



# SSC JE MAINS 2019

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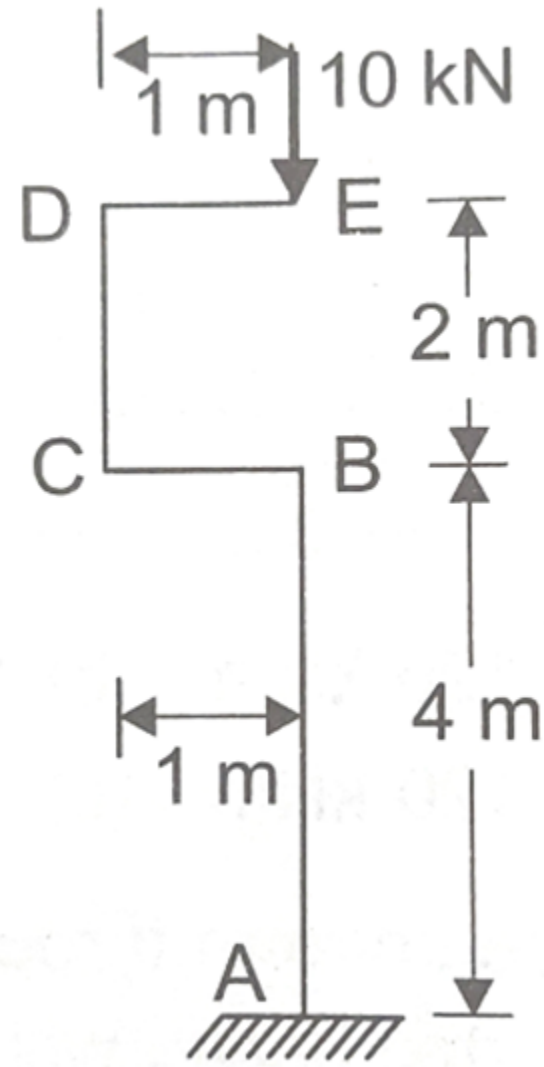
**Q : ) What is the bending moment at A for the bent column shown in the figure given?**

