淡江大學 103 學年度日間部轉學生招生考試試題

系別：機械與機電工程學系三年級　　科目：工程力學(含靜力學、動力學、材料力學)

考試日期：7 月 20 日(星期日) 第 3 節　　本試題共 4 大題， 共 2 頁

本試題雙面印刷

1. The A-36 steel rod is subjected to loadings shown in Fig. 1. If the cross-sectional area of the rod is 60 mm^2, determine the displacement of *B* and *A*. Neglect the size of the couplings at *B*, *C*, and *D*. (25%)

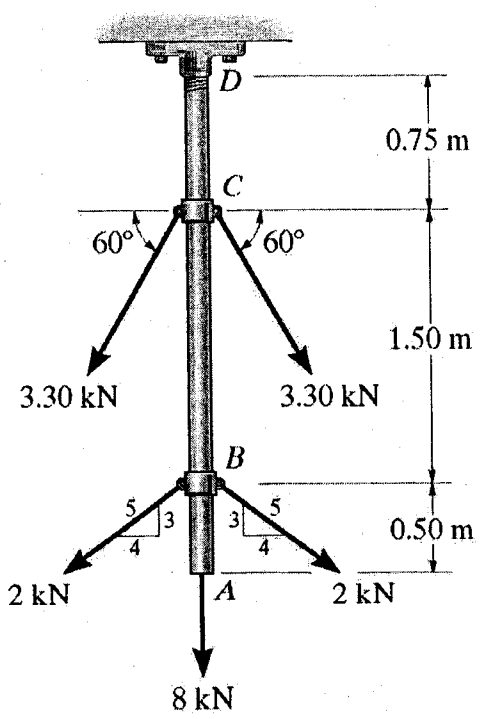

Fig. 1

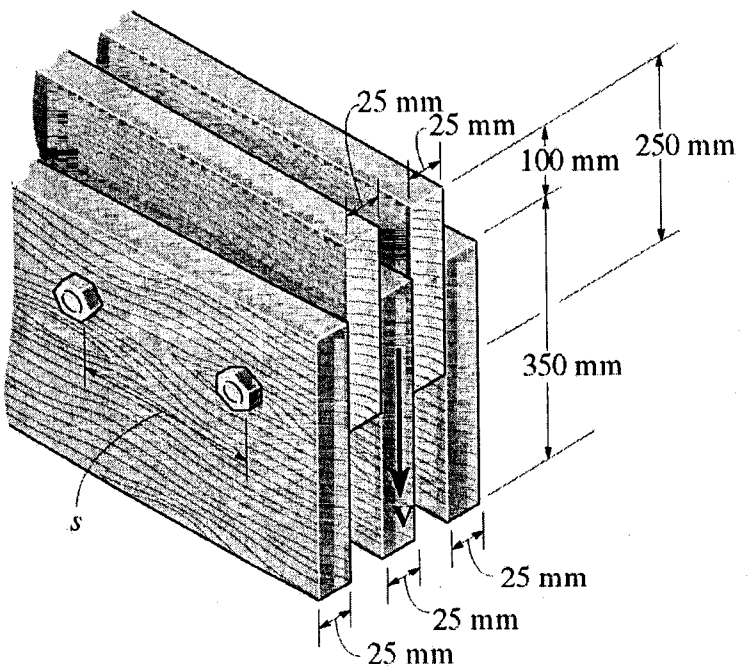

Fig. 2

2. A beam is constructed from five boards bolted together as shown in Fig. 2. Determine the maximum shear force developed in each bolt if the bolts are spaced s=250 mm apart and the applied shear is **V**= 35 kN. (25%)

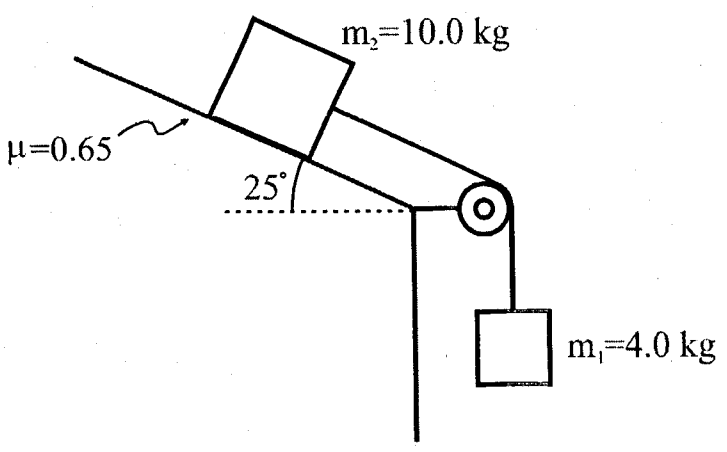

Fig. 3

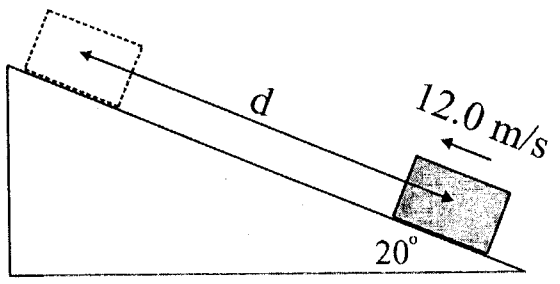

Fig. 4

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背面尚有試題

淡江大學 103 學年度日間部轉學生招生考試試題 43-2

系別：機械與機電工程學系三年級　　科目：工程力學(含靜力學、動力學、材料力學)

考試日期：7 月 20 日(星期日) 第 3 節　　本試題共 4 大題，共 2 頁

3. (a) Determine the tension in the rope in the system shown in Fig. 3. (10%)

   (b) An 8.0 kg block is fired up along a ramp at an initial velocity of 12.0 m/s shown in Fig. 4. The coefficient of friction, μ, is 0.28. The ramp angle is 20°. Determine the distance d which the block will slide before coming to a stop? (15%)

4. A vibration system (Fig. 5) has a mass, m, and two springs with their spring constants, $k_1 = 1\times10^5$ kN/m and $k_2 = 2\times10^5$ kN/m.

   (a) What is the resonance? (5%)

   (b) What about the natural frequency of a system? (5%)

   (c) Determine the mass, m, in order to make the system in resonance. (15%)

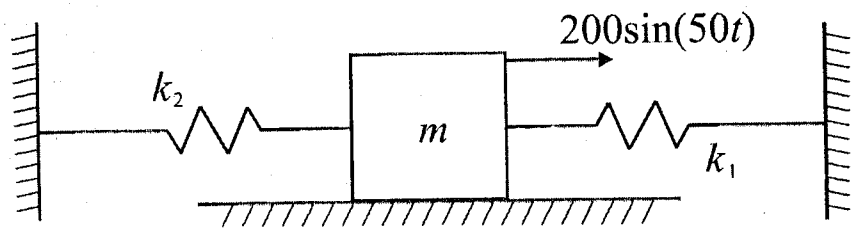

Fig. 5

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