

Question : 1 Find the tensile stress of a mild steel rod of 18 mm diameter, Given: Ultimate load =9.0 ton

[M.P. Sub Eng. 2016]

- A) 0.03 Ton/sq.mm**
- B) 0.02 Ton/sq.mm**
- C) 0.05 Ton/sq.mm**
- D) 0.06 Ton/sq.mm**

Question : 2 Find the intensity of stress if a steel rod of 26.9 mm diameter and 4.5 m long is subjected to an axial pull of 55kN:

[M.P. Sub Eng. 2016]

- A) 96.77 N/mm²
- B) 97.77 N/mm²
- C) 98.77 N/mm²
- D) 99.77 N/mm²

Question : 3 A steel tie rod of 25 mm diameter is subjected to a pull of 45kN. If Young's modulus of elasticity is $2 \times 10^5 \text{ N/mm}^2$ what would be longitudinal strain?

[MP VYAPAM JE 2015]

- A) 5.09×10^{-4}
- B) 7.5×10^{-4}
- C) 4.58×10^{-4}
- D) 3.9×10^{-4}

Question : 4 A material is said to be isotropic if it has

[H.P. SSC JE 2015]

- A)** Identical properties at all points
- B)** Identical properties in all directions
- C)** Identical properties at some points
- D)** Different properties at all points.

Question : 5 Maximum slenderness ratio allowed as per Indian standard for an unreinforced load bearing wall (using Portland Cement or Portland Pozzolana in mortar) is

[APPSC 2016]

- A) 13
- B) 20
- C) 27
- D) 35

Question : 6 If characteristic compressing strength at 28 days is 40 N/mm^2 and the standard deviation is 5 N/mm^2 , the target strength at 28 days for concrete mix proportioning

[APPSC 2016]

- A) 40 N/mm^2
- B) 45 N/mm^2
- C) 43.25 N/mm^2
- D) 48.25 N/mm^2

Question : 7 As the span of a bridge increase, the impact factor

[APPSC 2016]

- A) Decrease**
- B) Increase**
- C) Decrease up to a critical value of span and then increase**
- D) Increase up to a critical value of span and then decreases.**

Question : 8 The absolute maximum bending moment in a simply supported beam of span 20 m due to moving u.d.l. of 4 kN/m spanning over 5 m is

[BPSC 2019]

- A) 87.5 kNm at the support
- B) 87.5 kNm near the mid-point
- C) 3.5 kNm at the mid-point
- D) 87.5 kNm at the mid-point

Question : 9 At a point 'P' the state of stress is $p_x = 6$ MPa, $p_y = -2$ MPa and $q_{xy} = 3$ MPa, the magnitude of principal stresses for this state of stress will be:

[BPSC 2019]

