Problems Based on Virtual Energy

2012–2013 (Sem. I) (ME101) (MTU)

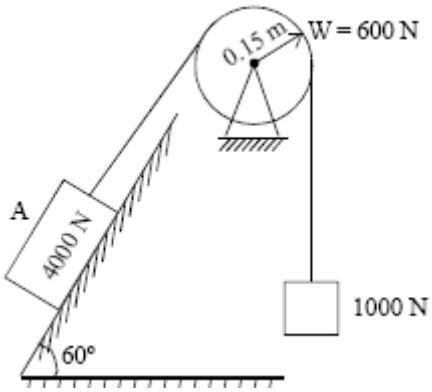
1. Explain principle of virtual work.

2012–2013 (Sem. II) (ME201) (MTU)

1. State the principle of virtual work.

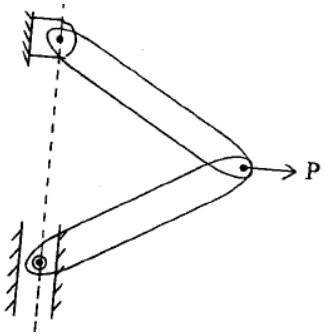
2013–14 (Sem. I) (EME102) [COP]

1. Determine the distance that block A shown in Fig., must move in order to reach velocity of 3 m/s. What is the acceleration of the system? Take coefficient of friction between the block and plane as 0.2. Use work energy method.



2013–14 (Sem. I) (ME101) [COP]

1. In the mechanism shown in figure, determine the horizontal force *P* required to be applied to hold the system in equilibrium. The length of each link is 1 m and weight is *W* newton. (Using virtual work).



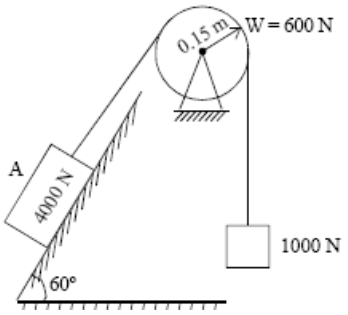
2014–15 (Sem. I) (ME101) [COP]

1. The diameters of the two steps of the pulley of a Weston's differential pulley block are 40 cm and 30 cm respectively. Determine the value of the effort required to lift a load of 4 kN using the principle of virtual work. Neglect the frictional forces.

2014–15 (Sem. II) (ME201) [COP]

1. Define virtual work.

2. Determine the distance that block *A* shown in figure must move in order to reach velocity of 3 m/s. What is the acceleration of the system? Take coefficient of friction between the block and plane as 0.2. Use work energy method.



2015–16 (Sem. I) (ME101) [COP]

1. Define the principle of virtual work,

2. A uniform ladder weighing 200 N rests with its upper end against a smooth vertical wall and its foot on a rough horizontal ground making 60° angle with ground. Determine friction force of ground using method of virtual work.

2015–16 (Sem. II) (ME201) [COP]

1. A uniform ladder of 300 N weight rests against a smooth vertical wall and a rough horizontal floor making an angle of 60° with the horizontal. Use the method of virtual work to find the frictional force between the foot of ladder and the rough horizontal floor.

2018–19 (Sem. II) (NME202/EME202) [COP]

1. Define Principle of virtual work and its application.