

Q. A cantilever beam of span 6 m is subjected to a point load of magnitude 40 kN at the free end. Deflection at the free end will be: (Given EI is constant throughout the length)

[UPRVNL JE 2019]

- A. $2880/EI$
- B. $360/EI$
- C. $1440/EI$
- D. $720/EI$

Q. Revised estimate is prepared when the original sanctioned detailed estimate exceeds by: [UPRVNL JE 2019]

A. 3%

B. 10%

C. 15%

D. 5%

Q. A canal with rectangular cross-section of width b is carrying an uniform flow of depth h , For this canal if chezy's coefficient is C and Manning's roughness coefficient is n , the product ' Cn ' is given by [UPPCL AE 2018]

A. $(2b + h)^2 / 3$

B. $(b + 2h)^2 / 3$

C. $(b + 2h)^2 / 6$

D. $(2b + h)^2 / 6$

Q. In the context of provisions for design of mixes and acceptance of concrete in Indian standards consider the following statements: [UPPCL AE 2018]

Statement 1 :- For a M25 grade concrete, if it is expected that the standard deviation in strength will be 4 MPa, the target mean strength for the design of the mix should be taken as 31.5 MPa

Statement 2 :- The Sample of three specimens Should be rejected if the difference between the maximum and the minimum strength obtained (Form the three specimens) is more than 3.5 MPa

Which of the following is CORRECT?

- A. Both statements are FALSE
- B. Statement – 1 is TRUE and Statements – 2 is FALSE
- C. Both statements are TRUE
- D. Statement – 1 is FALSE and Statements – 2 is TRUE

Q. The capillary rise in the glass tube is not to exceed 0.2 mm of water. Determine its minimum size, given that surface tension for water in contact with air = 0.0725 N/m. (consider angle, = 0, density of water = 1000 kg/m³) [UPPCL AE 2019]

- A. 14.8 cm
- B. 11.8 cm
- C. 12.8 cm
- D. 13.8

Q. A Light cable 18 m long, is supported at two ends at the same level. The Supports are 16 m apart. The cable supports 120 N load dividing the distance into two equal parts. Find the tension in cable. [UPPCL AE 2019]

- A. 60.00 N
- B. 156.34 N
- C. 116.42 N
- D. 130.97 N

Q. Full Form of USLE used in hydrology is; [UPPCL AE 2019]

A. Unity of soil loss Equation

B. Universal source soil Loss Equation

C. Universal soil Loss Equation

D. Universal soil Loss Equation

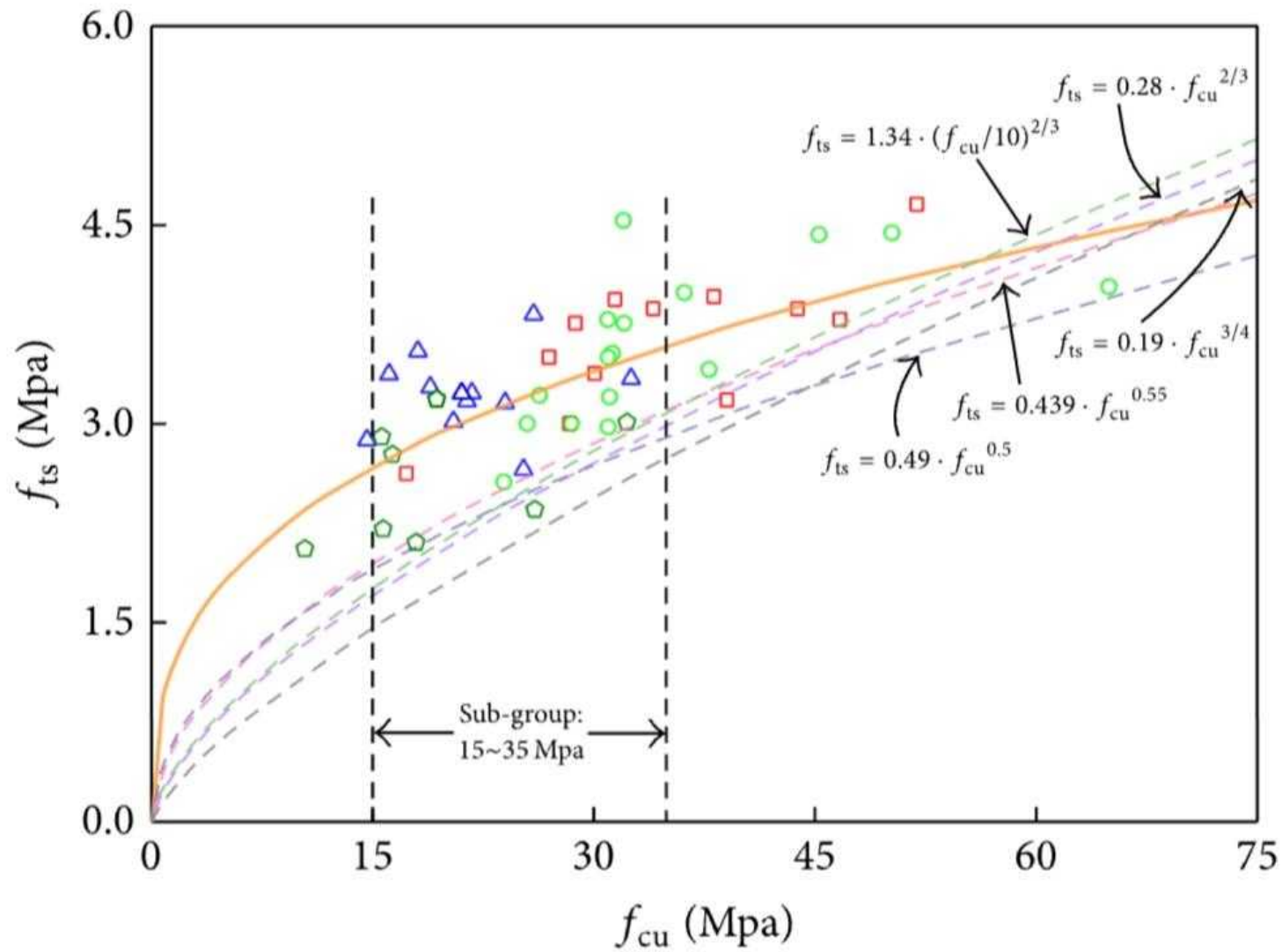
Q. For the formwork design, IS-456-2000 suggested the deviation from specified dimensions of cross section of columns and beams at _____. [MPSC AE Main 2017 Paper - I]

