



Regulation R18

Subject code: 2P6AB

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Supplementary Examinations, February 2024

## FOUNDATION ENGINEERING (CIVIL ENGINEERING)

Maximum Marks: 70

Date: 17.02.2024 Duration: 3 hours

- Note: 1. This question paper contains two parts A and B.  
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.  
3. Part B consists of 5 Units. Answer any one full question from each unit.  
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

### Part-A

All the following questions carry equal marks		(10X2M=20 Marks)	CO	Bloom Tx
1	List Various methods of soil exploration?		CO1	L1
2	What is Augur boring?		CO1	L1
3	Define finite and infinite slope.		CO2	L1
4	What is the counter foot retaining wall?		CO2	L1
5	What is difference between active and passive earth pressure?		CO3	L1
6	What are the types of retaining wall?		CO3	L1
7	Define allowable bearing capacity?		CO4	L1
8	Discuss the effect of water table on the bearing capacity of soil.		CO4	L2
9	Define tilt and shift in piles.		CO5	L1
10	What are methods to determine the load carrying capacity of a pile?		CO5	L1

### Part-B

Answer All the following questions. (5X10M = 50 Marks)

11	a. Write short notes on spacing of bore holes. [5] b. Describe Standard penetration test with figure and explain its role in foundation engineering. [5]		CO1	L1 L2
OR				
12	a. Explain sub soil investigation methods in detail. [5] b. Describe plate load test with figure. [5] c.		CO1	L2 L2
13	a. Explain different types of slope failure with neat sketch. [5] b. Describe standard methods of slices in slope stability. [5]		CO2	L2 L2
OR				
14	Explain stability of slopes of earthen dams under different conditions. [10]		CO2	L2
15	a. State the assumptions in Rankine's theory. Derive an expression for active and passive pressures. [5] b. Describe the principles for the design of retaining wall. [5]		CO3	L1 L2
OR				

16	A retaining wall 6 m height retains sand with $\phi = 30^\circ$ , $\gamma = 24\text{KN/m}^3$ upto a depth of 3 m from top. From 3 m to 6m, the material is a cohesive soil with $c = 20\text{KN/m}^2$ , $\phi = 20^\circ$ . Unit weight of cohesive soil is $18 \text{ KN/m}^3$ . A uniform surcharge of $100 \text{ KN/m}^2$ acts on the top of soil. Determine the lateral pressure acting on the wall and its point of application. [10]	CO3	L2
17	A square column foundation is to be designed for a gross allowable total load of 250 KN. If the load is inclined at an angle of $15^\circ$ to the vertical, determine the width of the square shape foundation . Take factor of safety of 3.0. Use $\gamma = 19\text{KN/m}^3$ , $\phi = 35^\circ$ , $c = 5 \text{ KN/m}^2$ . Depth of foundation is 1.0 m. Take $N_c = 46.12$ , $N_q = 33.30$ , $N_\gamma = 48.03$ . [10]	CO4	L2
OR			
18	A strip footing is needed to carry load of $1000\text{KN/m}$ at a depth of 1 m. Shear strength parameters for the soil are $c = 0$ and $\phi = 36^\circ$ . Determine the minimum width of footing for a factor of safety of 3 against shear failure. The water table may rise to the base of the footing. Take $G = 2.65$ , $e = 0.6$ , for saturated soil and $\gamma_{\text{dry}} = 16\text{KN/m}^3$ [10]	CO4	L2
19	a. How would you estimate the group capacity of piles in Sand. [5] b. Discuss different methods for the installation of piles. [5]	CO5	L1 L1
OR			
20	a. Describe the construction procedure of wells. [5] b. Discuss the causes and remedies for tilt and shifts while well sinking. [5]	CO5	L2 L2