Q :) Match List-I and List-II, and select the correct answer using the codes in given below list.

List-I	List-II
i. Preliminary estimate	1. Probable variation for quantity rate and amount for each items.
ii. Revised estimate	2. Material deviation of a structural nature
iii. Supplementary estimate	3. Complete estimate
iv. Quantity estimate	4. Approximate cost of the project.

Codes:

A : 4, 1, 2, 3

B : 4, 2, 1, 3

C : 3, 1, 2, 4

D : 3, 2, 1, 4

Q :) The total number of grades of ordinary concrete stipulated in IS:456-2000 are

A : 10

B : 8

C : 3

D : 6

Q :) Two shafts of same length and material are joined in series. If the ratio of their diameters is 2, then the ratio of their angles of twist will be:

A : 2

B : 4

C : 8

D : 16

Q :) The mortar used for masonry construction are classified based on strength in IS :2950 and IS: 1905 according to their designations L_1, L_2, H_1, M_1 and M_2. The correct sequence of increasing order of their strength is

A : L_1, L_2, H_1, H_2, M_1 and M_2

B : L_2, L_1, M_2, M_1, H_2 and H_1

C : L_1, L_2, M_1, M_2, H_1 and H_2

D : L_1, L_2, H_1, H_2, M_1 and M_2

Q :) A prismatic bar in compression has a cross sectional area A = 1200 mm^2 and carries a load P = 90 kN. Normal and shear stresses acting on a plane cut through the bar at $\theta = 25^0$, are respectively

A : 61.6 MPa and 28.7 MPa

B : 49.5 MPa and 23.8 MPA

C : 78.2 MPA and 20.7 MPA

D : 73.4 MPa and 29.2 MPA

Q :) The minimum width of tread without nosing for staircase of residential building shall be

A : 150 mm

B : 190 mm

C : 200 mm

D : 300 mm

Q :) A cast column of external diameter of 300 mm is 20 mm thick. Find safe compressive load on column with factor of safety of 5, if the crushing strength of material is 550 N/mm^2

A : 1925.21 kN

B : 1935.21 kN

C : 1945.21 kN

D : 1955.21 kN

Q :) The water-cement ratio for ferrocement mix should ne

A : Less than 0.35

B : Between 0.35 to 0.40

C : Between 0.40 to 0.50

D : Greater than 0.60

Q :) A simply supported beam of length 6 m carries a point load at the centre of the beam such that the maximum bending moment there is 12 kN-m, if 'EI' is the flexural rigidity of the beam, the deflection at the centre is

A : $\frac{9}{EI}$ **B :** $\frac{18}{EI}$

C : $\frac{36}{EI}$ **D :** $\frac{45}{EI}$

Q :) The minimum depth of the reinforced bond provided as strengthening arrangement in masonry building is

A : 75 mm

B : 60 mm

C : 50 mm

D : 40 mm

Q :) When a body is subjected to a direct tensile stress shear stress (q), the maximum normal stress is

A : $\frac{p}{2} + \frac{1}{2}\sqrt{p^2 + 4\,q^2}$

B : $\frac{p}{2} - \frac{1}{2}\sqrt{p^2 + 4\,q^2}$

C : $\frac{p}{2} + \frac{1}{2}\sqrt{p^2 \; \overline{} \; 4\,q^2}$

D : $\frac{p}{2} - \frac{1}{2}\sqrt{p^2 - 4\,q^2}$

Q :) Technical term ‘Eaves’ is defined as

A : The apex line of the sloping roof

B : The lower edge of the inclined roof surface

C : Sloped triangular surface formed at the end of a roof

D : The ridge formed by the intersection of two surfaces

Q :) A ductile structure is defined as one for which the plastic deformation before fracture

A : IS smaller than the elastic deformation

B : Vanishes

C : Is equal to the elastic deformation

D : Is much larger than elastic deformation

Q :) The method suitable for measuring the workability of dry concrete mix having very low workability is

A : Slump test

B : Compaction factor test

C : Vee-bee consistometer test

D : Vicat test

Q) A bar 40 mm in diameter is subjected to a tensile force of 40000 kg. The extension of bar measured over a gauge length of 200 mm was 0.318 mm. The decrease in diameter was found to be 0.02 mm. Calculate the values of Young's modulus of elasticity and modulus of rigidity of the material.

Q) When a bar of certain material 40 cm square is subjected to an axial pull of 100,000 N the extension on a gauge length of 200 m is 0.1 mm and the decrease in each side of the square is 0.005 mm. Calculate young's modulus, poisson's ratio, shear modulus and bulk modulus for the material.