

Question block created by wizard

This exam contains 92 questions.

1. Newton's first law states:

- (a) When a body is acted upon by an external force, the rate change of momentum is proportional to the force and takes place in the direction of the force.
- (b) To every action there is an opposite and equal reaction.
- (c) A body will remain at rest or will continue in uniform motion in a straight line unless acted upon by force.

If choice c is selected set score to 1.

2. Positive and negative signs of work indicate whether the object exerting the:

- (a) heat required to transferring energy to some other object, or receiving it.
- (b) work loss through heat expanded.
- (c) force is transferring energy to some other object, or receiving it.

If choice c is selected set score to 1.

3. Which engine has a better stall characteristic?

- (a) Both answers are correct.
- (b) Multi spool axial flow engine.
- (c) Single spool axial flow engine.

If choice b is selected set score to 1.

4. The difference in operation between a propeller and a jet engine can be summarized as follows:

- (a) A propeller accelerates a large quantity of air rearwards at a high rate. A jet engine accelerates a small quantity of air rearwards at a low rate.
- (b) A propeller accelerates a large quantity of air rearwards at a low rate. A jet engine accelerates a small quantity of air rearwards at a high rate.
- (c) Propeller is pulling while a jet engine is only compressing air.

If choice b is selected set score to 1.

5. In what unit is the engine output power of a turbojet normally measured?

- (a) Turbopower.
- (b) Thrust lbs or kg.

- (c) Jet thrust.

If choice b is selected set score to 1.

6. Thrust of a gasturbine engine comes from....

- (a) the acceleration of the air and fuel molecules.
- (b) the pressure of the exhaust against the atmosphere.
- (c) the enormous suction at the engine inlet.

If choice a is selected set score to 1.

7. The engine data and engine assembly identification plates are attached to the engine.

What data do these plates provide?

- (a) Engine specification as designed by the manufacturer for the aircraft configuration.
- (b) Aircraft specification as designed by the manufacturer for the engine to be installed.
- (c) Engine specification as designed by the manufacturer.

If choice c is selected set score to 1.

8. The bypass ratio of a modern turbofan is....

- (a) around 2 : 1.
- (b) around 5 : 1.
- (c) around 8 : 1.

If choice c is selected set score to 1.

9. Air velocity at the inlet of the low pressure compressor must be around....

- (a) Mach 0.1
- (b) Mach 0.5
- (c) Mach 0.9

If choice b is selected set score to 1.

10. Thrust stays constant until flat rate temperature point is reached.

What happens next?

- (a) Thrust begins to increase due to higher RPM and thinner air pressure.
- (b) Thrust begins to increase because of lower temperature.
- (c) Thrust begins to decrease.

If choice c is selected set score to 1.

11. During flight, the distribution of static pressure in and around the engine is as follows:



- (a) A: High pressure, B: Low pressure, C: High pressure
- (b) A: Low Pressure, B: High Pressure, C: Low Pressure
- (c) A: Low pressure, B: Low pressure, C: High pressure

If choice b is selected set score to 1.

12. What shape does a bifurcated intake have?

- (a) Divergent from front to rear.
- (b) Convergent from front to rear.
- (c) First divergent, then convergent towards the rear.

If choice a is selected set score to 1.

13. What is the most effective intake shape for supersonic speeds?

- (a) Divergent - convergent duct.
- (b) Convergent - divergent duct.
- (c) Straight duct.

If choice b is selected set score to 1.

14. On an engine with hot air anti-icing, where does the air come from?

- (a) From the engine itself.
- (b) From the aircraft air system.
- (c) From the opposite engine.

If choice a is selected set score to 1.

15. How is the hot air anti-ice system activated?

- (a) Automatically when ice is detected
- (b) The system is always on and can not be switched off
- (c) Manually from the flightdeck

If choice c is selected set score to 1.

16. Which types of compressors are mostly used in turbofan and turbojet engines?

- (a) Combination of both axial flow and centrifugal compressors.
- (b) Centrifugal compressors.

- (c) Axial flow compressors.

If choice c is selected set score to 1.

17. What kind of fixing method do you see in the picture?



- (a) Dove tail type
- o (b) Pinned type.
- o (c) Fir tree root type.

If choice a is selected set score to 1.

18. Fan blades can be removed and replaced, however the replaced blade must be of the....

- (a) same moment and weight class.
- o (b) production batch.
- o (c) same color code.

