

Module-3

- 5 a. Explain with neat sketch At-rest, Active and Passive earth pressure. (08 Marks)
 b. Explain step by step procedure of Culmann's graphical construction for determination of active pressure. (06 Marks)
 c. Compute the intensities of active and passive earth pressure at depth of 8 meters in dry cohesionless sand with an angle of internal friction of 30° and unit weight of 18 kN/m^3 . What will be the intensities of active and passive earth pressure if the water level rises to the ground level? Take saturated unit weight of sand as 22 kN/m^3 . (06 Marks)

OR

- 6 a. Explain stability of slopes and discuss on assumptions made in the analysis of stability of slopes. (06 Marks)
 b. Explain Swedish slip circle method for stability analysis of slopes. (08 Marks)
 c. Explain Fellenius method for location of critical slip circle. (06 Marks)

Module-4

- 7 a. Explain types of shallow foundation. (10 Marks)
 b. List the assumptions made in Terzaghi's bearing capacity theory and derive Terzaghi's bearing capacity equation. (10 Marks)

OR

- 8 a. Explain types of shear failure with sketches. (06 Marks)
 b. Determine the ultimate bearing capacity of a strip footing, 1.20m wide and having the depth of foundation 1.0m. Use Terzaghi's theory and assume general shear failure. Take $\phi' = 35^\circ$, $\gamma = 18 \text{ kN/m}^3$ and $C' = 15 \text{ kN/m}^2$, $N_c = 57.8$, $N_q = 41.4$ and $N_\gamma = 42.4$. (04 Marks)
 c. Explain Plate load test. Discuss on limitations of the plate load test. (10 Marks)

Module-5

- 9 a. Explain classification of piles based on mode of transfer of load. (06 Marks)
 b. With the help of neat sketch explain negative skin friction. (06 Marks)
 c. A pile group consisting of 12 piles (4x3) is subjected to a total load of 4 MN with eccentricity $e_x = 0.3\text{m}$, $e_y = 0.4\text{m}$. Distance between the piles is 1m. Determine the maximum load in an individual pile. (08 Marks)

OR

10 Write short notes on following :

- a. Efficiency of pile group
 b. Group capacity of piles
 c. Settlement of piles
 d. Under reamed piles
 e. Pile load tests.

(20 Marks)
