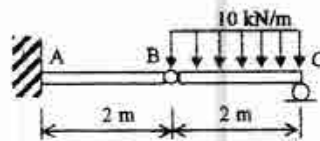


考生注意: 1. 依次序作答, 只要標明題號, 不必抄題。

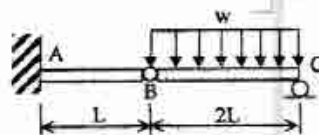
2. 答案必須寫在答案卷上, 否則不予計分, 並限以藍黑色筆作答。

3. 試題隨卷繳回。(餘請詳閱試場規則)

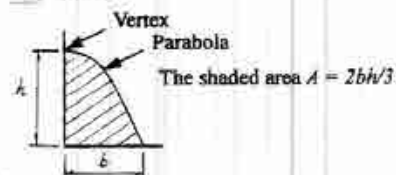
1. Derive the formula for flexural normal stress $\sigma = \frac{My}{I}$. (25%)
2. The prismatic beam as shown has a rectangular cross section. The width and depth of the cross section are 30 cm and 60 cm, respectively.
 - (a) Plot the shear force diagram and bending moment diagram (7%)
 - (b) Determine the maximum bending stress and the maximum shear stress (8%)
 - (c) Plot the stress element and the Mohr's circle representing the stress state at the point where the maximum tensile bending stress occurs. (10%)



3. Determine the deflection and rotation angle at cross section B of the beam as shown, assuming the material property and the cross section dimensions are represented by EI . (25%)



Hint:



4. The stress-strain diagram of an axial-loaded member is shown, and can be described by the equation $\epsilon = 0.45(10^{-6})\sigma + 0.36(10^{-12})\sigma^3$, where σ is in kPa.
 - (a) Determine the yield strength assuming a 0.2% offset. (15%)
 - (b) Determine the elongation if the member is subjected to a tensile axial force of 2.5 kN; the cross section area and the length of the member are 25cm^2 and 100cm, respectively. (10%)

