

Cessna Grand Caravan Pilot's Technical Examination

Version 1.0 2003-05-13

Candidate	Name	
	Licence class	Private/Commercial/ATP
	Licence number	
Examiner	Name	
	Licence number	
	Capacity	
Centre		
Date		200 -- --
Mark	(Pass mark is 70%)	/100 = %

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Instructions: This is an open-book exam, for which you will need access to up-to-date C208 Pilot's Operating Handbook and technical manuals. For each question, mark the block on the answer sheet corresponding to the most correct answer. The quiz forces you to work through the handbooks. However, you must also remember most of these facts for use during flight!

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93	94	95	96	97	98	99	100
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F	F	F	F	F	F	F	F

Section A: Engine

1. The P₃ bleed valve must be closed prior to start to:
 - a. Prevent overheating the cabin.
 - b. Provide compressor stall protection.
 - c. Prevent excessive loss of compressor output with an attendant risk of a hot start.
 - d. None of the above.

2. Two gauges indicate the most critical engine parameters. They are:
 - a. ITT and N₁.
 - b. ITT and propeller rpm.
 - c. Torque and ITT.
 - d. Torque and N₁.

3. Gas generator speed and ITT are also known as:
 - a. N₁ and T₇.
 - b. N_g and T₅.
 - c. N_g and T₇.
 - d. G_S and T₄.

4. The maximum ITT limit is:

	Takeoff	Continuous
a.	805°C	805°C
b.	805°C	740°C
c.	765°C	765°C
d.	765°C	740°C

5. Maximum sustained ITT in normal flight is:

	Maximum	Recommended
a.	805°C	765°C
b.	805°C	740°C
c.	765°C	740°C
d.	No limit	No limit

6. The maximum allowable transient ITT (2 s maximum) during start is:
 - a. 1000°C
 - b. 1090°C
 - c. 850°C
 - d. 750°C

7. The maximum allowable continuous N_g is:
- 104%
 - 101,6%
 - 102,5%
 - 100%
8. A figure of 100% N_g corresponds to:
- 33 700 rpm.
 - 35 700 rpm.
 - 37 500 rpm.
 - 38 100 rpm.
9. The shaded green portion on the torque meter indicates that this torque range may:
- Only be used with certain rpm combinations.
 - Only be used for five minutes.
 - Only be used for one minute.
 - Be used without restrictions.
10. Oil brands:
- May be mixed but only in an emergency.
 - May be mixed provided they are both natural oils.
 - May not be mixed at all.
 - May be mixed provided they are both synthetic oils.
11. Fuel control heat:
- Prevents fuel icing in the fuel system.
 - Prevents icing in the FCU.
 - Is activated by placing the Start switch to the *Start* position.
 - Is activated by the Emergency Power Lever.
12. Engine speed is controlled by:
- The power lever through the N_g governor.
 - The condition lever through the N_g governor.
 - The propeller through the primary propeller governor.
 - Both *a* and *b*.
13. The Emergency Power Lever is used:
- To control the FCU if its pneumatic operation has failed.
 - Subject to a minimum N_g of 65%.
 - Neither.
 - Both.

14. Forgetting to turn off the starter switch after starting will:
- Cause damage to the starter clutch mechanism.
 - Disable the generator.
 - Cause the engine to stall and exceed its maximum ITT.
 - Cause no harm, as the starter will disengage by itself.
15. If the fuel supply to an engine is interrupted at cruise airspeeds:
- The propeller feathers after the engine flames out.
 - The propeller maintains its rpm after the engine flames out.
 - The engine will relight without delay when the fuel is turned back on.
 - ITT will drop but torque will be maintained.
16. These engine controls need not be used during emergency procedures when full power is required:
- Condition lever.
 - Propeller lever.
 - Power lever.
 - All of them must be used.
17. The *Low Idle* and *High Idle* positions of the fuel condition lever influence:
- N_g at minimum and maximum positions of the power lever.
 - N_g at the minimum position of the power lever.
 - N_g at the maximum position of the power lever.
 - N_g at all positions of the power lever.
18. The C208 uses the following engine:
- Garrett/Airesearch TPE331.
 - Garrett/Airesearch PT6A-114.
 - Pratt & Whitney Canada TPE331.
 - Pratt & Whitney Canada PT6A-114.
19. The engine used in the C208 differs in the following way from larger members of the same engine family:
- It is basically a scale model.
 - It has fewer power turbines, improving the response time.
 - It has more power turbines, improving the response time.
 - It has fewer power turbines, increasing the response time.

