



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JANUARY 2010 SESSION

SUBJECT CODE : FMD 10102
SUBJECT TITLE : STATICS
LEVEL : DIPLOMA
TIME / DURATION : 9.00am – 11.00am
(2 HOURS)
DATE : 07 MAY 2010

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
 2. This question paper is printed on both sides of the paper.
 3. Please write your answers on the answer booklet provided.
 4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
 5. This questions paper consists of TWO (2) sections. Section A and B. Answer ALL questions in section A. For sections B, answer TWO (2) questions only.
 6. Answer all questions in English.
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THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

Redraw and complete the given table with correct units and symbol.

(14 Marks)

Quantity	Unit	Symbol
Length		
Mass		
Time		
Electrical Current		
Thermodynamic temperature		
Luminous Intensity		
Amount of substance		

Table 1

Question 2

Write down the definition in static for:

a) Solid bodies

b) Kinetics

(10 Marks)

Question 3Explain the terms *equilibrium* in the study of engineering mechanics.

(2 Marks)

Question 4The foundation of Newton's Law in study of static and dynamics where: $F = ma$. Define what are F , m , and a .

(3 Marks)

Question 5

List the **TWO (2)** quantities of vector.

(4 Marks)

Question 6

Describe the **first** and **second** Newton's Laws of motions.

(10 Marks)

Question 7

Consider the rod AB shown in figure 1. Find the moment about A of the force of 10N when it is applied at each of the points B, C and A.

(9 Marks)

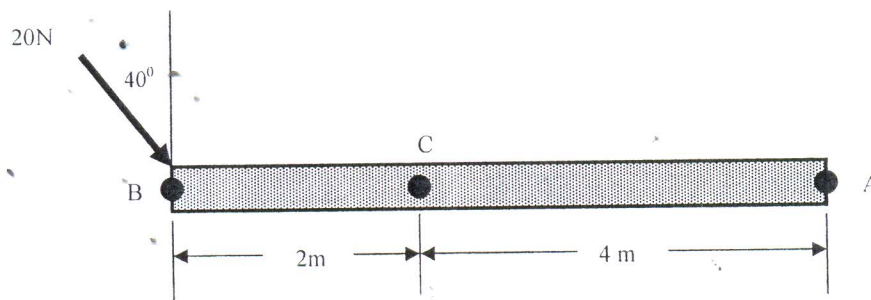


Figure 1

Question 8

Shows the resultant of the two vectors in figure 2

(8 Marks)

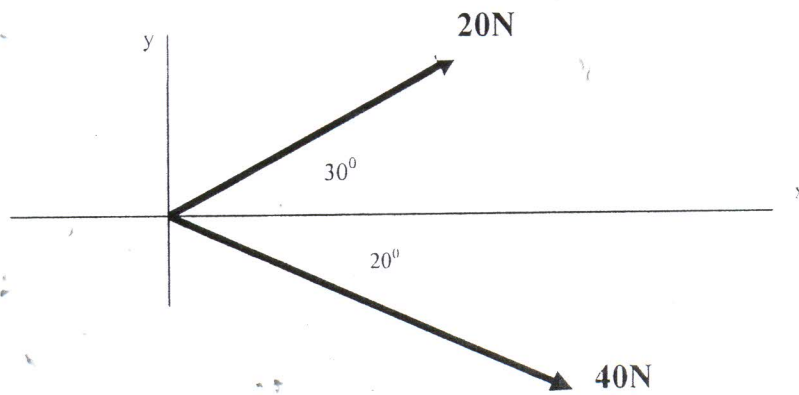


Figure 2

SECTION B (Total: 40 marks)

INSTRUCTION: Answer TWO questions ONLY.**Question 9**

A wooden sled in figure 3 supporting a large stone is pulled up a track inclined at 30° . The combined mass of the sled and stone is 700 kg, and the coefficients of friction between the sled runners and the track are $\mu_s = 0.40$ and $\mu_k = 0.30$. Determine the force P required:

- a) to start the sled up the track, (6 marks)
- b) to keep the sled moving up after it has been started, (6 Marks)
- c) to keep the sled from sliding down (8 Marks)