**A : 40 kNm**

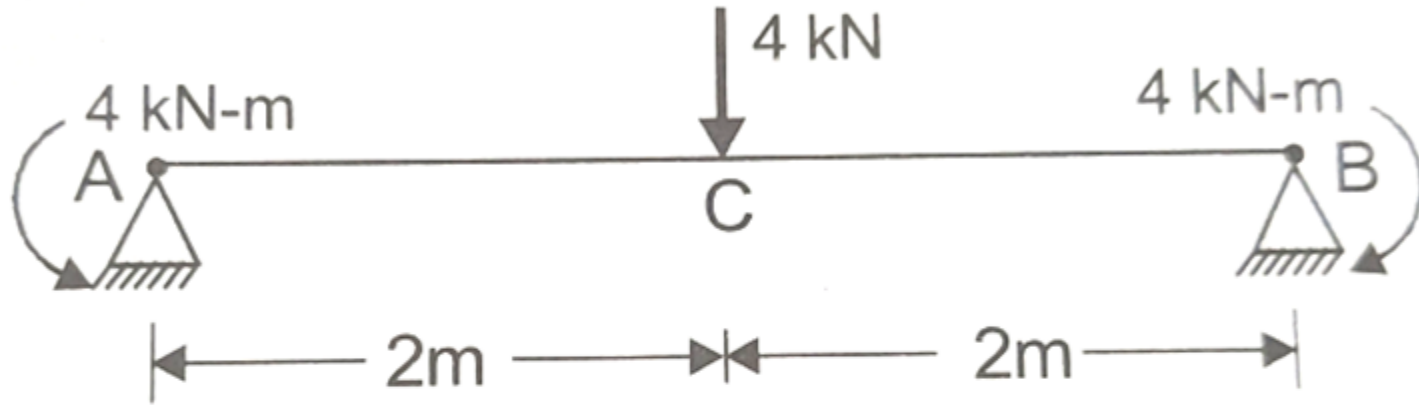
**B : 20 kNm**

**C : 10 kNm**

**D : Zero**



**Q : ) A simply supported beam is loaded as in figure. The bending moment at C is**



**A : 4 kN-m (Sagging)**

**B : 4 kN-m (Hogging)**

**C : 8 kN-m (Sagging)**

**D : zero**

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

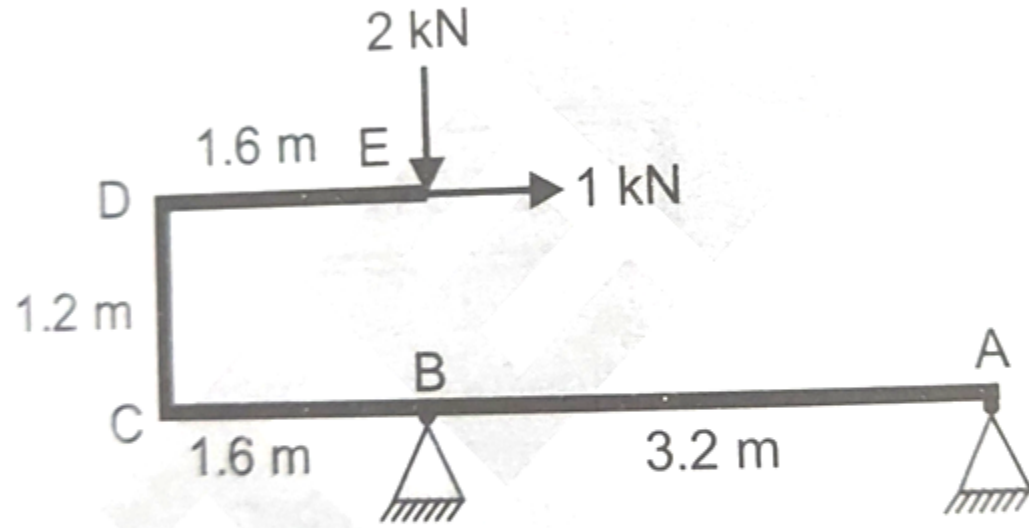
**A : Bending moment is zero**

**B : Shear force is zero**

**C : Shear force is constant**

**D : Bending moment is constant**

**Q : ) The bending moment at C for the beam shown in the figure is**



- A : —3.2 kN-m**
- B : —4.4 kN-m**
- C : —6.2 kN-m**
- D : —7.2 kN-m**

**Q : ) 'A mild steel bar is subjected to an axial force  $P_1$  resulting in an axial stress  $\sigma_x = 100 \text{ N/mm}^2$ . What would be the normal stress on a plane n-n making an angle  $\theta = 45^\circ$  with its axis?**

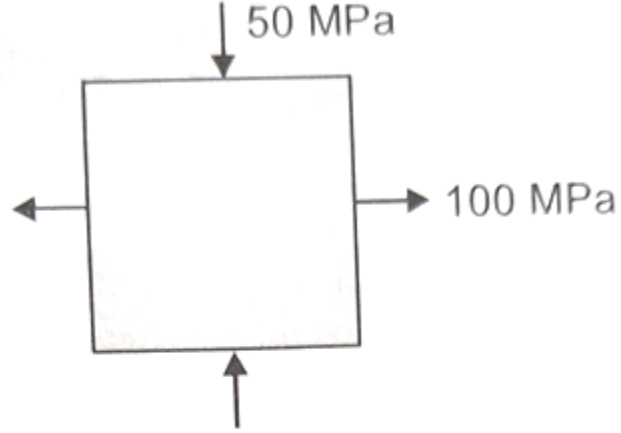
**A :  $25 \text{ N/mm}^2$**

**B :  $40 \text{ N/mm}^2$**

**C :  $50 \text{ N/mm}^2$**

**D :  $100 \text{ N/mm}^2$**

**Q : ) What is the diameter of Mohr's circle of stress for the state of stress shown above?**



**A : 20**

**B :  $10\sqrt{2}$**

**C : 10**

**D : Zero**

**Q : ) 7' A two-dimensional stress system has like stresses  $\sigma_x = 100 \text{ N/mm}^2$  and  $\sigma_y = 200 \text{ N/mm}^2$  in two mutually perpendicular directions. The x, y co-ordinates of the centre of the Mohr's circle are**