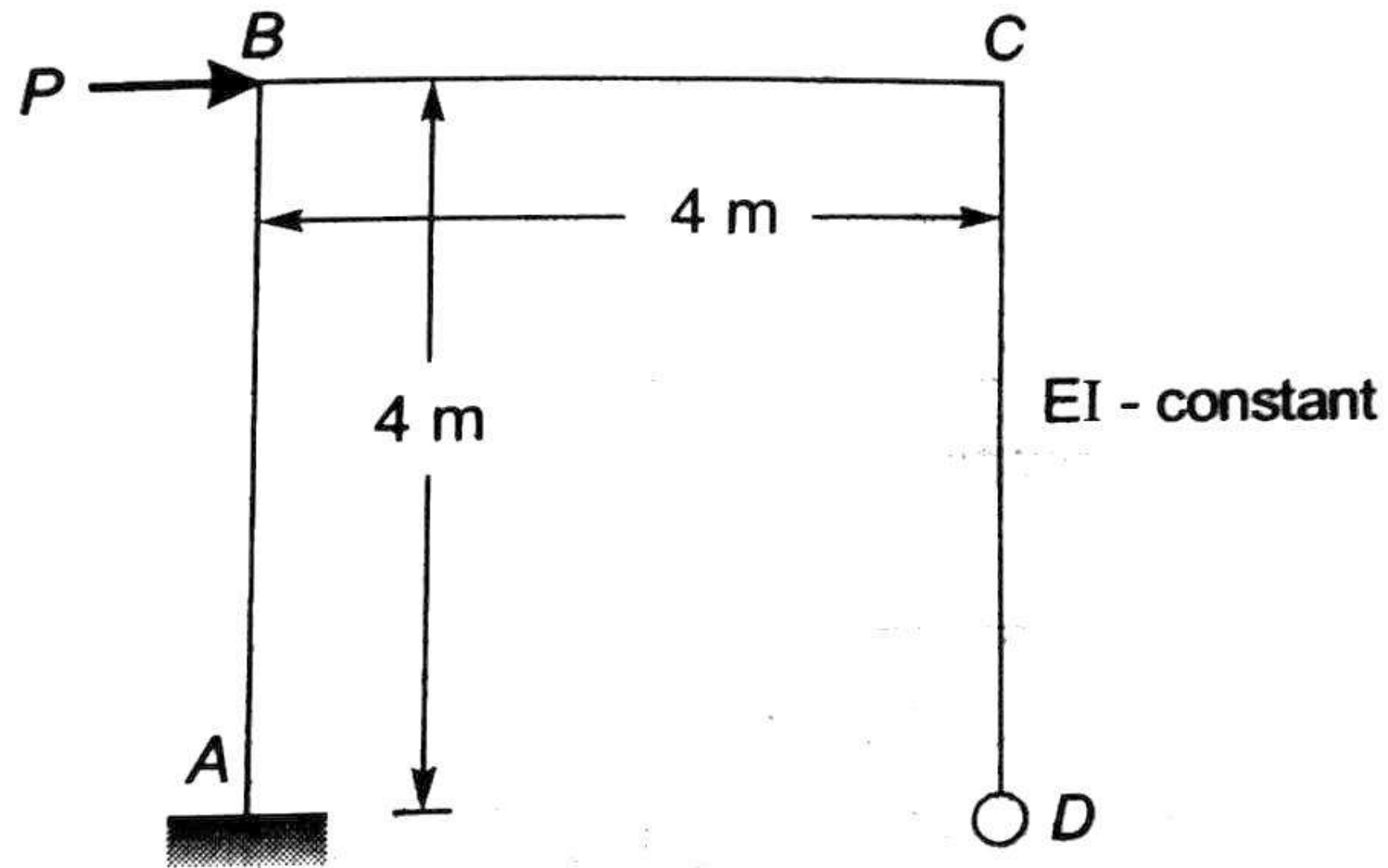
- A) 9 MPa and - 1 MPa**
- B) 7 MPa and - 3 MPa**
- C) 7 MPa and - 1 MPa**
- D) 8 MPa and - 3 MPa**

Question : 10 In T-shaped RCC retaining walls, the main reinforcement in the stem is provided on:

[BPSC 2019]

- A)** The front in one direction
- B)** The front face on both direction
- C)** The inner face in one direction
- D)** The inner face in both direction.

Question : 11 For the frame shown in the figure, the shear equation is



[MPSC 2017]

OP 1 :

$$\frac{M_{BA} + M_{AB}}{4} + \frac{M_{CD}}{4} + P = 0$$

OP 2 :

$$\frac{M_{BA} + M_{AB}}{4} + \frac{M_{BC}}{4} + P = 0$$

OP 3 :

$$M_{AB} + M_{BA} + M_{CD} + M_{DC} = 0$$

OP 4 :

$$M_{AB} + M_{BA} + M_{CD} + M_{DC} = P$$

Question : 12 Dynamic viscosity of a gas

[MPSC 2017]

- A)** Increase as temperature decreases
- B)** Increase as temperature increase
- C)** Is independent of temperature
- D)** May increase or decrease with increase in temperature, depending on the nature of gas

Question : 13 Which statement is correct if splices are provided in the reinforcing bars?

[MPSC 2015]

- A)** Lap splices shall not be used for bars larger than 30 mm diameter.
- B)** For flexure tension; Lap length = $2 L_d$ or 30ϕ whichever is greater
- C)** For direct tension; Lap length = $2 L_d$ or 24ϕ whichever is greater
- D)** For compression members; Lap length = L_d or 30ϕ whichever is greater.

Question : 14 The strain energy due to torsion is (torsion = T ; modulus of elasticity = E ; moment of inertia = I ; shear modulus = G ; polar moment of area = J)

[MPPSC 2017]

OP 1 : $\int \frac{T^2 dx}{2EI}$

OP 2 : $\int \frac{T^2 dx}{2GJ}$

OP 3 : $\int \frac{T dx}{2EI}$

OP 4 : $\int \frac{T dx}{2GJ}$

Question : 15 The optimistic, most likely and pessimistic estimates for an activity are 4 days, 11 days completion time of this activity is

[KPSC 2017]

- A) 9 days
- B) 10 days
- C) 11 days
- D) 12 days.

Question : 16 For a discharge Q , the specific speed of the pump is N_s . For half discharge with the same head, the specific speed will be

[KPSC 2017]

OP 1 : N_s

OP 2 : $N_s \sqrt{2}$

OP 3 : $\frac{\sqrt{2}}{N_s}$

OP 4 : $2N_s$

Question : 17 Flexural collapse in over-reinforced beams is due to

[KPSC 2015]

- A)** Primary compression failure
- B)** Secondary compression failure
- C)** Primary tension failure
- D)** Bend failure.