

**Q.1. The main reinforcement of a RC slab consists of 10 mm bars at 10 cm spacing. If it is desired to replace 10 mm bars by 12 mm bars, then the spacing of 12 mm bars should be**

- A• 12 cm**
- B• 14 cm**
- C• 14.4 cm**
- D• 16 cm**

**Q.2. Yield line theory results in**

- (a) Elastic solution**
- (b) Lower bound solution**
- (c) Upper bound solution**
- (d) Unique solution**

**Q.3. Shrinkage deflections in case of rectangular beams and slabs can be eliminated by putting**

- (a) compression steel equal to tensile steel**
- (b) compression steel more than tensile steel**
- (c) compression steel less than tensile steel**
- (d) compression steel 25% greater than tensile steel**

**Q.4. In case of 2-way slab, the limiting deflection of the slab is**

- (a) primarily a function of the long span**
- (b) primarily a function of the short span**
- (c) independent of long or short span**
- (d) dependent on both long and short spans**

**Q.5. From limiting deflection point of view, use of high strength steel in RC beam res**

- (a) reduction in depth**
- (b) no change in depth**
- (c) increase in depth**
- (d) increase in width**

**Q.6. In a spherical dome subjected to a uniformly distributed load the meridional force induced is**

- (a) compressive throughout
- (b) zero at the crown
- (c) tensile below the plane of rupture
- (d) compressive for heavier loads, while being tensile for lower loads

**Q.7. Designs of one-way RC slabs for concentrated load is done by**

- (a) using Pigeaud's moment coefficients
- (b) taking slab strip of unit width containing the load.
- (c) taking slab strip of width effective in resisting the load
- (d) taking orthogonal slab strips of unit width containing the load

**Q.8. For a bridge-deck the most economical section shall be**

- (a) a double-Tee section
- (b) an I section
- (c) a box section
- (d) a channel section

**Q.9. A T-beam roof section has the following particulars:**

Thickness of slab = 100mm  
Width of rib = 300 mm  
Depth of beam = 500 mm  
Centre to centre distance of beams = 3.0 m  
Effective span of beams = 6.0 m  
Distance b/w points of contraflexure = 3.60 m.  
The effective width of flange of beam is

- (a) 3000 mm
- (b) 1900 mm
- (c) 1600 mm
- (d) 1500 mm

Q.10. Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I		List-II	
A•	For longitudinal reinforcement in columns of size 200 mm and less, with 12 mm diameter bars as longitudinal steel	1•	40 mm or diameter of bar whichever is more.
B•	For longitudinal reinforcement in beams	2•	15 mm or diameter of bar whichever is more
C•	For longitudinal bars in slabs	3•	25 mm or diameter of bar whichever is more
D•	For longitudinal bars in columns of size more than 200 mm	4•	25 mm

Codes :

- A• A-4, B-3, C-2, D-1
- B• A-1, B-2, C-3, D-4
- C• A-1, B-3, C-2, D-4
- D• A-4, B-2, C-3, D-1

Q.11. A supported isotropically reinforced square slab of side 4 m is subjected to a service load of 6 kPa. The thickness of the slab is 120 mm. The moment of resistance required as per yield line theory is

- (a) 9 kN-m
- (b) 9 kN-m/m
- (c) 13.2 kN-m
- (d) 13.2 kN-m/m

Q.12. Given that  $d$  = effective depth;  $b$  = width and  $D$  = overall depth, the maximum area of compression reinforcement in a beam is

- (a)  $0.04 bd$
- (b)  $0.04 bD$
- (c)  $0.12 bd$
- (d)  $0.12 bD$

Q.13. A reinforced concrete slab is 75 mm thick. The maximum size of reinforcement bar that can be used is

- (a) 12 mm diameter
- (b) 10 mm diameter
- (c) 8 mm diameter
- (d) 6 mm diameter

**Q.14. In the design of two-way slab restrained at all edges, torsional reinforcement required is**

- (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) 0.375 times the area of steel provided in the shorter span
- (d) Nil

**Q.15. A square slab 4m x 4m is isotropically reinforced at the bottom. If it is subjected to a working load of 12 kPa (including self-weight), the moment capacity required as per yield line theory is**

- (a) 6 kN.m/m
- (b) 8 kN.m/m
- (c) 10 kN.m/m
- (d) 12 kN.m/m

**Q.16. Side face reinforcement is provided in a beam when the depth of web exceeds**

- (a) 300 mm
- (b) 450 mm
- (c) 500 mm
- (d) 750 mm

**Q.17. A reinforced cantilever beam of span 4m, has a cross-section of 150 x 500 mm. If checked for lateral stability and deflection, the beam will**

- (a) Fail in deflection only
- (b) Fail in lateral stability only
- (c) Fail in both deflection and lateral stability
- (d) Satisfy the requirements of deflection and lateral stability



**Q.18. In an RCC beam, side face reinforcement is provided if its depth exceeds**

- (a) 300 mm**
- (b) 500 mm**
- (c) 700 mm**
- (d) 750 mm**

**Q.19. The bending moment coefficients for continuous RC slabs in IS 456-1978 code is based on**

- (a) Pigeaud's method**
- (b) Marcus method**
- (c) Yield-line theory**
- (d) Westergaard's mathematical analysis**

**Q.20. In the limit state method of design, the failure criterion for reinforced concrete beams and columns is**

- (a) Maximum principal stress theory**
- (b) Maximum principal strain theory**
- (c) Maximum shear stress theory**
- (d) Maximum strain energy theory analysis**

