Q:) A prismatic bar when subjected to pure bending assume the shape of- [RPSC 2018]

A : Catenary

B : Cubic parabola

C : Quadratic parabola

D : Arc of circle

Q:) Most common method of pre-stressing used for factory production is- [RPSC 2018]

A : Long line method

B : Freyssinet system

C : Magnel-Blaton system

D : Lee-McCall system

Q:) A prismatic member with area of cross- section 'A' is subjected to a tensile load 'P', then the maximum shear stress and its inclination with the direction of load respectively are [RPSC 2018]

A : P/A and 60°

B : P/2 and 45°

C : P/2A and 60°

D : P/A and 45°

Q:) The phenomenon of decreased resistance of material due to reversal of stress is called [RPSC 2018]

A : Creep

B : Fatigue

C : Resilience

D : Plasicity

Q:) The shape factor of an isosceles triangle should be [RPSC 2018]

A : 1.5

B : 1.7

C : 2.34

D : 2

Q:) For a floating body to be in stable equilibrium, its meta centre should be [RPSC 2018]

A : Below the centre of gravity

B : Below the centre of buoyancy

C : Above the centre of buoyancy

D : Above the centre of gravity

Q:) As per IS:800, the maximum bending moment of purlin is [RPSC 2018]

A : WL/6

B : WL/8

C : WL/4

D : WL/10

where W = udl; L = span of purlin

Q:) A beam of uniform strength contains same [RPSC 2018]

A : Bending moment

B : Bending stress

C : Deflection

D : Stiffness

Q:) The load carrying capacity of a helically reinforced column as compared to that of a tied column is about [RPSC 2018]

A : 5% less

B : 10% less

C : 5% more

D : 10% more

Q:) For pipes, turbulent flow occurs when Reynolds number is
[RPSC 2018]

A : Less than 2000

B : Between 2000 and 4000

C : More than 4000

D : None of the above

Q:) As per IS:456 the value of f^y at outermost tension fiber is
[RPSC 2018]

A : $0.02 + (f^y/1.5\ E_s)$

B : $0.003 + (f^y/1.5\ E_s)$

C : $0.002 + (f^y/1.15\ E_s)$

D : $0.002 + (f^y/1.5\ E_s)$

Q:) For a given shear force across a symmetrical 'I' section, the intensity of shear stress is maximum at the [RPSC 2018]

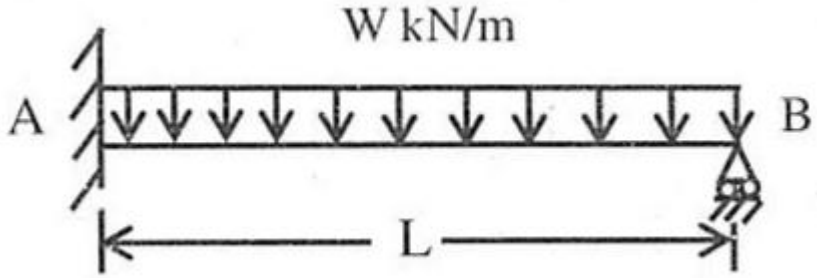
A : Junction of the flange and the web, but on web

B : Junction of the flange and the web, but on the flange.

C : Centroid of the section

D : Extreme fibres

Q:) In the propped cantilever beam carrying a uniformly distributed load of WN/m, shown in the following figure, the reaction at the support B is-



[RPSC 2018]

A : 5/8WL

B : 3/8WL

C : 1/2WL

D : 3/4WL

Q:) Two beams of same material have equal cross-sectional area. If one beams has square cross-sectional and the other has circular cross-sectional [RPSC 2018]

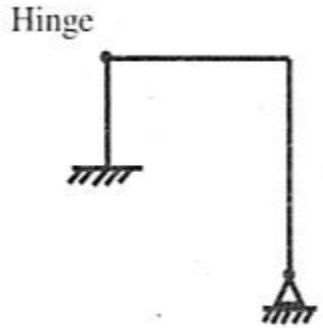
A : Both the beam will be equally strong

B : Circular section will be stronger

C : Square section will be stronger

D : Strength depends on loading condition.

Q:) For the plane frame as shown in the figure, the degree of kinematic indeterminacy neglecting axial deformation, is [RPSC 2018]



A : 3

B : 5

C : 7

D : 9

Q:) The intensity of u.d.l which, when it acts over the entire span of 1m of a cantilever beam of rectangular cross-sectional of width of 100 mm and depth 200m. would produce a maximum shear stress of 1.5 N/mm^2, is- [RPSC 2018]

A : 30 kN/m

B : 26.6hkN/m

C : 20 kN/m

D : 36.6kN/m

Q:) The bulk modulus of K, modulus of elasticity E and Poisson's ratio is 1/m, then which of the following is true [RPSC 2018]

A : $E = 3K\left(1 + \frac{2}{m}\right)$

B : $E = 3K\left(1 - \frac{1}{m}\right)$

C : $E = 3K\left(1 - \frac{2}{m}\right)$

D : $E = 3K\left(1 + \frac{1}{m}\right)$

Q:) In the simplified design of angle iron purlins, which one of following assumptions would not be valid [RPSC 2018]

A : Load component acting normal to the slope is considered

B : Bending moment about the minor axis is considered

C : Allowable bending stress is not reduced

D : Slope of the roof should not exceed 30^{o}

Q:) In a counterfort retaining wall, the main reinforcement is provided on the [RPSC 2018]

i. Bottom face in front counterfort
ii. Inclined face in front counterfort
iii. Bottom face in back
iv. Inclined face in back counterfort
The correct answer is-
A : i and ii

B : ii and iii

C : i and iv

D : iii and iv

Q:) In case of two way slab, the limiting deflection of the slab is-
[RPSC 2018]

A : Primarily a function of the long span

B : Primarily a function of the short span

C : Independent of long or short spans

D : Dependent on both long and short spans

Q:) Drops are provided in flat slabs to resist [RPSC 2018]

A : Thrust

B : Bending moment

C : Torsion

D : Shear.

Q:) Assertion A: According to IS:456; over reinforced sections are not permitted
Reason R: There is ductile failure of over reinforced section.
Select your answer based on the coding system given below-
[RPSC 2018]

A : Both A and R are true and R is the correct explanation of A

B : Both A and R are true and R is not the correct explanation of A

C : A is true but R is false

D : A is false but R is true.

Q:) The maximum diameter that a capillary tube can have to ensure that a capillary rise of at least 6 mm is achieved when the tube is dipped into a body of liquid with surface tension = 0.08 N/m and density = 900 kg/m^3, is- [RPSC 2018]

A : 3 mm

B : 6 mm

C : 5 mm

D : 8 mm

Q:) A horizontal water jet with a velocity of 10m/s and cross-sectional area of 10 mm^2 strikes a flat plate held normal to the flow direction. The density of water is 1000 kg/m^3. The total force on the plate due to the jet is [RPSC 2018]

A : 100 N

B : 10 N

C : 0.1 N

D : 1 N

Q:) A person standing on the bank of a canal drops a stone on the water surface. He notices that the disturbances on the water surface is not travelling upstream. This is because the flow in the canal is [RPSC 2018]

A : Sub critical

B : Super-critical

C : Steady

D : Uniform