If choice a is selected set score to 1.

19. What is an advantage of the Wide Chord Fan Blade Technology?

- o (a) Increase weight.
- o (b) Much longer life of operation.
- (c) The number of blades can be reduced.

If choice c is selected set score to 1.

20. What can cause a compressor stall or surge?

- (a) A rapid throttle movement.
- o (b) A low take off speed.
- o (c) A high speed landing.

If choice a is selected set score to 1.

21. Compressor bleed control valves are normally spring loaded to the...

- o (a) closed position.
- o (b) mid-range position.

- (c) open position.

If choice c is selected set score to 1.

22. The term "overall pressure ratio" is defined as the ratio of the...

- (a) pressure at the front and rear of the compressor of a gas turbine engine.
- o (b) stagnation pressure due to the rotoring speed of the shafts against the compressor inner wall.
- o (c) stagnation pressure at the combustion chamber.

If choice a is selected set score to 1.

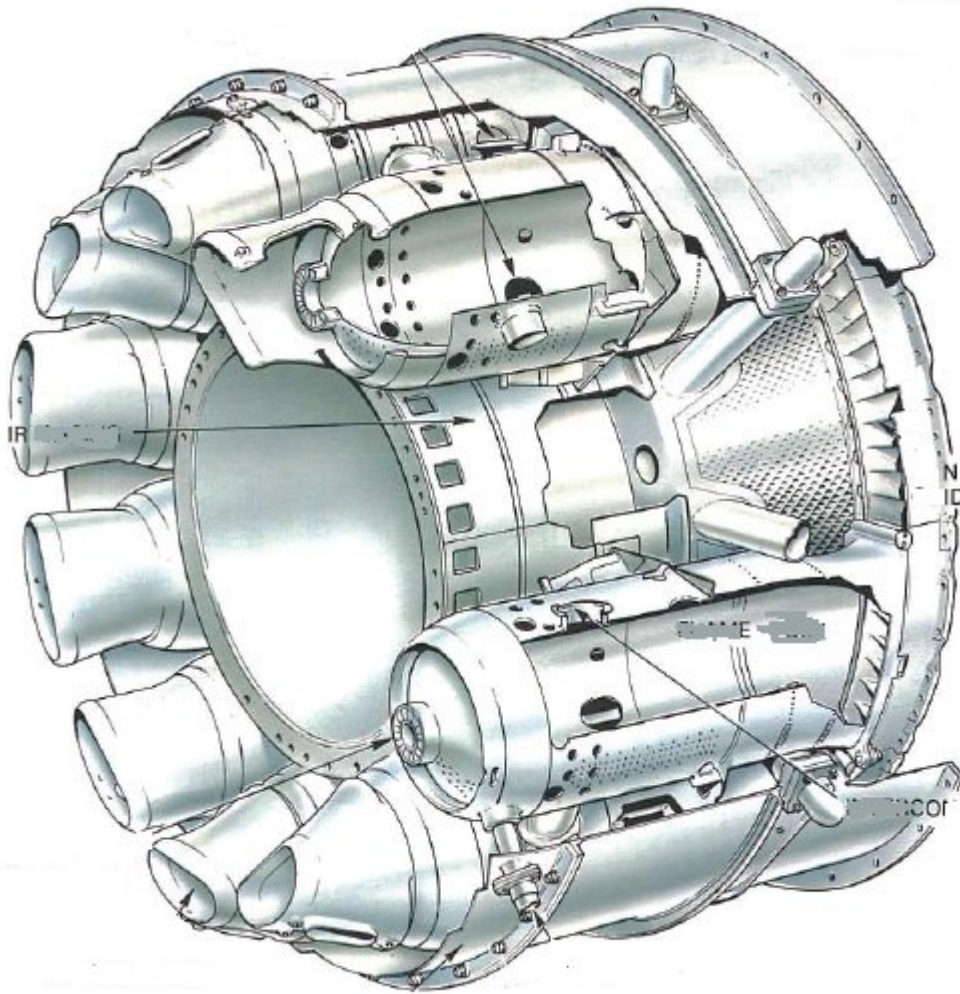
23. The compressor outlet delivers compressed air, to a component in front of the combustion section.

How do you call this?

