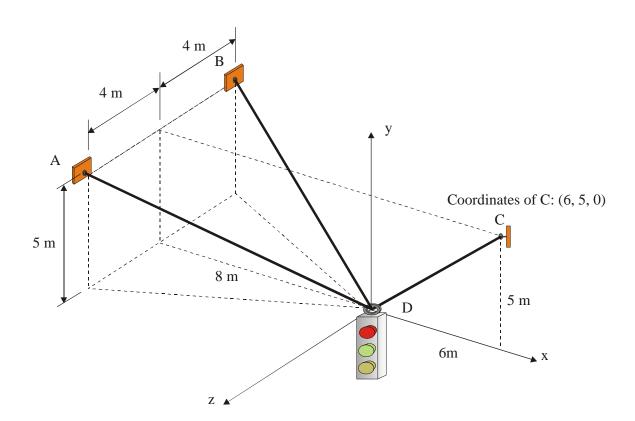
Date: Friday, December 14, 2007 Page No: 2 of 6 Department & Course No: ENG 1440 Time: 9:00 a.m.

Paper No: 442 Sections 1-3

**Duration: 2 Hours Examination: Introduction to Statics** Examiners: Dr. M. J. Frye Dr. D. Polyzois, Dr. D. Sidhu **Seats: 1 - 226** 

Place: Frank Kennedy Brown Gym

A traffic light that weighs 800 N is suspended by means of three (3) cables as shown in the figure below. Draw an appropriate FBD and determine the tension in cables DA, DB and DC.



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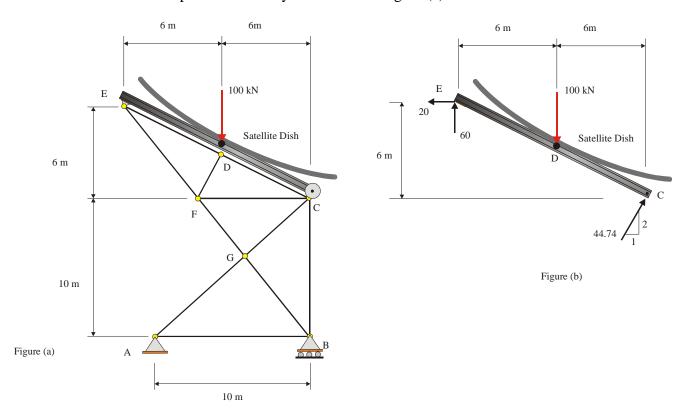
Examiners : Dr. M. J. Frye Dr. D. Polyzois, Dr. D. Sidhu Seats: 1 - 226

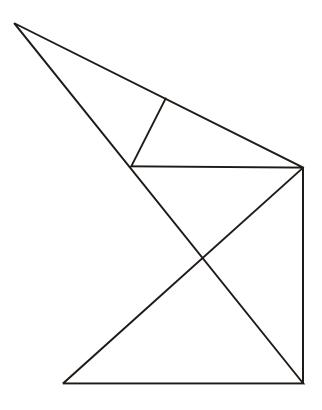
Place : Frank Kennedy Brown Gym Question 2

A satellite dish that weighs  $100 \, kN$  is attached to a beam that is supported by a simple truss by a pin support at E and a roller support at E as shown in Figure (a). The reactions to the beam supporting the satellite dish at joints E and E of the truss **are given** in Figure (b) below (in E).

a) Determine the truss support reactions at A and B.

b) Determine the force in each member of the truss and state whether it is in tension or compression. Show your results on Figure (c).





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Dr. D. Polyzois, Dr. D. Sidhu Seats: 1 - 226

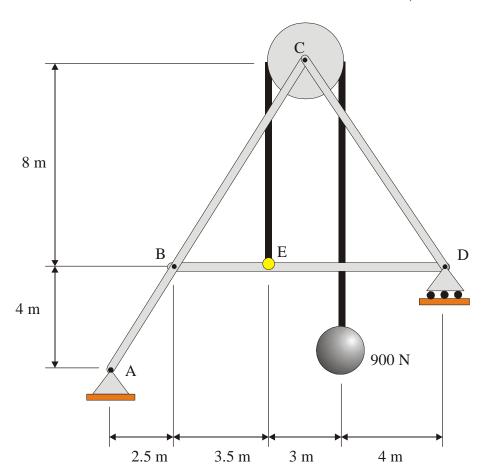
Place: Frank Kennedy Brown Gym

#### **Question 3**

A 900 N weight is suspended from a cable that passes over a frictionless pulley of radius 1.5 m and is attached back to a frame at E. The frame has a pin support at A and a roller support at D.

a. Determine the reactions at supports A and D.

b. Determine all forces exerted on members ABC, BED and CD.



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#### **Question 4**

A 3 m x 4 m wood stud wall sits on top of a concrete foundation wall as shown in the figure. The stud wall is bolted to the foundation wall and is supported by two cables ACand AD attached to the wall at point A. The tension in cable AC is 1.2 kN. Determine:

- The angle between cable AC and cable AD, (a)
- The moment of the 1.2 kN force applied at A by cable AC about the line (b)
- (c) The moment of the 1.2 kN force applied at A about the line CD and

