R18 Regulation *Subject code: 2P6AB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, July 2024

FOUNDATION ENGINEERING
(CE)

Maximum Marks: 70 Date:22.07.2024 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 which carries 10M.
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	What is soil exploration?	1	L1
2	List different types of samplers?	1	L1
3	What are the various types of slip surface in finite slope.	2	L1
4	Explain two types of slope failure.	2	L1
5	What is the difference between Rankine theory and Coulomb theory?	3	L1
6	What is a gravity retaining wall?	3	L1
7	What are the types of shear failure?	4	L1
8	Write the limitation of Terzaghi's analysis?	4	L1
9	What is negative skin friction?	5	L1
10	What are the different methods for finding load bearing capacity of a pile foundation?	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	a. Describe various methods of drilling holes for soil investigation. (5M) b. List out factors influence in selection of foundation on soil conditions.(5M)	1	L2
	OR		
12	a. Write down various factors that affect the sample disturbance? How these effects are minimized? (5M) b. Describe in brief various geophysical methods. (5M)	1	L2
13	a. Write the assumptions that are generally made in the analysis for stability of slopes? (5M) b. What are the different factors of safety used in the stability of slopes?(5M)	2	L2
	OR		
14	a. Explain stability analysis of finite slopes. (5M) b. What are the types of slip surfaces in finite slopes and explain them. (5M)	2	L2
15	a. Explain the Rankine's earth pressure theory on passive earth pressure in cohesionless soils. (5M)	3	L2

	b. A retaining wall, 4 m high supports a backfill ($c = 20KN/m^2$, $\emptyset = 30^0$, $Y = 20KN/m^3$). If the wall is pushed towards the backfill. Compute the total passive pressure on the wall and its point of application. (5M)		
	OR		
16	a. Discuss the principles of the design of retaining walls. (5M) b. A soil mass is retained by a smooth backed vertical wall of 6.0 m height. The soil has a bulk weight of $20KN/m^3$ and $\emptyset = 16^0$. The top of the soil is level with the top of the wall and is horizontal. If the soil surface carries a uniformly distributed load of $4.5KN/m^2$, determine the total active thrust on the wall per linear meter of the wall and its point of application. (5M)	3	L2
17	a. A square footing located at a depth 1.5 m from the ground surface carries a column load of 160 KN. The soil is submerged having an effective unit weight of $11KN/m^3$ and an angle of shearing resistance of 30^0 and $c = 0$. Find the size of the footing using Terzaghi's theory, if $F = 3$. Take $Nc=12$, $N_q = 10$, $N_Y = 6$. (5M) b. A footing 3 m square carries a gross pressure of $380\ KN/m^2$ at a depth of 1.2 m in sand. A saturated unit weight of sand is $20KN/m^3$, and the unit weight above the water table is $17\ KN/m^3$. The shear strength parameters $c = 0$, $\emptyset = 30^0$, $Nc=26$, $N_q= 22$, $N_Y =20$. Determine the factor of safety with respect to shear failure for the following cases. (i) Water table is 5 m below the ground level (5M)	4	L2
	OR		
18	a. Differentiate between the general shear failure and the local shear failure. How the ultimate bearing capacity is determined in local shear failure? (5M) b. A footing 2 m square is laid at a depth of 1.3 m below the ground surface. Determine the net bearing capacity using IS code method. Take $Y= 20\ KN/m^3$, $c=0$. Also take $N_c = 30.14$, $N_q = 18.4$, $N_Y = 22.4$, $S_c = 1.3$, $S_q = 1.2$, $S_Y = 0.80$ (5M)	4	L2
19	a. A square concrete pile (35 cm x35 cm) is driven into homogeneous sand layer ($\emptyset= 30^0$, $Y = 17\ KN/m^3$) for a depth of 10 m. Calculate the ultimate load. Take $K = 1.3$ and $\delta =18^0$. (5M) b. What do you understand by grip length? What is its importance in well foundation? (5M)	5	L2
	OR		
20	Explain various components on well foundation with net sketch. What are their uses? (10M)	5	L2