- o (a) Nozzle section.
- o (b) The exhaust section of the compressor.
- (c) Diffuser.

If choice c is selected set score to 1.

24. What kind of combustion chamber is shown in the picture?



- (a) Annular combustion chamber.
- (b) Turbo-annular combustion chamber.
- (c) Multiple combustion chamber.

If choice b is selected set score to 1.

25. On multi spool engines the overall pressure ratio is....

- (a) the square of all the individual compressor stages.
- (b) the sum of all individual compressor stages.
- (c) the multiplication of all the individual compressor stages.

If choice c is selected set score to 1.

26. The nozzle area in an impuls type turbine is....

- (a) divergent.
- (b) convergent.
- (c) constant flow.

If choice b is selected set score to 1.

27. What is the most common method of attaching turbine blades to the disk?

- (a) Dove tail
- (b) Fir-tree
- (c) Radial slots

If choice b is selected set score to 1.

28. The end of which creep phase determines the blade safe life limit?

- (a) Secondary.
- (b) Tertiary.
- (c) Primary.

If choice a is selected set score to 1.

29. What will happen to the turbine blade when it reaches the tertiary creep stage?

The blade will...

- (a) be under a constant rate of extension.
- (b) become weak.
- (c) eventually break away.

If choice c is selected set score to 1.

30. What exhaust nozzle style is described?

"This duct converts much of the heat and pressure energy in the gases into kinetic energy. The gases thus leave the nozzle at high velocity."

- (a) Convergent nozzle.
- (b) Bellmouth nozzle.
- (c) Subsonic divergent nozzle.

If choice a is selected set score to 1.

- 31.** The nozzle is fitted at the final end of the exhaust duct and for subsonic aircraft it will be convergent in shape.

That is why the velocity of the turbine discharge gases is relatively...

- (a) cool but it is decreased before they are discharged.
- (b) high but it is decreased before they are discharged.
- (c) low but it is increased before they are discharged.

If choice c is selected set score to 1.

- 32.** Blocker door type (cold stream) are mostly used on....

- (a) supersonic aircraft.
- (b) high by-pass engines.
- (c) thrust vectoring nozzles systems.

If choice b is selected set score to 1.

- 33.** What are the most common used oil seals?

- (a) Labyrinth, thread (helical type) and carbon seals.
- (b) Thread (helical type), carbon seals and scrappers.
- (c) Labyrinth, scrapper and carbon seals.

If choice a is selected set score to 1.

- 34.** What is the advantage to use hydraulic bearings in newer engines?

- (a) Reduces vibrations transmitted to the engine.
- (b) Increases the lifetime of the bearing.
- (c) Reduces vibrations transmitted to the engine cooling system.

If choice a is selected set score to 1.

- 35.** The main bearings have the critical function of supporting the main engine rotor.

The number of bearings necessary for proper engine support is, for the most part, determined by...

- (a) length and weight of the engine.
- (b) thrust and weight of the engine.
- (c) life expectance of the engine between overhaul.

If choice a is selected set score to 1.

36. What is the most widely used fuel for aircraft with jet engines?

- (a) Jet A / A1
- o (b) JP 8
- o (c) Jet B

If choice a is selected set score to 1.

37. What is a difference between Jet A and Jet A-1 fuel?

- o (a) Sulfur mass.
- (b) Freezing point.
- o (c) Fuel density.

If choice b is selected set score to 1.

38. What is the advantage of jet fuel A1, compared to jet fuel A?

- (a) Lower freezing point.
- o (b) Higher burning rate.
- o (c) Higher freezing point.

If choice a is selected set score to 1.

39. Increasing the flashpoint would reduce the...

- (a) volatile and low-boiling components of the fuel.
- o (b) weight of the fuel.
- o (c) quantity of the fuel.

If choice a is selected set score to 1.

40. The oil level is normally checked between 5 minutes and 30 minutes after the engine has been shut down. For safety, do not check the oil for at least five minutes after shutdown.

Why is it required to a certain length of time?

- o (a) For all the oil to drain back to the gear box.
- (b) This allows the tank pressure to deplete and limits the amount of oil drainage to the gearbox.
- o (c) So that all the oil loses its air through the breather and foaming of oil is reduced.

If choice b is selected set score to 1.

41. The engine oil tank is a...

- (a) unpressurized container.
- (b) reservoir for the engine oil system.
- (c) sump below the engine to return the oil by gravity.

