

科目：工程力學 適用：土木系三

編號：812

考生注意：

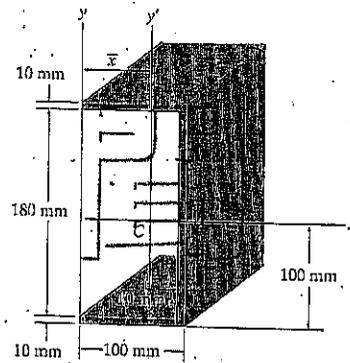
1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

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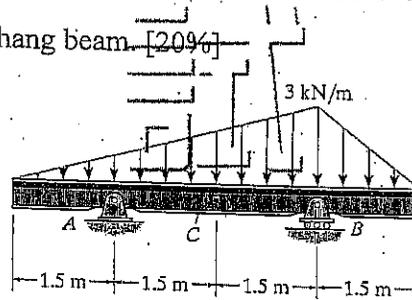
(1) For the cross section of the as shown below, determine:

(a) the distance  $\bar{x}$  which locates the centroidal axis  $y'$  for the cross-sectional area, [10%]

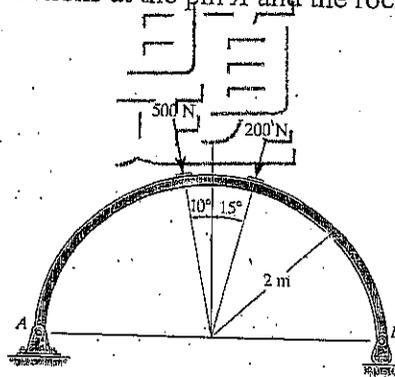
(b) the moment of inertia  $\bar{I}_{y'}$  about the  $y'$  axis. [10%]



(2) Determine the internal shear force and moment acting at point C in the double-overhang beam. [20%]



(3) Determine the reactions at the pin A and the rocker B of the curve beam. [20%]



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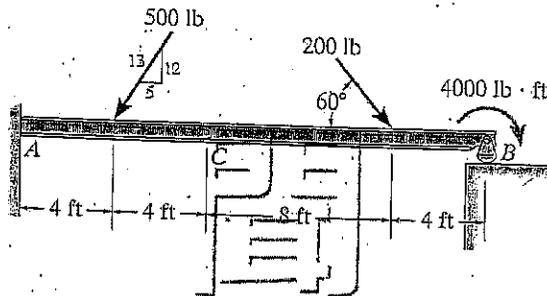
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- (4) The compound beam is fixed at  $A$  and supported by rockers at  $B$ . If it is hinged together at  $C$ , determine the components of reaction at the supports. Neglect the thickness of the beam. [20%]



- (5) The crate has a mass of 80 kg and is being towed by a chain which is always directed at  $20^\circ$  from the horizontal as shown. Determine the crate's acceleration in  $t=2$  s if the coefficient of static friction is  $\mu_s = 0.4$ , the coefficient of kinetic friction is  $\mu_k = 0.3$ , and the towing force is  $P = (90t^2)$  N where  $t$  is in seconds. [20%]

