

Module 15 Exam Practice Exam

Module 15

This is exam number 1.

1. On an axial flow, dual compressor forward fan engine, the fan turns the same speed as the

- a) high pressure compressor
- b) low pressure turbine
- c) forward turbine wheel

Answer:b

2. A bypass engine LP compressor

- a) supplies less air than is required for combustion
- b) supplies more air than is required for combustion
- c) supplies only the required quantity of combustion

Answer:b

3. A turbo jet engine gives

- a) small acceleration to a large mass of air
- b) large acceleration to a small mass of air
- c) large acceleration to a large weight of air

Answer:b

4. A jet engine derives its thrust by

- a) drawing air into the compressor
- b) impingement of the propelling gases on the outside air
- c) reaction of the propelling gases

Answer:c

5. In a reverse flow system the last stage of an axial flow compressor is often centrifugal, this is to

- a) provide initial turning of the airflow
- b) prevent compressor surge
- c) increase the temperature rise

Answer:a

6. In a free turbine

- a) there is a clutch between compressor and power output shaft
- b) there is no mechanical connection with the compressor
- c) there is a direct drive with a free-wheel unit

Answer:b

7. If an electrical de-icing system is operating, thrust will

- a) decrease
- b) increase
- c) remain constant.

Answer:c

8. A method of comparing engine efficiencies is by comparing

- a) thrust to weight ratio
- b) fuel consumption
- c) specific fuel consumption

Answer:c

9. "Ram effect" due to aircraft forward speed will cause the efficiency of the engine to

- a) remain constant
- b) increase
- c) decrease

Answer:b

10. The efficiency of a gas turbine engine at altitude

- a) decreases
- b) increases
- c) remains constant

Answer:b

This is exam number 2.

1. Bernoulli's Theorem states that at any point in a flow of gas
- a) the static pressure is less than the dynamic pressure
 - b) the static pressure and dynamic pressure are equal
 - c) the total energy remains constant

Answer:C

2. A bypass ratio of 5:1 indicates that the bypass flow is
- a) equal to 1/5 of the hot stream
 - b) five times the cold stream
 - c) five times the hot stream

Answer:C

3. In a turbo jet engine, combustion occurs at
- a) constant velocity
 - b) constant volume
 - c) constant pressure

Answer:C

4. The working fluid of a gas turbine engine is
- a) air
 - b) gasoline
 - c) kerosene

Answer:A

5. As subsonic air flows through a convergent nozzle the velocity
- a) increases
 - b) decreases
 - c) remains constant

Answer:A

6. The stator vanes in an axial-flow compressor
- a) convert velocity energy into pressure energy
 - b) convert pressure energy onto velocity energy
 - c) direct air into the first stage rotor vanes at the proper angle

Answer:A

7. What units in a gas turbine engine aid in stabilisation of the compressor during low thrust engine operations?

- a) Bleed air valves
- b) Stator vanes
- c) Inlet guide vanes

Answer:A

8. A nozzle is 'choked' when the gas flow or air flow at the throat is

- a) subsonic
- b) sonic
- c) supersonic

Answer:B

9. In the dual axial-flow or twin spool compressor system, the first stage turbine drives the

- a) N1 and N2 compressors
- b) N2 compressor
- c) N1 compressor

Answer:B

10. During the high RPM range on an axial flow gas turbine engine, in what position are the variable intake guide vanes and bleed valves

- a) at maximum swirl position, bleed valves open
- b) at maximum swirl position, bleed valves closed
- c) at minimum swirl position, bleed valves closed

Answer:C

This is exam number 3.

1. When reheat is used, EPR

- a) is reduced
- b) is increased

c) remains constant

Answer:C

2. Which of the following units are generally used to measure aircraft noise?

a) Decibels (dB)

b) Effective perceived noise decibels (EPNdB)

c) Sound pressure

Answer:B

3. What is the maximum practical angle through which the gas flow can be turned during thrust reversal?

a) 180°

b) 135°

c) 50°

Answer:B

4. A carbon seal has which type of sealing arrangement?

a) Full contact with race

b) Full contact with labyrinth

c) Full contact with casing

Answer:A

5. On a FADEC engine

a) A and B channel use the same phases of the motor

b) A channel uses control alternator and B channel uses aircraft bus power

c) A channel uses a separate winding of the control alternator to B

channel

Answer:C

6. A bellmouth compressor inlet is used on

a) aircraft with low ground clearance

b) helicopters

c) supersonic aircraft

Answer:B

7. Electrical de-icing operates
- a) cyclically independent of ambient air temperature
 - b) cyclically dependent on ambient air temperature
 - c) continuously and intermittently

Answer:C

8. The inlet door on a variable geometry intake is open at
- a) subsonic speeds
 - b) supersonic speeds
 - c) idle speed

Answer:A

9. The compensation device on an EGT system must be re-calibrated after
- a) manufacture and overhaul
 - b) each time a part of the system is replaced
 - c) does not need calibration

Answer:C

10. A supersonic duct is
- a) convergent then divergent along length
 - b) divergent then convergent along length
 - c) a convergent duct that is choked at the largest end at mach 1

Answer:A

This is exam number 4.

1. Noise from the jet wake when untreated by suppression is
- a) low frequency, high decibel
 - b) high frequency, high decibel
 - c) low frequency, low decibel

Answer:A

2. When testing an EGT system

- a) the OAT is neglected
- b) the OAT is always taken into consideration
- c) OAT is only taken into consideration when over 20°C

Answer: B

3. A free turbine is usually found on a

- a) turbo-fan
- b) turbo-jet
- c) turbo prop

Answer: C

4. If the LP shaft shears

- a) turbine runaway occurs
- b) compressor overspeed occurs
- c) compressor underspeed occurs

Answer: A

5. A turbo-shaft engine has

- a) a mechanical connection between compressor and turbine
- b) the power shaft is not connected to the compressor
- c) none of the above

Answer: B

6. Normal fuel/air ratio for successful combustion is

- a) 15:1
- b) 10:1
- c) 25:1

Answer: A

7. A magnetic chip detector inspection should be carried out

- a) within a specified time from shut down
- b) with engine running
- c) with engine cold

Answer:C

8. A fire wire is installed

- a) to withstand inertia, vibration, etc, encountered during normal operation
- b) vertically
- c) horizontally

Answer:A

9. APU has

- a) automatically controlled thrust and is self contained
- b) constant speed and is self contained
- c) variable speed and is self contained

Answer:B

10. Anti-ice is recommended during

- a) OAT below -10°C
- b) thunderstorms
- c) OAT $+10^{\circ}\text{C}$ and visible moisture

Answer:C

This is exam number 5.

1. Of the following, which engine type would most likely have a noise suppresser unit installed?

- a) Turboprop
- b) Turbojet
- c) Turboshaft

Answer:B

2. Bleed valves are normally spring loaded to the

- a) closed position
- b) mid-position

c) open position

Answer:B

3. Foreign object damage on compressor, when boroscoping is indicated by

a) tip curl

b)nicks and scores

c) flats

Answer:C

4. A magnetic chip detector detects

a) particles held in suspension

b)ferrous particles only

c) particles which are too small for the naked eye

Answer:A

5. Resistive and capacitive type firewires are tested with

a) megger/ohmeter

b)megger/voltmeter

c) multimeter

Answer:A

6. Engine anti-ice is taken from the

a) HP compressor

b)LP compressor

c) turbine

Answer:A

7. Fire wire clips have rubber in them to

a) insulate the fire wire electrically

b)stop heat transfer to the element

c) support the wire

Answer:C

8. The symbol for designating the speed of a LP compressor in a twin

spool engine is

- a) NG
- b)N
- c) N1

Answer:A

9. APU shut down is initiated by

- a) low oil pressure, fire warning
- b)low oil pressure, fire warning, hot oil temperature
- c) high oil pressure, fire warning, hot oil temperature

Answer:B

10. What happens when bulb type thermometer resistive element goes open circuit?

- a) Reads less than ambient
- b)Reads more than ambient
- c) No reading given

Answer:B

This is exam number 6.

