淡江大學九十二學年度轉學生招生考試試題

系別：航太工程學系三年級　　　科目：工程力學(含靜力學、材料力學)

准帶項目請打「○」否則打「x」	
○	簡單型計算機

P. ½

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本試題雙面印製

1. A tension test is performed on a bar of an unknown material to determine its material properties. Before the test, the bar's dimensions are 24 *in* X 1 *in* X 2 *in*. A 1500 *lb* force is applied to the bar as shown in *Figure* 1. While the force is applied, the dimensions of the two sides are measured as 24.0120 *in* and 1.9998 *in*.

   (a)　What is the value of the elastic modulus for the material? (5%)

   (b)　What is the value of the shear modulus for the material? (5%)

   (c)　What is the length of the 1 *in* side when the 1500 *lb* force is applied? (5%)
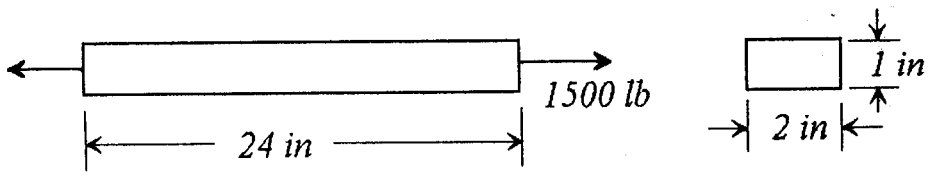

Figure 1

2. **Draw** the shear and moment diagram (*V-M* diagram) for the beam shown in *Figure* 2 **and** find the maximum bending moment. (10%)
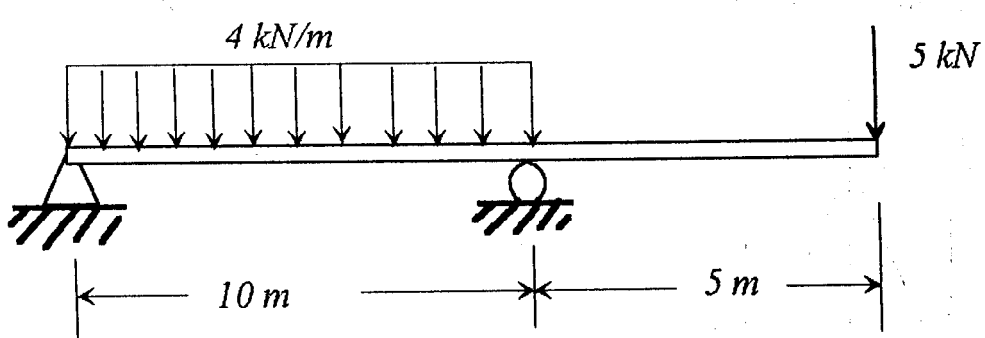

Figure 2

3. Describe the differences among a **rod**, a **bar**, and a **beam**. (15%)

◀注意背面尚有試題▶

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P.2/2.

本試題共 2 頁

4. For the beam and loading shown in *Figure* 4, determine the magnitude of P if the maximum shear stress in the beam is 1.82 *Mpa*. Compute the maximum tensile **and** compressive stress in the beam. (30%)
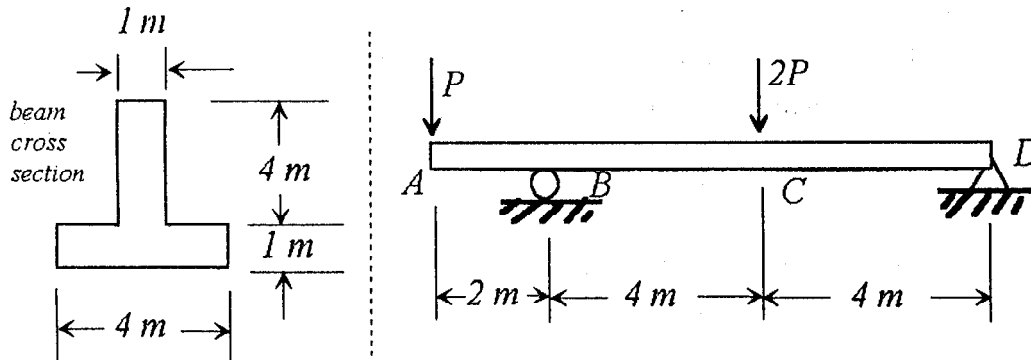

Figure 4

5. For the truss shown in *Figure* 5

(a) Determine the forces in members *LM, GI, HI,* and *HJ.* (10%)

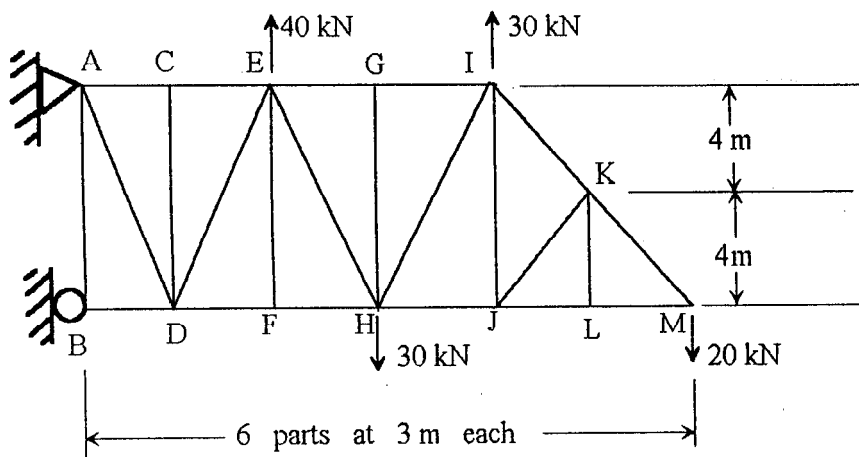(b) Identify all zero-force members in the truss. (20%)

Figure 5