

PPL (H) – Aircraft General Knowledge



**CIVIL AVIATION DIRECTORATE
OF THE REPUBLIC OF SERBIA**

FLIGHT CREW LICENSING DEPARTMENT

Theoretical knowledge examination for obtaining PPL (H)

**Subject:
AIRCRAFT GENERAL KNOWLEDGE**

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NOTE:

The correct answer is under letter **a**. During exam the order of answers will be different

1. The pressure entering the forward facing orifice of a pitot tube of an aircraft in flight is:
 - a. Dynamic and static pressure.
 - b. Dynamic pressure.
 - c. Static pressure.
 - d. Stagnation pressure.

2. Water in the pipelines of a static system:
 - a. May produce inaccurate readings on pressure instruments.
 - b. Will not freeze if the pilot heater is on.
 - c. Will cause the Airspeed Indicator to over read.
 - d. Is automatically separated from the air by a water separator.

3. During the four stroke cycle, the sparking plug ignites the mixture just prior to:
 - a. The end of the „compression stroke”.
 - b. The „intake stroke”.
 - c. The „exhaust stroke”.
 - d. The start of the „compression stroke”.

4. The term „valve overlap” is given to the method of opening and shutting the inlet and exhaust valves. The use of this method is to:
 - a. Ensure that all the exhaust gases are removed from the cylinder after the intake stroke.
 - b. Improve the volumetric efficiency of the engine.
 - c. Increase the period of the compression stroke.
 - d. Increase the period of the exhaust stroke.

5. Dual ignition is fitted to aero engines for the following reason:
 - a. Provides better combustion.
 - b. To provide a back-up ignition system.
 - c. Only for safety reasons.
 - d. In case of spark plug failure.

6. In the event of an alternator or generator failure during flight:
 - a. Electrical loads should be reduced to a minimum and a landing made as soon as possible.
 - b. Master switch should be turned off and flight continued normally without electrical power, except at night.
 - c. If the airplane is being flown under IFR conditions, perform radio out routine, if being flown VFR, it will be quite safe to continue.
 - d. Master switch should be turned off particularly if the failure is a discharge or over-charge being indicated. Flight may be continued but there is limited electrical power available from the battery.

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7. If a magneto becomes disconnected from its ignition switch:
 - a. Selecting the other magneto to "OFF" will fail to stop the engine.
 - b. A dead cut will result when the ignition check is carried out at high RPM and the other magneto is selected to "OFF".
 - c. The ammeter will show a continual discharge.
 - d. The pilot would notice the engine torque will reduce accompanied by slight rough running.

8. High tension supply for the spark plugs in a piston engine is derived from the:
 - a. Magneto's self contained generation and distribution system.
 - b. Battery, and stepped-up by the magneto.
 - c. Battery during starting and the magneto once the engine is running.
 - d. Alternator or generator stepped up through a capacitor on starting, then by the magnetos.

9. In the event of a cockpit fire, it is permissible to use a hand-held BCF extinguisher provided that:
 - a. The cockpit is ventilated after use.
 - b. A window is opened before the extinguisher is used.
 - c. Great care is used to avoid skin contamination.
 - d. All electrics are switched off.

10. A piston engine aircraft fly in that layer of the atmosphere called:
 - a. The Troposphere.
 - b. The Stratosphere.
 - c. The Mesosphere.
 - d. The Tropopause.

11. If the velocity of an air mass is increased:
 - a. The kinetic energy will increase, the dynamic pressure will increase and the static pressure will decrease.
 - b. The dynamic pressure will decrease and the static pressure will increase.
 - c. The static pressure will remain constant, the dynamic pressure will decrease and the static pressure will increase.

12. In a gas turbine engine, the Gas Generator is that section that consists of the:
 - a. Combustion section and the first turbine.
 - b. Compressor and combustion section.
 - c. Compressor and the first turbine.
 - d. Power turbine and the combustion section.

13. In a turbo-shaft gas turbine engine, a free turbine is a turbine:
 - a. Not connected to the compressor of the gas generator stage.
 - b. Used to drive ancillaries and the tail rotor drive shaft.
 - c. Connected to the compressor of a gas generator stage.
 - d. Not connected to the power output shaft.

