Homework 8

Study Questions

Commercial AVF 221

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_

Kershner, Takeoff Performance Chapters 5-9

1. What are 2 reasons why the takeoff is the most critical part of the flight?
2. Write Kershner’s rule of thumb for density altitude and then calculate density altitude for a temp of 23.5°C and a pressure altitude of 1189. Check with E6b.
3. Using the density altitude chart on page 4-13, does this rule of thumb work?
4. What does Kershner say about the chemistry behind why humid air is less dense than dry air?
5. What percentage does weight effect the takeoff roll?
6. What is the coefficient of friction for short grass\_\_\_\_\_, tall grass\_\_\_\_\_?
7. Our takeoff roll is 950 feet. What is it for short grass\_\_\_\_\_\_\_, tall grass\_\_\_\_\_?
8. What is net accelerating force (NAF)?
9. Kershner uses an example of a 2° runway slope and a 3000lb airplane, what is the rearward component of weight found in the example?
10. What is Kershner’s takeoff rule of thumb for airspeed at the ½ way point?
11. Wind effects takeoff 2 ways, list the 2 ways and circle the one with the most impact
12. What are 2 common errors committed in tricycle gear takeoffs?
13. Why is it better to set flaps to the proper position prior to starting a short field takeoff? (assume your plane uses flaps for the short)
14. Why is a left crosswind worse for the takeoff?

The Climb

1. Vy is a function of what?
2. What is the rate of decrease of the Vy speed per 1000 feet?
3. How does rate of climb vary with weight?
4. How does drag vary with weight?
5. How does excess THP vary with weight?
6. Look at figure 6-6. Why is the rate of climb the same at 60kts and 156kts?
7. What is a cruise climb?
8. At what rate does Vx increase as altitude increases?
9. Vx is a function of what?

Cruise Control, Range and Endurance

1. What are the three main techniques used to establish cruise?
2. Which one does Kershner say is the best?
3. Why is an aft loaded airplane faster in the cruise?
4. Where does max range airspeed occur?
5. What happens to this airspeed as weight is decreased through fuel burn?
6. Kershner points out max range doesn’t exactly occur at L/Dmax. What are the 2 other variables that effect max range airspeed?
7. When might a pilot use max endurance speed?
8. For reciprocating engines, at what altitude is max endurance found?
9. The minimum BHP required depends on what 2 factors?
10. List the 4 steps to set up max endurance

Glides

1. What is minimum sink?
2. What are the rules of thumb for figuring minimum sink?
3. What does the term “stretching the glide” mean?
4. How does altitude effect the glide?
5. How does wind effect the glide?

Landings

1. What is the main goal of a normal landing?
2. What is the effect of weight on landing distance?
3. What is the effect of velocity on landing distance?
4. What are the effects of high altitude on landing distance?
5. What is the rule of thumb for TAS increase as altitude is increased?
6. What is the rule of thumb for wind effects on landing distance?
7. What percentage of the landing roll should you use aerodynamic braking?
8. What should your touch down pitch attitude be in gusty wind conditions compared to that under normal conditions?
9. Name the three techniques used on approach in a crosswind landing
10. What is dynamic hydroplaning and write the rule of thumb formula for predicting the speed at which it will occur
11. What is viscous hydroplaning?
12. What is reverted rubber hydroplaning?