

15CV53

Max. Marks: 80

3. Use of IS:6403 is permitted.

1 of 2

OR

- 6 a. List the assumptions made in Rankine's theory to determine lateral earth pressure in soils. (04 Marks) \
- b. A Canal is to be excavated through a soil with $C = 15 \text{ KN/m}^2$, $\phi = 20^\circ$, $e = 0.9$ and $G = 2.67$. The side slopes is 1 in 1. The depth of canal is 6 m. Determine the FOS, with respect to cohesion when canal runs full. What will be the FOS, if the canal is rapidly emptied? Taylor's stability numbers are 0.06 and 0.114 respectively with respect to two cases. (06 Marks)
- c. How do you locate the centre of critical slip circle using Fellenius method? (06 Marks)

Module 4

- 7 a. Explain in detail how bearing capacity of soil is determined using BIS method (IS6403). (08 Marks)
- b. How do you consider the effect of water table on determination bearing capacity of soil. (04 Marks)
- c. Compute the ultimate load that an eccentrically loaded square footing of width 2.1 m with an eccentricity of 0.35 m can take at a depth of 0.5 m in a soil with $\gamma = 18 \text{ KN/m}^3$, $C = 9 \text{ KN/m}^2$, $N_c = 82$, $N_q = 35$, $N_{\gamma} = 42$. (04 Marks)

OR

- 8 a. Proportion a rectangular combined footing for uniform pressure under dead load, plus reduced live load, using the following data:
Allowable soil pressure, 150 KN/m^2 for dead load + reduced live load.
 225 KN/m^2 for dead load + live load

Column loads	Column A	Column B
Dead load (DL)	540 KN	690 K.N
Live load (LL)	400 KN	810 KN

- Distance C/C of columns = 5.4 m
Projection of footing beyond column A = 0.5 m. Draw the diagram. (12 Marks)
- b. List the assumptions made in Terzaghi's analysis to find bearing capacity of soils. (04 Marks)

Module 5

- 9 a. With neat diagrams, explain the classification of piles based on different criteria. (10 Marks)
- b. What is negative skin friction? How it is estimated in different types of soils. (06 Marks)

OR

- 10 a. Explain the static formula to find pile load carrying capacity. (10 Marks)
- b. A 16 pile group has to be arranged in the form of a square in a soft clay with uniform spacing. Neglecting end bearing, determine the optimum value of spacing of the piles in terms of pile diameter. Assuming a shear mobilization factor 0.6. (06 Marks)

www.FirstRanker.com

c, 'A'

ok<c/eqRi i