14. The Gas Turbine Engine is a:

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- a. Constant pressure engine.
 - b. Constant volume engine.
 - c. Constant cyclic engine.
 - d. Constant velocity engine.
15. A Free-Wheeling unit on a turbo-shaft gas turbine engine:
- a. Automatically disengages the power drive in the event of engine failure.
 - b. Allows a disconnection between the drive shaft and all the ancillary drives in the event of engine failure.
 - c. Allows the pilot to disengage the engine from the drive chain when shutting down the engine.
 - d. Automatically disengages the power drive from the gear-box at a pre-set RPM.
16. Self Sustaining Speed for a gas turbine engine is where the engine speed is running:
- a. Without further input from a starter motor.
 - b. At a constant RPM, such as in the cruise.
 - c. At a constant RPM set by an engine speed limited.
 - d. At minimum throttle setting.
17. A free turbine engine drives the main rotor and tail rotor from suitable gearing of:
- a. A dedicated turbine.
 - b. The compressor shaft.
 - c. The first power turbine stage.
 - d. The Gas Generator section.
18. The Twist Grip on the end of the collective of a turbine helicopter is:
- a. Normally fully open.
 - b. Used to set the cruise power.
 - c. Normally fully closed.
 - d. Used to keep engine torque within limits.
19. When starting a turbine engine, the pilot must monitor:
- a. Oil pressure and Turbine Outlet Temperature.
 - b. Low torque and oil temperature.
 - c. Rotor speed and torque.
 - d. High torque, oil temperature and Rotor speed.
20. If the pressure in the combustion stage is greater than the air entering this stage, it can cause a Turbine Engine Surge. This produces the following indications:
- a. A rise in TOT and banging sounds.
 - b. A drop in TOT and increase in fuel flow.
 - c. A rise in TOT and decrease in fuel flow.
 - d. A drop in TOT, intermittent fuel flow and rough running.
21. If the pilot selects the Anti-Icing Valve on, the only indication of satisfactory operation is a slight:
- a. Rise in Turbine Outlet Temperature.
 - b. Rise in Turbine RPM.

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- c. Drop in Turbine RPM.
 - d. Drop in Turbine Outlet Temperature.
22. A "Hung Start" is where the:
- a. Mixture is too rich; the engine lights up but fail to increase the RPM to the idle speed.
 - b. RPM fails to increase and the engine does not light up.
 - c. Mixture is too lean and the engine fails to light up.
 - d. The engine lights up, but cuts out when the RPM increases to above ground idle.
23. A "Vent Run" is carried out:
- a. After an over-rich start.
 - b. Only by the licensed engineer after an engine wash.
 - c. Before starting on a very hot day.
 - d. Before starting on a very cold day.
24. The thermal valve in the oil cooler system, is for allowing oil to bypass the cooler if:
- a. The temperature is too low.
 - b. It becomes clogged.
 - c. The pressure is too high.
 - d. If the oil cooler leaks.
25. Chip detectors in engines and gearboxes are used to:
- a. Indicate metal particles in the oil.
 - b. Prevent oil filters from becoming blocked.
 - c. Indicate oil bypass valve in operation.
 - d. Indicate that oil must be changed on next daily inspection.
26. The Pilot operated ignition system in a helicopter gas turbine engine is:
- a. Only on during engine starting and re-lighting.
 - b. Only available during re-lighting in flight.
 - c. Only available while the helicopter is on ground.
 - d. On continuously during engine running.
27. In the event of a single fuel booster pump failure, the pilot should:
- a. Land as soon as practicable, making power changes smoothly.
 - b. Be able to continue flying as fuel is supplied by second (back-up) pump.
 - c. Expect an engine flame-out and prepare for an engine out landing.
 - d. Be able to descend, but be aware that full power may not be available.
28. Should the Chip Detector illuminate on the tail rotor gearbox, the pilot should:
- a. Immediately shut down the engine, declare an emergency and perform an engine out landing.
 - b. Immediately perform an autorotation (as there is no torque reaction), land immediately.
 - c. Continue the planned flight but report the occurrence to the engineer after landing.
 - d. Declare an emergency, and land as soon as practicable.

