

Gyroplane questions – from Rotorcraft Private Bank

(From Rotorcraft questions that obviously are either gyroplane or not helicopter)

"X" in front of the answer indicates the likely correct answer.

Note: For associated Figures click here

http://www.air.flyingway.com/faa_exam/heli/gyroplane_test_figures.pdf

FAA Question Number: 3.1.3.3

FAA Knowledge Code: B09

No person may begin a flight in a rotorcraft under VFR unless there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly thereafter for at least

- X A. 20 minutes.
- B. 30 minutes.
- C. 1 hour.

FAA Question Number: 3.3.1.7

FAA Knowledge Code: H70

Angle of attack is defined as the angle between the chord line of an airfoil and the

- A. rotor plane of rotation.
- B. pitch angle of an airfoil.
- X C. direction of the relative wind.

FAA Question Number: 3.3.1.8

FAA Knowledge Code: H71

Figure 10 for this question

(Refer to figure 10.) During flight, if cyclic control pressure is applied which results in a maximum increase in pitch angle of the rotor blade at position A, the rotor disc will tilt

- X A. forward.
- B. left.
- C. aft.

FAA Question Number: 3.3.1.9

FAA Knowledge Code: H71

The lift differential that exists between the advancing main rotor blade and the retreating main rotor blade is known as

- A. hunting tendency.
- X B. dissymmetry of lift.
- C. transverse flow effect.

FAA Question Number: 3.3.2.0

FAA Knowledge Code: H71

During forward cruising flight at constant airspeed and altitude, the individual rotor blades, when compared to each other, are operating

- A. with a decreasing angle of attack on the advancing blade.
- X B. at unequal airspeed, unequal angles of attack, and equal lift moment.
- C. with increased lift on the retreating blade.

FAA Question Number: 3.3.2.1

FAA Knowledge Code: H71

The upward bending of the rotor blades resulting from the combined forces of lift and centrifugal force is known as

- A. blade slapping.
- X B. coning.
- C. inertia.

FAA Question Number: 3.3.2.2

FAA Knowledge Code: H71

When a blade flaps up, the CG moves closer to its axis of rotation giving that blade a tendency to

- X A. accelerate.
- B. stabilize its rotational velocity.
- C. decelerate.

FAA Question Number: 3.3.2.4

FAA Knowledge Code: H71

Which is a result of the phenomenon of ground effect?

- A. The lift vector becomes more horizontal.
- B. The induced angle of attack of each rotor blade is increased.
- X C. The angle of attack generating lift is increased.

FAA Question Number: 3.3.2.9

FAA Knowledge Code: H78

High airspeeds, particularly in turbulent air, should be avoided primarily because of the possibility of

- A. a low-frequency vibration developing.
- X B. retreating blade stall.
- C. an abrupt pitchup.

FAA Question Number: 3.3.3.1

FAA Knowledge Code: H78

When operating at high forward airspeeds, retreating blade stalls are more likely to occur under which condition?

- X A. Steep turns in turbulent air.
- B. High RPM and low density altitude.
- C. Low gross weight and low density altitude.

FAA Question Number: 3.3.3.2

FAA Knowledge Code: H78

Ground resonance is most likely to develop when

- A. on the ground and harmonic vibrations develop between the main and tail rotors.
- X B. a series of shocks causes the rotor system to become unbalanced.
- C. there is a combination of a decrease in the angle of attack on the advancing blade and an increase in the angle of attack on the retreating blade.

FAA Question Number: 3.3.3.5

FAA Knowledge Code: H78

The principal reason the shaded area of a Height vs. Velocity Chart should be avoided is

- A. turbulence near the surface can dephase the blade dampers.
- X B. insufficient airspeed would be available to ensure a safe landing in case of an engine failure.
- C. rotor RPM may decay before ground contact is made if an engine failure should occur.

FAA Question Number: 3.3.3.9

FAA Knowledge Code: H766

What precaution should be taken while taxiing a gyroplane?

- A. The cyclic stick should be held slightly aft of neutral at all times.
- X B. Avoid abrupt control movements when blades are turning.
- C. The cyclic stick should be held in the neutral position at all times.