20. The engine should be filled to within:

- a. 9½ US quarts of the Max Hot or Max Cold mark.
- b. 1½ US quarts of the Max Hot or Max Cold mark.
- c. 9½ US quarts of the Max Hot mark.
- d. 1½ US quarts of the Max Hot mark.

21. The engine is a:

- a. Reverse flow free turbine.
- b. Forward flow free turbine.
- c. Reverse flow direct drive turbine.
- d. Forward flow free turbine.

22. Engines of this type can be recognised on the airport apron by their:

- a. Feathered propellers and forward-mounted exhaust pipes.
- b. Flat-pitch propellers and forward-mounted exhaust pipes.
- c. Feathered propellers and aft-mounted exhaust pipes.
- d. Flat-pitch propellers and aft-mounted exhaust pipes.

Note: Forward-mounted does not mean "forward-facing"!

23. The approximate gear ratio between the power turbine and the propeller is:

- a. 15:1.
- b. 25:1
- c. 35:1
- d. 45:1

24. The maximum torque that can be used at any rpm is:

- a. 1090 ft-lb.
- b. 1865 ft-lb.
- c. 1970 ft-lb.
- d. 2400 ft-lb.

25. On a summer day at a Gauteng airfield (hot and high), the following parameter will most likely limit engine power:

- a. ITT.
- b. Torque.
- c. N_g.
- d. Propeller rpm.

26. New engines should:

- a. Be handled gently until they have been run in.
- b. Be run at high power settings to allow them to settle.
- c. Be run at a variety of power setting to allow them to settle.
- d. Require no special handling.

27. Old engines tend to produce:

- a. The same torque and ITT values as new engines.
- b. Lower torque and higher ITT values than new engines.
- c. Lower torque and lower ITT values than new engines.
- d. Higher torque and lower ITT values than new engines.

28. Igniters should be used:

- a. When fuel levels are low.
- b. In icing conditions.
- c. In heavy precipitation.
- d. Under all these conditions, but not under normal circumstances.

29. If the temperature rapidly climbs towards the absolute ITT limit during the start or the N_g accelerates too rapidly through 35%, the pilot should:

- a. Immediately turn off the starter switch.
- b. Immediately move the fuel condition lever to cut-off while continuing to wind the engine with the starter.
- c. Watch to see that the absolute limit is not exceeded for more than two seconds.
- d. Immediately turn off the battery switch.

30. During the start, the fuel condition lever should be placed in *Low Idle* when:

- a. N_g reaches 12%.
- b. N_g has stabilised at a sufficiently high value.
- c. N_g reaches 52%.
- d. ITT starts climbing.

31. After a start, the starter switch should be turned off at:

- a. $N_g = 12\%$.
- b. $N_g = 52\%$.
- c. $N_g = 65\%$.
- d. $N_g = 75\%$.

32. The essential items on the engine (oil pump, fuel pump and tacho generator) are driven by the:
- a. Power turbine.
 - b. Compressor turbine.
 - c. Electric motor.
 - d. Bleed air.
33. After three unsuccessful start attempts using the internal battery, the minimum waiting period before another attempt is:
- a. 30 s.
 - b. 60 s.
 - c. 90 s.
 - d. 30 minutes.
34. If the oil pressure falls into the yellow arc during flight:
- a. The flight can be completed without a problem.
 - b. The flight can be completed, but at a reduced power setting, and the aircraft should be grounded until the problem has been addressed.
 - c. The engine should be shut down immediately.
 - d. The propeller should be feathered.

Section B: Propellers

35. The propeller can be feathered:
- a. At any power setting.
 - b. When the engine is shut down or idling.
 - c. Only when the engine is shut down.
 - d. It cannot be feathered.
36. The propeller must not be feathered when there is a crosswind from the right with a cargo pod installed because:
- a. The crosswind will impair the oil cooling effect of the exhaust pipes.
 - b. The propeller slipstream is required to keep excessive heat away from the cargo pod.
 - c. The right crosswind will damage the feathered propeller.
 - d. The right crosswind will damage the engine drive shaft.