1. A fixed throttle with increased mass airflow

- a) EPR goes up
- b)EPR goes down
- c) EPR remains constant

Answer:B

2. Fuel heater prevents

- a) HP filter icing
- b)LP filter icing
- c) Neither

Answer:B

3. When a volume of air is compressed

a) no heat is lost or gained

b) heat is lost

c) heat is gained

Answer:C

4. On a FADEC engine the EEC

a) has electronic control of the hydro-mechanical fuel control unit in all modes

b) has electronic control of the hydro-mechanical fuel control in some modes

c) has mechanical control of the hydro-mechanical fuel control system

Answer:A

5. Fire extinguishers work by

a) combining with remaining oxygen to get rid of it

b) creating more oxygen

c) reducing oxygen

Answer:A

6. The air used for combustion is

a) Primary

b) Secondary

c) Primary and secondary

Answer:A

7. Compression occurs

a) across rotors

b) across stators

c) across stators and rotors

Answer:C

8. Ignitor plugs are cleaned by

a) compressed air and brushing lightly with soft brush

b) light sand blasting

c) steel wool

Answer:A

9. On a FADEC engine, the channel reset

a) always selects A channel

b)selects standby which becomes active on the next start

c) selects B channel

Answer:B

10. HEIU works by

a) a contact breaker

b)a discharging capacitor

c) ac busbar

Answer:B

This is exam number 7.

1. Water methanol for cooling is injected

a) compressor inlet or outlet

b)combustion chamber

c) engine hot zone

Answer:A

2. The highest turbine bearing temperature takes place

a) at shutdown

b)at start-up

c) all the time

Answer:A

3. On an EGT thermocouple system, the hot junction

a) is placed downstream of the combustion chamber

b)is placed up stream of the combustion chamber

c) is placed in cockpit

Answer:A

4. Increasing ram effect with increased speed
- a) reduces thrust due to reduced turbine temperature
 - b) reduces thrust due to reduced compressor efficiency
 - c) increases thrust due to increased maximum airflow

Answer:C

5. On an rpm system using a synchronous generator, the pointer is deflected by
- a) potentiometer
 - b) ac servomotor
 - c) wheatstone bridge

Answer:B

6. Fuel system inhibiting oil is
- a) kerosene
 - b) mineral oil
 - c) light anti-freeze oil

Answer:B

7. Fire detection systems which are routed through another zone
- a) must be protected by the use of heat sinks
 - b) must be protected from heat sources in the zone
 - c) are not allowed

Answer:B

8. Torque pressure is usually read from
- a) direct reading pressure gauge
 - b) torque meter
 - c) tension gauge

Answer:A

9. A high bypass engine results in

- a) overall slower airflow and greater propulsive efficiency
- b) overall faster airflow
- c) greater propulsive efficiency

Answer:A

10. Shrouded blades allow

- a) higher turbine inlet temperatures
- b) thinner more efficient blade sections to be used
- c) smaller inlets to be used

Answer:B

This is exam number 8.

1. When using Prist or Biopor

- a) It is left and burnt with the fuel
- b) it is flushed out immediately
- c) it is diluted with water to a 3-1 mix

Answer:A

2. NGV's form

- a) parallel ducts
- b) convergent ducts
- c) divergent ducts

Answer:B

3. In the combustion chamber

- a) static pressure and volume remains constant
- b) static pressure decreases slightly and volume increases
- c) static pressure and volume decreases

Answer:B

4. On an injection system

- a) town water/methanol is injected
- b) methanol is injected neat

c) de-mineralized water/methanol is injected

Answer:C

5. The working fluid of constant speed drive (CSD) is

a) taken from the engine lubrication system

b) within the unit

c) from separate tank

Answer:B

6. Pipe, electrical cables and associated components of a fire-detection system should be

a) fire proof

b) fire resistant

c) fire retardant

Answer:B

7. The drag cup in a Tacho-generator is balanced by

a) calibrated hairspring

b) adjustment screw

c) adjustable counterbalance weights

Answer:A

8. After placing an engine in a MVP envelope

a) check humidity indicator after 24 hours

b) check humidity indicator after 12 hours

c) check humidity indicator after 48 hours

Answer:A

9. The EPR system reads just over 1

a) this is a normal condition and does not need attention

b) the system has failed and needs attention

c) the system needs re-calibration back to "1"

Answer:C

10. On a vapour proof cocoon, there is a

- a) temperature indicator
- b) moisture indicator
- c) humidifier

Answer:B

This is exam number 9.

1. When an installed engine is not to be used for a period of up to 7 days

- a) it is necessary to inhibit the engine
- b) it is only necessary to blank off all apertures
- c) run the engine as prescribed in the Flight Manual

Answer:B

2. With a decrease in fuel SG, what is the result on uncompensated governor?

- a) Max RPM up
- b) Max RPM decrease
- c) No effect

Answer:A

3. Installed engines must be re-preserved after preservation at least every

- a) six months
- b) six days
- c) six weeks

Answer:A

4. At altitude idling rpm is

- a) higher than at sea level
- b) lower than at sea level
- c) same as at sea level

Answer:A

5. In a choked nozzle velocity increases

- a) pressure decreases
- b) pressure increases
- c) density decreases

Answer:B

6. When the engine is not running. The EPR gauge shows 1.0 then

- a) the transmitter is faulty
- b) it is normal
- c) the receiver is faulty

Answer:B

7. Fuel flow indication is taken from

- a) after either HP Pump or LP Pump
- b) after the HP pump
- c) after the LP pump

Answer:A

8. The test switch of a continuous loop detector gives a

- a) continuity check
- b) bonding check
- c) insulation check

Answer:A

9. When using water methanol in an axial flow compressor, it is injected in

- a) burner
- b) compressor inlet or burner section
- c) intake

Answer:B

10. What are the types of continuous fire detection system?

- a) Capacitance and resistance
- b) Capacitance

c) Inductance and capacitance

Answer:A

This is exam number 10.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
B	B	C	A	B	A	C	B	B	C

1. Secondary air in the combustion chamber is used for

a) combustion

b)cooling

c) increasing axial velocity of gases

Answer:B

This is exam number 11.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
A	A	B	C	C	C	B	C	C	A

1. If the LP compressor shaft severed

a) the LP turbine will speed up and the LP compressor will slow down

b) the HP compressor will slow down

c) the LP compressor of cruise thrust

2. The forces driving a turbine round are due to

a) impulse and reaction

b)impulse only

c) reaction only

3. Run down time is indicative of

a) compressor malfunction

- b) the freedom of rotation of the compressor
- c) an FCU malfunction

4. The propulsive efficiency is
- a) high, with a high mass flow acceleration
 - b) low, with a low mass flow acceleration
 - c) high, with a low mass flow acceleration

5. A hung start or false start is one in which
- a) there is no 'light up'
 - b) the engine does not rotate
 - c) 'light up' occurs, but the RPM does not increase

6. The maximum RPM of a turbine engine is limited by
- a) a temperature sensitive device which reduces the fuel pump speed
 - b) diversion of some of the fuel pump outlet flow by a spill valve sensitive to burner fuel pressure
 - c) reduction of the fuel pump stroke by a spill valve sensitive to centrifugally generated fuel pressure

