a safe angle of slop. 14

Unit-II

2. (a) Define earth pressure at rest. 2
(b) Explain : 14
(i) Coulomb Wedge theory
(ii) Distinguish between active and passive earth pressure
(c) Derive the equation of critical height of an unsupported vertical cut in cohesive soil. 14

Unit-III

3. (a) Define bearing capacity of soil. 2
(b) Explain Prandtl's method and Meyerh of method for bearing capacity of soil. 14

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- (c) A circle footing is resting on a stiff saturated clay with $q_0 = 250 \text{ kN/m}^2$. the depth of foundation is 2 m. Determine the diameter of the footing if the column load is 600 kN. Assume a factor of safety as 2.5. The bulk unit weight of soil is 20 kN/m^3 . 14

Unit-IV

4. (a) What is pile driving? 2
(b) Explain : 14
(i) Under-reamed piles
(ii) Negative skin friction
(iii) Zone of overlap
(c) Explain the function of pile foundation and show how the bearing capacity of the foundation can be estimated. 14

Unit-V

5. (a) What is black cotton soil? 2
(b) Discuss the problems in foundation on expansive soil and preventive measures. 14

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- (c) Write short notes on : 14
- (i) Swelling potential
 - (ii) Swelling pressure
 - (iii) Free swell
 - (iv) CBR value of black cotton soil