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## JPSC PAPER - 01 DETAILED SOLUTION

Q : ) In a RC beam main reinforcement consists of 16 mm bars and coarse aggregate size used in 20 mm . The horizontal distance between two parallel reinforcing bars should not be less than
A : 16 mm
B : $\mathbf{2 0} \mathbf{~ m m}$
C : 21 mm
D : $\mathbf{2 5}$ mm

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q:) In limit state approach, the spacing of main reinforcement controls primarily
A : Collapse
B : Cracking
C : Deflection
D : Durability

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) What should be the minimum grade of plain and reinforced concretes respectively provided for construction in coastal areas?
A : M20 and M30
B : M25 And M30
C : M20 and M25
D: None of the above

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) As per IS : 456, the minimum thickness provided in flat slab shall not be less than

A : 100 mm
B : 125 mm
C : $\mathbf{1 5 0} \mathrm{mm}$
D : $\mathbf{2 0 0}$ mm

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) Which of the following states falls under limit state of serviceability as per IS 456 : 2000?

A : Stability under load
B : Loss of equilibrium of a structure
C : Floor vibration
D : Formation of mechanism

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q :) Modulus of elasticity of concrete is increased with
A : Higher water-cement ratio
B : Shorter curing period
C : Lesser vibration
D : Increase in age

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q :) The loss of prestress due to stress relaxation in steel depends on
A : Amount of shrinkage in concrete
B : Initial prestress in steel
C : Coefficient of friction in between steel and concrete
D : Amount of elongation in steel

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) Which one of the following is not a post-tensioning method?
A : Freyssinet system
B : Gifford Udall system
C : Long line method
D : Lee-Macall system

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) Find the effective depth of the beam as shown in figure. Clear cover is 15 mm .

A: 277 mm
B : 275 mm
C : 273 mm
D : 269 mm


## JPSC PAPER - 01 DETAILED SOLUTION

Q:) As per IS 456, in a column the maximum distance between two longitudinal bars should not greater than
A : $\mathbf{2 0 0}$ mm
B : $\mathbf{3 0 0}$ mm
C : 250 mm
D : 350 mm

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) If standard deviation is $4 \mathrm{~N} / \mathrm{mm}^{2}$, the mean strength of M20 concrete should be

A : $16 \mathrm{~N} / \mathrm{mm}^{2}$
B : $20 \mathrm{~N} / \mathrm{mm}^{\mathbf{2}}$
C : $24 \mathrm{~N} / \mathrm{mm}^{2}$
D : $26.4 \mathrm{~N} / \mathrm{mm}^{\mathbf{2}}$

Q : ) The maximum area of tensile reinforcement to be used in a beam is to be restricted to

A : $0.04 \times$ gross area of the section
B : $0.04 \times$ effective area of the section
C : $0.057 \times$ gross area of the section
D : $0.057 \times$ effective area of the section

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q: ) The location of neutral axis in RC Tbeam
A : Lies in flange always
B : Depends on flange depth and total depth
C : Lies in the web always
D : Lies at the junction of flange and web

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q :) What is the effective length of the column when effectively restrained against translation at both the ends but restrained against rotation at one end only?
A: 0.707 L
B : 0.8 L
C : 0.65 L
D : 0.5 L

## JPSC PAPER - 01 DETAILED SOLUTION

Q :) The depth of an isolated footing is generally governed by
A : Bending moment consideration
B : Development length consideration
C : Shear consideration
D : All of the above

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) Effective length of a rafter member between two nodes at a distance ' $L$ ' perpendicular to the plane of the truss is
A: 2.00 L
B : 0.85 L
C : 1.5 L
D: 1.0 L

Q : ) Consider the following statements regarding the roofing of a industrial structure:

1. The conoidal shell is preferable to northlight steel trussed roof.
2. The warehouse flat slab construction is not suitable.
3. Load other than self weight has insignificant effect on the design
4. Consideration of corrosive environment cannot be ignored as it affects the durability. Which statements are correct?
A: 1, 2, 3 and 4
B : 2, 3 and 4
C : 1 and 2
D : 3 and 4

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q :) Purlins are provided in industrial buildings to carry dead loads, live loads and wind loads. As per IS code, what are they assumed to be?
A : Simply supported
B : Cantilever
C : Continuous
D : Fixed

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) A building with a gabled roof will experience pressure on its leeward slope which is

A : Always positive
B : Always negative
C : Sometimes positive and otherwise negative

D: Zero

## JPSC PAPER - 01 DETAILED SOLUTION

Q : ) The effective length of an angle member in a riveted truss is equal to
A:I
B : 0.85 I
C: 0.65 I
D: 0.5 I
Where I is the centre to centre distance between the joints.