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29. When starting a turbine helicopter engine, should an engine fire occur, the pilot must:
 - a. Close the throttle, switch off the fuel and continue to operate the starter.
 - b. Switch off the fuel and operate the engine fire extinguisher.
 - c. Switch off the fuel, open the throttle and continue to operate the starter.
 - d. Switch off all electrics; isolate the starter, fuel switch off.
30. A BCF fire extinguisher:
 - a. Is quite safe to use in an enclosed cockpit if the cockpit is subsequently ventilated.
 - b. Gives off highly toxic fumes and should never be used in an enclosed cockpit.
 - c. Is quite safe to use in an enclosed cockpit.
 - d. Is only suitable for wood or fabric fires and is, therefore, of no use in cockpit.
31. For gyroplanes with constant-speed propellers, the first indication of carburetor icing is usually:
 - a. A decrease in manifold pressure.
 - b. A decrease in engine RPM.
 - c. Engine roughness followed by a decrease in engine RPM.
32. Before shutdown, While at idle, the ignition key is momentarily turned OFF. The engine continues to run with no interruption; this:
 - a. Should not normally happen. Indicates a magneto not grounding in OFF position.
 - b. Is normal because the engine is usually stopped by moving the mixture to idle cut-off.
 - c. Is an undesirable practice, but indicates nothing is wrong.
33. The uncontrolled firing of fuel/air charge in advance of normal spark ignition is known as:
 - a. Pre-ignition.
 - b. Instantaneous combustion.
 - c. Detonation.
34. Which statement is true concerning the effect of the application of carburetor heat?
 - a. It enriches the fuel/air mixture.
 - b. It leans the fuel/air mixture.
 - c. It has no effect of the fuel/air mixture.
35. Detonation occurs in a reciprocating aircraft engine when:
 - a. The unburned fuel/air charge in the cylinders is subjected to instantaneous combustion.
 - b. There is an explosive increase of fuel caused by too rich a fuel/air mixture.
 - c. The spark plugs receive an electrical jolt caused by a short in the wiring.
36. The unequal lift across the rotor disc that occurs in horizontal flight as a result of the difference in velocity of the air over the advancing half of the disc area is known as:
 - a. Dissymmetry of lift.
 - b. Coriolis effect.
 - c. Blade flapping tendency.

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37. Cyclic control pressure is applied during flight that results in a maximum increase in pitch angle of the rotor blades at “12 o’clock” position. Which way will the rotor disc tilt?
- Left.
 - Aft.
 - Right.
38. A reciprocating engine at helicopters is more likely to stop due in-flight carburetor icing than will the same type engine in an airplane. This statement:
- Is true. The freewheeling unit will not allow wind milling (flywheel) effect to be exerted on a helicopter engine.
 - Has no basis in fact. The same type engine will run equally well in either aircraft.
 - Is false. The clutch will immediately release the load from the helicopter engine under engine malfunctioning conditions.
39. The main rotor blades of a semi-rigid rotor system can:
- Flap together as a unit.
 - Flap, drag and feather independently.
 - Feather independently, but cannot flap and drag.
40. How does high density altitude affect helicopter performance?
- Engine and rotor efficiency is reduced.
 - Engine and rotor efficiency is increased.
 - It increases rotor drag, which requires more power for normal flight.
41. A medium-frequency vibration that suddenly occurs during flight could be indicative of a defective:
- Tail rotor system.
 - Engine.
 - Main rotor system.
42. Abnormal helicopter vibrations in the low-frequency range are associated with system or component?
- Main rotor.
 - Tail rotor.
 - Transmission.
43. Helicopter low-frequency vibrations are always associated with the:
- Main rotor.
 - Tail rotor.
 - Transmission.
44. A high-frequency vibrations that suddenly occurs during flight could be an indication of a defective:
- Transmission.
 - Freewheeling unit.
 - Main rotor system.

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45. The best power mixture is that fuel/air ratio at which:
 - a. The most power can be obtained for any given throttle setting.
 - b. Cylinder heat temperatures are the coolest.
 - c. A given power can be obtained with the highest manifold pressure or throttle setting.
46. Detonation can be caused by:
 - a. Too lean a mixture.
 - b. Low engine temperatures.
 - c. Using higher grade fuel than recommended.
47. Applying carburetor heat will:
 - a. Enrich the fuel/air mixture.
 - b. Not affect the mixture.
 - c. Lean the fuel/air mixture.
48. An abnormally high engine oil temperature indication may be caused by:
 - a. The oil level being too low.
 - b. A defective bearing.
 - c. Operating with an excessively rich mixture.
49. What will occur if no leaning is made with the mixture control as the flight altitude increase?
 - a. The density of air entering the carburetor decreases and the amount of fuel remains constant.
 - b. The volume of air entering the carburetor decreases and the amount of fuel decreases.
 - c. The density of air entering the carburetor decreases and the amount of fuel increases.
50. Unless adjusted, the fuel/air mixture becomes richer with an increase in altitude because the amount of fuel:
 - a. Remains constant while the density of air decreases.
 - b. Decreases while the volume of air decreases.
 - c. Remains constant while the volume of air decreases.
51. The basic purpose of adjusting the fuel/air mixture control at altitude is to:
 - a. Decrease the fuel flow to compensate for decreased air density.
 - b. Decrease the amount of fuel in the mixture to compensate for increased air density.
 - c. Increase the amount of fuel in the mixture to compensate for decrease in pressure and density of the air.
52. If the RPM is low and the manifold pressure is high, what initial corrective action should be taken?
 - a. Lower the collective pitch.
 - b. Increase the throttle.
 - c. Raise the collective pitch.

