Q:) Which one of the following statements correct?

A : Maximum longitudinal in an axially loaded short column is 6% of gross sectional area

B : Columns with circular section are provided traverse reinforcement of helical type only

C : Spacing of lateral ties cannot be more than 16 times the diameter of tie bar

D : Longitudinal reinforcement bar need not be in contact with lateral ties.

Q:) The limits of percentage p of the longitudinal reinforcement in a column is

A : 0.15% to 2%

B : 0.8% to 4%

C : 0.8% to 6%

D : 0.8% to 8%

Q:) The load carrying capacity of column designed by working stress method is 500 kN. The collapse load of the column is

A : 500.0 kN

B : 662.5 kN

C : 750.0 kN

D : 1100.0 kN

Q:) The reduction coefficient or a reinforced concrete column with an effective length of 4.8 m and size 250 × 300 mm is

A : 0.8

B : 0.85

C : 0.9

D : 0.95

Q:) The maximum spacing of vertical reinforcement in RCC wall should NOT exceed.

A : The thickness of wall

B : 1.5 times the thickness of wall

C : 2 times the thickness of wall

D : 3 times the thickness of wall

Q:) Lateral ties in RC columns are provides to resist

A : Bending moment

B : Shear

C : Buckling of longitudinal steel bars

D : Both bending moment and shear

Q:) In an axially loaded spirally reinforced short column, the concrete inside the core is subjected to

A : Bending and compression

B : Biaxial compression

C : Triaxial compression

D : Uniaxial compression

Q:) In a pedestrian, the factor by which the effective length should not exceed the least lateral dimensions is

A : 2

B : 3

C : 4

D : 5

Q:) Which of the following are the additional moments considered for design of slender compression member in lieu of deflection in x and y directions?

A : $\frac{P_u l_{ex}^2}{2000D} and \frac{P_u l_{ey}^2}{2000D}$

B : $\frac{P_u l_{ex}}{2000} and \frac{P_u l_{ey}}{2000}$

C : $\frac{P_u l_{ex}^2}{2000D} and \frac{P_u l_{ey}^2}{2000b}$

D : $\frac{P_u l_{ex}^2}{200D} and \frac{P_u l_{ey}^2}{200b}$

Q:) A square column section of size 350 mm × 350 mm is reinforced with four bars of 25 mm diameter and four bars of 16 mm diameter. Then the transverse steel should be

A : 5 mm dia @ 240 mm c/c

B : 6 mm dia @ 250 mm c/c

C : 8 mm dia @ 250 mm c/c

D : 8 mm dia @ 350 mm c/c

Q:) An axially loaded column is of 300 × 300 mm size. Effective length of column is 3 m. What is the minimum eccentricity of the axial load for the column?

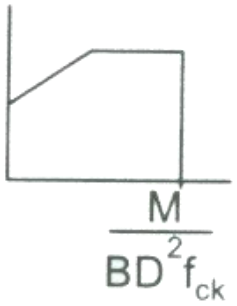
A : 0

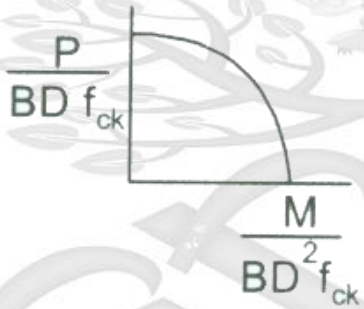
B : 10 mm

C : 16 mm

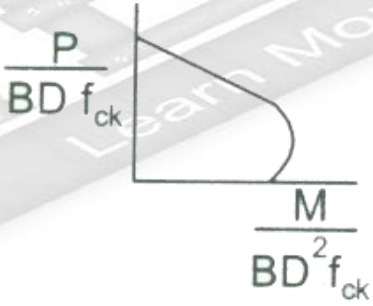
D : 20 mm

Q:) A rectangular reinforced column (8 × D) has been subjected to uniaxial bending moment M and axial load P. Characteristic strength of concrete = f_{ck}' Which one among the following column design curves shows the relation between M and P qualitatively?

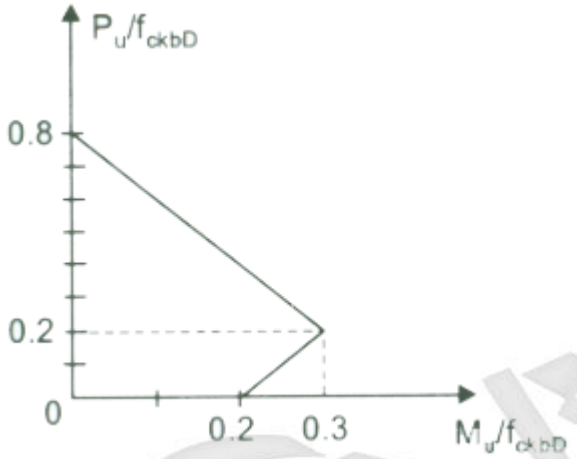
(a) 

(b) 

(c) 

(d) 

Q:) A RC column of square cross - section ($400 \times 400\ mm^2$) has its column load - moment interaction diagram as shown in figure below. What is the maximum uniaxial eccentricity at which a factored load Pu = 640 kN can be applied safety? (Take f_{ck} = 20 MPa)



A : 300 mm

B : 400 mm

C : 600 mm

D : 800 mm

Q:) Which one of the following represents the ratio of volume of helical reinforced to volume of core?

A : $0.36\left(\frac{A_g}{A_c}-1\right)\frac{f_{ck}}{f_y}$

B : $0.36\left(\frac{A_g}{A_s}-1\right)\frac{f_{ck}}{f_y}$

C : $0.36\left(\frac{A_s}{A_c}-1\right)\frac{f_{ck}}{f_y}$

D : $0.36\left(\frac{A_c}{A_s}-1\right)\frac{f_{ck}}{f_y}$

where Ag, As and Ac are gross cross sectional area of the membrane area of steel and core area; and F_{ck} and f_y are characteristic strength of concrete and steel respectively

Q:) A wall carries an axial load, 12 kN/m and also an eccentric load of 27 kN/m at 72 mm from the central axis of the wall. The equivalent eccentricity is nearly

A : 65 mm

B : 60 mm

C : 55 mm

D : 50 mm

Q:) Given that Φ is angle of internal friction 'p' is the safe bearing capacity and 'y' is the unit weight of soil, the maximum depth of foundation of masonry footings is given by

A : $\frac{p}{y}\left(\frac{1+sin\Phi}{1-sin\Phi}\right)$

B : $\frac{p}{y}\left(\frac{1-sin\Phi}{1+sin\Phi}\right)$

C : $\frac{p}{y}\left(\frac{1+sin\Phi}{1-sin\Phi}\right)^2$

D : $\frac{p}{y}\left(\frac{1-sin\Phi}{1+sin\Phi}\right)^2$

Q:) The critical section for two-away shear of footing is at the

A : Face of the column

B : Distance d from the column face

C : Distance d/2 from the column face

D : Distance 2d from the column face

Where d is effective depth of the footing

Q:) In the case of isolated square concrete footing, match the locations at which the stress resultants are to be checked, where d is effective depth of footing and select correct answer using the code given below the lists:

Stress Resultant	Location
A. Bending Moment	1. At face of column
B. One Way shear	2. At d/2 from face of column
C. Punching Shear	3. At d face of column

Codes:

A : A-1, B-2, C-3

B : A-3, B-1, C-2

C : A-2, B-1, C-3

D : A-1, B-3, C-2