If choice b is selected set score to 1.

42. What is the function of the Fuel / Oil Heat Exchanger?

- (a) Cooling of fuel.
- (b) Cooling of oil and heating of fuel.
- (c) Heating of oil.

If choice b is selected set score to 1.

43. What component in the oil tank will separate the oil from the air?

- (a) The pressure relief valve.
- (b) A ball valve.
- (c) The centrifugal breather.

If choice c is selected set score to 1.

44. The electronic control unit on a gas turbine is a...

- (a) dual channel processor.
- (b) 4-channel processor.
- (c) single channel processor.

If choice a is selected set score to 1.

45. The thrust level request on a FADEC engine is transmitted through a....

- (a) TLA resolver.
- (b) push/pull control rod system.
- (c) mechanical cable system.

If choice a is selected set score to 1.

46. When the fuel flow transmitter is not installed within 24 hours on the system...

- (a) fill the transmitter with fuel and drain afterwards.

- (b) fill the transmitter with engine oil and drain afterwards.
- o (c) it must be covered in a plastic bag.

If choice b is selected set score to 1.

47. What is the purpose of the L.P. pump?

- o (a) To ensure the engine will continue to run if the H.P. fuel pump fails.
- o (b) To ensure rapid acceleration when the throttle is opened.
- (c) To prevent cavitation of the H.P. fuel pump.

If choice c is selected set score to 1.

48. The fuel manifold carries fuel to spray nozzles.

The spray nozzles spray fuel into the...

- o (a) diffuser case.
- o (b) first stage of the turbine vanes.
- (c) combustion chamber.

If choice c is selected set score to 1.

49. The HP fuel pump receives its flow from the...

- o (a) fuel nozzles.
- (b) low pressure system (low pressure pump).
- o (c) fuel tank booster pumps however only in takeoff.

If choice b is selected set score to 1.

50. What is the purpose of the accessory cooling system?

- o (a) To avoid the engine oil temperature exceeds 580 °C.
- (b) Removes excessive heat from the engine and nacelle components.
- o (c) Allowing engine components to heat up to operating temperature.

If choice b is selected set score to 1.

51. What do large gas turbine engines usually use to prevent icing?

- o (a) Electrical heating in flight only.
- o (b) Hot air from the turbine sections

- (c) Hot air from the compression section

If choice c is selected set score to 1.

52. Compressor Stability Control permits compressor stability...

- o (a) only during high power settings
- o (b) during cruise power only.
- (c) during starting and engine operation.

If choice c is selected set score to 1.

53. What are the two main methods used for starting aircraft engines?

- o (a) Battery powered electrical starter and vacuum starter.
- o (b) Manual crank starters and hydraulic motor driving a clutch system.
- (c) Electric starters and air starters.

If choice c is selected set score to 1.

54. The starter motor is capable of cranking the engine to a speed slightly higher than....

- (a) that at which sufficient gas flow is generated to enable the engine to accelerate under its own power.
- o (b) idle speed.
- o (c) that at which sufficient air flow is provided to have combustion.

If choice a is selected set score to 1.

55. Give the best answer:

When working on the ignition system....

- (a) switch off and wait several minutes before removing components from the ignition system.
- o (b) remove the ignition leads from the exciter box and then remove the ignitors.
- o (c) switch off and start removing the components from the ignition system.

If choice a is selected set score to 1.

56. The ignition system supplies electrical energy at high voltage to...

- (a) start or sustain combustion of the fuel-air mixture in the engine.
- o (b) rotate the gearbox which causes engine start.
- o (c) the turbine section for quick engine starting.

If choice a is selected set score to 1.

57. "Ignition system voltage is dangerously high. Ignition switch must be in off position before removal of any ignition component." This is a warning.

Why?

- (a) The ignition box has to warm up because it extremely cold.
- (b) Because it could result in severe injury to personnel
- (c) Could cause early rotation of the starter.

If choice b is selected set score to 1.

58. The EGT Harness connects to a terminal block.

From the terminal block, the EGT signal is sent to a...

- (a) resistor to decrease the actual temperature otherwise it can be too high.
- (b) display.
- (c) voltage generator, to increase the temperature.