7. The function of a labyrinth seal is to create
- a) an airtight seal between fixed and rotation components
 - b) a restricted leakage of air between fixed and rotating components
 - c) an airtight seal between fixed adjacent casing surfaces

8. Intake air turbulence
- a) has little effect on the efficiency of the compressor
 - b) increases the efficiency of the compressor
 - c) decreases the efficiency of the compressor

9. To what condition does the fuel flow respond during aircraft acceleration
- a) the change in pressure at the compressor intake
 - b) the effect of 'ram-air' at altitude

c) mass airflow rate through the engine

10. An ignitor plug for a large gas turbine takes the form of a

a) surface discharge plug

b) sparking plug

c) 'glow' plug

This is exam number 12.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
B	C	A	B	B	C	C	A	A	B

1. The bearings of a compressor rotor are usually

a) sintered

b) ball and roller

c) plain

2. A jet engine derives its thrust by

a) drawing air into the compressor

b) impingement of the propelling gases on the outside air

c) reaction of the propelling gases

3. What will be the effect of operating the intake anti-icing system of a gas turbine engine?

a) A decrease in power

b) Increased power at altitude

c) Increased power for take off

4. An advantage of a centrifugal compressor is

a) it is dynamically balanced

- b) it is robust and can stand some shock from 'icing up'
- c) it is unaffected by turbulence

5. Variable inlet guide vanes prevent

- a) compressor runaway
- b) compressor stalling
- c) engine flame out at high speed

6. During acceleration, the fuel flow is increased at a controlled rate in order to

- a) increase s.f.c.
- b) prevent fuel pump damage
- c) prevent surge and the risk of flame-out

7. Which of the following is the least likely indication of a main bearing failure?

- a) High oil temperature
- b) High oil consumption
- c) High oil pressure

8. An axial flow compressor surges when

- a) all stages are stalled
- b) early stages are stalled
- c) later stages are stalled

9. As a consequence of tapping air from the compressor, the TGT will

- a) rise
- b) remain constant
- c) fall

10. Compressor air bleeds promote the flow of air through the early stages by

- a) opening to allow air in

- b) opening to allow air out
- c) closing

This is exam number 13.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
A	A	B	C	A	A	A	C	A	A

1. Compressor blades have reduced angle of attack at the tips

- a) to allow uniform axial velocity
- b) to prevent turbine stall
- c) to increase the velocity

2. The chip detector in the oil system is a

- a) magnetic plug in the return line
- b) window in the oil pump
- c) window in the pump casing

3. Nozzle guide vanes give

- a) pressure increase, velocity decrease
- b) pressure decrease, velocity increase
- c) pressure increase, velocity increase

4. After shutdown, flames are present in the exhaust pipe. The probable cause is

- a) a defective fuel control unit (FCU)
- b) a defective HP cock
- c) a defective pressurizing and dump valve

5. The BPC controls the FCU by

- a) pressure sensing
- b) temperature sensing

c) density sensing

6. If the LP cock is used to shutdown an engine

- a) the fuel pump will run dry
- b) the FCU will continue to function
- c) flames will appear in the exhaust

7. Compressor surge is caused by

- a) over fuelling
- b) rapid closing of the throttle
- c) prolonged engine running at high RPM

8. Shrouding of stator blade tips is to

- a) prevent tip turbulence
- b) ensure adequate cooling
- c) minimise vibration

9. The RPM for maximum power would be

- a) lower on a colder day
- b) lower on a hotter day
- c) greater on a colder day

10. The spark in the HE igniter is supplied by

- a) a capacitor
- b) the AC busbar
- c) a contact circuit breaker

This is exam number 14.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
B	A	B	C	C	B	A	B	C	A

1. If the swash plate of a positive displacement swash plate pump is perpendicular to the axis of the pump, the flow will be

- a) reversed
- b) zero
- c) maximum

2. What is DERD 2494?

- a) Kerosene
- b) Oil
- c) Wide cut gasoline

3. The burner fuel flow is at maximum at

- a) altitude
- b) I.S.A. sea level
- c) 10°C above I.S.A. sea level

4. Engine thrust varies with temperature

- a) low temperatures give low thrust
- b) increase in temperature gives greater thrust because of low friction in compressors
- c) low temperature gives greater mass flow and therefore greater thrust

5. A Pitot intake is divergent from front to rear because it

- a) reduces ram compression and turbulence
- b) speeds up the air before it hits the compressor face
- c) produces the maximum amount of ram compression

6. A method of comparing engine efficiencies is by comparing

- a) thrust to weight ratio
- b) specific fuel consumption
- c) fuel consumption

7. When rotating, the gear type oil pump
- a) draws oil into the pump and carries it round between the gear teeth and casing.
 - b)oil is drawn into the pump and through the intermeshing gears to the outlet.
 - c) oil is drawn into the pump, half being carried around between pump and casing, the other half passing between the gears to the outlet
8. A high viscosity index means the oil viscosity
- a) will vary greatly with temperature change
 - b)will not vary greatly with temperature change
 - c) has a large index number
9. The type of fuel control unit most commonly used in modern jet engines is
- a) electrical
 - b)mechanical
 - c) hydro-mechanical
10. Self sustaining speed is
- a) the RPM at which the engine continues without external assistance
 - b)V1 speed
 - c) take off velocity

This is exam number 15.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
C	C	C	B	C	B	C	B	C	B

1. Pressure rise across a single spool axial flow compressor is
- a) two to one
 - b)four to one

c) up to fifteen to one

2. What purpose do the diffuser vanes of a centrifugal compressor serve?

a) To increase the air velocity.

b) To convert pressure energy into kinetic energy.

c) To convert kinetic energy into pressure energy.

3. The main reason for adding methanol to the water is to

a) supply the additional heat required.

b) temper the cooling effect of the water to prevent distortion.

c) prevent mixture freezing.

4. The primary purpose of water injection is to

a) decrease mass airflow

b) cool the turbine

c) increase the calorific value of the fuel

5. Reverse thrust can only be selected when the throttle is

a) 75% power position.

b) open.

c) closed.

6. The overall air/fuel ratio of a combustion chamber can vary between

a) 10:1 and 45:1

b) 45:1 and 130:1

c) 130:1 and 200:1

7. During normal running conditions

a) combustion is continuously supported by ignition

b) combustion is intermittently supported by ignition

c) combustion is self supporting

8. How is servo pressure, which is used to control fuel pump swash plate angle, obtained?

- a) From pump inlet pressure through fixed restrictions.
- b) From pump delivery pressure through fixed restrictions.
- c) From pump delivery pressure through variable restrictions

9. Why is the Barometric Pressure Control fitted in a gas turbine engine fuel system

- a) To decrease the fuel flow to the burners with increased air intake pressure.
- b) To proportion the fuel flow between primary and main burner lines.
- c) To vary pressure pump output in relation to the pressure variation at the intake.

10. When light-up takes place

- a) the nozzle guide vanes spread the heat to adjacent flame tubes
- b) Interconnectors spread the heat to adjacent flame tubes
- c) each flame tube is isolated from its neighbours

This is exam number 16.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
C	B	C	C	A	C	B	A	A	C

1. During any stabilised running condition the spill or half ball valve is

- a) open fully.
- b) closed fully
- c) lightly seated

.

2. The swash plate in a fuel pump (static) is

- a) in the minimum position

- b) in the maximum position
- c) at some intermediate position

3. Bearing seal failure would most probably cause

- a) high oil temperature
- b) low oil pressure
- c) high oil consumption

4. The purpose of the rotating guide vanes on a centrifugal compressor is to

- a) prevent damage by solid objects
- b) direct the air smoothly into the impeller
- c) provide initial diffusing of the air

5. With fixed throttle in a climb

- a) RPM will increase
- b) RPM will decrease
- c) RPM will remain constant

6. A kinetic valve is a device used to control HP pump output. This is achieved by movement of a

- a) needle valve.
- b) diaphragm and half ball valve.
- c) knife blade.

