

AirMaintenance Update

open book exam 2017

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AIRMAINTENANCE UPDATE is Transport Canada-approved for recurrent training. This is our 14th exam, published annually in our June-July 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 2016, Aug.-Sept. 2016, Oct.-Nov. 2016, Dec.-Jan. 2017, Feb.-March 2017, and April-May 2017. 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 amumag2015@gmail.com, and we will mail them to you at a cost of \$7.95 per magazine postpaid.

A 75% pass rate is required in order to qualify for your 16 hours toward 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 downloaded as an Adobe Acrobat PDF file via our website: 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 typewritten on a separate sheet of paper. Completed exams should be submitted to: AirMaintenance Update, Unit 7, 11771 Horseshoe Way, Richmond, BC, V7A 4V4.

The exam must be postmarked no later than October 31, 2017. 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. Once again, good luck to all participants!

Your Contact Information

For a prompt and accurate response to your 2017 Exam answers, please fill in the following information (print clearly)

Name

Address

.....

.....

Phone

Email

June - July 2016 (Volume 15/Issue 1)



The GE9X: Thinner is Always Better

Finish the following sentences:

1) Additive manufacturing is popularly known as...

2) CMCs operate in temperatures as high as...

3) No other commercial engine in service has a...

4) GE will also replace the titanium leading edge that is currently used...

5) Where the GE90 has 22 blades and the GENx holds 18, the GE9X will have only...

Raising the Bar: All Present not Accounted For

Finish the following sentences:

6) The Pratt and Whitney R1830-92 Twin Wasp 14-cylinder radial engine was air-cooled and had...

- 7) The 14 cylinders were each composed of...
.....
.....
- 8) The cylinder barrel was forged from steel alloy and included a flange for attachment to the crankcase and...
.....
.....
- 9) The cylinder head was machined from aluminum casting and housed the intake and exhaust valves as well as...
.....
.....
- 10) For assembly to the cylinder barrel, the cylinder head was heated then threaded onto the barrel while hot; it shrank while cooling creating a...
.....
.....

- 3) Bombardier Aerospace and Pratt & Whitney announce that P & W achieved Transport Canada type certification of its first PurePower Geared Turbofan engine...
.....
.....
- 4) The C Series aircraft's maximum range was confirmed to be up to 3,300 NM (6,112 km), some 350 NM (648 km) more than...
.....
.....
- 5) In December, the CS100 receives its Transport Canada Type Certification following a testing that included...
.....
.....

Raising the Bar: Hot Mess on No. 4 Bearing
Finish the following sentences:

- 6) After the occurrence, the thermal environment in the No. 4 bearing compartment was reassessed using a...
.....
.....
- 7) Between the issuance of the RSI in July 2013 and the occurrence in May 2014, seven shutdowns with a cool-down period of less than five minutes took place on...
.....
.....
- 8) Testing demonstrated that, once the seal was compromised, oil leaked into the turbine intermediate case (TIC) and was drawn into...
.....
.....
- 9) One or more hot shutdowns caused heat soaking, which allowed the oil feed tube's Teflon C-seal in the No. 4 bearing to fail, which in turn allowed...
.....
.....

Aug. - Sept. 2016 (Volume 15/Issue 2)



Bombardier C Series: Finally off the Ground

Finish the following sentences:

- 1) Bombardier's C Series is a family of narrow-body, twin-engine, medium-range jets targeted to compete against other airliners such as the...
.....
.....
- 2) ...the C Series aircraft that will take to the skies with Pratt & Whitney PurePower PW1500G engines, 19-inch-wide seats, and...
.....
.....

10) Production engines will feature an enhanced design configuration for the oil supply tube and cooling airflow that will...

.....

Oct. - Nov. 2016 (Volume 15/Issue 3)



Can PMA Parts Compete with OEM Aftermarket?

Finish the following sentences:

1) Parts Manufacturer Approval is, of course, an authorization granted by the Federal Aviation Administration (FAA) to a...

.....

2) PMA parts must pass the same rigorous quality and testing requirements as OEM parts, but are often...

.....

3) In North America, the majority of air carriers already accept...

.....

4) OEM repair shops, on the other hand, can offer...

.....

5) A prime example of the push-pull between OEM and PMA provider can be found in the maintenance and repair of Environmental Control Systems used in...

.....

Raising the Bar: When Rubber doesn't meet the Road

Finish the following sentences:

6) The investigation determined that some airlines have found that the number three main tire fails more frequently than...

.....

7) An unexpected high rotational imbalance was created on the number three tire when...

.....

8) If there are no specific requirements for dynamic vibration testing of components or completed airframes, there is a risk that similar or other aircraft systems could...

