(b) Describe the stability analysis of infinite' slopes. 8

Section-B

4. (a) Draw the apparent pressure distribution diagrams recommended by Terzaghi and Peck for cuts in sand, firm clay and soft clay. Also determine how the load can be calculated in each case. 7

(b) What is sheeting and bracing system? Describe the components of sheeting and bracing systems. 8

5. (a) What is the necessity of coffer dam? Explain different types of coffer dams in detail. 7

(b) Briefly describe the factors affecting the stability of cellular coffer dam on rocks. 8

Section-C

6. (a) Determine the embedded depth of a cantilever sheet pile penetrating a clay deposit, with a granular backfill of height 5 m. the unit weights for clay deposits and backfill are 19 kN/m³ and 16 kN/m³. Given for clay deposits, c = 50 kN/m² and for backfill, Φ = 30°. 10

(b) What are the different types of sheet pile? Explain briefly. 5

7. An excavation 8 m deep is to be made in cohesionless soil having $\gamma = 16$ kN/m³, $\Phi = 35°$. Determine the minimum depth of embedment for equilibrium. The anchors and water table are at a depth of 2.5 m and 3 m below the ground surface. Assume free earth support conditions. 15

Section-D

8. (a) Describe the characteristics elements of a vibratory system in detail. 7

(b) What is Barkens spring constant? Explain Barkens method to determine natural frequency of a block foundation. 8

9. Write a short note on the following: 15

(a) Bituminous and lime stabilization

(b) Damping

(c) Grouting and reinforced earth

(d) Free and forced vibrations

(e) Resonance

B.Tech. (Civil Engineering) 8th Semester (G-Scheme)
Examination, July–2022
GEOTECHNOLOGY
Paper– PEC-CEEL-408-G

Time allowed : 3 hours]   [Maximum marks : 75

Note: (1) Question No.1 is compulsory. Attempt **one** question from each section

   (2) All questions carry equal marks

   (3) Assume missing data, if any, suitably

1.   (a)   Uses of Stability Number

   (b)   Necessity of braced cuts

   (c)   Differentiate cantilever and anchored sheet piles

   (e)   Necessity of machine foundation

   (f)   Dynamic compaction

   (g)   Components of a finite and infinite slope   15

Section-A

2.   (a)   Define different types of slopes. Enumerate the factors affecting slope stability.   7

   (b)   Analyse the different causes of slope failure? Describe the stability of finite slopes by friction circle method.   8

3.   (a)   What do you mean by critical slip circle? Describe Fellenius method to locate the centre of most critical slip circle.   7