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q :) IS 456-2000 considers concrete has reached its limit state of collapse when the strain is

A : 0.0015
B : 0.0020
C : 0.0030
D: 0.0035

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) The centroid of a compression block representing stress in concrete at limit state, the distance being measured from extreme compression edge is
A : $0.36 \mathrm{x}_{\mathrm{u}}$
B : $0.42 \mathrm{x}_{\mathrm{u}}$
C : $0.48 \mathrm{x}_{\mathrm{u}}$
D : $0.53 \mathrm{x}_{\mathrm{u}}$

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) The common assumption that, all rivets share equally a non-elastic load is valid at a load

A : Below the working load
B : Equal the working load
C : Above the working load
D : Equal to the failure load

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q :) The upper yield point in the stress strain curve in structural steel can be avoided by
A : Cold working
B : Hot working
C : Quenching
D : Galvanizing

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q :) In the fillet weld the weakest section is the
A : Smaller side of the fillet
B : Throat of the fillet
C : Side perpendicular too the force
D : Side parallel to the force

Q:) In a double-riveted double cover butt joint, the strength of the joint per pitch length in shearing the rivets is ' $n$ ' times the shear strength of one rivet in single shear, where ' $n$ ' is equal to
A: 1
B : 2
C: 3
D: 4

Q : ) Maximum size of fillet weld for a square plate of square edge is
A : $\mathbf{1 . 5} \mathbf{~ m m}$ less than the thickness of the plate
B : One half of the thickness of the plate
C : Equal to the thickness of the plate
D : 1.5 mm more than the thickness of the plate

## JPSC PAPER - 01 DETAILED SOLUTION

Q : ) A steel beam supporting loads from the floor slab as well as from wall is termed as

A : Stringer beam
B : Lintel beam
C : Spandrel beam
D : Header beam

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) Generally, the maximum deflection/span ratio of a steel member should not exceed

A: 1/750
B : 1/500
C : 1/325
D : 1/250

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) As per IS-800, the maximum allowable slenderness ratio of compression members carrying forces resulting from dead load any superimposed load is
A: 180
B : 250
C : 300
D : 400

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q :) Which of the following methods is not classified as a force method?
A : Theorem of three moments
B : Moment distribution method
C : The method of consistent deformation
D : Castigliano's theorem

Q :) In the slope deflection equations, deformations are considered too be caused by
A : Shear forces and bending moments only
B : Axial force and bending moments only
C : Axial forces, shear forces and bending moments
D : Bending moments only

## JPSC PAPER - 01 DETAILED SOLUTION

Q : ) The moment distribution method in structural analysis falls in the category of
A : Displacement method
B : Force method
C : Flexibility method
D : First-order approximate method

Q :) By which one of the following methods, an approximate quick solution possible for frames subjected to transverse loads?
A : By cantilever or portal method
B : By strain energy method
C : By moment distribution method
D : By matrix method

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) For a fixed bema $A B$ of length $L$, the depth of beam upto mid-span is ' d ' from left end and 0.5 d for rest $\mathrm{L} / 2$. what is the carry over factor from A to B while using moment distribution method for the analysis?
A : 0.5
B : 1.0
C : < 0.5
D : > 0.5

## JPSC PAPER - 01 DETAILED SOLUTION

Q : ) ISHT stands for
A : Indian standard heavy weight Tee bars
B : Indian standard high tensile tee Bars
C : Indian standard slit Tee bars from Hsections

D : Indian standard hollow Tee bars

Q :) An ISMB 500 is used as a beam in a multi-storey building construction. From the structural design point of view it can be considered to be laterally retrained when,
A : tension flange is laterally restrained
B : Compression flange is laterally restrained

C : Web is adequately stiffened.
D : The conditions in (A) and (C) are met.

## JPSC PAPER - 01 DETAILED SOLUTION

Q : ) The moment which makes all the fibers at the sections to yield is known as
A: Flexural rigidity
B : Moment of resistance
C : Plastic moment capacity
D : Yield moment

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q :) The shape factor of a $I$ section is
A: 1.2
B : 1.5
C : 2.0
D : None of the above

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) Determine the load factor of safety of a two span continuous beam as shown in figure. The plastic moment and elastic moment of the beam are $150 \mathrm{kN}-\mathrm{m}$ and 100 kN -m respectively.
A : 6.0 and 2.0
B : 4.0 and 2.35
C : 6.0 and 4.0
D : 4.0and 4.35

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) Which expression represents shape factor?
$\mathrm{A}: \frac{(\mathrm{MOB})_{p}}{(\mathrm{MOB})_{e}}$
B : $\mathbf{Z}_{\mathrm{p}} / \mathbf{Z}_{\mathrm{e}}$
C : Both (A) and (B)
D : None of the above

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) For a linear elastic structural system, minimization of potential energy yields
A : Compatibility conditions
B : Constitutive relations
C : Equilibrium equations
D : strain displacement relations

## JPSC PAPER - 01 DETAILED SOLUTION

For Any Query Call - 8595517959 | Website - everexam.org
Q : ) The order of flexibility matrix of a structure is
A : Equal to the number of redundant forces

B : More than the number of redundant forces
$C$ : Less than the number of redundant forces

D : Equal to the number of redundant forces plus three

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