SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : DDRCS(13A01502) **Course & Branch**: B.Tech - CE

Year & Sem: III-B.Tech & I-Sem **Regulation:** R13

UNIT – 3

SLABS

1. Design a simply supported two way slab for the roof of a room of clear dimensions 3 m x 3 m using M25 grade concrete and Fe415 grade steel. The corners are not prevented from lifting. Width of supporting walls around is 320 mm. Live load on the slab is 1.5kN/m^2 weight of weathering course is 1.75kN/m^2.
2. Design a simply supported roof slab for a room 7.5 m x 3.5 m clear in size. The slab is carrying an imposed load of 5 kN/m^2. Use M20 concrete and Fe415 steel.
3. Design a cantilever slab for an overhanging of 1.2 m . The imposed load on slab consists of 1 kN/m^2 of live load and weight of finishing is 800 N/m^2. Use M20 concrete and Fe415 steel.
4. Design a reinforced concrete slab for a hall measuring 8 m x 16 m. The slab is supported on RCC beams 250 mm wide and spaced at 4 m c/c. The superimposed load is 4 kN/m^2. Use M20 concrete and Fe415 steel. Bearing of beam is 200 mm.
5. Design a one wall continuous slab supported on T- beams spaced 3.25 m c/c. The live load on the slab is 2 kN/m^2. Use M20 concrete and Fe 415 steel.
6. Design a slab over a room 4 m x 6 m as per IS code. The edge of the slab are simply supported and the corner are not held down. The live load on the slab is 3 kN/m^2. The slab has a bearing of 150 mm on supporting walls. Use M20 concrete and Fe415.
7. Design a slab over a room 4.5 m x 6 m as per IS code. The slab are simply supported on masonry walls all round, with adequate restrained at corners are held down. The live load on the slab is 3 kN/m^2. The slab has a bearing of 150 mm on supporting walls. Use M20 concrete and Fe415.
8. Design a simply supported roof slab for a room 8 m x 3.5 m clear in size. If the super imposed load is 5 kN/m^2. Use M20 concrete and Fe415 steel.
9. Design a continuous one way slab having three equal spans of 3 m each with the following data: imposed load = 2.5 kN/m^2, grade of concrete M25 and Fe 500 steel.
10. Design a two way slab for a room 5.5 m x 4 m clear in size. If the super imposed load is 5 kN/m2. Use M25 concrete and Fe 415 steel. Edges of simply supported – corners not held down.

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QUESTION BANK (OBJECTIVE)

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1. A reinforced concrete slab is 75mm thick. The maximum size of reinforcement bar that can be used is [ ]
a) 12mm dia b) 10mm dia c) 8mm dia d) 6mm dia
2. In the design of two ways slab restrained at all edges, torsion R.F required is [ ]
a) 0.75 times the area of steel provided at mid-span in the same direction
b) 0.375 times the area of steel provided at mid-span in the same direction
c) 0.75 times the area of steel provided in the shorter span
d) Nil
3. A square slab 4mx4m is a simply supported slab. If it is subjected to a design load of 12kpa (including self weight) the moment capacity required as per IS: 456-2000; use $\alpha_x = \alpha_y = 0.062$
a) 11.9kN-m b) 15kN-m c) 28kN-m d) 35kN-m [ ]
4. The B.M coefficients for continuous RC slabs in IS; 456 is based on [ ]
a) Pigeaud's method b) Marcu's method
c) Yield-line theory d)Westergaarisd's mathematical analysis
5. As per IS: 456-2000 the vertical deflection limit for beams may generally be assumed to be satisfied provided that ratio of span to effective depth of a continuous beam of span 12m is not to be greater than [ ]
a) 35 b) 26 c) 21. 67 d) 31.2
6. In case of two-way slab the deflection of the slab is [ ]
a) Primary function of the long span b) primary function of short span
c)Independent of span, short or long d) Most long span but sometimes short span
7. The moment coefficients inIS:456-2000 for simply supported two slabs are based on [ ]
a) Rankine-Grashoff theory b)Rankine-Grashoff theory with Marcus corrections
c) Yield line theory d)Westgaards mathematical analysis
8. The minimum thickness of a flat slab required according to IS:456-2000 is [ ]
a) 125mm b) 150mm c) 100mm d) 200mm
9. The continuous slab designed according to moment coefficients given by IS:456-2000 should be
a) One way slab b) two way slab c) any type d) two way restrained slab [ ]
10. Drops are provided in flat slabs to resist [ ]
a) Bending moment b) shear c) thrust d) torsion
11. For maximum sagging bending moment in a given span of a multiple span beam [ ]
a) Every span as well as alternate spans are loaded
b) adjacent spans are loaded

c) Spans adjoining this span are loaded
d) adjacent spans are unloaded and next spans are loaded

12. The amount of torsion reinforcement required for a two way simply supported slab is where Ast_{xx} ws the main reinforcement in the shorter direction [ ]
a) $3/4Ast_{xx}$ b) $1/4\ Ast_{xx}$ c) $0.75\ Ast_{xx}$ d) Ast_{xx}