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53. During climbing flight, the manifold pressure is low and the RPM is high. What initial corrective action should be taken?
- Raise the collective pitch.
 - Increase the throttle.
 - Decrease the throttle.
54. When operating a helicopter in conditions favorable for carburetor icing, the carburetor heat should be:
- OFF for take-offs, adjusted to keep the carburetor air temperature gauge indicating in the green arc at all other times.
 - Adjusted to keep the carburetor air temperature gauge indicating in the green arc at all times.
 - OFF during take-offs, approaches, and landings; adjusted to keep the carburetor air temperature gauge indicating in the green arc at all other times.
55. During level flight, if the manifold pressure is high and the RPM is high, what initial corrective action should be taken?
- Raise the collective pitch.
 - Increase the throttle.
 - Decrease the throttle.
56. During a near-vertical power approach into a confined area with the airspeed near zero, what hazardous condition may develop?
- Settling with power.
 - Ground resonance.
 - Blades stall vibration.
57. Under which situation is accidental settling with power likely to occur?
- A steep approach in which the airspeed is permitted to drop to nearly zero.
 - A shallow approach in which the airspeed is permitted to drop below 10 mph.
 - Hovering in ground effect during calm wind, high density altitude conditions.
58. What are the major indications of an incipient retreating blade stall situation, in order of occurrence?
- Low-frequency vibration, pitch-up of the nose, and roll in the direction of the retreating blade.
 - Slow pitch-up of the nose, high-frequency vibration, and a tendency for the helicopter to roll.
 - Slow pitch-up of the nose, tendency for the helicopter to roll, followed by a medium-frequency vibration.
59. To taxi on the surface in a safe and efficient manner, one should use the cyclic pitch to:
- Correct for drift during crosswind conditions.
 - Start and stop aircraft movement.
 - Maintain heading during crosswind conditions.

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60. A pilot is hovering during calm wind conditions. The greatest amount of engine power will be required when:
- Making a left-pedal turn.
 - Ground effect exists.
 - Making a right-pedal turn.
61. Using left pedal to assist a left turn during an autorotative descent will probably cause the rotor RPM to:
- Decrease and the aircraft nose to pitch down.
 - Increase and the airspeed to decrease.
 - Increase and the aircraft nose to pitch down.
62. During the entry into a quick stop, how should the collective pitch control be used? It should be:
- Lowered as necessary to prevent ballooning.
 - Raised as necessary to prevent a rotor over-speed.
 - Raised as necessary to prevent a loss of altitude.
63. During a normal approach to a hover, the collective pitch is used primarily to:
- Control the angle of descent.
 - Maintain heading.
 - Control the rate of closure.
64. During a normal approach to a hover, the cyclic pitch is used primarily to:
- Control the rate of closure.
 - Maintain heading.
 - Control the angle of descent.
65. Normal RPM should be maintained during a running landing primarily to ensure:
- Adequate directional control until the helicopter stops.
 - That sufficient lift is available should an emergency develop.
 - Longitudinal and lateral control, especially if the helicopter is heavily loaded or high density altitude.
66. Which is true concerning a running take-off?
- A running take-off may be possible when gross weight or density altitude prevents a sustained hover at normal hovering altitude.
 - If a helicopter cannot be lifted vertically, a running take-off should be made.
 - One advantage of a running take-off is that the additional airspeed can be converted quickly to altitude.
67. The principal factor limiting the never-exceed speed (V_{NE}) of a gyroplane is:
- Lack of sufficient cyclic stick control to compensate for dissymmetry of lift or retreating blade stall, depending on which occurs first.
 - Turbulence and altitude.
 - Blade-tip speed, which must remain below the speed of sound.
68. Which is true with respect to vortex circulation?