**A : (0, 150)**

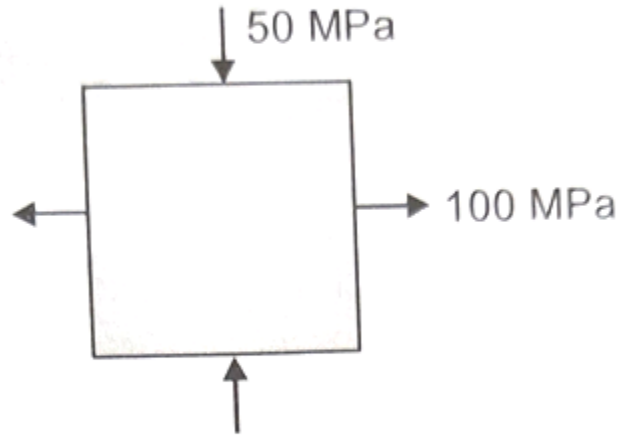
**B : (150, 0)**

**C : (-50, 0)**

**D : (50, 0)**

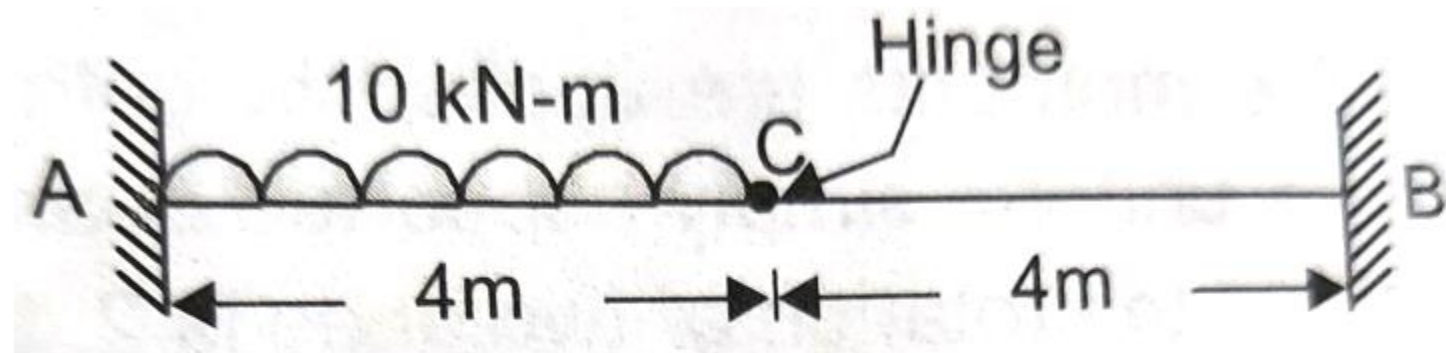


**Q : ) For the state of stress shown in the above figure, normal stress acting on the plane of maximum shear stress is**



- A : 25 MPa compression**
- B : 75 MPa compression**
- C : 25 MPa tension**
- D : 75 MPa tension**

