

Numerical Question Bank

RCC-1 (CE-504) Semester: 5TH

INSTRUCTIONS. 1. All questions with their solution are submitted till 27 October 2014.

NOTE; Use of IS Code 456-2000 is permitted , assume any missing data suitably.

1. Find the moment of resistance of a RC beam 200 mm wide and 450 mm deep . the beam is reinforced with 3-12mm diameter bars in tension zone . the effective cover to the reinforcement is 35mm , Grade of concrete is M20 and Grade of steel is Fe 250.
2. Effective span of the beam is 5.0 m .and the beam is subjected to uniformly distributed load of 20 KN/M acting over its span design a reinforced beam with cross section of 200mm x300mm. Exposure condition is moderate.
3. Find the moment of resistance of beam 25cm by 50cm deep if it is reinforced with 2-12 mm bars in compression zone and 4-20 mm bars in tension zone each an effective cover of 40mm .Assume (i) M15 mix and Fe 250 grade steel (ii)M15 mix and Fe 415 steel
4. Design an simply supported slab for room 7.5m x3.0m clear in size if the live load is 4 KN/m². The slab is supported on 230mm thick wall .
5. Design a simply supported slab for a room 5.0m x 3.0m clear in size if the live load is 2 KN / m² and Corners are held down
6. Design a column with square section for an axial load of 1200 KN . Also design the isolated footing for the column if safe bearing capacity of soil is 150 KN/m². Exposure condition is mild
7. Design isolated footing for the column subjected to an axial load of 1500 KN . Take Safe Bearing capacity of soil as 120 KN/ m².
8. Design a dog legged staircase to be provided in a residential multi Storeyed building. Clear space available is 2.4 m x 4.8 m . Height of each flight is 1.5 m and floor height is 3.0 m . length of landing is 1.5 m and floor to floor height is 3.0 m . Length of landing on either side along the direction of flight is 1.0 m . Take Live load as 3 KN/ m²

9. Design the waist slab type staircase comprising comprising a straight flight of steps, supported between two stringer beam along the two sides given RISER = 150MM, TREAD= 300 MM width of staircase = 2.0m, width of beam = 300 mm. Assume a LIVE load of 5.0 KN/m² and moderate exposure condition.

10. Design a dog legged stairs to be provided in a residential multi storeyed building. clear space available is 3m x 4.8m. Floor to floor height is 3.6 m. length of landing on either side along the direction of flight is 1.2 m. exposure condition is moderate.

11. design a simply supported beam for a room 5m x 4m clear in size if the live load 2KN/m² and corner held down.

12 Design an rectangular column subjected to an axial load of 3500 KN and uniaxial moment of 40 KN-m

13 Design an simply supported slab for room 8.5m x3.0m clear in size if the live load is 10 KN/m². The slab is supported on 260 mm thick wall.

14 design an isolated footing for a column subjected to an axial load 2400KN and uniaxial moment of 60 KN –m.

15. Effective span of the beam is 8.0 m .and the beam is subjected to uniformly distributed load of 40 KN/M acting over its span design a reinforced beam with cross section of 300mm x400mm. Exposure condition is moderate.