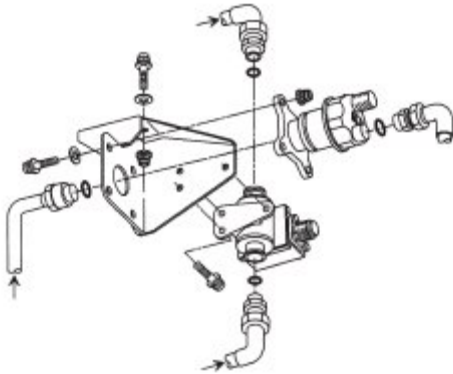
If choice b is selected set score to 1.

59. On a modern turbofan engine, the engine pressure ratio (EPR) indicating system measures the pressure ratio across the...

- (a) compressor including low pressure.
- (b) only pressure outlet (exhaust).
- (c) fan.

If choice c is selected set score to 1.

- 60.** The oil pressure transmitter senses the difference between pressure pump delivery pressure and...



- (a) the gear box pressure.
- o (b) the FCOC (Fuel Cooled Oil Cooler).
- o (c) the ISA parameters.

If choice a is selected set score to 1.

- 61.** The engine tachometer N2 system senses engine speed.

It displays the speed on EICAS in....

- o (a) engine pounds of thrust.
- o (b) rpm (revolutions per minute).
- (c) percent.

If choice c is selected set score to 1.

- 62.** Engine torque is used to indicate...

- o (a) lateral twist on the engine mouths.
- o (b) the power that is developed by a turbo fan engine.
- (c) the power that is developed by a turbo-propeller engine.

If choice c is selected set score to 1.

- 63.** The greatest advantage of the water injection system is...

- o (a) the heating.
- o (b) cooling inlet air.
- (c) the cooling of the turbine.

If choice c is selected set score to 1.

64. The mass flow rate of air through the engine is depending on the density of the air.

A higher mass flow rate results in...

- (a) a greater thrust of the engine.
- o (b) a higher engine temperature.
- o (c) a lower thrust output.

If choice a is selected set score to 1.

65. Which system is normally used on turbo-jet engines to augment the thrust of the engine for short periods?

- (a) Afterburner.
- o (b) In cruise.
- o (c) Pre-ignition.

If choice a is selected set score to 1.

66. The propeller is allowed to go to its feather position when the engine is shut down. What type of turbine is this?

- o (a) Axial flow turbine.
- (b) Free turbine.
- o (c) Coupled turbine.

If choice b is selected set score to 1.

67. What is the advantage of a parallel spur gear train?

It is...

- (a) mechanically simple and therefore relatively cheap to manufacture.
- o (b) mechanically simple but relatively expensive to manufacture.
- o (c) mechanically complex but relatively cheap to manufacture.

If choice a is selected set score to 1.

68. On a typical free turbine turboprop engine the propeller control lever is connected to the...

- (a) propeller governor.
- o (b) constant speed fuel mixing unit.
- o (c) fuel control unit.

If choice a is selected set score to 1.

69. Overspeed is the condition in which the actual engine speed is higher than the desired engine speed set.

How is this prevented?

- (a) Only by throttle being retarded.
- (b) Centrifugal forces of the fan.
- (c) By overspeed governor.

If choice c is selected set score to 1.

70. Drive shaft and flexible coupling, turbine helicopters make use of a short shaft system to deliver power to a:

- (a) transmission.
- (b) turbine.
- (c) compressor.

If choice a is selected set score to 1.

71. The most commonly used turbo-shaft engines today are from the...

- (a) single shaft type.
- (b) free-turbine type.
- (c) fixed-turbine type.

If choice b is selected set score to 1.

72. What is a turbo-shaft engine?

- (a) A turbine that drives a high speed ultra high bypass compressor.
- (b) Axial flow compressor with a propeller drive system, used in large commercial aircraft
- (c) A gas turbine engine that delivers power through a rotating shaft.

If choice c is selected set score to 1.

73. The parallel spur gear type and the epicyclic type describe...

- (a) excitation gear systems.
- (b) reduction gear systems.
- (c) eccentric gear systems.

If choice b is selected set score to 1.

74. The APU control unit (ECU) completely controls...

- (a) automatic selection of air source, no pilot interface needed, including start.
- (b) start and acceleration.
- (c) start and acceleration including automatic selection of air.

If choice b is selected set score to 1.

