

Midterm Exam - Practice**Time allowed: 50 minutes****Open book, open notes****No cell phones****All answers should be on these pages. Use the backs of pages if necessary, but clearly identify which question your work is associated with.****GRADING SHEET – MIDTERM****NAME:** _____

		Points awarded	Max points
Question 1. (20 points)	a) b) c) d)		4 4 6 6
Question 2. (20 points)	a) b) c) Magnitude Direction		5 5 5 5
Question 3. (25 points)	a) Free body diagram b) Equilibrium Equations c) Forces		5 10 10
Question 4. (20 points)	Response Rationale Relationship to code of ethics		5 5 10
Question 5. (15 points total)	Factor 1 Factor 2 Factor 3		5 5 5
TOTAL			100

QUESTION 1. (Short Answer Questions)

- a. Why should you get civil engineering related work experience during college?

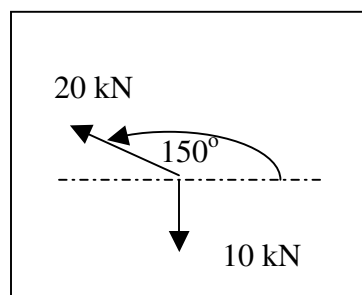
- b. What is Chi Epsilon?

- c. What qualifications does a Professional Engineer have?

- d. At Thanksgiving your aunt will ask you “So, what is Civil Engineering?”. What is your one or two sentences response?

QUESTION 2.

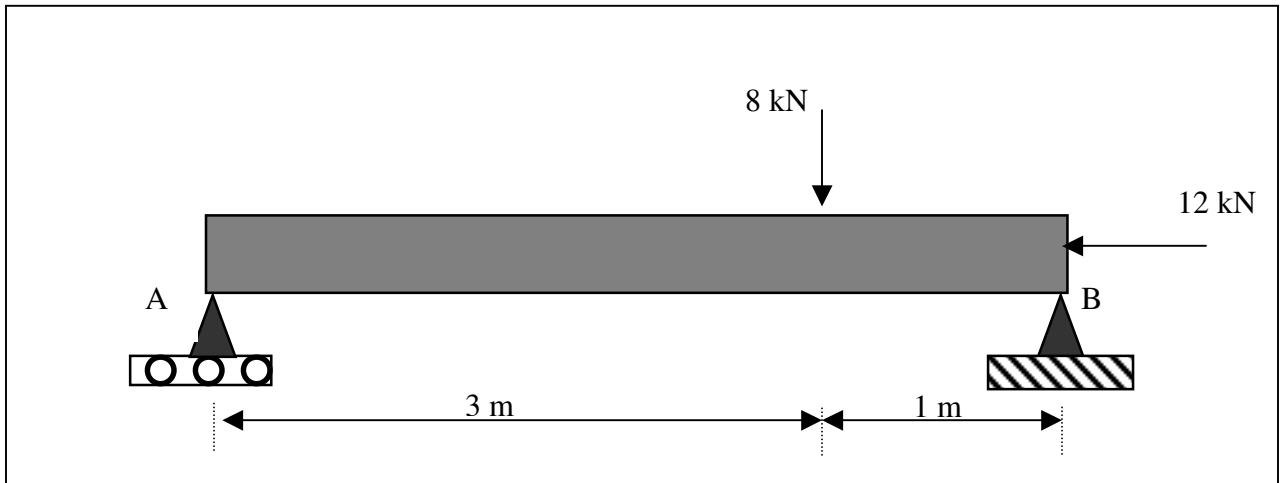
A 20 kN force is applied at 150° to the horizontal. A 10 kN weight hangs vertically from the same point. The following free body diagram represents the two forces.



- a. Compute the horizontal and vertical components of the 20 N force.

- b. Compute the total force in the horizontal and vertical directions for both the 20 kN and 10 kN forces.
- c. Determine the magnitude and direction of the resultant force.

QUESTION 3.



Assume the beam in the above diagram is weightless.

- a. Draw the free body diagram for the beam

- b. Write the equilibrium equations for
 - i. The forces in the vertical direction.

 - ii. The forces in the horizontal direction

 - iii. Moments about the joint A.

- c. Compute the reactions at A and B by solving the equations above

QUESTION 4.

Chris submitted the report on the safety of the structure for a steel mill in Mifflinburg, Pennsylvania. He is not sure what his boss, Joe, did with the report. What are Chris' responsibilities in the context of the code of ethics?

QUESTION 5.

In selecting the design for the Indian River Bridge Inlet, describe three factors that DeIDOT took into account. Explain why each factor is important.

Factor 1: _____

Description (one sentence):

Why is this factor important (one sentence)?

Factor 2: _____

Description (one sentence):

Why is this factor important (one sentence)?

Factor 3: _____

Description (one sentence):

Why is this factor important (one sentence)?