37. Thrust reversing can be used during the landing roll to:
- Achieve the specified landing performance by shortening the landing roll.
 - Reduce the landing roll to less than that specified in the manual.
 - Improve the pilot's view.
 - Reduce the noise level.
38. Selecting thrust reversal when the aircraft is parked on the ground with the engine shut down will:
- Have no effect.
 - Damage the power lever linkage.
 - Increase the propeller pitch.
 - Reduce the propeller pitch.
39. The low pitch stop:
- Prevents overspeed in reverse.
 - Allows the blade angle to reduce to a safe value in flight.
 - Is reset by the pilot for reversing on the ground.
 - Both *b* and *c*.
40. The governing range of the primary propeller governor is:
- 1600 to 1900 rpm
 - 1600 to 2000 rpm
 - 1600 to 1750 rpm
 - 52% to 101,6%
41. After an engine failure in cruise, with N_g at 15% due to windmilling, the propeller will:
- Feather due to a loss of oil pressure.
 - Slowly reduce speed to about 1000 rpm.
 - Remain on speed.
 - a* or *b* depending on situation.
42. The propeller overspeed governor:
- Is part of the FCU and prevents propeller overspeed by reducing fuel flow to the engine.
 - Can be reset for testing at approximately 1750 rpm.
 - Acts on the propeller to prevent overspeed if the primary governor fails.
 - Both *b* and *c*.

43. If both propeller governors (normal and overspeed) fail:
- a. The propeller will stay on the full fine stop and the rpm will climb above 2500.
 - b. The rpm will remain at 1900 because of the propeller's design.
 - c. The FCU will limit the turbine fuel flow to ensure that the rpm does not continue to increase.
 - d. The FCU will shut down the engine, and normal operation can be restored with the emergency power lever.
44. After touchdown, thrust reversal should be discontinued at 25 kts to:
- a. Avoid moving backwards.
 - b. Ensure that stones are not thrown up behind the aircraft.
 - c. Prevent excessive propeller erosion because of debris.
 - d. Ensure that the propeller tips do not hit the ground.
45. The propeller may be:
- a. Unfeathered in flight to windmill the engine for a restart.
 - b. Feathered in flight with the engine idling.
 - c. Positioned in flat pitch for faster taxi speeds.
 - d. Feathered at maximum power without ill effect.

Section C: Pneumatic and vacuum

46. Vacuum is generated:
- a. By two engine-driven pumps on the accessory gearbox of the engine.
 - b. By an electric vacuum pump.
 - c. By two electric vacuum pumps.
 - d. By venting P₃ air overboard through an ejector.

Section D: Flaps and Flight Controls

47. Choose the correct statement:
- a. Use of 30° flap improves climb performance over close obstacles after takeoff.
 - b. Use of 30° flap can be used on takeoff to obtain quicker liftoff.
 - c. Flaps cannot be operated if the flap selector lever does not respond.
 - d. Up to 20° of flap can be used for takeoff.

48. If all electrical power fails in flight, the wing flaps:
- a. Will remain in their previous position.
 - b. Will retract due to dynamic pressure.
 - c. Can be set as required.
 - d. Can be retracted if required.
49. If asymmetric flap extension is noticed, the pilot must retain roll control and immediately:
- a. Retract the flaps.
 - b. Extend full flaps (30°).
 - c. Use the emergency extension mechanism.
 - d. Twist the aileron trimmer knob.
50. Electric trim is available for:
- a. Elevators.
 - b. Ailerons.
 - c. Rudder.
 - d. All of the above.
51. During backup flap system operation, the pilot must exercise caution because:
- a. The normal system can run away during standby operation.
 - b. The backup system has no limit switches.
 - c. The backup system has different speed limits.
 - d. All of the above.

Section E: Landing gear

52. The optional extended nose fork provides:
- a. Better visibility for the pilot during takeoff.
 - b. Improved visibility during landing.
 - c. Extra ground clearance for the propeller.
 - d. More robust operation of the nosewheel.
53. Tyre inflation pressures are:

	Mainwheels	Nosewheel
a.	40 or 55 bar	36 bar
b.	2,7 or 3,7 bar	2,4 bar
c.	4,0 or 5,5 bar	3,6 bar
d.	101,3 kPa	101,3 kPa

Section F: Brakes

54. When the right-seat pilot is applying brakes, and left-seat pilot also applies brakes:
- The right-seat pilot has control.
 - The left-seat pilot has control.
 - The pilot who applies most force has control.
 - Both pilots contribute to the braking force.
55. The brake fluid reservoir is situated:
- On the hydraulic power pack.
 - In the tailcone area adjacent to the oxygen filler panel.
 - In the nose compartment on the left side, forward of the firewall.
 - Under the floorboards, forward of the main spar.
56. Brakes will last the longest if:
- Old Caravans are braked gently, but newer Caravans are braked hard.
 - All Caravans are braked gently.
 - All Caravans are braked hard.
 - New Caravans are braked gently, but old Caravans are braked hard.
57. The park brake is:
- Set by pulling the handle and released by pushing in the handle.
 - Set by stepping on the brakes and pulling the handle, and released by stepping on the brakes and pushing in the handle.
 - Set by stepping on the brakes and pulling the handle, and released by pushing in the handle.
 - Set by pulling the handle, and released by stepping on the brakes and pushing in the handle.
58. Taxi speed should be controlled by:
- Brakes, with thrust reversal as a last resort.
 - Beta range, with brakes as required.
 - Brakes, with beta range as required.
 - Brakes only.

