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Roll No. :

320652(20)

B. E. (Sixth Semester) Examination, April-May 2020

(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 only two parts from (b), (c) and (d).

Unit-I

1. (a) Define infinite and finite slope. 2
- (b) Explain stability analysis of infinite slopes for cohesive soil. 7

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- (c) Analyze the slope of infinite extent having slope angle $= 25^\circ$, is made of clay having $C' = 30 \text{ kN/m}^2$, $\phi' = 20^\circ$, $e = 0.65$ and $G_s = 2.7$ under the following conditions : 7
- (i) When the soil is dry,
- (ii) When water seeps parallel to the surface of the slope; and
- (iii) When the slope is submerged.
- (d) Explain Swedish circle method. 7

Unit-II

2. (a) What is lateral earth pressure? 2
- (b) A 5 m high rigid retaining wall has to retain a back fill of dry cohesionless soil having the following properties : $\phi =$ Angle of internal friction $= 30^\circ$, $e =$ void ratio $= 0.74$, $G_s =$ specific gravity $= 2.68$, coefficient of friction $= 0.36$. Determine the magnitude and point of application of the resultant thrust. 7

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- (c) Explain Poncelet method. 7
- (d) Explain different cases of cohesionless backfill. 7

Unit-III

3. (a) What is soft footing? 2
- (b) Explain plate load test. 7
- (c) The result of two plate load tests for a settlement of 25.4 mm are given :

Plate diameter	Load
0.305 m	31 kN
0.61 m	65 kN

A square column foundation is to be designed to carry a load of 800 kN with an allowable settlement of 25.4 mm. Determine the size of footing by using Housel method. 7

- (d) Write short notes on : (any two) 7
- (i) Rectangular combined footing
- (ii) Mat footing
- (iii) Spread footing

Unit-IV

4. (a) What is well foundation? 2
- (b) In a 16 pile group. The pile diameter is 45 cm and center to center spacing of the square group is 1.5 m. If $C = 50 \text{ kN/m}^2$, determine whether the failure would occur with the pile acting individually or as a group? Neglect bearing at the tip of the pile. All piles are 10 m long. Take $m = 0.7$ for shear mobilisation around each pile. 7
- (c) What are the different shape of wells? Discuss the characteristics of each type. 7
- (d) Explain the classification of piles foundation. 7
- Unit-V**
5. (a) What do you mean by CNS soils? 2
- (b) What are preventive measures for expansive soil? 7
- (c) What do you understand by under-seamed piles, explain with sketch? 7
- (d) What is an expansive soil? Where is it found in India? What are its generally characteristics? 7