## Paper / Subject Code: 31821 / Theory of Reinforced Concrete Structures

TECCIVIL) | SEM I | R-19 | SH-22 | 22.11.22

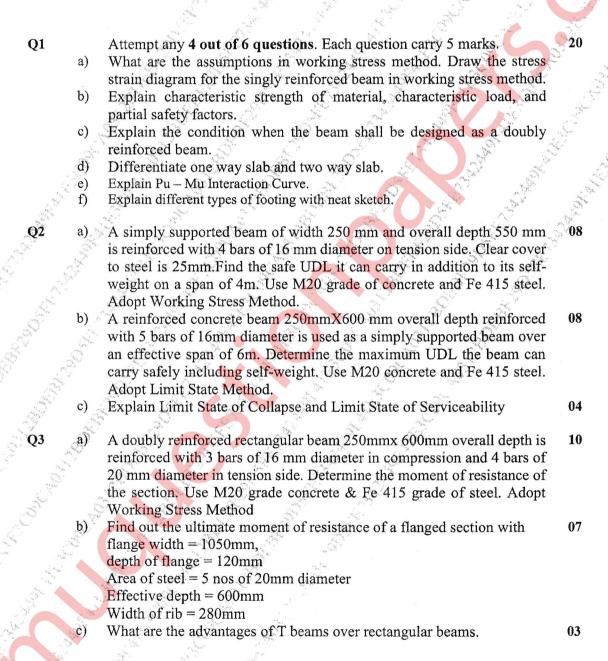
& P CODE: 100/2538

Max. Marks: 80

## Please Note:

Time: 3-hour

- 1. All questions carry equal marks
- 2. Question one is compulsory
- 3. Attempt any three out of remaining questions
- 4. Use of IS codes is permitted
- 5. Assume suitable data if required and state if clearly.



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Q4	a)	Design shear reinforcement for a beam of 280mmX 450mm effective 10
ν.	,	depth carrying a factored load of 30kN/m over a span of 6m. It is
		reinforced with 1256mm <sup>2</sup> steel. Use M20grade of concrete and Fe 415
		steel. Adopt Limit State Method.
	b)	Design a slab for a hall of size 7m X 3m clear span. The slab is simply
		supported on 230mm wall on all the four sides. Consider live load as
		4kN/m <sup>2</sup> and floor finish as 1kN/m <sup>2</sup> . Assume M20 grade of concrete and
		Fe 415 steel. Draw Reinforcement details. Adopt Limit State Method.
		Design a short circular column with helical reinforcement to carry an 10
Q5	a)	Design a short chedial column with hencul formerodates
		ultimate load of 2100kN. Use M20grade of concrete and Fe 415 steel.
		Draw Reinforcement details. Adopt Limit State Method  Final State Method
	b)	Explain the need of transverse reinforcement in columns. How can you
		differentiate short column and long column.
	c)	Write a note on one way shear and two way shear in looting.
~ -		Design a short square column to carry an ultimate load of 1800kN. The 08
Q6	a) -	Design a short square column to carry an utilinate load of Toodkiv. The
		column is 4m long effectively field in position out not restrained against
3	S.	
	\$ <b>L</b> \	Reinforcement details. Adopt Little State Welflood
10/2	(O	Design a square footing for a short axiany fooded column of size
	40	350mm A550mm, carrying working road of 700km. Osc 19120 grade of
7	. N	
Q6	c) a) b)	differentiate short column and long column. Write a note on one way shear and two way shear in footing.