



R18 Regulation

Subject code:2P6AB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, December 2024

FOUNDATION ENGINEERING

(Civil Engineering)

Maximum Marks: 70

Date:30.12.2024

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 is 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	List out the components of well foundation.	5	L1
10	What are the different methods for driving piles in foundation?	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
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] B)A retaining wall, 4 m high supports a backfill ($c = 20\text{KN/m}^2$, $\phi = 30^\circ$,	3	L2

	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 $\phi = 16^\circ$. 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° and $c = 0$. Find the size of the footing using Terzaghi's theory, if $F = 3$. Take $N_q = 10$, $N_\gamma = 6$, $N_c = 1$. [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 $c = 0$, $\phi = 30^\circ$, $N_q = 22$, $N_\gamma = 20$. Determine the factor of safety with respect to shear failure for the following cases. (i) Water table is 5 m below the ground level Water table is 1.2 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 $N_c = 30.14$, $N_q = 18.4$, $N_\gamma = 22.4$, $S_c = 1.3$, $S_q = 1.2$, $S_\gamma = 0.80$ [5M]	4	L2
19	A)A square concrete pile (35 cm x35 cm) is driven into homogeneous sand layer ($\phi = 30^\circ$, $Y = 17$ KN/m ³) for a depth of 10 m. Calculate the ultimate load. Take $K = 1.3$ and $\delta = 18^\circ$. [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