Section G: Pitot-static system

59. Pitot heat usage on the ground is recommended:
- When the OAT is less than 10°C.
 - Only if visible moisture is seen below freezing.
 - Only for short periods.
 - At all times.
60. The alternate static system:
- Provides a source of alternate static to both the left and right panel static systems.
 - Provides a static source to the left panel system that may be used without correction.
 - Uses a source below the de-ice/anti-ice switch panel that requires considerable corrections, especially at high speed.
 - May not be used in icing conditions due to the large position error.
61. During a high-speed dive with a low power setting, the pilot hears a warning horn behind his head. This horn is:
- The stall warning.
 - The undercarriage warning.
 - The flap warning.
 - The V_{MO} warning horn.

Section H: Ice protection

62. Extension of the inertial separator can be confirmed by:
- Increased torque, decreased ITT.
 - Decreased torque, decreased ITT.
 - Decreased torque, increased ITT.
 - Increased torque, increased ITT.
63. Use of inertial separator is recommended when:
- Operating in temperatures below 4°C and driving rain.
 - Temperature is below 4°C and there is a possibility of entering cloud.
 - When taking off from a dusty airfield.
 - All of the above.

Section K: Cabin and environmental

64. Cabin air is heated by:
- Compressor output from the engine, through the bleed and outlet valves.
 - Electrical panels in the roof.
 - Electrical panels in the floor.
 - Both *a* and *b*.
65. The temperature selection knob should be:
- Rotated to maximum and then decreased to the desired temperature.
 - Rotated to minimum and then increased to the desired temperature.
 - Rotated directly to the desired temperature.
 - Left to automatically find the best position for cabin comfort.
66. The MIXING AIR control can be used as follows:
- Either position may be used in flight or on the ground.
 - Only the GRD-PULL position may be used on the ground.
 - GRD-PULL may only be used on the ground, and FLT-PUSH may only be used in flight.
 - Only the FLT-PUSH position may be used in flight.

Section L: Electrical

67. Inverters are used to produce:
- DC to charge the battery.
 - AC to charge the battery.
 - DC to power instruments for inverted flight.
 - AC to power certain flight instruments.
68. On a passenger-equipped C208, total electrical failure will not affect:
- The torque gauge.
 - The propeller rpm gauge.
 - The N_g indicator.
 - Any of these instruments.
69. With the External Power switch in the *Start* position:
- The GPU is connected to the starter and the battery to all other equipment.
 - The GPU powers all systems.
 - The battery is connected to the starter and the GPU to the main bus.
 - The battery powers all systems.

70. Battery heat annunciators are included:

- a. In all aircraft.
- b. In aircraft with NiCd batteries, as they can explode when they overheat.
- c. In aircraft with lead-acid batteries, as they can explode when they overheat.
- d. Only on large aircraft such as airliners.

71. How many circuit breakers must be pulled to isolate both buses?

- a. One.
- b. Two.
- c. Four.
- d. Six.

72. One pitot heater (left) can be obtained by:

- a. Turning on only one of the two switches.
- b. The pitot heaters always operate together.
- c. Turning on the switch and pulling one of the circuit breakers.
- d. Turning off the switch and pulling one of the circuit breakers.

73. The minimum battery voltage required for a start using external power is:

- a. 20 V
- b. 22 V
- c. 24 V
- d. 28 V

74. A popped circuit breaker:

- a. Should not be reset in flight.
- b. Must be reset in flight, except if it is a subpanel feeder breaker.
- c. Should be reset in flight.
- d. Could be reset in flight, provided that it protects an essential item and is not a subpanel feeder breaker.

75. When using external power, the following precautions should be taken:

- a. The GPU voltage must be 24 to 28 V, and the current capacity must be at least 800 A.
- b. The GPU voltage must be 24 to 28 V, and the current capacity must be at least 1,7 kA.
- c. The GPU voltage must be 24 to 28 V, and the current capacity must be no more than 1,7 kA.
- d. *a* and *c*.

