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

Question Paper Code: 59713

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

Fifth Semester

Civil Engineering

15UCE503 – DESIGN OF REINFORCED CONCRETE ELEMENTS

(Regulation 2015)

Duration: One hour Maximum: 30Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. For R.C.C. member of beam submerged under sea water, the cover should be more than the specified value by CO1- R

   (a) 10 mm (b) 40 mm (c) 20 mm (d) 60 mm

2. Effective cover of the beam depends on CO1- U

   (a) Diameter of main reinforcement (b) Grade of main reinforcing steel

   (c) Width of the beam (d) All of the above

3. For simply supported slab of span 8m, the basic value of L/d value is CO2-R

   (a) 20 (b) 10 (c) 7 (d) 15

4. Unit weight of concrete is CO2- R

   (a) 25kN/m^3 (b) 10kN/m^3 (c) 15kN/m^3 (d) 1.5kN/m^3

5. According to IS 456 :2000 minimum area of longitudinal reinforcement of rectangular column of size b X D are CO3- U

   (a) 0.008BD (b) 0.008bD (c) 0.006 BD (d) 0.006bD

6. long column is one whose ratio of effective length to least lateral dimension exceed CO3- R

   (a) 5 (b)10 (c) 12 (d) 20

7. In design of isolated footing, the minimum percentage of steel provided to be CO4- U

   (a) 0.12% (b) 0.8% (c) 1% (d) 85/f_y %

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

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

9. If *T* and *R* are tread and rise respectively of a stair, then CO5- U

(a) 2R + T = 60 (b) T + 2R = 60 (c) 2R + T = 30 (d) 2T + R = 30

10. In a staircase, the vertical part of the step is called CO5- U

(a) Riser (b) Tread (c) Tread (d) Waist

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11.	A simply supported over an effective span of 8m carries a live load of 15KN/m. design the beam, using M20 concrete and Fe415 grade steel. Keep the width equal to half the effective depth. Use working stress method of design.	CO1- E	(8)
12.	Design tensional reinforcement in a rectangular beam section, 350mm wide 750mm deep, subject to an ultimate twisting moment of 140 KNm combined ultimate shear force of 110KN. Bending Moment = 25kNm, Assume M-25 grade concrete, Fe415 grade steel and mild exposure condition.	CO2- Ana	(8)
13.	Discuss various assumptions used in the limit state methods of design of compression members.	CO3- U	(8)
14.	Design a suitable footing for a 500 mm x 500 mm square column transferring 100kN axial load and a moment of 35kN-m.The safe bearing capacity of soil is 190 kN/m^2 .Use M20 concrete and Fe415 steel. Adopt limit state design method.	CO4- Ana	(8)
15.	Design a dog legged stair for a building in which vertical distance between floor is 3.6m.Assume any relevant data.	CO5- E	(8)