C16-C-501

5816

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH / APRIL - 2019

DCE - V SEMESTER EXAMINATION

REINFORCED CONCRETE STRUCTURES

Time : 3 Hours] [Total Marks : 80

PART - A

3×10=30

Instructions : *(1) Answer ALL questions.*
(2) Each question carries THREE marks.
(3) Answer should be brief and straight to the point.

1 Define the term limit state design.

2 State the different limit states.

3 Write down any three assumptions made in designing the RCC sections by limit state method.

4 Define the term ultimate maximum depth of neutral axis.

5 List the types of slabs based on support condition.

6 Define the term one-way slab.

7 Write down the formula for effective flange width of T-beam.

8 Define the term continuous beam .

9 Write down the formula to find out effective span of continuous beam.

10 Define the term long column.

PART - B

10×5=50

Instructions : *(1) Answer any FIVE questions.*
(2) Each question carries TEN marks.
(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

11 A RCC beam of size 250 × 600 mm overall depth is reinforced with 4 bars of, 20 mm diameter as tension reinforcement. The center of the bars being 50 mm from the bottom of the beam. Use M20 grade concrete and Fe415 grade steel. Find out the moment of resistance by the working stress method ?

12 A singly reinforced beam of section 200 × 400 mm is reinforced with 4 bars of 16 mm diameter. The beam is simply supported over a span of 3 m. Find the safe uniformly distributed load the beam can carry by limit state method? Use M20 concrete and Fe415 steel.

13 A cantilever beam of span 2m carries a UDL of 20 kN/m over entire span and point load of 10 kN at free end. Design the beam using M25 concrete and 415 steel ?

14 Design a simply supported RCC slab for an office floor having clear dimensions of 4 ×10 m with 230 mm walls all round. Adopt M 20 grade concrete and Fe 415 steel. Take live load as 4 kN/m^2 and floor finishes 0.6 kN/m^2.

15 A RCC singly reinforced concrete simply supported T-beam has a flange of 750 mm width and 120 mm thickness and is having area of steel of 3500 mm square provided at an effective depth of 450 mm and width of web is 250 mm. Calculate the moment of resistance of the section using M20 concrete and Fe 415 steel.

16 A continuous beam of size 300 mm × 500 mm overall depth and having three spans is supported on 300 × 300 mm masonry columns at clear intervals of 4 m. The beam carries a dead load of 20 kN/m including self weight and imposed load of 12 kN/m. Use M20 and Fe 415 grade steel. Design the reinforcement at support next to end support and interior supports ?

17 Design a short reinforced concrete circular column with lateral ties to carry an axial load of 1500 kN ? Use M25 concrete and Fe 415 grade steel.

18 A RC column of size 400 × 400 mm carries a load of 1000 kN. The safe bearing capacity of soil is 200 kN/m^2. Design an isolated square column footing of uniform thickness ? Use M20 concrete and Fe415 steel.

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