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- a. The vortex strength is greatest when the generating aircraft is heavy, clean and slow.
 - b. Helicopters generate downwash turbulence only, not vortex circulation.
 - c. When vortex circulation sinks into ground effect, it tends to dissipate rapidly and offer little danger.
69. If an object is statically stable, it will return to its original position, however in doing so may initially overshoot. If the amplitude of the oscillations die out it can be said to be:
- a. Dynamically stable.
 - b. Dynamically unstable.
 - c. Dynamically neutrally stable.
70. A stabilizer at the tail of the fuselage will produce adverse effects if the helicopter is moving backward. A gust of wind causes the disc to flap forward. In that case:
- a. The fuselage will slow down, the angle of attack on the stabilizer will increase and the pitch-up movement of the tail will be increased.
 - b. The fuselage will pitch up, and the tail will slow down.
 - c. The fuselage will slow down, and the tail will pitch down.
71. The types of rotor system are:
- a. The teetering head, the fully articulated head, semi-rigid and rigid rotor.
 - b. Fully articulated and semi-rigid rotor only.
 - c. Semi-rigid, rigid and fully articulated rotor.
72. If the same cyclic force were applied to the different rotor systems, which of these would be the most effective in changing the aircraft attitude?
- a. The rigid rotor.
 - b. The fully articulated rotor.
 - c. The teetering head rotor.
73. The helicopter pilot's main controls are as follows:
- a. Collective Pitch Lever, Cyclic Pitch Control Column, Yaw Pedals, Throttle.
 - b. Collective Pitch Lever, Cyclic Pitch Control Column, Yaw Pedals.
 - c. Collective Pitch Lever, Cyclic Pitch, Throttle.
74. The Cyclic Pitch Control Column:
- a. Varies the pitch of each blade cyclically.
 - b. Controls the movement of the helicopter about vertical axis in hovering.
 - c. Simultaneously alters the pitch of all blades by the same amount.
75. The Collective Pitch Lever:
- a. Simultaneously alters the pitch of all blades by the same amount.
 - b. Varies the pitch of each blade cyclically.
 - c. Controls the movement of the helicopter about vertical axis in hovering.
76. Yaw Pedals:
- a. Controls the movement of the helicopter about vertical axis in hovering.
 - b. Simultaneously alters the pitch of all blades by the same amount.

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- c. Varies the pitch of each blade cyclically.
77. The essential difference between a conventional gas turbine and the free turbine or turbo-shaft type is that:
- a. The free turbine has a one or two stage turbine devoted to providing a power take-off to the helicopter main rotor gearbox.
 - b. The conventional gas turbine has relatively low specific fuel consumption.
 - c. The conventional gas turbine has the power take-off from the front of the engine.
78. Teetering type tail rotor requires:
- a. A feathering hinge only.
 - b. A feathering hinge and a flapping hinge.
 - c. A flapping hinge only.
79. A fin is fitted to helicopters that use the shrouded tail rotor („Fenestron”) system to give additional stability and in some cases camber is provided on one side of the fin:
- a. To produce a side force to assist in counteracting main rotor torque.
 - b. Not to use servo unit for pitch control.
 - c. To prevent helicopter drift during hovering in wind conditions.
80. The pitch of the tail rotor is controlled by the:
- a. Pilot’s yaw pedals.
 - b. Collective Pitch Lever.
 - c. Cyclic Stick Control Column.
81. As forward speed increases, the fuselage pitches nose down. The amount of pitching down is limited by the:
- a. Horizontal stabilizer at the tail.
 - b. Cyclic stick forward movement.
 - c. Amount of parasite drag.
82. If initial conditions of retreating blade stall are ignored, the next stage is:
- a. Pitch-up tendency and the helicopter will roll over towards the retreating blade.
 - b. Pitch-down tendency and the helicopter will roll over towards the advancing blade.
 - c. Loss of control immediately.
83. Connecting two 12 volt, 40 ampere-hour capacity batteries in series will provide a battery of:
- a. 24 volts and 40 ampere-hours capacity.
 - b. 12 volts and 80 ampere-hours capacity.
 - c. 24 volts and 80 ampere-hours capacity.
 - d. 12 volts and 40 ampere-hours capacity.
84. Magnetos are:
- a. Self-contained, engine driven, electrical generators which produce high voltage sparks.
 - b. Generators, driven by the cam-shaft, used to supply electrical equipment.
 - c. Used to generate low voltage sparks for the spark-plugs.

