Reg. No. : | | | | | | | | | | |

Question Paper Code: 55103

B.E./B.Tech. DEGREE EXAMINATION, SEP 2020

Fifth Semester

Civil Engineering

15UCE503- DESIGN OF REINFORCED CONCRETE ELEMENTS

(IS456-2000 and SP16 Permitted)

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any Six of the following Questions)

1. As per limit state method, Minimum percent of reinforcement in a RC slab in either direction is CO1- R

   (a) 0.18 (b) 0.16 (c) 0.14 (d) 0.12

2. If $M_{ulim} > M_u$,the beam shall be designed a CO1- R

   (a) Singly Reinforced Section (b) Doubly Reinforced Section

   (c) Balanced Section (d) Under reinforced section

3. A R.C.C. beam not provided with shear reinforcement may develop cracks in its bottom inclined roughly to the horizontal at CO2- R

   (a) 25^o (b) 35^o (c) 45^o (d) 55^o

4. The width of the flange of a T-beam, which may be considered to act effectively with the rib depends upon CO2- R

   (a) Breadth of the rib (b) Overall thickness of the rib

   (c) Span of the T-beam (d) All of the above

5. The minimum diameter of the longitudinal bars in an RCC column should not be less than _____ CO3- R

   (a) 12mm (b) 16mm (c) 20mm (d) 25mm

6. The diameter of longitudinal bars of a column should never be less than CO3- R

   (a) 6mm (b) 8mm (c) 10mm (d) 12mm

7. In a combined footing if shear stress exceeds 5 kg/cm^2, the nominal stirrups provided are CO4- R

(a) 6 legged (b) 8 legged (c) 10 legged (d) 12 legged

8. _____ footing is used in load bearing masonry construction. CO4- R

(a) Strip (b) Isolated (c) Combined (d) Pile

9. The minimum width of riser and tread for a building is _____ CO4- R

(a) 150mm & 250mm (b) 250mm & 150mm (c) 350mm & 1.8m (d) 200mm & 2m

10. On an absolutely rigid foundation base, the pressure will be CO4- R

(a) More at the edge of the foundation (b) Uniform

(c) Not uniform (d) Zero at the centre of footing

PART – B (3 x 8 = 24 Marks)

(Answer any Three of the following Questions)

11.	Explain the working stress and limit state methods of design of RC structures.	CO1- U	(8)
12.	Write down the step by step procedure for a Flanged beam section in Limit state method.	CO2- App	(8)
13.	Design the reinforcement in a circular column of diameter 350mm with lateral reinforcement of 8mm diameter to support a factored load of 1400 kN. The column has an unsupported length of 3.5m and is braced against side sway. Adopt M20 grade concrete and Fe415 steel bars.	CO3- Ana	(8)
14.	Write the step by step by design procedure for combined footing.	CO4- U	(8)
15.	Discuss about the various types of footings.	CO5- U	(8)