



RON'S GYROS AND FLIGHT TRAINING

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AREODYNAMICS AND PRINCIPLES OF FLIGHT



Name _____ Date _____

1. What should be the first action taken if a gyroplane begins to oscillate in flight?
 - A. Reduce power
 - B. Unload rotor system
 - C. Apply aft cyclic pressure to increase pitch and reduce airspeed

2. What are the causes of rotor blade flap during taxi and take off?

3. Longitudinal and lateral control of a gyroplane in flight are affected by:
 - A. Antitorque pedals
 - B. Tilting the plane of rotation of the rotor in the direction that control is desired
 - C. Adjusting the pitch of the rotor blades to the angle and direction that control is desired

4. What is a safe rotor RPM while taxiing? _____

5. Explain the take off procedure starting from completion of the take off check list.

6. The lift difference that exists between advancing and retreating main rotor blades is known as:
 - A. Transitional lift
 - B. Dissymmetry of lift
 - C. Translating tendency
7. How does a negative G maneuver affect a gyroplane's rotor RPM?
 - A. Increases rapidly
 - B. Remains the same
 - C. Decreases rapidly
8. Regarding advancing and retreating rotor blades, a gyroplane will have the greatest tendency to roll during what flight condition?
 - A. Horizontal flight at high speed
 - B. Climbing flight in which forward airspeed decreases
 - C. Descending flight in which forward airspeed decreases
9. What should help prevent aircraft induced oscillation on a gyroplane?
 - A. Adding a horizontal stabilizer
 - B. Increasing cyclic control sensitivity
 - C. Lowering the center of gravity below the thrust line
10. Unloading the rotor on a gyroplane can lead to:
 - A. A power push over
 - B. Increased rotor RPM
 - C. Pilot induced oscillation
11. What is dissymmetry of lift?
 - A. The difference in lift that exists between the advancing blade half and the retreating blade half of the disc area
 - B. The difference in lift that exists between the rearward part and the forward part of the rotor disc during forward flight
 - C. A term used to differentiate between air flowing downward through the rotor in powered flight and upward through the rotor in autorotative flight
12. Which pilot action will help reduce pilot induced oscillation?
 - A. Avoid flights at high speeds
 - B. Increase power if nose pitches down
 - C. Prior to a climb, increase pitch attitude before increasing power

13. What factor primarily determines the rotor RPM of a gyroplane in flight?

- A. Airspeed
- B. Engine RPM
- C. Rotor disc loading

14. How does an increase in forward airspeed affect rotor blade induced drag?

- A. Increase
- B. Decrease
- C. Remain the same

15. Using a sketch, explain which is the retreating and advancing rotor blade.

16. What is the purpose and function of the teetering action of the two rotor blade systems?

17. How would you identify the presence of rotor blade flap during take off?

18. How would you prevent rotor blade flap during take off:

19. What would result if rotor blade flap were to continue during take off?

20. Using a sketch, show what is meant by unloading the rotors, and "0" and negative "G"

21. What flight maneuvers regarding joystick movements will cause the rotor blades to reduce RPM?

22. Describe throttle and cyclic movements used to make the transition from a climb to level flight.

23. During your landing, after the main wheels touch the ground. If the joystick control was moved full forward, what would be the effect?

24. When starting to pre-rotate the rotor blades, or when slowing down the rotor blades to a stop position, in what position should the rotor disk be?

25. Which control governs gyroplane attitude?

26. Which control(s) governs gyroplane altitude?

27. During flight, if the wind conditions became very gusty, what would the proper action to avoid possible oscillating and/or porpoising?

28. What causes PIO (Pilot Induced Oscillation)?

29. Explain "flying on the back side of the power curve"

30. While returning to the airport for landing, you notice that the wind direction is 90° across the runway and very strong. Explain how you would safely land the gyroplane.

31. Use a sketch to explain what causes the rotor blades to speed up during flight regarding load factor and coning angle.

SAFETY

32. Why are downwind take offs and landings unsafe?

33. How would you determine surface wind direction and why would you want to know?

34. What are some important details to look for during a pre-flight inspection?

35. List some safety considerations that must be observed when starting the engine and rotor blades on a gyroplane.

36. How does density altitude affect gyroplane performance? How does it affect take off?

37. How can you recognize contaminated fuel? Water, dirt, etc.?

38. How would you obtain current weather conditions and forecasts for your area?

REGULATIONS AND PROCEDURES

39. How many solo hours are required to be eligible for the following pilot certificates?

Sport Pilot _____

Private Pilot _____

Commercial Pilot _____

40. What equipment is required when operating a gyroplane in Class B and C airspace?

1. _____

2. _____

What about Class D airspace?

41. What minimum avionics equipment is required for operation within Class C airspace?

- A. Two-way communications
- B. Two-way communications and transponder with automatic altitude reporting capability
- C. Two-way communications, transponder with automatic altitude reporting capability, and VOR

42. Using a sketch, show the recommended, safer airport traffic pattern procedure when flying a gyroplane compared to fixed wing traffic pattern.

43. What documents are required to be posted in the experimental gyroplane?

1. _____

2. _____

3. _____

4. _____

What documents are required to be in the pilot's possession while pilot in command of a gyroplane?

Sport Pilot

1. _____
2. _____

Private Pilot

1. _____
2. _____
3. _____

44. What class medical certificate is required for a student pilot and when does it expire?

45. How long is a CFI endorsement sign-off valid for a student solo flight?

What action is required when the CFI endorsement has expired?

46. What color are the center lines on a taxi way? What color on the runway?

SPORT PILOT

47. What airspace can a sport pilot fly in?

48. How many passengers can a sport pilot carry? _____

49. Can a sport pilot accept payment of any kind for flying with a passenger? If so, explain.

50. Can a sport pilot fly at night? _____

51. What is the max gross take off weight of the aircraft that's considered legal to fly with sport pilot privileges?