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- d. Fitted within the distributor and fire in the same sequence as the spark-plugs.
85. When turning through North in the Northern Hemisphere:
- a. Liquid swirl will increase the magnitude of any turning error.
 - b. Turning errors are the greatest closer to the magnetic equator.
 - c. Acceleration errors are always more significant than turning errors.
 - d. The compass will be lively.
86. The Mechanical Tachometer:
- a. Works on the principle of a magnetic field being induced in a drag cup and creating a torque which rotates a shaft attached to the pointer on the dial of a Tachometer.
 - b. Uses the friction generated in a drag cup to rotate shaft, which is connected to a pointer, against the pressure of a hairspring.
 - c. Is driven directly from the prop shaft. Gears reduce the speed of rotation so that a generator can be used to produce a voltage proportional to shaft speed which is indicated on a gauge calibrated in RPM.
 - d. Is driven directly from the alternator drive.
87. Pre-ignition in a four stroke piston engine is:
- a. The fuel-air mixture burning earlier than it should.
 - b. Caused by a rich mixture in a hot engine.
 - c. The explosive combustion of the fuel-air mixture.
 - d. Characterised by the ringing nature of the explosion it causes.
88. Instruments normally supplied from the electrical system include the:
- a. Fuel quantity gauges and the turn co-ordinator.
 - b. Engine RPM indicator and the fuel quantity gauges.
 - c. Turn co-ordinator and oil pressure gauge.
 - d. Engine RPM indicator and the turn co-ordinator.
89. Engine compression ratio is the ratio of the:
- a. Total volume to the clearance volume.
 - b. Clearance volume to the swept volume.
 - c. Swept volume to the total volume.
 - d. Swept volume to the clearance volume.
90. In the event of an alternator or generator failure during flight, the:
- a. Electrical loads should be reduced to a minimum and a landing made as soon as safely practicable.
 - b. Flight may be continued normally because the battery supplies all electrical loads.
 - c. Alternator master switch should be turned off and flight continued normally without electrical power.
91. The purpose of the compass deviation card fixed next to an aircraft's magnetic compass is to:
- a. Indicate the discrepancy between the heading shown on the compass and the actual magnetic heading.

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- b. Compensate for the influence of magnetic material carried on the person, on the pilot, and/or passengers.
 - c. Indicate the discrepancy between the aircraft's track and magnetic north.
 - d. Indicate the discrepancy between the aircraft's track and true north.
92. Why do aircraft engine ignition systems incorporate a means of spark augmentation?
- a. Because the speed of rotation of the engine, during starting, is too low for the magneto to produce enough energy to ignite the air-fuel mixture.
 - b. Because, at high engine speeds, a fat spark is needed to extract maximum power from the air-fuel mixture.
 - c. In order to overcome the problem of spark-retard during starting.
 - d. All of above.
93. Carbon monoxide gas, which is highly toxic, may enter in aircraft cabin in flight due to an exhaust system defect. Carbon Monoxide:
- a. Is odourless and colourless.
 - b. May be identified by its strong smell.
 - c. May be identified by its grey colour.
 - d. Has a very distinctive taste.
94. A Directional Indicator:
- a. Suffers from apparent drift of the gyro from the fixed position in space to which it was aligned, produced by Earth rotation.
 - b. Is badly affected by acceleration in a turn.
 - c. Is not affected by drift produced from mechanical friction in the gyro gimbal bearings.
 - d. Provides a stable reference in azimuth and elevation for maintaining accurate headings and pitch attitudes.
95. The type of gas which is stored in the activating cylinder of a life jacket:
- a. Is Carbon Dioxide.
 - b. Is extremely toxic and great care should be taken, when topping up the lifejacket, not to breathe any of it in.
 - c. Is highly inflammable.
 - d. Is Carbon Monoxide.
96. In reference to the magnetic compass, the pilots must have in mind:
- a. The maximum turning errors are when turning through North and South, and minimum when turning through East and West.
 - b. The maximum turning errors are when turning through East and West, and minimum when turning through North and South.
 - c. The turning errors increase, the nearer the aircraft is to the Magnetic Equator, and diminish as the aircraft approaches the Magnetic Poles.
 - d. Acceleration errors increase the nearer the aircraft is to the Magnetic Poles, and diminish as the aircraft approaches the Magnetic Equator.
97. The exhaust gas temperature gauge:

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- a. Can indicate whether the air-fuel mixture being drawn into the combustion chamber is too lean or too rich.
 - b. Is an engine instrument designed to protect the engine from excessive heat.
 - c. Does the same job as the cylinder head temperature gauge.
 - d. Requires power from the D.C. bus-bar.
98. The correct working cycle of a four stroke engine is:
- a. Induction, compression, power, exhaust.
 - b. Exhaust power induction, compression.
 - c. Induction, power, compression, exhaust.
 - d. Exhaust, induction, power, compression.
99. What will be the consequence for the validity of an aircraft's Certificate of Airworthiness (C of A), if the aircraft is not maintained in accordance with the approved maintenance schedule detailed in C of A?
- a. The C of A will be rendered invalid until such time as the required maintenance is completed.
 - b. The aircraft owner must apply to the CAA for an exemption from the required maintenance schedule.
 - c. The C of A must be renewed before the aircraft may fly.
 - d. The validity of the C of A will not be affected.
100. The crankshaft in a piston engine:
- a. Converts reciprocating movement into rotary motion.
 - b. Controls the clearance of the valves.
 - c. Converts rotary motion into reciprocating movement.
 - d. Rotates at half the camshaft speed.
101. Pre-ignition:
- a. Is usually caused by a hot spot in the combustion chamber.
 - b. Is also known as pinking.
 - c. Occurs after ignition.
 - d. Happens after the spark occurs at the plug.
102. The compression ratio of a piston engine is the ratio of the:
- a. Cylinder volume when the piston is at BDC to the cylinder volume when the piston is at TDC.
 - b. Total cylinder volume to the volume when the piston is at bottom dead centre (BDC).
 - c. Total cylinder volume to swept volume.
 - d. Swept volume to clearance volume.
103. Detonation is:
- a. Unstable combustion.
 - b. An explosion that occurs before the normal ignition point.
 - c. Usually associated with a rich mixture and high temperature of cylinder's head.
 - d. Usually associated with a weak mixture and a low temperature of cylinder's head.