- A. + 12 mm , - 6 mm
- B. + 50 mm , - 12 mm
- C. + 25 mm , - 25 mm
- D. + 12 mm , - 12 mm

Q. If the compressive strength of concrete increases, then tensile strength is also increases, but at a _____.

[MPSC AE Main 2017 Paper - I]

- A. Increasing rate
- B. Decreasing rate
- C. Constant rate
- D. Exponential increasing rate



- Group A (1955s)
- Group B (2011s)
- △ Group C (2000s)

- ◇ Group D (2005s)
- $f_{ts} = 1.033 \cdot f_{cu}^{0.35}$
(best fitting curve)

$f_{ts} = 0.28 \cdot f_{cu}^{2/3}$
 $f_{ts} = 1.34 \cdot (f_{cu}/10)^{2/3}$
 $f_{ts} = 0.19 \cdot f_{cu}^{3/4}$
 $f_{ts} = 0.439 \cdot f_{cu}^{0.55}$
 $f_{ts} = 0.49 \cdot f_{cu}^{0.5}$

Sub-group:
15~35 Mpa

Q. Which of the following is NOT a purpose of valuation?

[DMSC JE 2019]

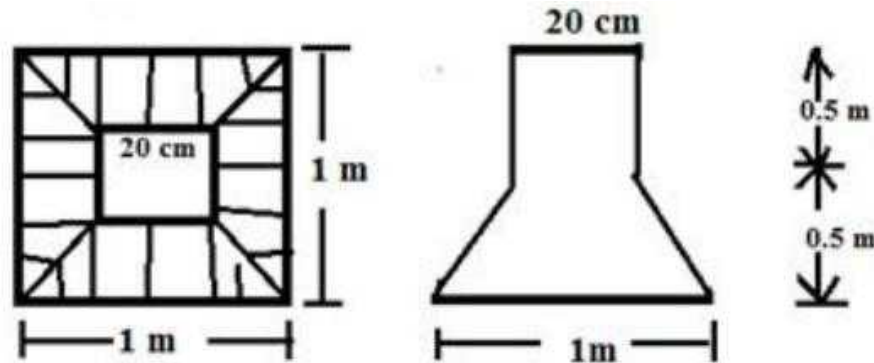
A. Specification of material

B. Tax fixation

C. Insurance Premium

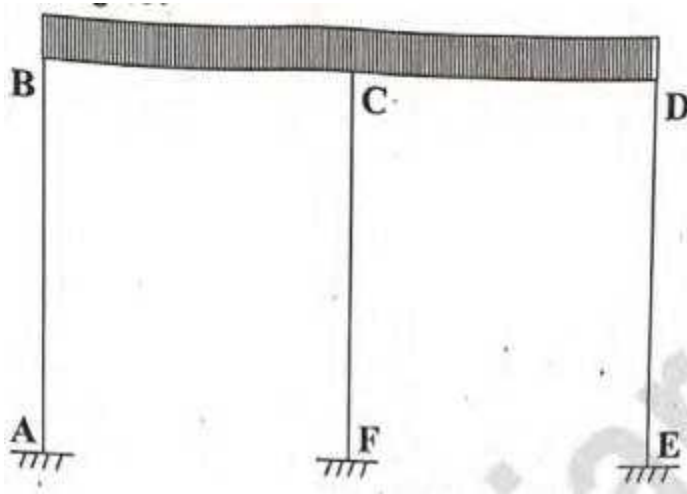
D. Rent Fixation

Q. The Shuttering Quantity for the footing shown in the below figure is: [DMSC JE 2019]



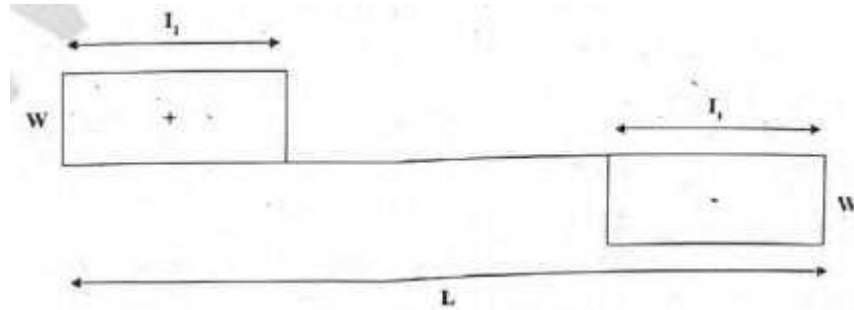
- A. 3.5 m^2
- B. 2.0 m^2
- C. 4.0 m^2
- D. 2.5 m^2

Q. What is the moment at joint F, in a case where there is no side sway and the member CF is along the axis of symmetry while a UDL of W kN/m is applied all along the length BD as shown in the figure? [GPSC AE 2020]



- A. $WL^3 / 48 EI$
- B. $WL^3 / 384 EI$
- C. 0
- D. None of the above

Q. The shear force diagram for a simple supported beam of span L is given in the figure. The maximum bending moment is [GPSC AE 2020]



- A. WL
- B. $WL/2$
- C. Wl_1
- D. $Wl_1/2$