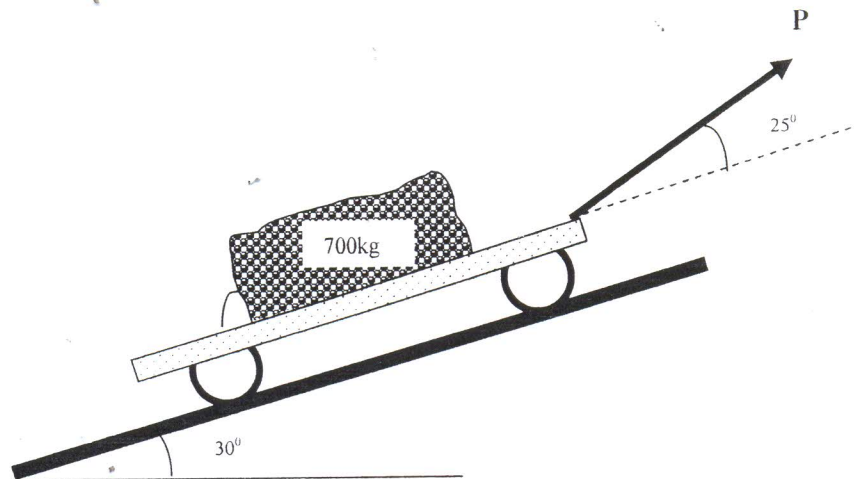


Figure 3

Question 10

Four forces act on bolt A as shown in figure 4. Determine the resultant of the forces on the bolt.

(20 Marks)

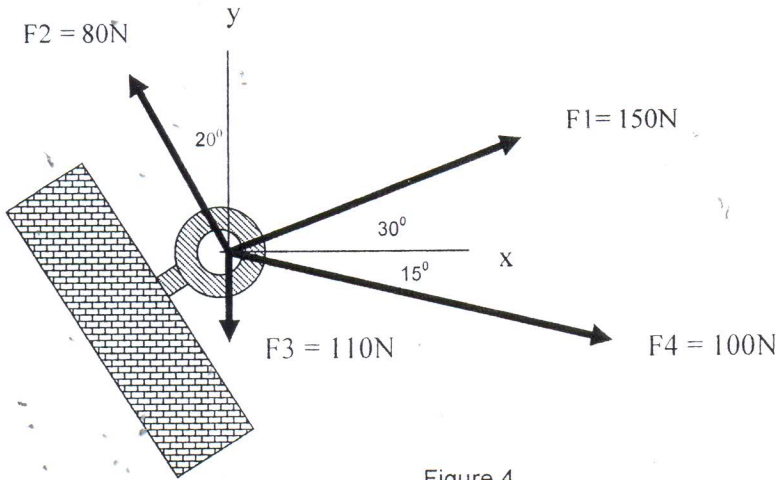


Figure 4

Question 11

The gravity wall is made of concrete. Determine the location (x_c, y_c) of the center of gravity G for the wall.

(20 Marks)

Given:

$a = 0.8\text{ m}$, $b = 2.6\text{ m}$, $c = 0.6\text{ m}$, $d = 0.4\text{ m}$, $e = 3.0\text{ m}$ and $f = 1.2\text{ m}$

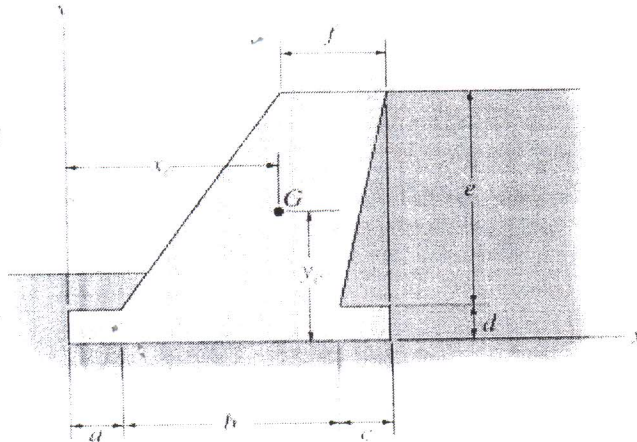


Figure 5

END OF QUESTION