Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BArch- SEMESTER– 6 EXAMINATION – SUMMER 2016

Subject Code: 1065004   **Date: 11/05/2016**
Subject Name: Structure – VI
Time: 10: 30 am - 12: 30 pm   **Total Marks: 50**
Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Use of IS – 456 & IS -3370 is permitted**

Q.1	**(a)**	Explain (1) Combined rectangular footing (2) Combined trapezoidal footing (3) Strap footing and (4) Raft footing.	**06**
	(b)	Draw typical bending pattern, shear force and bending moment diagram for combined rectangular footing.	**04**
	(c)	Design effective depth of a rectangular footing for two columns A and B carrying loads of 500 kN and 700 kN respectively. Column A is 300 mm X 300 mm and column B is 400 mm X 400 mm in size. The centre to centre spacing of the columns is 3.4 m. The SBC of soil is 150 N/mm^2. Use M 20 concrete and Fe 415 grade steel.	**10**
Q.2	**(a)**	Draw sketch showing behavior of various components, deflection profile and reinforcement details for counter fort retaining wall.	**06**
	(b)	Explain with diagram stability condition (1) Against overturning (2) Against sliding and (3) Maximum pressure and no tension at base for cantilever retaining wall.	**06**
	(c)	Describe active earth pressure by Rankine Theory (1) Dry and moist backfill with no surcharge (2) Submerged soil (3) Backfill with uniform surcharge (4) Backfill with sloping surcharge and (5) Inclined backfill and surcharge	**10**

OR

	(c)	Design a thickness of stem of a cantilever retaining wall having 3 m high embankment above ground level. Unit weight of soil = 18 kN/m^3.The angle of repose = 30^0. The SBC of soil = 100 kN/m^2.The coefficient of friction = 0.5. Use M 20 concrete and Fe 415 steel	**10**
Q.3		Write short note on: (1) Grillage foundation (2) Raft foundation (3) Inverted arch foundation (4) Eccentric loading on foundation.	**08**

OR

Q.3		Fix the basic dimensions and design the top dome of Intze type of elevated water tank to store 9 Lac liters. The height of staging = 16 m. The SBC of soil = 150 kN/ m2. The intensity of wind pressure = 1500 N / m^2. Use M 20 concrete and Fe 415 steel. Sketch the dimensions of Intze tank.	**08**

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