7. What is the surge margin of an axial flow compressor?

- a) The margin between minimum and maximum pressure ratio obtained at constant RPM
- b) The margin between the compressor working line and the surge line
- c) The margin between the stall condition and the surge condition

8. High energy ignition is required because of the

- a) high flash point of the fuel

- b) low flash point of the fuel
- c) absorbed moisture content

9. The point of maximum velocity in the engine is in the
- a) exhaust exit nozzle
 - b) combustion chamber
 - c) nozzle guide vanes

10. The minimum bend radius for a continuous loop type fire wire is
- a) 1/8"
 - b) 1/2"
 - c) 1"

This is exam number 17.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
C	C	C	B	B	A	B	B	C	A

1. The compression ratio of a jet engine is
- a) the compressor outlet pressure divided by the number of compressor stages
 - b) the ratio between turbine pressure and compressor outlet pressure
 - c) the ratio between compressor outlet pressure and compressor inlet pressure

2. In the H.E.I.U. the discharge resistors
- a) allows sufficient voltage to be stored to provide relight facilities up to 55,000 ft.

- b) protects the unit from excessive voltages.
- c) allows the capacitors to discharge when the unit is switched off.

3. A free turbine is

- a) connected directly to the propeller and compressor
- b) not directly connected to the power output shaft
- c) connected directly to the power output shaft

4. Why do the holes in the body of the duplex burner provide air to the shroud around the burner head?

- a) To reduce burner temperature.
- b) To minimise carbon formation on the burner face.
- c) To assist atomisation of the fuel at slow running.

5. Variable inlet guide vanes prevent

- a) compressor runaway
- b) compressor stalling
- c) ice build up on compressor blades

6. The air passing through the combustion chamber of a jet engine is

- a) used to support combustion and to cool the engine
- b) entirely combined with fuel and burned
- c) speeded up and heated by the action of the turbines

7. Water used in a thrust augmentation system should be demineralised to prevent

- a) blocking the jet.
- b) fouling the blades and vanes.
- c) carbon formation.

8. A Convergent-Divergent nozzle

- a) produces a type of thrust known as kinetic thrust
- b) makes maximum use of Pressure thrust
- c) requires the aircraft to be travelling at supersonic speeds

9. A toroidal vortex is

- a) a bull-nosed cowling for deflecting air from the static

- b) a vapour trail visible in moist air conditions
- c) a region in the combustion chamber of low velocity re-circulation

10. The quantity of water usually carried by an aircraft equipped with water injection is enough for

- a) one take-off
- b) two take-offs
- c) three take-offs

This is exam number 18.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
B	A	B	C	A	B	C	B	B	A

1. A fuel system icing inhibitor is a fuel additive which

- a) prevents the fuel from freezing
- b) prevents the water in the fuel freezing
- c) prevents both the water and the fuel freezing

2. Why are two or more turbine wheels coupled

- a) so power output is doubled
- b) to keep turbine rotor diameter small
- c) to simplify dynamic balancing

3. On front fan engines, to obtain thrust reversal, the

- a) hot stream is reversed
- b) cold stream is reversed
- c) hot and cold streams are reversed

4. Why is it necessary to have a combustion drain system?

- a) To prevent pressure build up in the combustion chamber
- b) To allow water in the combustor to drain away

c) To prevent initial over-fuelling on start up or hot start

5. How are extinguisher spray rings checked for freedom from obstruction?

a) Blowing through with compressed air

b) Firing the system

c) Pumping water through the system

6. What is a 'cannular' combustion system?

a) One common flame tube closed in a common air casing

b) A set of flame tubes, enclosed in a common air casing

c) A set of flame tubes, each mounted in a separate air casing

7. Exhaust noise can be reduced by

a) lowering the vibration frequency

b) increasing the jet velocity

c) increasing the mixing rate

8. The flame temperature is approximately

a) 500°C

b) 2000°C

c) 1400°C

9. The rate of discharge of a H.E.I.U. is

a) 4 discharges per revolution

b) 60 - 100 per minute

c) 60 - 100 per second

10. Fuel entering the combustion chamber from an atomizer spray nozzle enters as

a) a fuel/air mixture

b) fuel in air pulses

c) fuel continuously

This is exam number 19.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
A	B	B	A	C	C	A	C	A	C

1. When accelerating from "light-up" to ground idling speed, the EGT will
a) increase above idle value then decrease to normal
b) decrease below idle value then increase to normal
c) remain constant

2. Air through the compressor, before entering the combustion chamber passes
a) through nozzles to increase the velocity
b) through divergent passage to increase the pressure
c) through divergent passage to decrease the pressure

3. Why is it necessary to control fuel supply to the engine during rapid acceleration?
a) To control maximum RPM
b) To prevent excessively high EGT and possible compressor surge
c) To prevent compressor stall above cruise RPM

4. An advantage of an annular combustion system is
a) decrease in combustor length compared to a turbo-annular combustor of the same output
b) unrestricted airflow at maximum RPM
c) diameter of engine is reduced due to the cans being smaller

5. Which component corrects for air density effects on fuel/air mixture in a gas turbine engine?
a) The adjustable throttle valve
b) The pressurising valve

c) The barometric pressure control unit

6. How is the combustion chamber drain valve closed?

- a) By 12th stage compressor air pressure
- b) By a return spring
- c) By combustion chamber gas pressure

7. A gas turbine engine is stopped by closing

- a) HP cock
- b) LP cock
- c) throttle valve

8. Low mass airflow through a compressor will produce

- a) have no effect
- b) stalling of rear stages
- c) stalling of early stages

9. Why is the low pressure fuel pump fitted in a gas turbine engine aircraft?

- a) To maintain a vapour free pressure from the aircraft fuel tanks to the HP fuel pump
- b) As an emergency in case of failure of the HP pump
- c) As a booster to the HP pump for excess fuel required during sudden throttle openings

10. If compressor surge occurs it is recognized by

- a) fluctuating RPM and fuel flow
- b) fluctuating EGT and oil temperature
- c) coughing in compressor and vibration

This is exam number 20.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
A	A	B	C	A	B	B	B	A	C

1. Why are oil seals pressurised?

- a) To ensure minimum oil loss
- b) To ensure oil is forced into the bearings
- c) To ensure that the oil is prevented from leaving the bearing housing

2. A bleed valve

- a) relieves compressor choking at low RPM
- b) bleeds air from compressor for intake de-icing
- c) controls air intake pressure

3. If a compressor has a compression ratio of 9:1 and an intake compression of 2:1 what is the overall compression ratio?