**Q : ) The reaction of the beam at C is**



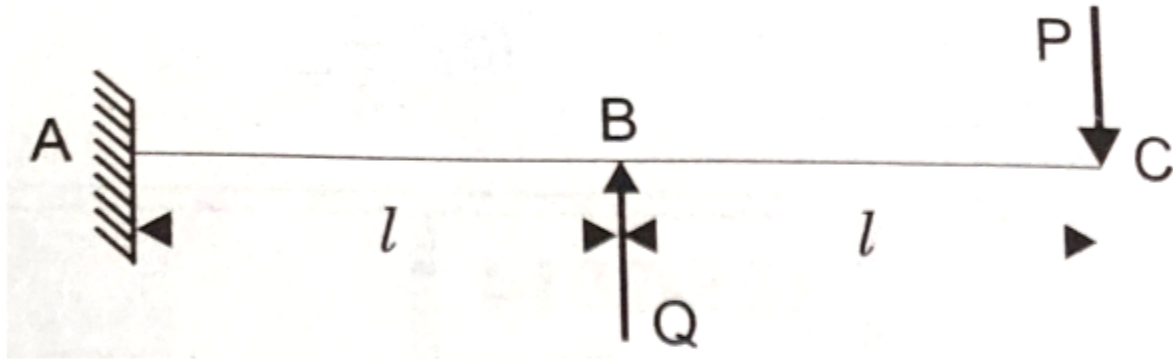
**A : 5.5 kN**

**B : 6.5 kN**

**C : 7.5 kN**

**D : 8.5 kN**

**Q : ) For the beam-system as shown, if the P deflection at C is zero, then the ratio  $P/Q$  is**



- A :  $3/8$**
- B :  $5/8$**
- C :  $3/16$**
- D :  $5/16$**

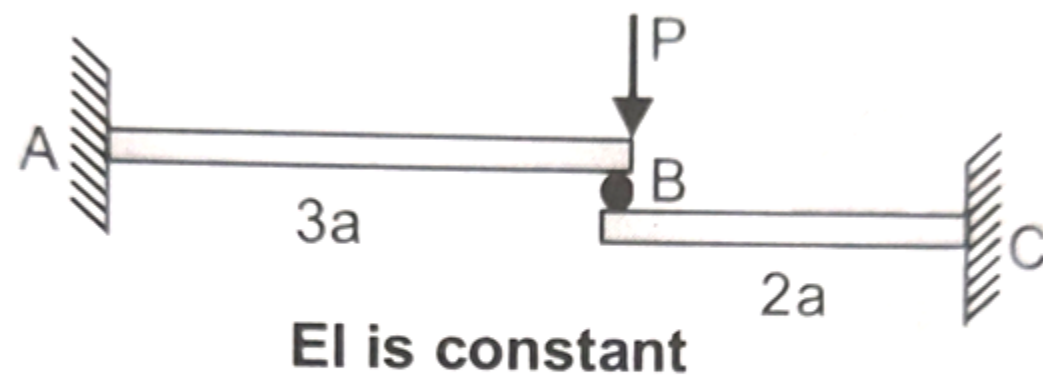
**Q : ) The free end of a cantilever beam is supported by the free end of another cantilever beam using a roller as shown in the figure given below. What is the deflection at the roller support B?**

**A :  $8 Pa^3/(3EI)$**

**B :  $9 Pa^3/(EI)$**

**C :  $72Pa^3/(35EI)$**

**D :  $216 Pa^3/(35EI)$**



**Q : ) The deflection at the free end of a uniformly loaded cantilever of length 1 m is 7.5 mm. What is the slope at the free end?**

**A : 0.01 radian**

**B : 0.015 radian**

**C : 0.02 radian**

**D : 0.025 radian**

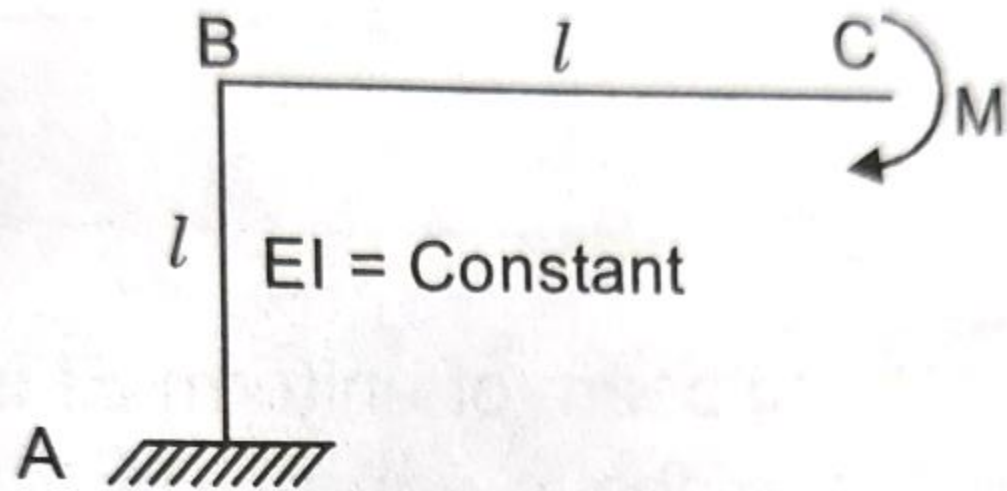
**Q : ) What is the horizontal deflection of free end C of the frame shown in the given figure**