13. The nominal cover required for a slab having mid exposure, with a diameter of reinforcing bars used equal to 10mm should be not less than [ ]
a) 20mm b) 25mm c) 20mm d) none

14. A rectangular slab 4mx6m supported on two opposite shorter edges should be designed as [ ]
a) A one way slab spanning along longer edges b) a two way slab
c) A one way slab spanning along shorter edges d) none

15. The negative moment in a two way restrained slab should be provided over [ ]
a) Discontinuous edge b) continuous edge c) both a and bd) none

16. The thickness of slab depends on (I=eff.Length;d=eff.depth) [ ]
a) 1/d radius b) dia of bar used c) spacing of reinforcement d) none

17. The minimum reinforcement in a slab takes care of [ ]
a) Temperature & shrinkage stress b) homogeneity of slab
c) support to main reinforcement d)all the above

18. The moment coefficients given in IS: 456-2000 for simply supported two-way slabs are based on
a) Rankine-Grashoff's method b) westergaarrd's method [ ]
c) johansen's yield line theory d) Bernoulie's theory

19. The main reinforcement in RCC cantilever beam is placed at [ ]
a) Top face along the span b) bottom face along the width
c) Top face perpendicular to width d) bottom face perpendicular to width

20. The bending moment coefficients given in IS456-2000 for two way restrained slab is based on
a) Rankine- Grashoff's method b) westergaarrd's method [ ]
c) Johansen's yield line theory d) plate theory

21. The plaster thickness of the ceiling of slabs [ ]
a) Can be included in the cover to the reinforcement
b) Should not be included in the cover
c) provides nominal cover
d) None of the above

22. The minimum percentage of high yield strength deformed bars in RCC slabs are [ ]
a) 0.4 b) 0.15 c) 0.12 d) 0.23

23. The torsional reinforcement in a two way restrained slab required for a corner with two continuous edges will be [ ]
a) 0.75 times the area of steel provided at midspan in the same direction
b) 0.375 times the area of steel provided at midspan in the same direction
c) 0.75 times the area of steel provided in the shorter span d) nil

24. In a two way restrained slab torsion steel is provided at [ ]
a) Top b) Bottom c) a and b d) none

25. The critical section for shear in a flat slab is at a distance of, (d=effective depth) [ ]
a) Effective depth from the face of a column or column drop

b) d/2 from the periphery of column or capital or drop
c) at the drop panel of a slab
d) at the periphery of the column

26. A simply supported slab of 10m effective span, the minimum effective depth to satisfy the vertical deflection limits should be [ ]
a) 50mm b) 75mm c) 60mm d) 90mm

27. In a two way slab lifting of corners occur due to [ ]
a) Resultant shear force at the ends b) torsional moment on the slab
c) Resultant stress at the ends d) unbalanced moment on the slab

28. The permissible value of deflection foe a two-way simply supported slab with shorter span less than 3.5m and the live load is less than $3kN/m^2$ using deformed bars is [ ]
a) 35 b) 28 c) 40 d) 32

29. Which one of the following statement is correct? Temperature and shrinkage steel is provided in reinforced concrete slabs because [ ]
a) It occupies larger area b) its thickness is less
c) It is a main structural element d) it is a flexure member

30. The maximum diameter of bar in a 200mm thick concrete slab is [ ]
a) 12mm b) 16mm c) 20mm d) 25mm

31.The final deflection of horizontal members below the level of casting should not exceed [ ]
a) span/200 b) span/250 c) span/300 d) span/350

32. The limiting tensile strain of concrete is of the order [ ]
a) 0.0002 to 0.0005 b) 0.0030 to 0.0004 c) 0.002 to 0.003 d) 0.003 to 0.004

33. Secant modulus E_c= [ ]
a) $500\sqrt{fck}$ b) $50\sqrt{fck}$ c) $50000\sqrt{fck}$ d) $5000\sqrt{fck}$

34. Basic value of span to effective depth ratio for continuous beam is [ ]
a) 7 b) 20 c) 26 d) 32

35. The ratio of span to total depth for a singly supported two way slab of short span less than 3.5+m and loading cross upto $3KN/m^2$ using deformed steel is [ ]
a) 35 b) 28 c) 40 d) 22

36. As tension steel increases, the deflections [ ]
a) Increase b) decrease c) doesn't change d) are independent of tension steel

37. As compression steel increases, the deflections [ ]
a) Increase b) decrease c) doesn't change d) are independent of tension steel

38. The maximum deflection for a beam at service condition is---- [ ]
a) Span/250 b) span/350 c) 20mm d) both b & c

39. The young's modulus to determine creep deflection is given by [ ]
a) Effective modulus, E_{ce} b) short term modulus, E_c c) modulus of steel, E_s d) none

40. A simple supported beam of effective span 4m. Minimum deflection with the modification factor for tension steel and compression steels are respectively 1.1 & 1.2 is given by [ ]
a) 150mm b) 200mm c) 115mm d) 60mm

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