FAA Question Number: 3.6.9.9

FAA Knowledge Code: H317

Figure 40 for this question

(Refer to figure 40.) Determine the total landing distance to clear a 50-foot obstacle in a gyroplane. The outside air temperature (OAT) is 75°F and the pressure altitude at the airport is 2,500 feet.

- A. 521 feet.
- X B. 525 feet.
- C. 529 feet.

FAA Question Number: 3.7.0.0

FAA Knowledge Code: H317

Figure 40 for this question

(Refer to figure 40.) Approximately how much additional landing distance will be required for a gyroplane to clear a 50-foot obstacle with an increase in temperature from 40 to 60 °F at 3,200 feet pressure altitude?

- A. 8 feet.
- B. 12 feet.
- X C. 4 feet.

FAA Question Number: 3.7.0.1

FAA Knowledge Code: H317

Figure 40 for this question

(Refer to figure 40.) Determine the total landing distance to clear a 50-foot obstacle in a gyroplane. The outside air temperature (OAT) is 80 °F and the pressure altitude is 3,500 feet.

- A. 521 feet.
- B. 526 feet.
- X C. 531 feet.

FAA Question Number: 3.7.0.2

FAA Knowledge Code: H317

Figure 40 for this question

(Refer to figure 40.) Determine the total takeoff distance required for a gyroplane to clear a 50-foot obstacle if the temperature is 95 °F and the pressure altitude is 1,700 feet.

- X A. 2,030 feet.
- B. 1,910 feet.
- C. 1,825 feet.

FAA Question Number: 3.7.0.3

FAA Knowledge Code: H317

Figure 40 for this question

(Refer to figure 40.) Determine the total takeoff distance required for a gyroplane to clear a 50-foot obstacle if the temperature is standard at sea level pressure altitude.

- X A. 1,200 feet.
- B. 1,090 feet.
- C. 950 feet.

FAA Question Number: 3.7.0.4

FAA Knowledge Code: H317

Figure 40 for this question

(Refer to figure 40.) Approximately how much additional takeoff distance will be required for a gyroplane to clear a 50-foot obstacle if the temperature increases from 75 to 90 °F at a pressure altitude of 2,300 feet?

- X A. 160 feet.
- B. 2,020 feet.
- C. 200 feet.

FAA Question Number: 3.7.2.9

FAA Knowledge Code: H76

Figure 45 for this question

Figure 46 for this question

(Refer to figures 45 and 46.) What is the new CG of the gyroplane after a 10-gallon fuel burn if the original weight was 1,450 pounds and the MOM/1000 was 108 pound- inches?

- A. Within limits near the forward limit.
- B. Out of limits forward.
- C. Out of limits aft.

FAA Question Number: 3.7.3.0

FAA Knowledge Code: H76

(Refer to figures 45 and 46.) What is the condition of the weight and balance of the gyroplane as loaded?

WEIGHT (LB) MOMENT (1000)

Empty weight 1,074 85.6

Oil, 6 qt --- 1.0

Pilot and passenger 247 ---

Fuel, 12 gal --- ---

Baggage 95 ---

- A. Overweight.
- B. Within limits.
- C. Out of limits aft.

FAA Question Number: 3.7.3.1

FAA Knowledge Code: H76

(Refer to figures 45 and 46.) Approximately how much baggage, if any, may be carried in the gyroplane, without exceeding weight and balance limits?

WEIGHT (LB) MOMENT (1000)

Empty weight 1,074 85.6

Oil, 6 qt --- 1.0

Fuel, Full --- ---

Pilot (FWD) 224 ---

- A. None, overweight.
- B. 100 pounds.
- C. 70 pounds.

FAA Question Number: 3.7.4.6

FAA Knowledge Code: H81

Which action would be appropriate for confined area operations?

- A. Plan the flight path over areas suitable for a forced landing.
- B. Takeoffs and landings must be made into the wind.
- C. A very steep angle of descent should be used to land on the selected spot.

FAA Question Number: 3.7.4.8

FAA Knowledge Code: H81

Which is a correct general rule for pinnacle and ridgeline operations?

- A. A climb to a pinnacle or ridgeline should be performed on the upwind side.
- B. Gaining altitude on takeoff is more important than gaining airspeed.
- C. The approach path to a ridgeline is usually perpendicular to the ridge.