- a) 11:1
- b) 18:1
- c) 9:1 intake compression does not add to the overall compression ratio of the system

4. A compressor stage stalls when

- a) compression ratio is too high
- b) adiabatic temperature rise is too high
- c) smooth airflow is disrupted

5. What action is taken to protect integral fuel tanks from corrosion due to micro biological contamination?

- a) A biocidal additive is added to the fuel
- b) The inside of the tank is coated with yellow chromate
- c) Rubber liners are installed in the tank

6. Inlet guide vanes are fitted to

- a) guide the airflow

- b) control the angle of airflow into the compressor
- c) control the quantity of air entering the intake

7. Why in an axial flow compressor is the cross sectional area of the compressor air duct reduced at each stage?

- a) To decrease the velocity of the air rising under pressure
- b) To maintain the velocity of the air under rising pressure
- c) To permit stronger, shorter blades to be used in the later stages

8. When doing a boroscope inspection of a turbine

- a) turn the turbine through the jet pipe
- b) turn the turbine with attachment to gearbox
- c) ensure the engine is being turned only at minimum idle speed

9. At constant RPM the pressure ratio of the compressor and the temperature rise across the compressor

- a) remains constant irrespective of height
- b) decrease with height
- c) increases with height

10. With an electrical ice protection system, the heating elements operate

- a) continuously
- b) intermittently
- c) part continuous - part intermittent

This is exam number 21.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
C	C	C	A	A	B	C	C	B	C

1. An abraidable lining around the fan is to
 - a) prevent fan blade tip rub
 - b) provide less leakage for anti-icing
 - c) strengthen EPR value

2. If air is taken from the compressor for air conditioning or anti-icing
 - a) thrust will decrease EGT will decrease
 - b) thrust will increase EGT will increase
 - c) thrust will decrease EGT will increase

3. A “wet start” is indicated by
 - a) low rpm
 - b) a prolonged cranking period
 - c) no temperature indication

4. With the aircraft stationary, propulsive efficiency
 - a) is minimum
 - b) depends on RPM
 - c) is maximum

5. What is the Engine Pressure Ratio (EPR) used to indicate?
 - a) The thrust produced by the engine
 - b) To limit the maximum exhaust gas temperature
 - c) As a cross check for minimum acceptable thrust

6. The efficiency conversion of kinetic energy into propulsive work is a measure of
 - a) thermal efficiency
 - b) propulsive efficiency
 - c) mechanical efficiency

7. The engine accelerates to idling by
 - a) starter motor
 - b) gas flow
 - c) combined efforts of starter motor and gas flow

8. Running clearance is kept to a minimum to reduce
 - a) aerodynamic buffeting
 - b) temperature loss
 - c) tip losses

9. Two basic types of turbine blades are
 - a) tangential and reaction
 - b) reaction and impulse
 - c) impulse and vector

10. Why are nozzle guide vanes fitted?
 - a) To increase velocity of the air flow
 - b) To decrease velocity of the gas flow
 - c) To increase velocity of the gas flow

This is exam number 22.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
B	B	B	B	B	A	B	B	C	B

1. Adiabatic compression is
 - a) an isothermal process
 - b) no loss or gain of heat
 - c) an increase in kinetic energy

2. Allowable damage on the first stage compressor blade is restricted to

- a) root end of the blade
- b) middle third of the blade to the outer edge
- c) outer third of the blade to the outer edge

3. A turbine disk is

- a) a segmented or complete shroud on blade tips that reduces leakage
- b) a disk at the core of the engine that the blades are attached to
- c) a shroud around the stators of the turbine

4. When carrying out a borescope the damage on turbine blades that would indicate a failure is

- a) colour changes
- b) tip curl
- c) speckling

5. Power is adjusted in a gas turbine engine by

- a) increasing airflow to the combustion chamber
- b) increasing air and fuel flow
- c) increasing fuel flow

6. An HMU receives its signals from

- a) EEC
- b) ADC
- c) thrust lever resolvers

7. In a ducted fan engine, the fan is driven by the

- a) accessory gearbox
- b) turbine
- c) air passing over the compressor

8. The engine rating plug

- a) is permanently connected to the EEC
- b) is permanently connected to the Engine casing

c) is connected to the EPR transmitter

9. In a FADEC system, active control switchover occurs

- a) on shutdown
- b) when channels A and B are healthy
- c) on engine start up only

10. An APU start cycle is completed at

- a) 75% RPM
- b) 95% RPM
- c) 100% RPM

This is exam number 23.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
A	C	C	A	A	C	B	A	B	B

1. The fuel flow in a turboprop engine is controlled
manually
automatically
manually, to compensate for high density

2. On storage of engine the desiccant is
a) looked at 24 hrs later if blue it should be replaced
b) looked at within 24 hrs if its blue its ok
c) looked at 24 hrs later if its blue its ok

3. The valve on a vane type fuel flow measuring device becomes stuck.
What safety backup is available for the engine fuel flow?
a) A fuel bleed valve
b) A bypass valve
c) A differential pressure bypass valve

4. An oil emission spectrometer measures
 - a) particles in suspension
 - b) particles on the surface
 - c) specific gravity of the oil

5. A modular constructed gas turbine engine means that
 - a) its major components can be removed and replaced
 - b) all engines have a specific component layout
 - c) the engine is constructed by the vertical assembly technique

6. An APU power lever is located
 - a) behind the throttles
 - b) at the Flight Engineer Station
 - c) An APU is fully automatic and does not require a power lever

7. Where is EGT measured?
 - a) In the combustion chamber
 - b) Downstream of the combustion chamber
 - c) Upstream of the combustion chamber

8. Flat Rated thrust is defined as
 - a) the thrust at the ambient temperature point above which thrust drops below 100%
 - b) that power achieved at Idle RPM
 - c) that power achieved at Maximum EGT

9. Supervisory EEC sends its output to the
 - a) fuel valve
 - b) HMU/FFG
 - c) EGT thermocouple circuit

10. After placing an engine into storage, details would be recorded in

- a) Technical Log
- b) Engine log book
- c) Aircraft log book

This is exam number 24.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
A	C	C	A	A	C	B	A	C	B

1. If a FADEC loses its ADC input, in the short term it will
 - a) go into soft reversion
 - b) go into hard reversion
 - c) go to limit protection mode

2. The primary purpose of an EEC is
 - a) to change analogue inputs into digital format to provide glass cockpit information and reduce flight crew workload
 - b) to change analogue inputs into digital format to reduce flight crew workload and provide maintenance information
 - c) to save fuel, reduce crew workload and reduce maintenance costs

3. An APU consists of
 - a) a load compressor and free turbine
 - b) a power compressor and directly connected turbine
 - c) a power compressor and load compressor

4. A convergent exhaust nozzle produces mainly
 - a) momentum thrust
 - b) pressure thrust
 - c) momentum and pressure thrust

5. When storing an engine the fuel system is to be inhibited. How is this done?

- a) Remove plugs rotate engine then add oil
- b) Rotate engine whilst adding oil then remove plugs
- c) Add oil leaving plugs in

6. Variable Ramp Intakes restrict airflow by

- a) reducing the area of the intake
- b) diverting the airflow around the intake
- c) creating shockwaves in the intake

7. The accessory gearbox of a high bypass engine is

- a) in the fwd bearing housing
- b) on the HP Compressor housing
- c) attached to the turbine casing

8. A thermocouple indicator is basically a

- a) millivoltmeter
- b) milliohmeter
- c) milliammeter

9. Tip speed of a centrifugal compressor can reach

- a) Mach 0.8
- b) Mach 1.0
- c) Mach 1.3

10. A thermocouple indicator is connected to the

- a) hot junction
- b) cold junction
- c) difference between the hot junction and the cold junction

This is exam number 25.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
B	C	C	C	A	C	A	C	C	A

1. A broadband vibration reading indicates
 - a) the N1 vibration
 - b) the total vibration sensed by the transducer
 - c) the peak allowable vibration

2. Thrust rating on an FADEC controlled engine can be changed by
 - a) varying the EPR datum plug
 - b) varying the ballast resistor in the EGT system
 - c) changing the engine rating plug

3. A full flow oil system has
 - a) a single fixed minimum oil pressure
 - b) a hot and cold oil pressure limit
 - c) a variable oil pressure dependant upon throttle setting

4. In a large commercial passenger transport aircraft the APU supplies
 - a) pneumatics
 - b) electrics
 - c) pneumatics and electrics

5. Vibration analysers determine which component is vibrating by analysing
 - a) frequency
 - b) amplitude
 - c) voltage

6. Turbine case cooling utilizes
 - a) HP Compressor Air
 - b) LP Compressor Air
 - c) Fan Air

7. When both channels are healthy they will alternate
- on each engine start
 - when one channel fails
 - as selected on the flightdeck
8. The purpose of the LP fuel pump is to
- ensure the fuel flow governor gets enough fuel
 - pump fuel from the aircraft fuel tanks to the engine
 - ensure the HP fuel pump does not cavitate
9. The resultant velocity of air exiting an axial compressor stage depends upon
- aircraft forward speed
 - compressor RPM
 - Both of the above
10. Thrust in a high bypass fan engine is indicated by
- N1 RPM or EPR
 - N3 RPM or P1/P4 ratio
 - N1 RPM or N3 RPM

This is exam number 26.