Q. If the pressure at any point in the liquid approaches the _____ (1), the liquid starts vaporizing, Vapour bubbles that are created in the region of _____ (2) are carried with the liquid to the region of _____ (3), bubbles explode and collapse there which damage the walls of a conduit and also creates air pockets. The phenomenon is known as _____ (4). [LMRC JE 2020]

A. (1) atmospheric pressure, (2) low pressure, (3) high pressure, (4) cavitation

B. (1) cavitation low pressure, (2) high pressure, (3) high pressure, (4) cavitation

C. (1) saturation vapour pressure, (2) low pressure, (3) high pressure, (4) Cavitation

D. Saturation vapour pressure, (2) high pressure, (3) low pressure, (4) cavitation

Q. Porosity of a soil sample is the ratio of: [LMRC JE 2020]

A. volume of solids to volume of voids

B. volume of voids to total volume of sample

C. volume of voids to volume of solids

D. total volume of sample to volume of voids

Q. $ALN / 60 Q = \text{cumecs}$ is an equation for discharge, where, A is a cross-sectional area of cylinder/ piston, L is the stroke length of the piston and N is the rpm of the crank [LMRC JE 2020]

- A. Diffuser pump
- B. A single acting reciprocating pump
- C. Triple cylinder pump
- D. A double acting reciprocating pump

Q. Effective length of compression member with one end fixed and the other end free is_____. [LMRC AE 2020]

A. 1.20 L

B. 1.00 L

C. 0.67 L

D. 2.00 L

Q. Flexural strength of M25 grade concrete will be _____. [LMRC AE 2020]

- A. 4.5 N mm^2
- B. 3.5 N / mm^2
- C. 5.5 N / mm^2
- D. 2.5 N / mm^2

Q. As per IS 800 : 2007, the cross-section in which the extreme fiber can reach the yield stress, but cannot develop the plastic moment of resistance is classified as [JPSC AE 2020]

- A. Plastic section
- B. Compact section
- C. Semi-compact section
- D. Slender section

Q. Minimum number of vertical bars in a circular column is

[JPSC AE 2020]

A. 6

B. 4

C. 5

D. 8