PASS EXAM – *FOR PRACTICE ONLY*

Course: CIVE 2101 Mechanics II Facilitator: Brandon Robinson

IMPORTANT:

The images used in the exam are copyrighted material from Engineering Mechanics Statics & Dynamics Twelfth Edition.

It is **most beneficial** to you to write this mock midterm **UNDER EXAM CONDITIONS**. This means:

- Complete the exam in 3 hour(s).
- Work on your own.
- Keep your notes and textbook closed.
- Attempt every question.

After the time limit, go back over your work with a different colour or on a separate piece of paper and try to do the questions you are unsure of. Record your ideas in the margins to remind yourself of what you were thinking when you take it up at PASS.

The purpose of this mock exam is to give you practice answering questions in a timed setting and to help you to gauge which aspects of the course content you know well and which are in need of further development and review. Use this mock exam as a ***learning tool*** in preparing for the actual exam.

Please note:

- Come to the PASS session with your mock exam complete. There, you can work with other students to review your work.
- Often, there is not enough time to review the entire exam in the PASS session. Decide which questions you most want to review – the Facilitator may ask students to vote on which questions they want to discuss.
- Facilitators do not bring copies of the mock exam to the session. Please print out and complete the exam before you attend.
- **Facilitators do not produce or distribute an answer key for mock exams.** Facilitators help students to work together to compare and assess the answers they have. If you are not able to attend the PASS session, you can work alone or with others in the class.

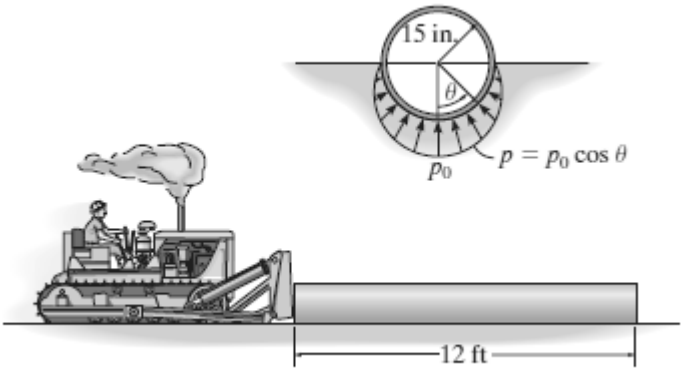
[1] Hibbeler, R.C. (2010). Engineering Mechanics Statics & Dynamics 12th ed. New Jersey: Pearson Prentice Hall

Good Luck writing the Mock Exam!!

PEER ASSISTED STUDY SESSIONS

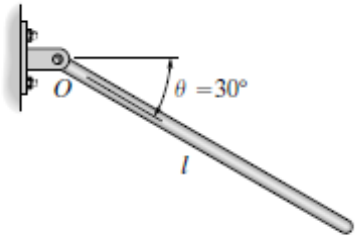
Facil: Brandon Robinson | Course: CIVE 2101 A | Week: October 24th
Email: BrandonRobinson@cmail.carleton.ca | Office: 4th floor MacOdrum Library | Office Hours: Thursday 12-1:00

The tractor is used to push the 1500-lb pipe. To do so it must overcome frictional forces at the ground, caused by sand. Assuming that the sand exerts a pressure on the bottom of the pipe as shown, and the coefficient of static friction between the pipe and the sand is μ_s = 0.3m determine the horizontal force required to push the pipe forward. Also, determine the peak pressure p_o.



[1] Pearson Prentice Hall ©2010
Page 437 Question 8-122

The bar has a mass *m* and length *l*. If it is released from rest from the position θ = 30°, determine its angular accelerations and the horizontal and vertical components of the reaction at the pin O.

