



Commercial Multi Engine Knowledge Exam

Systems

1. What engines are on the PA-44?
2. Is the Seminole a conventional twin?
3. How much horsepower do the engines produce and at what RPM?
4. Are the engines fuel injected or carbureted?
5. Where does the fuel/air mixture occur?
6. How many spark plugs are in each engine and what powers them?
7. Are the engines air cooled or liquid cooled?
8. What is the maximum and minimum oil capacity of the engines?
9. What is the maximum oil pressure for takeoff?
10. How many vacuum pumps does the airplane have?
11. What would happen in the event of a vacuum pump failure?
12. What is the total and usable fuel capacity?
13. How many fuel pumps do we have for the engines? Are they mechanical or electric?
14. Can you cross feed fuel?
15. Can the fuel cross feed position be used during takeoff and landing?

16. What is the maximum CHT?
17. Describe how the heater works.
18. What would happen in the event the heater overheats?
19. How much fuel does the heater use and what fuel tank feeds it?
20. Describe the electrical system.
21. When are the inboard and outboard stall warning vanes activated?
22. Describe in as many words as possible how the landing gear system operates.
23. What would prevent the landing gear from being retracted while the airplane is on the ground?
24. What are the three conditions that would cause the gear warning horn to sound?
25. What type of hydraulic fluid does the gear system use?
26. What would happen in the event a hydraulic line for the landing gear system ruptures?
27. Where is the power pack located?
28. Who manufactures the props?
29. Describe how the constant speed prop works.
30. What would happen to the prop if we lose engine oil pressure in flight?
31. What prevents the props from feathering when you turn the engine off on the ground?
32. During the engine securing procedure, the pilot must select the FEATHER position before the engine RPM reaches _____.

33. Is a high RPM setting a high or low pitch?
34. Is a low RPM setting a high or low pitch?
35. If you have 2300 RPM set and 20" of MP and then advance the throttles to 23" of MP, are you adding oil pressure to the prop hub, or reducing?
36. Where is the prop governor located?
37. The limit load factors are ___ positive and ___ negative.
38. If the cabin door becomes unlatched during flight, the pilot should slow to _____ KIAS before attempting to close the door.
39. After conducting an air start, it is necessary to decrease the propeller RPM slightly to prevent a _____.
40. If an engine fire persists in flight the pilot should _____.
41. After a loss of fuel pressure, if the electric pump is activated but fuel pressure is not restored, this most likely indicates _____. The pilot should _____.
42. When conducting a 180 turn on the ramp, what is the minimum turning radius?
43. When placing the Seminole in a hanger, what is the minimum hanger door height to clear the horizontal stabilizer?
44. What are the dimensions of the baggage door?
45. When loaded to maximum ramp weight, the Seminole must burn _____ gallons of fuel before takeoff.
46. The power loading of the Seminole is _____ lbs per hp.
47. When checking the pitot heat on the ground, limit its operation to _____ minutes.
48. To prevent starter damage, the maximum cranking period should be limited to ___ seconds followed by a cool down period.
49. While operating on a single alternator, the pilot should limit the maximum alternator output to _____ amps to ensure adequate charging of the battery.
50. What can we use to control the temperature of the engine?

Aerodynamics and Performance

1. What are the aerodynamic factors that affect performance when a multi engine airplane has one engine inoperative?
2. Is there a point in which the above-mentioned factors overcome your ability to maintain directional control of the aircraft? What is it named?
3. What is the definition of a critical engine?
4. How do you know which engine is considered critical on a conventional twin?
5. Does our airplane have a critical engine? Why or why not?
6. Under what conditions must a manufacturer test an airplane to determine its published Vmc speed?
7. How would density altitude change your Vmc speed?
8. How would CG affect your Vmc speed?
9. How does weight affect your Vmc speed?
10. What is "zero sideslip" and how does it improve single engine performance?
11. How do you recover from a spin in a multi engine airplane?
12. Single engine stalls can produce an altitude loss of more than _____ ft and _____ degrees of pitch.
13. Calculate the Accelerate Stop distance for the following conditions: The airplane is at max gross weight and you are taking off from RWY 15 at ADS. Winds are 210 at 10 and the temperature is 35C.
14. What is the definition of Accelerate Stop distance?
15. What does Accelerate Go distance mean?
16. Maximum demonstrated crosswind _____.

17. The maximum speed for opening the storm window is _____.

18. Fill in the blank for each "V" speed listed below.

V_R

V_{LR}

V_X

V_{LO}

V_{XSE}

V_{SO} (at max gross weight and 0 degree of bank)

V_Y

V_{S1} (at max gross weight and 0 degree of bank)

V_{YSE}

V_{FE}

V_{MC}

V_{NO}

V_{SSE}

N_{VE}

V_{LE}

19. What is your before takeoff briefing?

20. How and why would your takeoff briefing change at a high-density altitude airport?

21. How would your takeoff briefing change on an IFR day?

Maneuvers and ACS Standards

Below is a list of all maneuvers you will be required to perform for the Multi Engine add on. List the entry airspeed, power setting, rpm setting, and OR the ACS standards for each maneuver.

Steep Turns -

Slow Flight -

Power Off Stall -

Power On Stall -

Accelerated Stall -

Vmc Demo -

Simulated Emergency on Takeoff Roll -

Engine Failure After Liftoff -

Maneuvering with One Engine Inoperative -

Instrument Approach and Landing with an Inoperative Engine -

Emergency Descent -

Short Field Takeoff -

Short Field Landing -

Emergency Procedures

1. What is your engine out flow?
2. Engine fire on the ground -
3. Engine failure in flight -

4. What do you check when “troubleshooting” an inoperative engine?

5. Engine failure secure -

6. Airstart -

7. Prop overspeed -

8. Manual gear extension -

Regulations

1. What aircraft categories are covered under FAR 23.3?
2. What are the certifications for normal category aircraft?
3. Define Minimum control speed. What regulation covers it?
4. What does FAR 23.67 One Engine Inop climb state for aircraft above 6000 lbs or have a V_{so} greater than 61kts?
5. What does FAR 23.67 One Engine Inop climb state for aircraft at or less than 6000 lbs and have a V_{so} less than 61kts?
6. What does FAR 23.51 state regarding take off speeds?
7. What does FAR 23.53 state regarding take offs?
8. Describe FAR 23.65 as pertains to the climb gradient of aircraft under 6000 lbs.