76. If the red GENERATOR OFF annunciator comes on in flight, and the voltage is 28 V with a charging current of 30 A:
- Enjoy your flight to the destination, and then have the light looked at.
 - Feather the propeller and execute an emergency landing.
 - Reduce power and execute a precautionary landing.
 - Immediately turn off the battery switch.
77. The generator is rated at:
- 28 V, 100 A.
 - 28 V, 200 A.
 - 13,8 V, 100 A.
 - 13,8 V, 200 A.
78. If the battery and generator switches are turned off in flight:
- The electric boost pumps will cease to function, and the engine will flame out.
 - The electric boost pumps will start running.
 - The electric boost pumps will not be affected.
 - The electric boost pumps will cease to function, but the engine will continue to run normally.
79. To see if a particular Caravan has a standby power system, one should look for:
- Two amber lights added to the annunciator panel.
 - Standby power and avionics standby power switches on the electrical panel.
 - Two additional breakers on the electrical panel.
 - All of the above.

Section M: Fuel

80. The normal position for the two fuel selectors is:
- Only one must be open.
 - Both must be open.
 - Both must be in *Standby*.
 - The central accumulator tank must be selected for takeoff.
81. Useable fuel capacities are:
- 332 US gallons on all models.
 - 332 US gallons on some models, and slightly more on others.
 - 335 US gallons.
 - 335,6 US gallons.

82. Aviation petrol (Avgas) may be used as a fuel:
- For up to 150 hours between overhauls, subject to restrictions.
 - Mixed 1:3 with Jet A1 for up to 450 hours between overhauls, subject to restrictions.
 - Either *a* or *b*.
 - Both *a* and *b*.
83. When noticing a fuel imbalance of 300 lb, the pilot should:
- Immediately close the fuel selector on the fullest tank's side.
 - Immediately close the fuel selector on the emptiest tank's side.
 - Immediately select the centre tank.
 - Take no action, as the imbalance is no problem.
84. The electric standby pump is intended for use during:
- Starting.
 - Operation with low fuel states.
 - High-altitude operation on Avgas.
 - All of the above.
85. Transfer of fuel from the wing tanks to the central tank:
- Occurs by gravity.
 - Must be helped with the electric pump when the fuel runs low.
 - Happens only with the electric pump on.
 - Both *a* and *b* are correct.
86. The electric fuel pump will normally:
- Kick in by itself if fuel pressure falls.
 - Be activated by the pilot if fuel pressure falls.
 - Be used at all times.
 - Be automatically activated during the landing approach.
87. Fuel is heated before entering the FCU by:
- Hot air from the engine oil cooler.
 - An electric element and heated tank vents.
 - Engine oil, through a heat exchanger.
 - Anti-ice boots.

Section N: Weight and Balance

88. Maximum operating weights (in pounds) are:

	Ramp	Takeoff	Landing
a.	8750	8500	8500
b.	8785	8750	8500
c.	8750	8750	8500
d.	8750	8500	8500

Section O: Handling

89. The following speed is not identical to V_{MO} :

- a. V_{FE} for 10° .
- b. Door open speed.
- c. Window open speed.
- d. V_{FE} for 20° .

90. V_A at 1000 lbs below maximum landing weight is:

- a. 112 KIAS.
- b. 125 KIAS.
- c. 137 KIAS.
- d. 148 KIAS.

91. V_Y at 15 000' is:

- a. 72 KIAS.
- b. 87 KIAS.
- c. 96 KIAS.
- d. 104 KIAS.

92. A pilot is on final approach to a runway with a crosswind of 24 kts.

- a. Landing is prohibited.
- b. A landing is allowed but ill-advised.
- c. The pilot must immediately divert.
- d. There is no problem. The pilot can land without concern.

Section P: True or False

93. Engine gas generator idle speed will increase with increasing field elevation.
94. Prolonged use of 115/145 Avgas will cause power deterioration due to coating of compressor blades.
95. Maximum allowable oil consumption is 1 US Quart per 9 hours.
96. The propeller reversing system may be activated with the engines shut down without damaging the linkages.
97. Failure of the AC-powered instruments in flight can normally be corrected by switching to the other inverter.
98. If a bus isolation circuit breaker has blown, and nothing else seems unusual, the pilot can assume that the problem has isolated itself.
99. The bleed air valve must be open for all starts.
100. The minimum N_g for a windmilling air start is 12%.