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104. If the power supply of the pitot heater failed during the flight in icing conditions and the aircraft subsequently descended, the readings on the Altimeter, the VSI and the ASI, if ice had blocked the pitot (Total Pressure) tube, would:
- | Altimeter | VSI | ASI |
|--------------------|-----------------|-------------|
| a. Read correctly/ | Read correctly/ | Under-read. |
| b. Read correctly/ | Under-read/ | Over-read. |
| c. Under-read/ | Read correctly/ | Over-read. |
| d. Read correctly/ | Read correctly/ | Over-read. |
105. The cylinder head temperature gauge:
- Obtains its temperature information from the hottest engine cylinder, by means of a probe consisting of two dissimilar metals joined together.
 - Is primarily a fuel management instrument.
 - Requires alternating current to power the instrument needle.
 - Obtains its information from a probe which is installed about four inches from the cylinder head on the exhaust system.
106. The most probable cause of the oil pressure gauge's needle fluctuating when the aircraft is in level flight with the engine running at cruise RPM is:
- A low oil supply.
 - The presence of air in the oil tank.
 - A loose electrical connection.
 - The low power setting.
107. In the aircraft tanks, fuel is most likely to be contaminated by water from:
- Atmospheric air remaining in the tanks.
 - Poorly fitting fuel caps.
 - Contamination during re-fuelling.
 - Leaks in the tanks that have let in rain.
108. An altimeter:
- Contains an aneroid capsule connected to a static pressure source. The capsule contracts during descent.
 - Contains a barometric capsule, connected to a total pressure source, that contracts during descent.
 - Contains a barometric capsule that expands during descent.
 - Contains a partially evacuated capsule that expands during descent.
109. It is possible to get carburettor icing when the relative humidity is greater than 50% within a temperature range of:
- 7⁰C to +33⁰C.
 - 0⁰C and below.
 - 20⁰C to +10⁰C.
 - At any temperature.
110. If a fuse blows during flight, it:
- May be replaced in the air once only, by one of the same value.

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- b. Should not be replaced until after landing.
 - c. May be replaced by a fuse of a higher rating to ensure that it will not blow again.
 - d. May be replaced as often as required.
111. If, while an aircraft is descending, the static vent leading to the Vertical Sped Indicator becomes blocked, the indicator will:
- a. Show a zero reading, after a short delay.
 - b. Continue to show the same reading.
 - c. Indicate a climb.
 - d. Indicate a descent.
112. When an aircraft is in flight, the pressure sensed by the forward facing hole in the pitot tube is:
- a. Dynamic pressure plus static pressure.
 - b. Static pressure only.
 - c. Total pressure plus dynamic pressure.
 - d. Dynamic pressure only.
113. The gyro in an aircraft horizon is:
- a. An Earth gyro rotating in a horizontal plane about a vertical axis.
 - b. An Earth gyro rotating in a vertical plane about the aircraft's lateral axis.
 - c. An Earth gyro rotating in a vertical plane about the aircraft's longitudinal axis.
 - d. A tied gyro rotating in a horizontal plane about the aircraft's longitudinal axis.
114. The main advantage of an alternator over a generator is that:
- a. An alternator will give almost full power at engine idling speed.
 - b. A generator can only produce alternating current.
 - c. The output of a generator fluctuates too much.
 - d. An alternator produces direct current from its armature.
115. As air enters to the restriction of a Venturi, velocity _____, static or ambient pressure _____ and temperature _____:
- a. Increases/ decreases/ decreases.
 - b. Increases/ increases/ increases.
 - c. Decreases/ increases/ decreases.
 - d. Decrease/ decrease/ increases.
116. Detonation is:
- a. Harmful to the pistons.
 - b. Also known as the "piston slap".
 - c. Part of normal engine running.
 - d. Cannot be identified externally.
117. A magnetic heading:
- a. Is the sum of the compass heading and compass deviation.
 - b. Is the sum of the compass heading, compass deviation and variation.
 - c. Is not affected by turning errors.
 - d. Is always referenced to the True North.