ANSWERS

1.	2	3	4	5	6	7	8	9	10
A	B	B	A	C	C	B	B	B	C

1. How is the N1 and N2 measured on a triple spool engine?
- Pulse type speed probes
 - Tachometer connected to the external gearbox

c) Tachometer connected to the internal gearbox

2. Propeller torque is analogous to

- a) engine RPM
- b) shaft horsepower
- c) propeller RPM

3. In a FADEC what is the result of Channel A failing to receive information from a sensor?

- a) Channel B will assume control
- b) Channel A will take the information from channel B
- c) Channel A will take the information from the backup sensor

4. Modern oil pressure servo transmitters sense

- a) differential pressure
- b) absolute pressure
- c) HP oil pressure

5. EGT thermocouples are usually made of

- a) nickel and platinum
- b) chromel and platinum
- c) chromel and alumel

6. Thrust in a high bypass engine is indicated by measuring

- a) N3 RPM
- b) fuel flow
- c) neither of the above, thrust is not indicated in flight

7. The total power in a turboprop engine is the

- a) SHP
- b) ESHP
- c) BHP

8. In a FADEC engine with a hydromechanical fuel system, how is fuel flow controlled?

- a) By fuel pressure
- b) By electro-hydraulic servo valves (EHSV's)
- c) By oil hydraulics

9. Air for anti-icing is taken from

- a) LP compressor
- b) HP compressor
- c) accessory Gearbox

10. Dilution air is placed

- a) in the primary zone of the combustion chamber
- b) in the swirl vanes of the combustor
- c) in the dilution zone of the combustion chamber after the primary zone

This is exam number 27.

1.	2	3	4	5	6	7	8	9	10
C	B	A	C	B	A	C	C	B	B

1. On the approach

- a) RPM should be at or above the minimum for maximum acceleration
- b) RPM should be lower than minimum for maximum acceleration
- c) RPM should be at high

2. On a gas turbine engine, what is the fan driven by?

- a) HP turbine
- b) LP turbine
- c) IP turbine

3. What is a compressor stage?

- a) One rotor plus one stator
 - b) One IGV and one rotor
 - c) One compressor rotor and one nozzle guide vane
4. The air data input to the FADEC fails. The result will be
- a) a lack of flight data
 - b) uncorrected data from hard wired analogue sensors is utilised
 - c) the FADEC reverts to the failsafe mode
5. Torque measurement is taken from the
- a) free turbine shaft
 - b) reduction gearbox
 - c) prop shaft
6. A FADEC system consists of
- a) HMU, sensors and an EEC
 - b) HMU, ADC and sensors
 - c) EEC, ADC and sensors
7. What power supply is required for a thermocouple system to work?
- a) Direct current
 - b) Alternating current
 - c) Neither of the above
8. For an APU to run "unmanned" it must be equipped with
- a) an audible fire warning
 - b) an automatic fire extinguishing system
 - c) both an audible fire warning and an automatic fire extinguishing system
9. In a thermocouple temperature sensing system, what is the purpose of the compensating resistor?
- a) To standardise the reading for different engine types
 - b) To correct for varying ambient temperatures at the cold junction
 - c) To correct for varying ambient temperatures at the hot junction

10. In a dive, with the throttles fixed, the EPR will
- a) increase
 - b) decrease
 - c) not change

This is exam number 28.

1.	2	3	4	5	6	7	8	9	10
B	A	C	B	B	C	A	C	C	A

1. As air is bled of the engine, EGT will
- a) remain constant
 - b) increase
 - c) decrease

2. Turbine rear struts
- a) straighten the gas flow
 - b) increase the velocity of the gas flow
 - c) increase the pressure of the gas flow

3. The inlet door of a variable geometry intake at supersonic speeds will be
- a) open
 - b) mid-Position
 - c) closed

4. An engine in storage for 7 days should
- a) be run twice in that week
 - b) be fitted with covers and blanks and apertures covered
 - c) have storage oil placed in engine

5. Bowing of turbine blades indicate

- a) over-speed condition
- b) over-temp condition
- c) under-temp condition

6. What bearing is used to take axial loads on a main rotation shaft of a gas turbine engine?

- a) Plain bearing
- b) Roller bearing
- c) Ball bearing

7. On an impulse-reaction turbine blade it is

- a) impulse at the root and reaction at the tip
- b) reaction at the root and impulse at the tip
- c) impulse and reaction all the way along the blade

8. When operating engine in icing conditions care should be taken with

- a) temperatures below 0 degrees Celsius
- b) temperatures below -10 degrees Celsius
- c) temperatures below +10 degrees Celsius with visible moisture

9. In a Tachometer generator

- a) the frequency output is constant
- b) the frequency output is inversely proportional to engine speed
- c) frequency output is proportional to engine speed

10. On a (VP) cocoon bag, if the humidity indicator turns pink/lilac

- a) dessicant is ineffective and needs changing
- b) dessicant is effective and does not need changing
- c) dessicant is changed weekly

This is exam number 29.

1.	2	3	4	5	6	7	8	9	10
B	A	C	C	B	A	C	C	C	C

1. Turbine creep effects

- a) NGV's
- b) turbine blades
- c) turbine disks

2. Creep is

- a) a permanent deformation of turbine
- b) a temporary deformation of turbine
- c) not found in turbines

3. Creep overall

- a) decreases turbine diameter
- b) has no effect on turbine diameter
- c) increases turbine diameter

4. Thrust reversal on a high bypass engine is achieved by

- a) clamshell configuration
- b) bucket type doors
- c) blocker doors

5. Acoustic linings made from composite materials are used in what section of the engine?

- a) Hot section & Cold Section
- b) Cold section only
- c) Not used to suppress noise

6. Vibration mounts are used for

- a) preventing engine vibration loads being transmitted to the airframe structure

b) damping out vibration stresses on engine when being transported on an engine stand

c) stopping vibrations entering the engines

7. An APU is

a) a reserved engine in case of a main engine failure

b) a self contained variable speed gas turbine engine

c) a self contained constant speed gas turbine engine

8. An aircraft has a heavy landing and on inspection of the engine mounting bolts the bolts torque loading has reduced, you should

a) re-torque bolt up to correct torque value

b) add washers to take up any gap or slackness and re-torque to correct value

c) remove bolt and carry out inspection as the bolt may have increased in length due to heavy landing

9. With an increase in forward speed the engine thrust

a) increases with an increase in forward speed

b) decreases with an increase in forward speed

c) decreases slightly but recover due to ram effect

10. If damage is found to the reverse thrust cascade vanes and need replacing you can

a) interchange the cascade vanes as they are interchangeable

b) replace damaged vanes with 45 degree vanes

c) only replace vanes with new ones that have the correct part as the originals removed

This is exam number 30.

