

國立臺北科技大學 111 學年度碩士班招生考試

系所組別：1120 機械工程系機電整合碩士班乙組

第二節 工程力學 試題

第 1 頁 共 2 頁

注意事項：

1. 本試題共四題，每題 25 分，共 100 分。
2. 不必抄題，作答時請將試題題號及答案依照順序寫在答案卷上。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1. The system of three elements shown in Fig. 1 consists of a 6-kg block B , a 10-kg disk D , and a 12-kg cylinder C . If no slipping occurs, determine the total kinetic energy of the system. (25%)

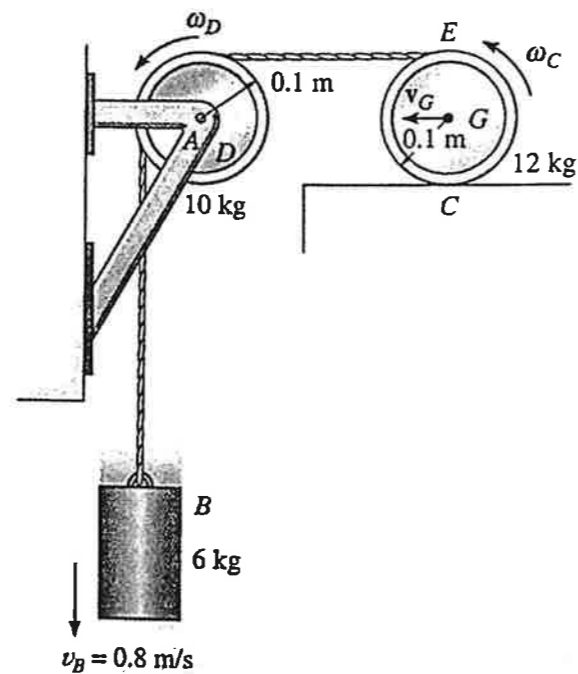


Fig. 1

2. The 100-kg stone shown in Fig. 2 is originally at rest on the smooth horizontal surface. If a towing force of 200 N, acting at an angle of 45° , is applied to the stone for 10 s, determine the final velocity and the normal force which the surface exerts on the stone during the time interval. (25%)

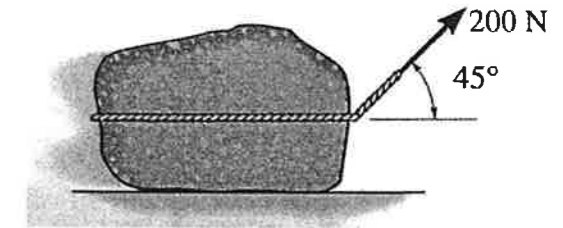


Fig. 2

3. A fixed crane has a mass of 1000 kg and is used to lift a 2400-kg crate. It is held in place by a pin at A and a rocket at B . The center of gravity of the crane is located at G . Determine the components of the reactions at A and B . (25%)

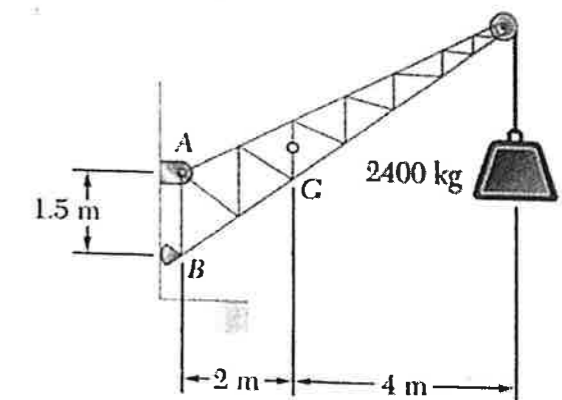


Fig. 3

注意：背面尚有試題

4. The frame shown in Fig. 4 supports part of the roof of a small building. Knowing that the tension in the cable is 150 kN, determine the reaction at the fixed end E . (25%)

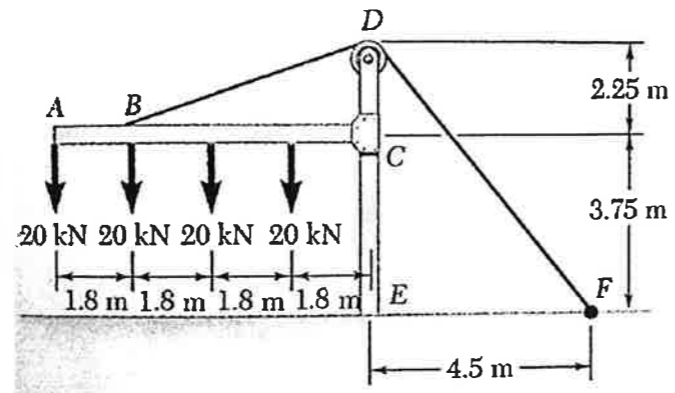


Fig. 4