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

# Question Paper Code: 35101

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

Fifth Semester

Civil Engineering

01UCE501 – DESIGN ON REINFORCED CEMENT CONCRETE AND MASONRY STRUCTURES

(Regulation 2013)

Duration: 1.15 hrs Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

1. In working stress method, the modular ratio '*m*' for M20 grade of concrete is

   (a) 11 (b) 9.33 (c) 13.33 (d) 18.67

2. Partial safety factor for concrete in limit state method is

   (a) 1.2 (b) 1.15 (c) 1.4 (d) 1.5

3. The maximum spacing of vertical shear reinforcement in beams shall not exceed

   (a) 0.5 times effective depth (b) 0.75 times effective depth
   (c) 0.4 times effective depth (d) 0.6 times effective depth

4. The design bond stress of plain bars in tension in M30 grade of concrete is

   (a) 1.5 (b) 1.2 (c) 1 (d) 1.4

5. The behaviour of one way slab of unit width in flexure is similar to the behaviour of

   (a) column (b) footing (c) beam (d) wall

6. The analysis of slab spanning in one direction is done by assuming it to be a beam of

   (a) l *m* length (b) l *m* width
   (c) 1 $m^2$ area (d) none of these

7. The slenderness ratio of a RCC long column is greater than

   (a) 20 (b) 15 (c) 12 (d) 16

8. When the ratio of effective length of the column to its least lateral dimension does notexceed12, it is termed as a

(a) long column (b) short column
(c) plain column (d) none of these

9. The Name of the code used for the design of masonry structures is

(a) IS 456 (b) SP 16 (c) IS 1905 (d) IS 800

10. Which of the following expression is/are wrong for determining the effective height of masonry pier/wall?

(a) 0.5 L (b) 1.5 L (c) 1 L (d) none of these

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. Explain the advantages of limit state method over other methods. (8)

12. Design a *T*-beam for an office floor using following data: Effective span = 8*m*, spacing between *T* beams = 3*m*, live load and floor finish are $4kN/m^2$ and 0.6 $kN/m^2$ respectively and also slab thickness = 150*mm*. Draw a reinforcement details. (8)

13. Design a slab for an office building of size 4 *m* x 6 *m*, live load = 5 $kN/m^2$, floor finishes = 1.5 $kN/m^2$ and edge conditions are two adjacent edges discontinuous. Draw a reinforcement detailing for the slab. (8)

14. Design a combined footing with strap beam for two reinforced concrete column of size 300 *mm* x 300 *mm* spaced 4 *m* centre to centre, and each supporting a service axial load of 500 *kN*. The safe bearing capacity of soil at site is 150 $kN/m^2$. Draw reinforcement detailing for the footing. (8)

15. Design an interior cross wall to two storied building to carry 100 *mm* thick RCC slab with 3.0 *m* ceiling height. The wall is un-stiffened and its supports a 2.65 *m* wide slab. The live load on roof – 1.50 $kN/m^2$, live load on floor – 2.0 $kN/m^2$, weight of 80 *mm* thick terrace – 1.96 $kN/m^2$. Weight on floor finish - 0.20 $kN/m^2$. (8)