1.	2	3	4	5	6	7	8	9	10
B	B	B	B	C	C	C	C	B	C

1. A felt filter in an oil lubrication system should be

- a) removed and cleaned in a container of lead free petrol
- b) removed and replaced with a new filter element
- c) removed and cleaned in MEK

2. What filter is used in a oil scavenge pump in the inlet side of the pump?

- a) Wire wound filter
- b) Wire mesh filter
- c) Threaded filter

3. Anti-icing for a turboprop is achieved by

- a) bleed air supply from compressor
- b) electric bonded heater mats
- c) hot oil supply from lubrication system

4. HEIU ignitor plugs receive their electrical supply from

- a) discharge inductor
- b) discharge capacitor
- c) starter system electrical circuit

5. Electrical propeller de-icing pads are

- a) at the tip
- b) on the trailing edge
- c) at the root

6. Vibration pick-ups are located

- a) on the turbine case
- b) on the fan/compressor case
- c) on both fan and turbine cases

7. A divergent intake is

- a) convergent/Divergent from front to rear
- b) divergent/Convergent from front to rear
- c) divergent from front to rear

8. High frequency vibration

- a) energises air particles prior to compression
- b) can give an indication of a fluctuating (EPR)
- c) causes engine components to crack

9. What is used as an extinguishant in fire bottles?

- a) Water
- b) Halogenated hydrocarbons
- c) Freon compounds

10. What purpose does the nose cone serve on the (N1) fan on a high bypass engine?

- a) Assist in diffusing airflow
- b) Reduce and straighten any turbulent air
- c) Streamlined fairing

This is exam number 31.

1.	2	3	4	5	6	7	8	9	10
A	A	B	B	A	A	A	C	C	B

1. Engine oil sampling analysis is taken

- a) after engine shut down
- b) when oil level is high
- c) at specific time after engine shut down

2. The main factor considered when designing an engine is

- a) max. turbine temperature
- b) max. tip speed
- c) max. fuel consumption

3. The heat absorbed by internal components can be detrimental to thrust and is prevented by

- a) bleeding air off the compressor to heat the components
- b) bleeding air off the compressor to cool the components
- c) reducing fuel flow to reduce internal temperature

4. The advantage of the two shot fire bottle system is

- a) one bottle can be used twice
- b) both bottles can be used in either of the engines
- c) one bottle can be discharged after certain time delay from the other bottle

5. Fuel heater prevents

- a) entrained water in fuel freezing
- b) pipelines freezing
- c) LP fuel filter icing

6. When APU is running and pneumatic is on

- a) bleed valve open, surge valve closed
- b) bleed valve open, surge valve modulating
- c) bleed valve closed, surge valve open

7. If the bypass ratio is 0.7:1, the 0.7 pounds of air is

- a) fed around the engine to 1 pound fed into H.P. compressor
- b) fed into H.P compressor compared to 1 pound fed around it
- c) bypassed for every 1 pound at the intake

8. Calorific value is the

- a) vaporisation point of fuel
- b) fuel boiling temperature
- c) amount of heat or energy in one pound of fuel

9. When re-light is required in flight on a FADEC engine pilot selects

- a) one igniter
- b) both igniters
- c) igniter selected automatically

10. A Duplex burner uses

- a) small burner at low RPM and large burner at hi RPM
- b) small burner at low RPM and both burner at hi RPM
- c) both burners at low and hi RPM

This is exam number 32.

1.	2	3	4	5	6	7	8	9	10
B	C	B	C	C	C	A	B	A	C

1. Which law relates to the kinetic, pressure, and potential energy in a fluid flow?

- a) Charles's law
- b) Bernoulli's theorem
- c) Newton's laws

2. When should thrust reversers be used?

- a) At high RPM and high forward speed
- b) At high RPM and low forward speed
- c) At low RPM and low forward speed

3. An HEIU is rated in

- a) Watts
- b) Joules
- c) Amps

4. In a capacitive type fuel quantity indicating system the tank units

are connected in

- a) series
- b) series/parallel
- c) parallel

5. Fuel trimming on a turbo prop engine is

- a) automatic
- b) pilot controlled
- c) governor controlled

6. With external power applied the engine will not run up to idle after reaching starting speed. The likely fault would be with the

- a) battery
- b) clutch
- c) Fuel Control Unit

7. If the area of the nozzle was too large the effect is

- a) exit velocity lower causing loss of the thrust
- b) exit velocity lower, negligible effect on thrust
- c) will "choke" at mach 1

8. What controls the fuel trimmer on a turbo prop engine?

- a) Propeller Control Unit
- b) Engine Speed Governor
- c) The blade angle

9. Water methanol injection will increase thrust by up to

- a) 30%
- b) 70%
- c) 50%

10. A glow plug operates

- a) manually

- b) electrically
- c) by heat action

This is exam number 33.

1.	2	3	4	5	6	7	8	9	10
A	C	B	A	B	A	A	C	A	B

1. The approximate % of the mass airflow taken in by flame tube snout is
 - a) 18%
 - b) 82%
 - c) 8%

2. The density of gas may be expressed as
 - a) pressure/volume
 - b) volume/weight
 - c) weight/volume

3. Advantage of an axial flow over a centrifugal flow GTE
 - a) low weight
 - b) high peak efficiencies
 - c) power required for starting is less

4. How are turbine disks attached to the shaft in GTE
 - a) bolted
 - b) splined
 - c) curvic couplings

5. The position of fuel heater in fuel system is
 - a) after the LP fuel filter and before the HP pump
 - b) before the LP fuel filter
 - c) between the fuel control unit and the burner manifold

6. Injection of water/methanol into compressor inlet causes
 a) increase in power without the need for burning extra fuel
 b) increase in power due to the burning of methanol alone
 c) increased efficiency of the engine due to reduced icing in the airflow

7. Flame stabilization in combustion chamber is achieved by
 a) the airflow pattern
 b) the correct air/fuel ratio
 c) the correct burner pressure

8. A variable geometry intake at subsonic speeds
 a) jet pipe area is increased
 b) throat area is decreased
 c) throat area is increased

9. Electrical anti-ice
 a) heats elements, placed under mats around engine
 b) heats air which is distributed around engine
 c) heats oil which is distributed around engine

10. Fuel nozzles are cleaned
 a) with a rag and solvent
 b) in-situ with detergent solution
 c) in-situ with carbon solution

This is exam number 34.

1.	2	3	4	5	6	7	8	9	10
B	B	B	A	A	C	B	A	C	A

1. Forward engine mounts take which loads?
 a) Thrust, vertical and impact

- b) Thrust, vertical and shear loads
- c) Centrifugal, thrust and axial

2. When running down an engine

- a) it should be done as quickly as possible to stop excess of fuel gathering
- b) it should be done as slowly as possible to reduce thermal stress
- c) it should be done as slowly as possible to assist thermal stress

3. To check a fire bottle in situ is serviceable

- a) weigh it, check blow out discs, check pressure
- b) check blow out disc, pop up indicators, expiry date and pressure
- c) check blow out disc only

4. The specific gravity of fuel effects

- a) aircraft range
- b) engine efficiency
- c) thrust rating

5. Reheat is the term used to describe

- a) adding fuel in the exhaust section
- b) adding of fuel in the compressor section
- c) adding of fuel in the turbine section

6. The cycling speed of the electrical de-icing mat

- a) is not affected by weather conditions
- b) comes in 4 speeds
- c) is affected by weather conditions

7. Lobe type exhaust noise suppressors are made from

- a) steel
- b) heat resistant alloy
- c) composite Material

8. Compressor blades reduce in length
- a) from L.P to H.P section to maintain uniform velocity in compressor
 - b) from root to tip to maintain correct angle of attack
 - c) from tip to root to maintain uniform velocity in compressor
9. Torque measurement in a GTE is
- a) not always reliable
 - b) highly reliable
 - c) required only when the turbine drives a propeller
10. ESHP is
- a) Shaft horse power + exhaust efflux
 - b) Power available at the turbine less the power required to drive the compressor
 - c) Horsepower/efficiency

This is exam number 35..

