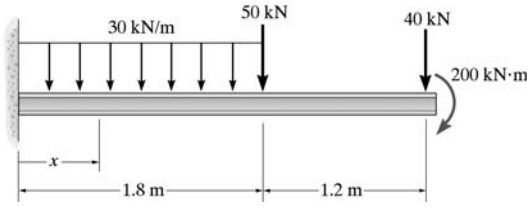
國立臺灣海洋大學河海工程研究所 2016 材料力學 2AB 班第二次大考

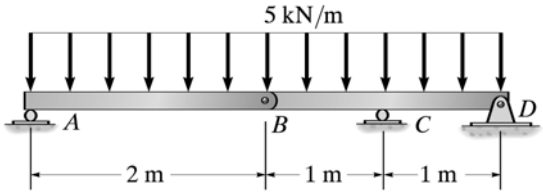
日期：2016 年 05 月 26 日　　姓名：_____　　學號：_____

1. 請畫出下面各樑的剪力圖和彎矩圖。(20%)

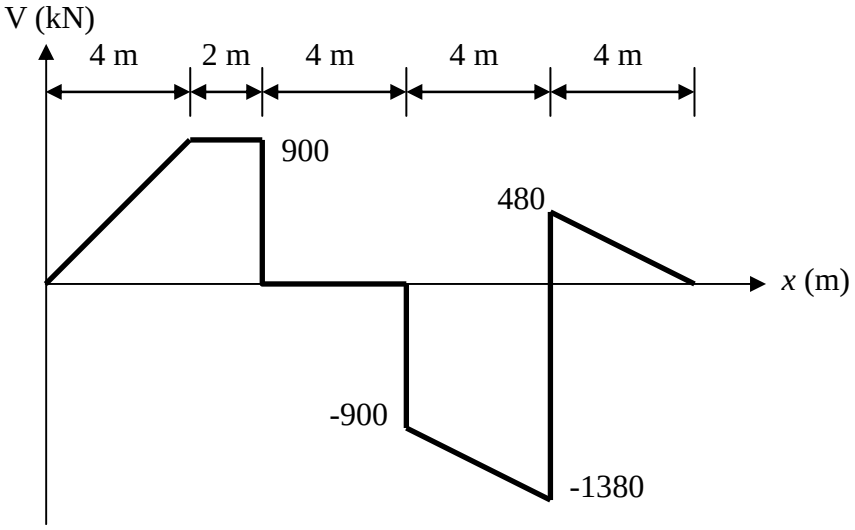
(a)



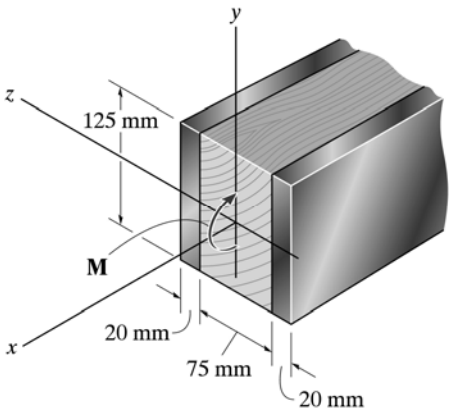
(b)



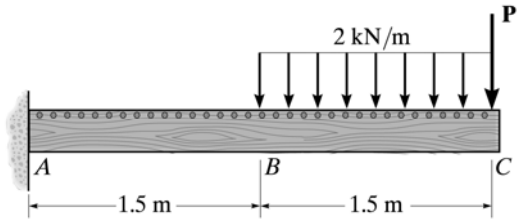
2. 依照所給的剪力圖，繪製相對應的負荷圖與彎矩圖。假設並無力偶作用於梁上。 (10%)

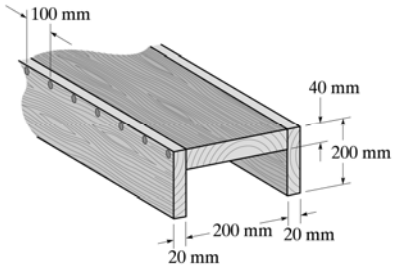


3. 一複合樑包括木質核心和兩鋼板。若木材的容許彎曲應力為 $(\sigma_{\text{allow}})_w = 20$ MPa，鋼則為 $(\sigma_{\text{allow}})_{st} = 130$ MPa，求能施加於樑的最大彎矩。$E_w = 10$ GPa，$E_{st} = 200$ GPa。 (15%)

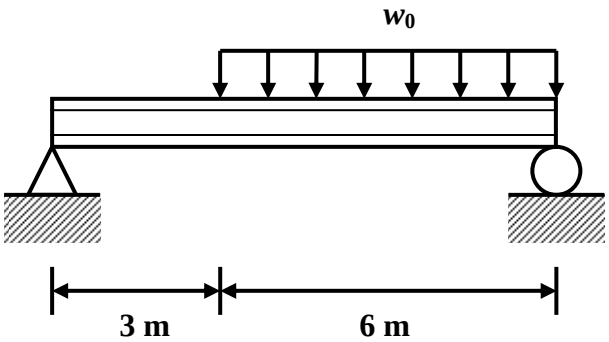


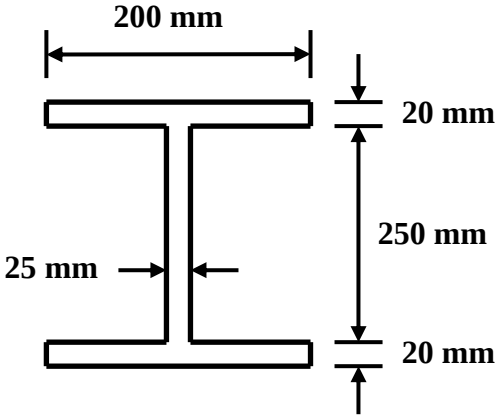
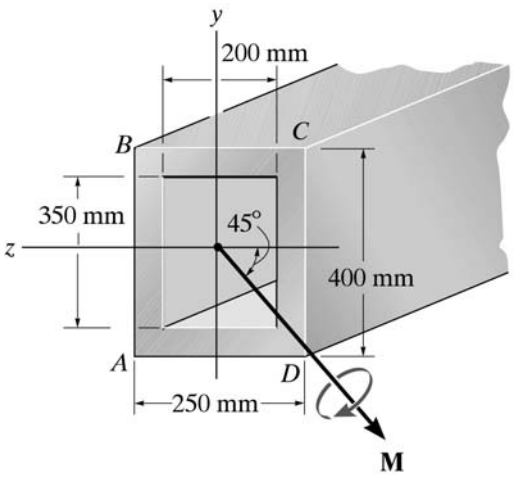
4. 試求樑 AB 段中的釘子所產生的平均剪應力。釘子位於樑之兩側且釘距為 100 mm。各釘直徑均為 4 mm。取 $P = 2$ kN 。 (20%)





5. 樑之容許彎曲應力為 10 MPa，容許剪應力為 1.4 MPa，求容許最大負荷強度 $w_0 = ?$ (20%)





6. 箱型樑承受一彎矩 $M = 30$ kN·m，方向如圖示。試求樑內最大彎曲應力及中性軸方位。 (15%)