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Q:1) The maximum shear stress in concrete of a reinforced cement concrete beam is

A: Shear force /(lever arm × width)

B: Lever arm / (Shear force × width)

C: Width / (lever arm × shear forced)

D: None of these



Q: 2) Pickup the correct statement from the following:

A: The bent up bars at a support resist the negative bending moment

B: The bent up bars at a support resist the shearing force

B: The bending of bars near support is generally 45° degree

C: All options are correct



- Q:3) The design shear stress in reinforced cement concrete depends on-
- a. Characteristic strength of concrete
- b. Percentage of longitudinal tensile reinforcement
- c. Characteristic strength of steel

A: Only A B: Only B

C: Only C D: Both A and B



Q:4) The minimum percentage of shear reinforcement in R.C.C. beams is

 $A: 0.85/f_{y}$ 

B: 0.4

C:4

 $D:40S_v/f_vd$ 

Q:5) Diagonal tension in a reinforced concrete beam:

A: Is maximum at neutral axis.

B: Decreases below neutral axis and increases above neutral axis.

C: Increases below neutral axis and decreases above neutral axis

D: Remains constant throughout the depth

Q:6) The factored load at the limit state of collapse for DL + LL, DL + WL and DL + LL + WL combinations, according to IS: 456-2000 are respectively A:1. DL + 1.2 LL, 1.5 DL + 1.5 WL, 1.5 DL + 1.5 LL +

A: 1. DL + 1.2 LL, 1.5 DL + 1.5 WL, 1.5 DL + 1.5 LL + 1.5 WL

B: 1.5 DL + 1.5 LL, (0.9 or 1.5) DL + 1.5 WL 1.2 DL + 1.2 LL + 1.2 WL

C: 1.5 DL + 1.5 LL, 1.2 DL + 1.2 WL, 1.5 DL + 1.5 LL + 1.5 WL

D: (0.9 or 1.5) DL + 1.5 LL, 1.5 DL + 1.5 WL 1.2 DL + 1.2 LL + 1.2 WL

Q:7) The shear capacity of an RCC beam without shear reinforcement is

 $A:\tau_cbd$ 

 $B:\tau_v bd$ 

 $C:(\tau_v-\tau_c)$ bd

 $D: \tau_{cmax}bd$ 

Q:8) tension bars in a cantilever beams must be anchored in the support up to

A: Ld

 $B:L_d/3$ 

 $C:12\phi$ 

**D**: d



Q:9) The length of the straight portion of a bar beyond the end of the hook should be at least

A: Twice the diameter

**B**: Thrice the diameter

C: Four times the diameter

D: Seven times the diameter



Q: 10) Lap length in compression shall

not be less than:

A: Less than  $15\phi$ 

B: Less than 20  $\phi$ 

C: Less than 24  $\phi$ 

D: Less than  $30 \phi$ 



Q:11) If a beam fails in bond, then its bond strength can be increased most economically by:

A: Increasing the depth of beam

B: Using thicker bars but more in number

C: Using thicker bars but less in number

D: None of the above



Q: 12) In limit state method of design, for HYSD bars the values of bond stress shall be

A: Increased by 60%

B: Decreased by 60%

C: Increased by 50%

D: Decreased by 50%

Q:13) The bearing stress at bends for limit state method compared to working stress method of design is

A: 1.5 times more

B: 2.5 times more

C: 2.5 times less

D: 1.5 times less

Q: 14) Pick up the incorrect statement from the following:

Tensile reinforcement bars of a rectangular beam

A: Are curtailed if not required to resist the bending moment

B: Are bent up at suitable places to serve as shear reinforcement

C: Are bent down at suitable places to serve as shear reinforcement

D : Are maintained at bottom to provide at least local bond stress

Q:15) The designed bond stress of

M20 grade concrete is:

A: 1.2 N/mm<sup>2</sup>

B: 1.8 N/mm<sup>2</sup>

C: 1.0 N/mm<sup>2</sup>

D: 1.6 N/mm<sup>2</sup>

Q:16) For a 30 degree cranked or bend up bar, the inclined length of the crank is equal to:

A: 1.73 d

B:d/2

**C**: d

D: 2d

Q:17) Development length is inversely proportional to:

A: Shear stress

B: Stress in bar

C: Bending stress

D: Design bond stress



Q: 18) The total length of bar having hook at both the ends is

A:L+9D

B: L + 12D

C: L + 18D

D:L+24D

Q:19) The clear distance between the lateral restraints for a simply supported or continuous beam to ensure lateral stability should not exceed:

A: 60 b<sup>2</sup> or 250 b<sup>2</sup>/d whichever is more

B: 60 b or 250 d<sup>2</sup>/b whichever is less

C: 60 b or 25 d<sup>2</sup>/b whichever more

D: 60 b or 250 b<sup>2</sup>/d whichever is less

Q: 20) In doubly reinforced sections, total reinforcement percentage of steel should not exceed:

A: 4.0

B: 6.0

C: 8.0

D: 10.0



Q: 21) Minimum spacing between horizontal parallel reinforcements of different sizes should not be less than

A: One diameter of thinner bar

B: One diameter of thicker bar

C: Sum of the diameter of thinner and thicker bars

D: Twice the diameter of thinner bar

Q: 22) A simply supported beam is considered as a deep if the ratio of effective span to overall depth is less than:

A:1

B:4

C:3

D:2



Q: 23) bending moment co-efficient and shear co-efficient for continuous beams of uniform cross-section as per IS: 456 (table 12 and 13) may be used only when spans do not differ to the longest span by:

A: 15%

B: 20%

C: 10%

D:12%

Q: 24) A T-beam behaves as a rectangular beam of a width equals to its flange if its neutral axis:

A: Falls within the flange

B: Falls below the flange

C: Coincides with the geometrical centre of the beam

D: falls below the centroidal axis of the beam

Q: 25) The thickness of the flange of

T-beam of a ribbed slab is assumed as

A: Half the thickness of the rib

B: Thickness of the concrete topping

C: Depth of the rib

D: Width of the rib



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