

# open book exam 2009

**A**IRMAINTENANCE UPDATE is Transport Canada-approved for Recurrent Training. This is our seventh exam, published annually in our anniversary issue, in accordance with our agreement with Transport Canada. The exam consists of questions based on articles appearing in all six issues from the past year: June/July 2008, August/September 2008, October/November 2008, December 2008/January 2009, February/March 2009, and April/May 2009. You will require all six issues in order to write the exam. If you are missing any issues, call us at (604) 214-9824, or email us at amu.magazine@telus.net, and we will mail them to you at a cost of \$6.95 per magazine postpaid.

A 75% pass rate is required in order to qualify for your 16 hours towards RT. The questions in the exam are arranged in order of their appearance in AirMaintenance Update according to issue and individual article. The exam can also be accessed and printed from our web site: [www.amumagazine.com](http://www.amumagazine.com). Answers should be printed in the spaces provided, and must be drawn directly from the text of the articles in order to be considered correct. All questions requiring a longer answer than the space allowed must be type-written on a separate sheet of paper. Completed exams should be submitted to:

AIRMAINTENANCE UPDATE, Suite 2-203, 4360 Agar Drive, Richmond, BC, V7B 1A3. The exam must be postmarked no later than October 31, 2009. We will mark your test and return it along with documentation supporting your submission. We will keep a copy of your written test and results on file for future reference, and a copy will be forwarded to Transport Canada.

— Good luck again to all participants!



## YOUR CONTACT INFORMATION

**For a prompt and accurate response to your 2009 Exam answers, please fill in the following information (print clearly).**

Name: .....

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## June–July 2008 (Volume 7/Issue 1)



### *No Tail What?*

1) Name four methods of counteracting main rotor torque in a helicopter.

1. ....
2. ....
3. ....
4. ....

2) Where is the fan of the NOTAR system in an MD helicopter located?

.....  
 .....

3) How is this fan driven?

.....

4) Where does the air propelled by this fan go?

.....  
 .....  
 .....

5) Where does the air that travels along the inside of the tailboom exit?

.....  
 .....  
 .....

6) What operates the adjustable plenum that rotates about the thruster opening?

.....  
 .....  
 .....

7) What two components make up the remainder of the NOTAR system?

.....  
 .....

*The Diesel Generation*

- 8) Name an airframe modification made in the Cessna 172 Thielert diesel engine conversion.  
.....  
.....  
.....
  
- 9) Name three items on a 100-hour engine inspection of a Thielert diesel.  
1. ....  
2. ....  
3. ....  
.....  
.....
  
- 10) How are changes in engine power determined in a diesel engine?  
.....  
.....
  
- 11) What does the acronym FADEC stand for?  
.....  
.....
  
- 12) What three systems are managed by the FADEC when the single cockpit control lever is adjusted?  
1. ....  
2. ....  
3. ....
  
- 13) How many engine control units are there in the Thielert diesel?  
.....  
.....

*ADS-B Explained*

- 14) What does the acronym ADS-B stand for?  
.....  
.....  
.....
  
- 15) When does the pilot have to provide input to the ADS-B system?  
.....  
.....

- 16) On what navigation aid is the ADS-B system dependant?  
.....  
.....
  
- 17) To whom is an ADS-B aircraft broadcasting information?  
.....  
.....  
.....
  
- 18) If all aircraft were equipped with ADS-B, what ground-based equipment could be eliminated?  
.....  
.....  
.....
  
- 19) What information is transmitted by the ADS-B transponder?  
1. ....  
2. ....  
3. ....  
4. ....

**August–September 2008 (Volume 7/Issue 2)**



*Weight and Balance of Amphibious Aircraft*

- 1) Does the longitudinal position of the main wheel axles on most amphibious aircraft remain the same distance from the datum under all conditions?  
.....  
.....
  
- 2) What can make this distance change?  
.....  
.....  
.....

3) What is the first problem to consider when calculating the weight and balance of an aircraft on amphibious floats?

.....  
.....

4) Can the data supplied by the manufacturer be relied upon for determining the longitudinal position of the wheels?

.....

5) Name two reasons why the manufacturer's data cannot be relied upon.