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118. To work at its highest efficiency, the engine:
- Needs to be at the highest temperature consistent with safe operation.
 - Oil system must constantly be supplied with hot oil.
 - Must be used at high altitude to take advantage of the cooling effect of the atmosphere.
 - Needs to be at the lowest temperature consistent with safe operation.
119. What part(s) of a reciprocating aircraft engine seal(s) the combustion chamber?
- The cylinder rings and valves.
 - The cylinder gasket.
 - The spark plugs.
 - The camshaft.
120. The piston rod in a reciprocating engine forms a link between:
- The cylinder piston and the crankshaft.
 - The cylinder piston and the camshaft.
 - The valve rod and the rocker arm.
 - The rocker arm and the valve body.
121. What part in a reciprocating four-stroke engine operates the piston valves?
- The camshaft.
 - The piston rod.
 - The piston bolt.
 - The diffuser valve.
122. The purpose of fins around cylinder of a reciprocating air-cooled aircraft engine is a:
- Better cylinder cooling.
 - Cylinder augmentation.
 - Lower engine aerodynamic drag.
 - Lower engine mass.
123. Oil in a reciprocating engine serves:
- For lubricating and cooling the engine.
 - To increase mixture combustion temperature in the cylinders.
 - As additive for proper fuel-air which burns in the cylinder.
 - For quiet engine operating only.
124. When the engine is stopped, the main source of electrical power is the:
- Battery.
 - Magneto.
 - Generator or alternator.
 - Circuit breaker.
125. For exciting of the alternator an initial electrical current is needed, provided by the:
- Battery.
 - Magneto.
 - Ignition coil.

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- d. Current distributor.
126. Can the alternator of an aircraft engine operate without the battery?
- a. No, in no case.
 - b. Yes, provided the magnetos operate properly.
 - c. Yes, however at high RPM only.
 - d. Yes, provided the pilot has switched off all electrical services on board.
127. To which source of electrical power is the starter of an aircraft engine connected to?
- a. Directly to the battery.
 - b. To the external source of electrical power only.
 - c. To the alternator or generator.
 - d. Depends on the type of aircraft.
128. One purpose of the dual ignition system on an aircraft engine is to provide for:
- a. Improved engine performance.
 - b. Balanced cylinder head pressure.
 - c. Uniform heat distribution.
129. What would be the result of a single magneto failure on an aircraft in cruise flight?
- a. A slight drop in RPM, plus a slight increase in fuel consumption.
 - b. The engine would be difficult to control.
 - c. The engine would backfire excessively.
 - d. Black smoke would be observed from the exhaust.
130. On a reciprocating aviation engine, what is controlled by the exhaust temperature gauge (EGT)?
- a. Quality of the fuel/air mixture.
 - b. Carburettor icing.
 - c. Oil pressure.
 - d. Oil consumption.
131. For inertial cooling, a reciprocating aircraft engine especially depends on:
- a. The air flowing over the exhaust manifold.
 - b. The circulation of lubricating oil.
 - c. A properly functioning thermostat.
132. Which instrument(s) is (are) connected to the total pressure?
- a. Airspeed indicator only.
 - b. Airspeed indicator, classic rate-of-climb indicator, and altimeter.
 - c. Classic vertical speed indicator and altimeter.
 - d. Classic vertical speed indicator only.
133. What causes the true airspeed of an aircraft to differ from its indicated airspeed?
- a. The forward wind component.
 - b. Pitot error caused by flow losses in the pitot tube.
 - c. Yaw error caused by the yawing movement in cruise flight.
 - d. Variation in temperature and air density.

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134. If set to QNH, what will be aircraft altimeter reading after landing?
- Airfield height above the mean sea level.
 - Zero.
 - Airfield height above the pressure plane 1013, 2 hPa.
 - Airfield pressure altitude above the standard value.
135. If a pilot changes the altimeter setting to a lower pressure, the altitude indication will:
- Decrease.
 - Stay unchanged.
 - Increase.
136. If a flight is made from an area of high pressure into an area of low pressure without the altimeter setting being adjusted, the aircraft true altitude:
- Decreases.
 - Increases.
 - Stays unchanged.