

Name:



Commercial Multi Engine Knowledge Exam

Systems

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

14. What would happen in the event the heater overheats?
15. How much fuel does the heater use and what fuel tank feeds it?
16. Describe the electrical system.
17. When are the inboard and outboard stall warning vanes activated?
18. Describe in as many words as possible how the landing gear system operates.

19. What would prevent the landing gear from being retracted while the airplane is on the ground?
20. What are the three conditions that would cause the gear warning horn to sound?
21. What type of hydraulic fluid does the gear system use?
22. What would happen in the event a hydraulic line for the landing gear system ruptures?
23. Where is the power pack located?
24. Describe how the constant speed prop works.

25. What would happen to the prop if we lose engine oil pressure in flight?
26. What prevents the props from feathering when you turn the engine off on the ground?
27. Is a high RPM setting a high or low pitch?
28. Is a low RPM setting a high or low pitch?
29. 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?
30. Where is the prop governor located?

Aerodynamics and Performance

31. What are the aerodynamic factors that affect performance when a multi engine airplane has one engine inoperative?
32. Is there a point in which the above-mentioned factors overcome your ability to maintain directional control of the aircraft? What is it named?
33. What is the definition of a critical engine?
34. How do you know which engine is considered critical on a conventional twin?
35. Does our airplane have a critical engine? Why or why not?
36. Under what conditions must a manufacturer test an airplane to determine its published Vmc speed?
37. How would density altitude change your Vmc speed?
38. How would CG affect your Vmc speed?
39. How does weight affect your Vmc speed?
40. What is "zero sideslip" and how does it improve single engine performance?
41. How do you recover from a spin in a multi engine airplane?
42. Fill in the blank for each "V" speed listed below.
 - Vr
 - Vx
 - Vy
 - Vxse
 - Vyse
 - Vmc
 - Vsse
 - Vle
 - Vlr
 - Vlo

V_{so} - (at max gross weight and 0 degree of bank)
V_{s1} - (at max gross weight and 0 degree of bank)
V_{fe}
V_{no}
V_{ne}

43. 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.

44. What is the definition of Accelerate Stop distance?

45. What does Accelerate Go distance mean?

46. What is your before takeoff briefing?

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

48. 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 -