R22 Regulation *Subject code: 4P7AB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, May 2026

Foundation Engineering

(CE)

Maximum Marks: 60 Date:07.05.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 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 (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	What are the stages of a site investigation?	1M	1	1
b)	Mention any two advantages of geophysical exploration.	1M	1	1
c)	List the assumptions made in the analysis of infinite slopes	1M	2	1
d)	Define the term factor of safety in slope stability.	1M	2	1
e)	Define active, passive, and at-rest earth pressures	1M	3	1
f)	What are the functions of a retaining wall?	1M	3	1
g)	List the different types of shallow foundations	1M	4	1
h)	What is meant by bearing capacity of soil?	1M	4	1
i)	List the different types of piles based on function	1M	5	1
j)	Define negative skin friction	1M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	a. Explain the steps involved in planning and executing a soil investigation programme. b. Explain the procedure of the Plate Load Test	5 5	1	2 2
	OR			
3	Discuss the criteria for selection of foundation type based on soil conditions.	10	1	2
4	a. Explain the Standard Method of Slices and its assumptions. b. Explain the effect of seepage on the stability of infinite slopes.	5 5	2	2 2
	OR			
5	Derive the relationship between height of slope, stability number, and cohesion.	10	2	3
6	State the assumptions of Rankine's earth pressure theory. Derive the expression for passive earth pressure using Rankine's theory.	10	3	3
	OR			

7	Explain the design principles of gravity, cantilever, and counterfort retaining walls.	10	3	2
8	a. Explain the assumptions and limitations of Terzaghi's bearing capacity theory. b. Explain different types of settlements that occur in shallow foundations.	5 5	4	2 2
	OR			
9	Explain different types of settlements that occur in shallow foundations.	10	4	2
10	a. Explain the principle of dynamic pile driving formulae b. Discuss the common problems encountered during well sinking.	5 5	5	2 2
	OR			
11	Determine the ultimate load capacity of a 250 mm diameter pile 8 m long in cohesive soil with $c = 50$ kN/m², $\alpha = 0.7$, and adhesion factor $N_c=9$	10	5	3