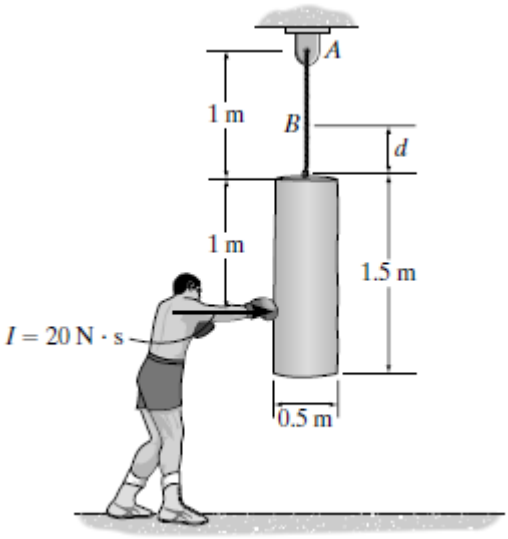


[1] Pearson Prentice Hall ©2010
Page 436 Question 17-73

[1] Hibbeler, R.C. (2010). Engineering Mechanics Statics & Dynamics 12th ed. New Jersey: Pearson Prentice Hall

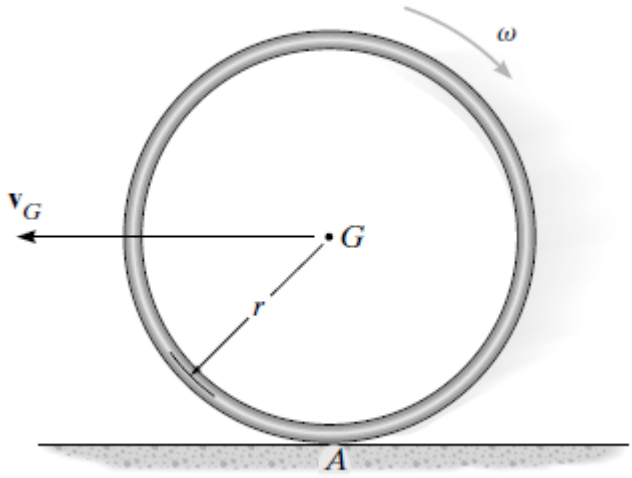
Facil: Brandon Robinson
Email: BrandonRobinson@cmail.carleton.ca
Course: CIVE 2101 A
Office: 4th floor MacOdrum Library
Week: October 24th
Office Hours: Thursday 12-1:00

If the boxer hits the 75-kg punching bag with an impulse of I = 20 Ns, determine the angular velocity of the bag immediately after it has been hit. Also, find the location d, of point B, about which the bad appears to rotate. Treat the bag as a uniform cylinder.



[1] Pearson Prentice Hall ©2010
Page 513 Question 19-16

If the thin loop has a weight W and a radius r, and is thrown onto a rough surface with a velocity $\boldsymbol{v_G}$ parallel to the surface, determine the backspin, $\boldsymbol{\omega}$, it must be given so that it stops spinning at the same instant that its forward velocity is zero. Note that it is not necessary to know the coefficient of friction at A for the calculation.

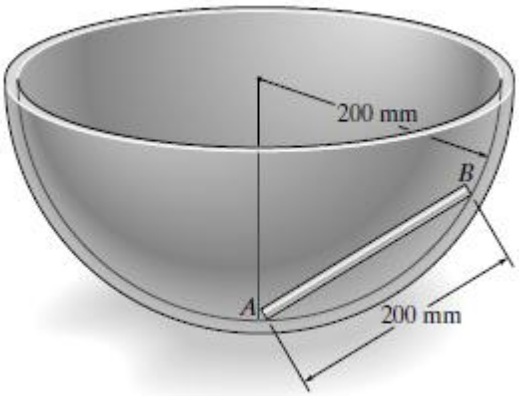


[1] Pearson Prentice Hall ©2010
Page 547 Question R2-49

[1] Hibbeler, R.C. (2010). Engineering Mechanics Statics & Dynamics 12th ed. New Jersey: Pearson Prentice Hall

Facil: Brandon Robinson
Email: BrandonRobinson@cmail.carleton.ca
Course: CIVE 2101 A
Office: 4th floor MacOdrum Library
Week: October 24th
Office Hours: Thursday 12-1:00

The 500-g rod *AB* rests along the smooth inner surface of a hemispherical bowl. If the rod is released from rest from the position shown, determine its angular velocity at the instant it swings downward and becomes horizontal.



[1] Pearson Prentice Hall ©2010
Page 488 Question 18-63

[1] Hibbeler, R.C. (2010). Engineering Mechanics Statics & Dynamics 12th ed. New Jersey: Pearson Prentice Hall