Southern Maine Aviation, LLC

Pre-Solo Knowledge Test

Name _____

Airplane performance:

1. What is the normal approach speed for your airplane? _____
2. Describe how the engine gauges should read when developing full power for takeoff _____
3. What is meant by density altitude? _____
4. What is the crosswind component while departing on runway 25 if the wind is from 205 degrees (magnetic) at 18kts? _____
5. What effect will frost have on airplane performance? _____

Emergency Procedures

6. What would you do if the engine began to run roughly or erratically at 3000ft? _____ _____
7. Describe your actions if seeing low oil pressure but normal oil temperature _____ _____
8. What would you do if you have inadvertently entered a region of low visibility such as snow showers? _____
9. Describe your actions if an engine fire began during engine start _____ _____
10. If an engine fails shortly after takeoff, at what minimum altitude should you be before even considering turning back toward the airport? _____
11. If fog envelops the Sanford airport while practicing over Sebago Lake, what should you do? _____

Airplane Operation

12. When should carburetor heat be used? _____ Why? _____
13. Explain what might be of concern if there is no rpm drop when checking magnetos _____
14. Explain how the controls should be positioned when taxiing in wind _____ _____

15. Describe the sequence of steps you would perform for a go-around? _____
_____

16. If you are on downwind and you hear another airplane report downwind at the same airport, what actions can you take for collision avoidance? _____
_____

17. What should be done if a mag check fails due to excessive rpm drop on one magneto?
_____

18. Describe how the magneto and ignition system works _____
_____

19. What would you suspect if only clear liquid drains from the fuel sumps? _____
_____

20. Will the engine still run if its master switch is turned off? Explain _____
_____

21. Describe wake turbulence avoidance techniques _____
_____

22. After soloing, what limitations are there on your flying? _____
_____

23. Define what a safe minimum altitude is _____
24. What does “mode C” mean on a transponder? _____
25. Which instruments are driven by the vacuum pump? _____
_____

26. Which instruments are powered electrically? _____
_____

27. Which instruments use ram air from the pitot tube? _____
_____

28. Which instruments use air from the static source? _____
_____

29. At what altitude should you be to perform practice air work (other than ground reference maneuvers)? _____

Local Information

30. What is the AWOS frequency at Sanford (SFM)? _____
31. What is the common traffic advisory frequency at Sanford (SFM)? _____
32. What are the CTAF frequencies, traffic patterns, and altitudes for Biddeford and Rochester?
_____

33. What frequencies might you try if you need assistance or need to declare an emergency?
_____

34. What airports near Sanford are Class D? Class C? Class B? _____
_____

35. How can you ensure remaining clear of the above airspace areas? _____
_____

36. Sketch the runway layout and traffic pattern for Sanford and describe acceptable methods of traffic pattern entry for each runway.

Aerodynamics

37. Approximately how does the stall speed change if in a 45° bank? _____

38. What other factors can affect stall speed of a given airplane? _____

39. How does best glide airspeed change with weight? _____

40. Explain the flight characteristics of a too-far-forward CG and too-far aft CG _____
_____

41. How will a slip affect the indicated airspeed? _____

42. When will an airplane stall? _____

43. When can an airplane enter a spin? _____

Airplane Specifics

44. Define the following and give the values for your airplane:

Vx _____ value = _____

Vy _____ value = _____

Vso _____ value = _____

Vfe _____ value = _____

Va _____ value = _____

Best glide _____ value = _____

45. What is the minimum oil level for your airplane? _____

46. Show the weight and balance calculation for your airplane with the following scenario and evaluate whether it is within requirements:

    Pilot = 210 lbs Co-pilot = 160 lbs

    Baggage = 50 lbs Fuel = 36 gallons

    Rear seat passenger (ignore for 2-seat airplanes) = 230 lbs

Regulations

47. What are the basic VFR weather minimums _____

48. What must you do before entering class C or class D airspace? _____
    _____

49. What documents must be on board an airplane during every flight? _____
    _____

50. What documents must be on board an airplane during student solo flight? _____
    _____

51. When must an airplane's navigation lights be on? _____

52. What minimum fuel reserve must be on board for day VFR operations? _____

53. What endorsements are required before solo flight? _____

54. What minimum information must you possess before embarking on a flight, and what resources are available to gather this information? _____
    _____
    _____

Instructor's Signature _____ Date _____