75. Reverse flow in an APU will...

- (a) not cause a shutdown.
- (b) cause a protective shutdown.
- (c) be automatically corrected by the ECU.

If choice b is selected set score to 1.

76. What type of compressor and combustion chamber is used in the power section of an APU?

- (a) Axial flow compressor to save space and can combustion chamber.
- (b) Axial flow compressor to save space and annular combustion chamber.
- (c) Centrifugal compressor with a reverse flow annular combustion chamber.

If choice c is selected set score to 1.

77. The igniter provides the spark to the...

- (a) combustor chamber.
- (b) turbine on APU with a reverse flow combustion chamber.
- (c) fuel nozzle injector during all phases of APU operation.

If choice a is selected set score to 1.

78. Powerplants are often divided into zones by fireproof bulkheads.

Bulkheads are usually made of...

- (a) aluminum alloy.
- (b) harden steel.
- (c) stainless steel, titanium.

If choice c is selected set score to 1.

79. When you need no overhead crane or other external hoist devices to change an engine.

This is a...

- (a) Single hoist equipment.
- (b) Chain hoist equipment.
- (c) Bootstrap equipment.

If choice c is selected set score to 1.

80. The pylon transmits engine loads to the wing through the...

- (a) wing spars, front and rear.
- (b) lower wing surface.
- (c) forward bulkhead and aft mount bulkhead.

If choice c is selected set score to 1.

81. What causes the majority of outside noise in a high-bypass engine?

- (a) HP fan.
- (b) LP fan.
- (c) Core Engine.

If choice b is selected set score to 1.

82. The fire extinguishing system protects those sections of the airplane...

- (a) where a fire could initiate. Controls and system status indications are located in the cockpit.
- (b) where a fire could initiate. Controls and system status indications related to the cabin are located in FWD Cabin Station. All other controls and systems are located in the cockpit.
- (c) selected by each flight crew before departure.

If choice a is selected set score to 1.

83. Turbine case cooling is used to....

- (a) improve service life of the high pressure compressor.
- (b) reduce turbine rotor vane clearances and improve engine efficiency.
- (c) improve gasturbine starting characteristics at high altitude.

If choice b is selected set score to 1.

84. Fire is one of the most dangerous threats to an aircraft.

How are the potential fire zones of all multi engine aircraft which are currently produced, protected?

- (a) by fire funnels.
- (b) by a fixed fire protection system.
- (c) by a portable fire protection system.

If choice b is selected set score to 1.

85. Extinguishing agent is discharged through a...

- (a) solid material that melts on heat contact.
- (b) pipeline system
- (c) solid state generator the a pipeline system is too heavy for large airplanes.

If choice b is selected set score to 1.

86. An "engine start without ignition" is indicated by...

- (a) low RPM.
- (b) no temperature indication.
- (c) compressor stall.

If choice b is selected set score to 1.

87. What is the maximum power setting the pilot can use in an emergency situation?

- (a) Maximum climb.
- (b) Maximum continuous thrust.
- (c) Maximum cruise.

If choice b is selected set score to 1.

88. Trend monitoring is a system of routine comparison of engine performance parameters with a base line of the same parameters.

How is this accomplished?

- (a) Graphs or curves are used to show trends in changing conditions.
- (b) Each Pilots log book entry is compared to the baseline.

- (c) Via downloading the post flight report from the on-board maintenance system.

If choice a is selected set score to 1.

89. One procedure that has improved efficiency is the built-in provision for inspecting the inside of the engine without disassembling it.

This is performed by...

- (a) borescope equipment.
- (b) large access ports installed through each module of the engine.
- (c) xray of the internal parts on a regular time frame.

If choice a is selected set score to 1.

90. Foreign object damage (FOD) comes from many sources.

What are the most common?

- (a) Taxi ways.
- (b) Ice / hail.
- (c) Birds.

If choice a is selected set score to 1.

91. When performing a ground test on a turbine engine....

- (a) tailwind is not permitted.
- (b) a little tailwind is ok as long as it does not exceed 10 knots.
- (c) the orientation of the aircraft relative to wind direction is not important.

If choice a is selected set score to 1.

92. When the fuel system is flushed for preservation, there has

- (a) engine oil to be filled in the system.
- (b) preservative oil to be filled in the system.
- (c) clean fuel to be filled in the system.

If choice b is selected set score to 1.

If assessment score is 0% to 100% Feedback