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Daily Class – 8:00 PM

Q: 1) Consider the following statements:

Percentage of steel for balanced design of a singly reinforced rectangular section by limit state method depends on

- 1. Characteristic strength of concrete
- 2. Yield strength of steel
- 3. Modulus of elasticity of steel
- 4. Geometry of the section

Which of these statements are correct?

A: 2, 3 and 4 B: 1, 3 and 4

C: 1, 2 and 4 D: 1, 2 and 3



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- Q: 2) Which of the following factors would greatly affect the attainment of best possible strength of the concrete mix produced using the weighbatcher?
- 1. Moisture content in the sand and gravel
- 2. Inadequate or excess use of approved admixtures.
- 3. Speed of rotation of the drum.
- 4. None-emptying of the drum as fully as possible

A: 1 and 4 B: 1 and 2

C: 1 and 2 D: 3 and 4



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Q: 3) Consider the following statements:

- 1. Modulus of elasticity of concrete increases with the increase in compressive strength of concrete
- 2. Shear strength of concrete increases with the increase in compressive strength of concrete

Which of these statements is/are correct?

A: Neither 1 nor 2 B: Both 1 and 2

C: 1 only D: 2 only



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Q: 4) The additional cover thickness to be provided in reinforced concrete members that are totally immersed in seawater is

A: 25 mm

B: 30 mm

C: 35 mm

D: 40 mm



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Q:5) The minimum grade of reinforced concrete in seawater as per IS 456-2000 is

A: M 15

B: M 20

C: M 30

D: M 40



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- Q: 6) Consider the following statements concerning 'elasticity of concrete'
- 1. Stress-strain behaviour of concrete is a straight line up to 10% of ultimate stress.
- 2. Strain determination is obtained from tangent modulus
- 3. Modulus of elasticity of concrete is also called as secant modulus.

Which of the above statements are correct?

A: 1, 2 and 3

B: 1 and 3 only

C: 1 and 2 only

D: 2 and 3 only



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Q: 7) If any tension reinforcement in an RC beam attains its yield stress during loading before the concrete in the compression zone fails due to crushing, the beam is said to be

A: Under-reinforced

B: Over-reinforced

C: Balanced

D: Non-homogeneous



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Q: 8) The distance between the centroid of the area of tension reinforcement and the maximum compressive fibre in a reinforced concrete beam design is known as

A: Overall depth

B: Effective depth

C: Lever arm

D: Depth of neutral axis



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Q: 9) What is the pH value of potable water, as specified by IS 456-2000?

A: Equal to 7

B: Between 6 and 9

C: Less than 6

D: Not less than 6



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Q: 10) A certain RC structure has to be constructed along a sea coast. The minimum grade of concrete to be used as per IS 456:2000 is

A: More than M20

B: More than M20 and less than M30

C: Not less than M30

D: Less than M45 and more than

M30



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Daily Class – 8:00 PM

Q: 11) Consider the following cases in the deign of reinforced concrete members in flexure:

- 1. Over-reinforced section
- 2. Tension failure
- 3. Compression failure
- 4. Under-reinforced section

Which of the above cases are considered for safe design of R.C. members in flexure?

A: 1 and 2 only

B: 2 and 4 only

C: 2 and 4 only

D: 1 and 3 only



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Q: 12) Fatigue in RCC beams will not be a problem if the number of cycles is less than

A: 20,000

B: 25,000

C:30,000

D:35,000



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Daily Class – 8:00 PM

Q: 13) As per IS-456: 2000, cracking of concrete in tension zone cannot be avoided but can be limited by

- 1. Adhering to the codal requirements of minimum steel area
- 2. Proper and prolonged curing of concrete
- 3. Increasing water cement ratio to increase workability

A: 1 and 2 only

B: 1 and 3 only

C: 2 and 3 only

D: 1, 2 and 3



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Q: 14) Which of the following are correct for cover to reinforcement?

- 1. The reinforcement shall have a minimum clear cover of 20 mm or diameter of such bar whichever is more
- 2. At each end of reinforcing bar not less than 25 mm nor less than twice the diameter of such bar.
- 3. Increased cover thickness may be provided when surface of concrete is exposed to the action of harmful chemicals.

A: 1, 2 and 3

B: 1 and 2 only

C: 1 and 3 only

D: 2 and 3 only



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Q:15) If the nominal shear stress $(\tau_{\rm v})$ at a section does not exceed the permissible shear stress $(\tau_{\rm c})$

A: Minimum shear reinforcement is steel provided

B: Shear reinforcement is provided to resist the nominal shear stress

C: No shear reinforcement is provided

D: Shear reinforcement is provided for the difference of the two



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Q:16) Shear span is defined as the zone where

A: Bending moment is zero

B: Shear force is zero

C: Shear force is constant

D: Bending moment is constant



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Q: 17) While checking shear resistance of reinforced concrete beams for limit state of collapse as per IS: 456, which one of the following nominal shear stress recommendations is to be adhered to? (V_u is shear force at vertical cross-section, 'b' and 'd' are overall breadth and effective depth of beam respectively?

 $A : 0.5 V_{u} / bd$

 $B: 2 V_u/5 bd$

 $C : V_u / 0.5 bd$

 $D: V_{\mu}/bd$



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Q: 18) The chances of diagonal tension in R.C.C. member reduce when

A: Axial compression and shear force act simultaneously

B: Axial tension and shear force act simultaneously

C: Only shear force act

D: Flexural and shear force act simultaneously



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Q: 19) The codal provisions recommend minimum shear reinforcement in the form of stirrups in the beams

- 1. To cater for any torsion in the beam section
- 2. To improve ductility of the crosssection
- 3. To improve dowel action of longitudinal tension bars

Select the correct answer using the codes given below:

A: 1, 2 and 3 B: 2 and 3

C : Only 1 D : Only 2



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Q: 20) Which one of the following statements is correct?

Minimum shear reinforcement in beams is provided in the form of stirrups

A: To resist extra shear force due to live load

B: To resist the effect of shrinkage of concrete

C: To resist principal tension

D: To resist shear cracks at the bottom of beam

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