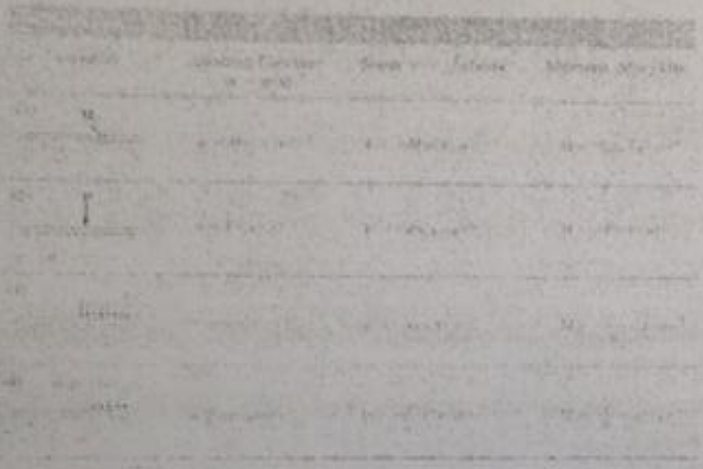
試卷碼	CCUME100B-4202352C-M002					任課老師	林派臣
學年	100	學期	下	日期	2011/05/16	試別	□期中考
科目	Mechanics of Materials II					評分	
姓名		班別				學號	

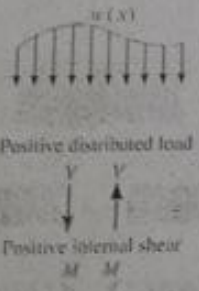
Midterm Exam – Part II (70%)
Time: 2 hr & 30 min

Equations:
A.



B. $\theta_{B/A} = \int_A^B \frac{M}{EI} dx$; $t_{A/B} = \bar{x}\int_A^B \frac{M}{EI} dx$; $t_{B/A} = \bar{x}\int_A^B \frac{M}{EI} dx$

C. The sign convention of the external loads applied to the beam.



Beam sign convention

7. The beam is made of two rods and is subjected to the concentrated load P. Determine the maximum deflection of the beam by the **integration method** if the moments of inertia of the rods are I_{AB} and I_{BC}, and the modulus of elasticity is E. (20%)

8. The wooden beam is subjected to the load shown. Determine the equation of the elastic curve by the **discontinuity functions**. Specify the slope at the B. $E_w = 12$ GPa (15%)

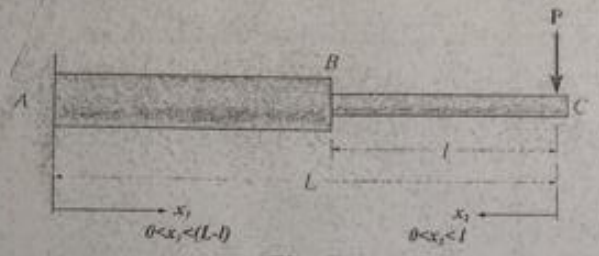


Fig. 7

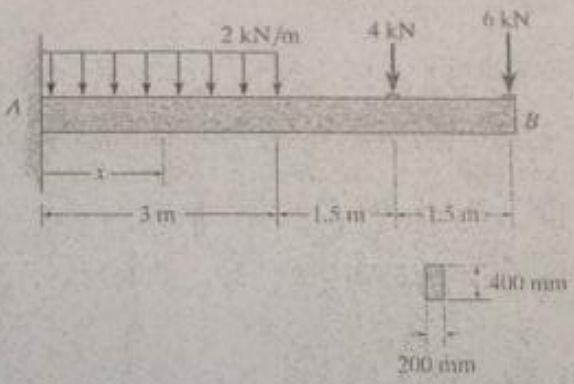


Fig. 8

9. Using the **method of superposition**, determine the deflection at C of beam AB. The beams are made of wood having a modulus of elasticity of $E = 10$ GPa. (20%)

10. Determine the reactions at the supports by the **moment-area method**, then draw the shear diagram. EI is constant. Support B is a thrust bearing. (20%)

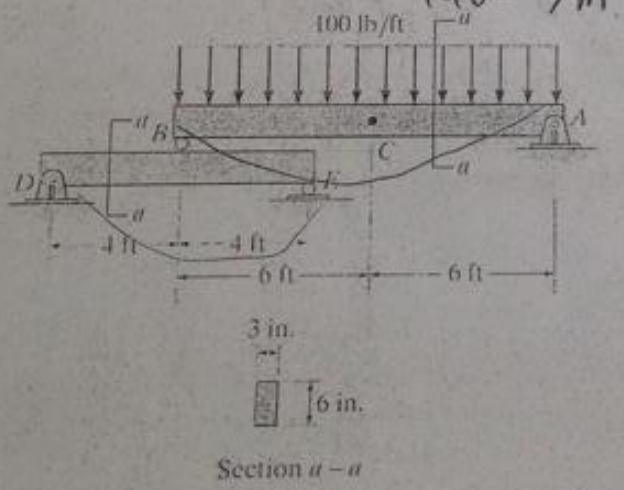


Fig. 9

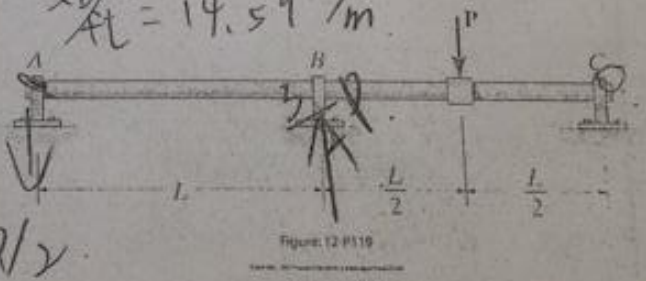
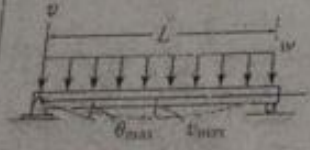


Fig. 10

Beam	Slope	Deflection	Elastic Curve
	$\theta_{max} = \frac{-wL^3}{24EI}$	$v_{max} = \frac{-5wL^4}{384EI}$	$v = \frac{-wx}{24EI}(x^3 - 2Lx^2 + L^3)$
	$\theta_{max} = \frac{-PL^2}{16EI}$	$v_{max} = \frac{-PL^3}{48EI}$	$v = \frac{-Px}{48EI}(3L^2 - 4x^2)$ $0 \le x \le L/2$