- 1. ....  
.....
- 2. ....  
.....

6) How is the longitudinal position of the four wheels normally determined on an amphibious aircraft?

.....  
.....  
.....

7) Can an accurate weight and balance be calculated by supporting a four-wheeled amphibious aircraft on three scales?

.....

8) What is the best way to weigh an amphibious aircraft if only three scales are available?

.....  
.....  
.....  
.....

9) Can it be assumed that the left and right nosewheels will have the same weight?

.....

*No Tail What? — Part 2*

10) What component do the anti-torque (rudder) pedals directly control?

.....  
.....  
.....

11) What three components are controlled by the splitter assembly?

- 1. ....
- 2. ....
- 3. ....

12) What is the air pressure produced by the NOTAR fan?

.....

13) What part of the fan assembly causes the fan blades to change pitch?

.....

14) What is the RPM of the NOTAR fan?

.....

15) Name the components of the direct-jet thruster.

- 1. ....
- 2. ....
- 3. ....

16) What controls the direction of the airflow from the thruster?

.....  
.....

*EFIS Explained*

17) In a typical airliner glass cockpit, what does each pilot's panel display independently?

.....  
.....

18) What instrumentation is shared by the two pilots?

.....

19) To what devices is the information from the various navigation system sensors fed?

.....  
.....

20) What do the two screens of the navigation displays typically show as their primary indications?

- 1. ....
- 2. ....

- 21) Name 10 display options that can be selected by pilots on the screens of navigation displays.**
1. ....
  2. ....
  3. ....
  4. ....
  5. ....
  6. ....
  7. ....
  8. ....
  9. ....
  10. ....

- 22) Name three advantages of video display technology.**
1. ....
  2. ....
  3. ....

**October–November 2008 (Volume 7/Issue 3)**



*No Tail What — The End of the Tale*

- 1) Name three conventional types of helicopter anti-torque systems.**
1. ....
  2. ....
  3. ....
- 2) What cockpit control adjusts the pitch of the tail rotor blades?**
- .....
- .....
- .....

- 3) Name two types of tail rotors, based on the direction they propel the air in relation to the tail.**
1. ....
  2. ....
- 4) Which of the above is more efficient?**
- .....
- 5) Name two types of twin main rotor systems.**
1. ....
  2. ....
- 6) How is yaw controlled in a twin non-coaxial system?**
- .....
- .....
- .....
- 7) How is yaw controlled in a twin co-axial system?**
- .....
- .....
- .....
- 8) Name three ways in which the fenestron system is superior to the open tail rotor system.**
1. ....
  2. ....
  3. ....

*HSI Explained*

- 9) What do the initials HSI stand for?**
- .....
- 10) What does the symbol in the centre of the HSI represent?**
- .....
- .....
- 11) What does the line at the top centre (lubber line) of the HSI indicate?**
- .....
- .....
- .....





*A Christmas Present from Eurocopter*

4) To what have the Arriel engine flameouts been attributed?

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.....  
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5) What is the purpose of a starter-generator damper system?

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6) How is the spring tension fixed on a Goodrich starter-generator system?

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7) With an APC system, how is the dampening system tensioned?

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.....

8) What is the work involved in the Alert Service Bulletin in this article?

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.....  
.....  
.....  
.....

9) Once the shaft nut of the starter-generators in question have been tightened the required way, what is a cross-check to ensure the nut is correctly tightened?

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.....  
.....

10) When moving the starter-generator shaft up and down rapidly, what should be done if a clicking noise is heard?

.....  
.....  
.....

*Pitot-static Systems Explained — Part 2*

11) Where is the air from the pitot and static ports initially directed in an air data instrumentation system?

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.....  
.....

12) Are leak checks required in the pitot or static systems after the changing of an electrically driven instrument?

.....

13) Name five other systems besides the airspeed, altimeter and vertical speed indicators that use information provided by the pitot and/or static systems.

- 1. ....
- 2. ....
- 3. ....
- 4. ....
- 5. ....

**April–May 2009 (Volume 7/Issue 6)**



*The Art of Repainting*

1) Name three things that determine whether an aircraft requires repainting.

- 1. ....
- 2. ....
- 3. ....