**A :  $MI^2/2EI$**

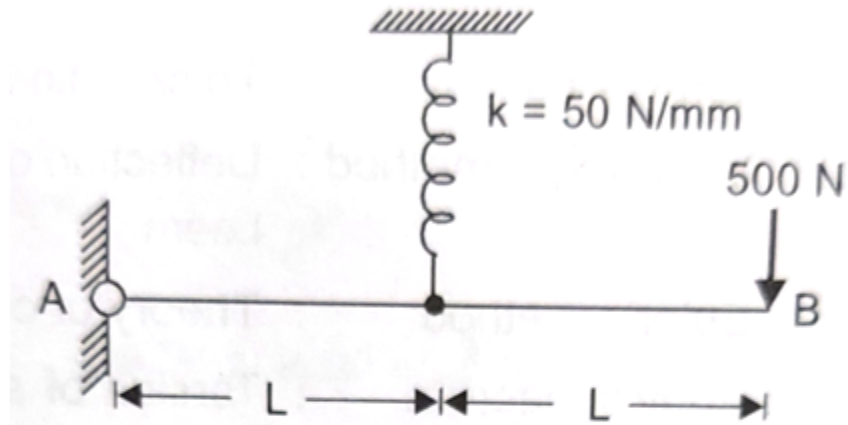
**B :  $MI^2/EI$**

**C :  $3MI^2/2EI$**

**D :  $2MI^2/EI$**



**Q : ) A rigid bar is supported by a spring as shown in the given figure.**



**The deflection of the point B will be**

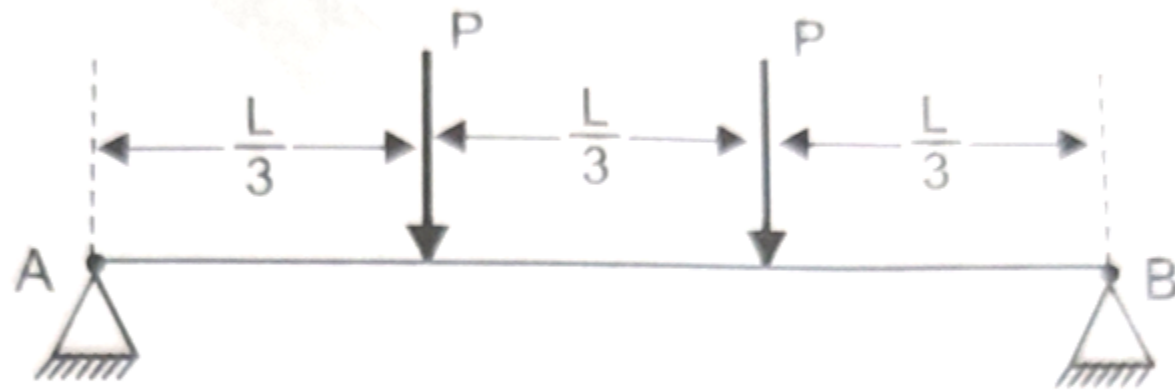
**A : 10 mm upward**

**B : 20 mm downward**

**C : 5 mm upward**

**D : 40 mm downward**

**Q : ) A simply supported beam of uniform flexural rigidity is loaded as shown in the given figure, The rotations of the end 'A' is**



**A :  $PL^2/ 9EI$**

**B :  $PL^2 / 6EI$**

**C :  $PL^2/ 18 EI$**

**D :  $PL^2 / 12EI$**





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