



## BRAINWARE UNIVERSITY

## Term End Examination 2022 Programme – Dip.CE-2019 Course Name – Design of RCC Structures Course Code - DCE503 ( Semester V )

Full Marks: 60 Time: 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

**Group-A** (Multiple Choice Type Question) 1 x 15=15 Choose the correct alternative from the following: (i) In a T-beam, the vertical distance between the bottom of the flange and the centre of the tensile reinforcement is known as the a) breadth of flange b) thickness of flange c) breadth of slab d) depth of rib (ii) The pitch of bars of main reinforcement in solid slab should not exceed the effective depth of slab or 60 cm whichever is smaller a) double b) three times c) five times d) six times (iii) When the steel bars are embedded in concrete, the concrete after setting, adheres to the surface of the bars and thus resist any force that tends to pull or push this rod. The intensity of this adhesive force is called a) bond stress b) shear stress c) compressive stress d) none of these (iv) In reinforced cement concrete structures, the steel reinforcement consists of a) Deformed bars b) Cold twisted bars c) Mild steel and medium tensile steel bars d) All of these (v) The modular ratio is the ratio of a) Young modulus of steel to the young b) young modulus of concrete to the young modulus of concrete modulus of steel c) load carried by concrete to the load carried d) None of these (vi) For a longitudinal reinforcing bar in a column, the cover should not be less than a) 10 mm b) 20 mm c) 30 mm. d) 40 mm (vii) In singly reinforced beams, steel reinforcement is provided in

b) compressive zone

d) neutral zone

a) Tensile zone

c) both tensile and compressive zones

(viii) The purpose of lateral ties in short reinforced concrete columns is to

a) facilitate construction	b) facilitate compaction of concrete		
c) avoid buclking of longitudinal bars			
The longitudinal shearing stresses acting on the concrete are called			
	b) tensile stresses		
	( V )   10   10   10   10   10   10   10		
	•		
		•	
c) mechanical resistance	d) all of these		
In a doubly reinforced beam, steel reinforcem	ent is provided in a		
a) tensile zone	b) compression zone		
	, , , , , , , , , , , , , , , , , , , ,	_	
increases only by about	ed, the moment of resistance of the bean	1	
a) 0.12	b) 0.22		
c) 0.32	d) 0.42		
	boutof its compressive		
_	h) 15 to 20%		
c) 20 to 25%	d) 25 to 30%		
) In an over reinforced section	, -		
a) (a) steel reinforcement is not fully stressed	, , ,	ts	
	-1 2000 E		
cy ettiler (a) or (b)	d) both (a) and (b)		
	•		
(Short Answer	Type Questions)	3 x 5=15	
Explain the Modulus of elasticity of concrete.		(2)	
3. Explain what do you mean by Long Column & Short Column.		(3) (3)	
		(3)	
		(3)	
Write short note on splices in tensile reinforcen	nent.	(3)	
6. How do you prevent minimum shear reinforcements?		(3)	
one and property or good a some success com-	crete reimorcement.	(3)	
Gre	oup-C		
(Long Answer	Type Questions)	5 x 6=30	
RCC structures.		(5)	
Explain what is a balanced section, under rein	forced section & Over reinforced section.	(5)	
9. Write short note on over reinforced sections.		(5)	
	OR	(5)	
Explain what is doubly reinforced sections?		(5)	
Define single reinforced &double reinforced b		(5)	
Differentiate between one-way slab and two-		(5)	
		(5)	
	The longitudinal shearing stresses acting on the concrete are called a) bond stresses c) compressive stresses The spacing of vertical stirrups in a rectangular a) maximum near the supports c) maximum near the centre The bond between steel and concrete is main a) pure adhesive resistance c) mechanical resistance ln a doubly reinforced beam, steel reinforcem a) tensile zone c) either (a) and (b) lf the area of tensile steel reinforced is double increases only by about a) 0.12 c) 0.32 Normally the tensile strength of concrete is a strength a) 10 to 15% c) 20 to 25% ln an over reinforced section a) (a) steel reinforcement is not fully stressed to its permissible value c) either (a) or (b)  Grace (Short Answer  Explain the Modulus of elasticity of concrete. Explain what do you mean by Long Column & Siexplain What is characteristic load? Classify the criteria recommended by IS 450-20  Write short note on splices in tensile reinforcement on your prevent minimum shear reinforcement. Give the property of good a bond between considered the property of g	d) increase the load carrying capacity column The longitudinal shearing stresses acting on the surface between the steel and concrete are called a) bond stresses b) tensile stresses The spacing of vertical stirrups in a rectangular beam is a) maximum near the supports b) minimum near the supports c) maximum near the centre b) minimum near the centre The bond between steel and concrete is mainly due to a) pure adhesive resistance b) frictional resistance c) mechanical resistance b) frictional resistance c) mechanical resistance b) compression zone c) either (a) and (b) d) both (a) and (b) If the area of tensile steel reinforced is doubled, the moment of resistance of the bean increases only by about a) 0.12 b) 0.22 d) 0.42 c) 0.32 b) 0.22 d) 0.42 c) 0.32 b) 15 to 20% d) 25 to 30% d) 10 to 15% b) 15 to 20% d) 25 to 30% d) 10 an over reinforced section a) (a) steel reinforcement is not fully stressed to its permissible value c) either (a) or (b) d) both (a) and (b)  Group-B (Short Answer Type Questions)  Explain the Modulus of elasticity of concrete. Explain what do you mean by Long Column & Short Column. Explain What is characteristic load? Classify the criteria recommended by IS 450-2000 for cover to reinforcement? OR  Write short note on splices in tensile reinforcement. How do you prevent minimum shear reinforcements? OR  Group-C (Long Answer Type Questions)  Write a short note on different kinds of loads to be taken into account for the design of RCC structures. Explain what is a balanced section, under reinforced section & Over reinforced section. Write short note on over reinforced sections. OR  Give the property of good a bond between concrete reinforced section & Over reinforced section. Write short note on over reinforced sections. OR Croup-B (Short Note on splices in tensile reinforcement.	

12. How to select cross sectional dimensions for beams?	*	(5)
OR		
Briefly explain about partial safety factor.	·	(5)

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