Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.ARCH. - SEMESTER–IV EXAMINATION – WINTER 2015

Subject Code: 1045003 **Date: 14/12/2015**

Subject Name: Structure IV

Time: 2:30pm to 4:30pm **Total Marks: 50**

Instructions:

1. **Attempt all questions.**
2. **Make suitable sketches wherever necessary.**
3. **No other material than IS 456 is allowed.**

Q.1	**(A)**	State Minimum steel required for a column size 500 X 600 mm.	**02**
	(B)	Give limits of reinforcement size for Mild Steel (Plain bars), Deformed steel bars, TMT bars.	**03**
	(C)	Give minimum grades of concrete for Different exposure conditions.	**05**
	(D)	Explain Clear cover, Effective cover, Clear span and Effective span with neat figure	**05**
Q.2	**(A)**	Explain various types of Slabs with neat sketches.	**05**
	(B)	Simply Supported 5 m effective beam has effective cross section 230 X 550 mm is reinforced with 4 number of 16 mm dia. Find total limit state load carried by the beam if Fe 415 steel and M20 grade of concrete is used.	**10**
		OR	
	(B)	Design a rectangular beam having 250 mm width as per IS 456 – 2000. The beam is simply supported on effective span of 4.5m. The UD Load including self weight is 20 kN/m. Sketch the detailing of the designed beam. Take M20 grade concrete and Fe – 415 steel. Take partial safety factor = 1.5 for load.	**10**
Q.3	**(A)**	Explain various types of deep footings with neat sketches.	**10**
		OR	
	(A)	Design a square footing for isolated column 500 mm X 500 mm size carrying an Axial load of 1600 KN. SBC of soil is 200 KN/m2. Take M20 grade concrete and Fe – 415 steel. Check for shear is not required.	**10**
Q.4	**(A)**	Explain the structural classification of Stair Cases with neat sketches.	**10**
		OR	
	(A)	Design a square RCC short column subjected to axial load of 600,000 N. Take M20 grade concrete and Fe –500 steel. Draw reinforcement details. Provide 1% steel. Take partial safety factor = 1.5 for load.	**10**

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