Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2023

Subject Code:3160616 Date:15-12-2023

Subject Name: Foundation Engineering

Time:02:30 PM TO 05:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Define the following terms: (1)Gross safe bearing capacity,(2) Net allowable Bearing Pressure, (3) Net safe settlement pressure	**03**
	(b)	What is reconnaissance? What type of information is obtained in reconnaissance?	**04**
	(c)	Explain the procedure for the design of a (1) Strip footing (2) spread footing.	**07**
Q.2	**(a)**	How would you fix the depth of foundation?	**03**
	(b)	What is negative skin friction? What is its effect on the pile?	**04**
	(c)	What are the assumption made in the derivation of Terzaghi's bearing capacity theory? Write the equation for the ultimate bearing capacity.	**07**
		OR	
	(c)	Explain types of retaining walls with neat sketches.	**07**
Q.3	**(a)**	What are the conditions where a pile foundation is more suitable than a shallow foundation?	**03**
	(b)	Discuss the effect of water table on the bearing capacity of the soil.	**04**
	(c)	Enlist test for identification of expansive soil and explain any one.	**07**
		OR	
Q.3	**(a)**	Enlist various dynamic formula for determine pile capacity with their limitations.	**03**
	(b)	How would you decided the depth of exploration and the lateral extent of the investigations?	**04**
	(c)	Describe with a neat sketch wash boring method of sub-soil exploration. What are its merits and demerits?	**07**
Q.4	**(a)**	Explain anchors used in sheet pile walls.	**03**
	(b)	How do you ascertain whether a foundation soil is likely to fail in local shear or in general shear?	**04**
	(c)	Discuss standard penetration test. What are the various corrections? What is the importance of the test in geotechnical engineering?	**07**
		OR	
Q.4	**(a)**	What are the purpose of foundation?	**03**
	(b)	Discuss characteristics of expansive soils.	**04**
	(c)	Describe free swell test	**07**
Q.5	**(a)**	Enlist various pile driving hammers.	**03**
	(b)	Differentiate between general shear failure and local shear failure.	**04**
	(c)	Describe various types of pile foundations.	**07**
		OR	

Q.5	**(a)**	Differentiate between strip footing and strap footing.	**03**
	(b)	How would you estimate the group capacity of piles in (1) sand (2) clay?	**04**
	(c)	Explain in details the types of failure of pile group.	**07**

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