.....

9) Short-radius turns with hard braking may cause an extreme shearing force on the tread area and on the sidewalls of the number three tire in particular, because...

.....

10) Other operators that use this aircraft have changed operational procedures to mitigate effect of the sharp right turns on the ramps near the gates in order to lessen the extreme shear loads primarily affecting...

.....

Dec. - Jan. 2017 (Volume 15/Issue 4)



The Morphing Wing

Finish the following sentences:

1) When the Wright brothers accomplished their first powered flight more than a century ago, they controlled the motion of their Flyer 1 aircraft using...

.....

2) Thanks to high-tech wizardry developed by engineers at MIT and NASA, some aircraft may be returning to their roots, with...

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

3) In the team's new approach, the whole shape of the wing can be changed, and twisted uniformly along its length, by activating two small motors that...

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.....
.....

Raising the Bar: Hard Highway Landing

Finish the following sentences:

4) Vapour lock occurs when fuel, normally in liquid form, changes to vapour while...

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.....
.....

5) An engine is more likely to undergo vapour lock with increased temperatures, lowered pressures (density altitude), higher Reid vapour pressure (RVP) of the fuel, or...

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

6) Because AVGAS has a lower and more uniform vapour pressure than automotive gasoline does, it will remain in the liquid state at a higher ambient temperature during...

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.....

7) More often than not, the electric boost pump was required to...

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.....
.....

8) Also, lower atmospheric pressure, as the aircraft continued to climb, increased the probability of...

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.....

9) If MOGAS is used in aircraft that are not certified for its use, there is an increased risk of engine power loss due to fuel delivery issues such as...

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.....
.....

10) In the event of a power loss or engine failure, the Beechcraft Pilot's Operating Handbook and Airplane Flight Manual directs the pilot to...

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.....
.....

Feb. - Mar 2017 (Volume 15/Issue 5)



Lessons in a New Material World

Finish the following sentences:

1) As manufacturers build more wings, fuselages and other major commercial aircraft parts out of solid-laminate composite materials, Sandia National Laboratories has shown that aircraft inspectors need training to...

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.....
.....

2) An eye-opener for course participants was noticing that the scanner signals decreased in amplitude or intensity due to the presence of...

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.....
.....

3) The Boeing 787 makes greater use of composite materials in its airframe and primary structure than...

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.....

4) For example, aluminum is sensitive to tension loads but...

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.....
.....

5) The expanded use of composites, especially in the highly tension-loaded environment of the fuselage, greatly reduces maintenance due to fatigue when compared with...

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.....
.....

Raising the Bar: Engine Failure during initial Climb-out
Finish the following sentences:

6) Engine Indicating and Crew Alerting System (EICAS) parameters displayed rapid decreases in fan speed (N1), compressor speed (N2), fuel flow, and...

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.....
.....

7) The propulsor core was seized by several HPT stage 2 nozzle fragments jammed in different locations, which prevented the core from...

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

8) It is believed that, under the right operating conditions, a fuel-rich zone can exist...

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

9) In normal hardware conditions, this fuel-rich zone would pass through the HPT and into cooler temperatures, following work extraction in the turbine stages, with...

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

10) The larger volume of air in this region can mix with the fuel-rich air and become a...

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

April - May 2017 (Volume 15/Issue 6)



Raising the Bar: Men on the Wire
Finish the following sentences:

1) The Hughes 369D, also referred to as an MD Helicopters Inc. 369D, was a five-place, single-turbine-engine (Rolls Royce 250-C20B, serial number CAE832457) helicopter equipped with a five-bladed, fully articulated main rotor system and...

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2) All helicopter operations include a state of hover during various transitions in flight, such as...

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3) The compressor section of a gas turbine engine takes in ambient air and increases air pressure for use in...

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

4) The compressor assembly consists of an axial compressor, centrifugal compressor/ impellor, compressor case, and...

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.....
.....

5) Lack of damage to the front support struts or to the stage 1 compressor blades suggests that the engine did not...

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

6) When considering the flow of air during compressor operation, the damage would progress downstream from...

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

7) If operators do not follow manufacturer-recommended procedures when operating in an erosive/corrosive environment, there is an increased risk of..

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.....
.....

8) For the Hughes 369D helicopter to achieve a successful autorotation from a state of hover with no airspeed, required conditions include having a minimum altitude of 500 feet above ground level and then immediately transitioning into forward flight to maintain the rotor energy required to...

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9) Without engine power, the helicopter's continued flight depended on the energy remaining in the rotor disc and on...

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10) A significant amount of rotor energy was expended while pulling back, and...

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.....



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