

淡江大學九十學年度日間部轉學生招生考試試題

系別：機械工程學系三年級

科目：工程力學(含靜力、動力、材料力學)

准帶項目請打「○」否則打「×」	
計算機	字典
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本試題共 / 頁

1.

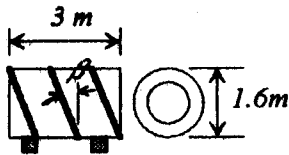


Figure 1

The pressure tank shown in Figure 1 has 10 mm wall thickness and butt-welded seams forming an angle $\beta=20^\circ$ with a transverse plane. For a gage pressure 500 kpa, determine

- (1)(05%) the hoop stress of the tank,
- (2)(05%) the longitudinal stress of the tank,
- (3)(08%) the normal stress perpendicular to the weld,
- (4)(07%) the shearing stress parallel to the weld.

2.

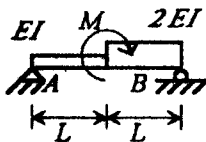


Figure 2

The flexural rigidities for the simply supported step-shaft shown in Figure 2 are indicated in the Figure. The shaft is subjected to a concentrated moment (M) at the center.

- (1)(25%) Determine the location and magnitude of the maximum deflection.

3.

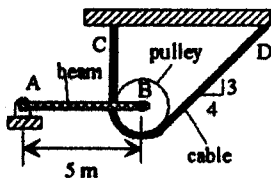


Figure 3

The light pulley (radius 0.2m) is supported by the frictionless bearings at the end of the uniform 1280N beam AB, as shown in Figure 3. A cable is wrapped around the pulley and connected to a ceiling at points C and D.

- (1)(05%) Draw the free-body diagram of the beam AB.
- (2)(05%) Draw the free-body diagram of the pulley.
- (3)(05%) Find the force in the cable.
- (4)(10%) Find the reactions of the pin at A onto the beam.

4.

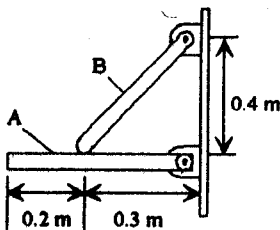


Figure 4

Bar A in Figure 4 has angular velocity 0.5 rad/s (clockwise) and angular acceleration 0.25 rad/s² (counter clockwise) at given instant.

- (1)(10%) Find the angular velocity of bar B.
- (2)(15%) Find the angular acceleration of the bar B.