1.	2	3	4	5	6	7	8	9	10
A	C	B	C	B	B	B	A	A	B

1. Deposit build up on compressor blades
- a) can decrease compressor efficiency and cause corrosion
 - b) will not decrease efficiency but may cause corrosion
 - c) airflow is too fast for deposits to build up
2. The EEC receives its primary power from
- a) 115V AC main BUS
 - b) 115V AC emergency BUS
 - c) separate permanent magnet alternator
3. The fuel trimmer on a turbo-prop engine is operated
- a) manually, to prevent high EGT due to altitude increase
 - b) automatically controlled in conjunction with FCU

c) manually to prevent excessive RPM at high altitude

4. Vibration signals picked up

a) go through half wave rectifier to indicator

b) go straight to indicator

c) frequencies filtered to exclude unwanted frequencies

5. The variable inlet guide vanes are operated

a) electrically from cockpit

b) by fuel pressure

c) using N1 fan speed

6. The resistor in a D.C. starter motor

a) prevents over speed

b) prevents current surge when motor is at low rpm

c) used when D.C. motor fails

7. Forward engine mounts take which form

a) castings

b) forgings

c) fabricated sheet steel

8. Resistive type fire wires are tested using

a) megger/ohmmeter

b) megger/voltmeter

c) ammeter/ohmmeter

9. When testing an installed fire bottle

a) a safety ohmmeter is used

b) a lamp and 1.5v cell used

c) a multimeter used

10. On checking a fault free fire detection system

- a) use megger as per normal
- b) use a megger only for a short while as it can polarise the element
- c) a megger is never to be used

This is exam number 36.

1.	2	3	4	5	6	7	8	9	10
A	B	B	C	C	B	C	C	C	C

1. When heat is added to the combustion chamber
 - a) pressure changes slightly and volume increases
 - b) pressure increases rapidly volume remains constant
 - c) pressure rises at chamber outlet

2. A divergent duct will cause a decrease in
 - a) pressure, increase velocity
 - b) velocity, increase pressure
 - c) velocity, pressure remains constant

3. To ensure an engine sustains self sustain speed
 - a) idle increases with density increase
 - b) idle increases with density decrease
 - c) idle remains same for any density

4. The diffuser after the compressor, before the combustion chamber
 - a) increases velocity, decreases pressure
 - b) increases velocity, pressure remains constant
 - c) decreases velocity, pressure increases

5. What may be an indication of a bleed valve stuck in the closed position?
 - a) Over speed
 - b) Low EGT reading

- c) Compressor stalling at low RPM
6. Seals on a gas turbine engine restrict leakage of oil by
- a) spring pressure
 - b) air pressure
 - c) closely tolerated contacting components
7. The main advantage of FADEC is
- a) it has electrical control of hydro mechanical unit in all modes
 - b) it changes TLA to most efficient EPR rating
 - c) efficiency is always maximum
8. A shroud placed around fuel nozzles
- a) flakes the carbon to minimise accumulations
 - b) builds up carbon deposits to assist atomisation
 - c) prevents carbon build up
9. In a compressor diffusion action takes place across
- a) rotors
 - b) stators
 - c) rotors and stators
10. Fir tree turbine blade attachment locates the blade
- a) radially
 - b) axially
 - c) allows slight movement

This is exam number 37.

1.	2	3	4	5	6	7	8	9	10
A	B	B	A	A	B	A	C	A	C

1. A factor that limits EGT is
- a) turbine

- b) compressors
- c) jet pipe

2. Excessive EGT can

- a) cause damage to jet pipe
- b) cause damage to turbine
- c) cause NGV to creep

3. Creep may occur to turbine blades due to

- a) prolonged low RPM use
- b) over-temp with excessive centrifugal loads
- c) high back pressures

4. Water/methanol solution is

- a) de-mineralised water/methanol depending on engine
- b) distilled water
- c) town water/methanol depending on engine

5. Oil used in a gas turbine engine is usually

- a) synthetic
- b) mineral
- c) natural

6. Pipes around engines are

- a) mild seamless steel
- b) stainless steel
- c) aluminium

7. Thrust changing with temperatures

- a) will increase at low temperatures
- b) will decrease at low temperatures
- c) will increase at high temperatures

8. Water/methanol is injected
- a) at high temperature, at high altitudes
 - b) at high temperatures
 - c) at high temperatures or high altitudes

9. Inlet side of a fuel pump has
- a) wire mesh filter
 - b) wire wound filter
 - c) threaded micron filter

10. Across the turbines
- a) turbines cause temperature rise
 - b) isometric expansion takes place
 - c) turbines cool

This is exam number 38.

1.	2	3	4	5	6	7	8	9	10
A	C	C	C	B	B	C	A	B	C

1. Forces driving turbine are due to
- a) momentum and directional acceleration of gases
 - b) aerodynamic lift imposing impulse on blades
 - c) expansion of gases

2. Impulse turbine blades run cooler than reaction because
- a) impulse spin faster radially
 - b) converging rotors increase velocity
 - c) temperature drop across NGV is greater

3. When thrust is selected to increase power, pressure drop across FCU
- a) drops
 - b) remains the same

c) increases

4. Vane type oil pump output is controlled by

- a) output pressure controlling plate angle
- b) outlet pressure controlling servo
- c) outlet pressure against spring pressure

5. The intake of a Gas Turbine Engine is designed to

- a) protect compressor from FOD
- b) provide turbulent free air
- c) provide streamlined fairing for aircraft

6. 3 ways to test serviceability of a fixed fire bottle in situ are

- a) weigh, pressure, pop up indicator
- b) pressure, pop up indicator, blow-out disc
- c) weigh, pressure, blow-out disc

7. An abraidable lining in the fan case

- a) prevents fan blade tip rub
- b) produces less leakage at tips for anti-ice
- c) provides acoustic medium

8. Fibrous metallic lining for noise suppression is used

- a) in hot area
- b) in cold area
- c) for lobe type noise suppressors

9. Noise lining in the fan area is made from

- a) layers of bonded resin
- b) porous type Honeycomb and backing sheet
- c) felt with aluminium sheet

10. An increase in turbine diameter is caused by
- over speed
 - products of combustion
 - over temp/centrifugal loads

This is exam number 39.

1.	2	3	4	5	6	7	8	9	10
A	C	C	A	B	C	C	A	A	C

- A jet engine has a high oil temperature but all other power parameters are normal. The probable cause is
 - a main bearing in distress
 - gear box leakage
 - a large quantity of oil being returned to tank

- Where does the high voltage type turbine ignition receive its voltage pulse from?
 - Trigger transformer
 - Rectifier
 - Primary windings

- If the throttle position remains constant
 - with increasing OAT, TGT will increase
 - with decreasing OAT, RPM will increase
 - with increasing OAT, RPM and TGT will increase

- The ring of fixed blades at the intake of an axial flow compressor are called
 - inlet guide vanes
 - first stage stator blades
 - first stage diffuser blades

5. A powerplant consists of

- a) a basic engine plus thrust reverser, exhaust system and gear box with accessories
- b) the complete engine as it would be found on aircraft including all connections, controls, cowlings, intake etc
- c) a basic engine plus E.C.U

6. What is the purpose of pressure balance seal?

- a) To ensure LP compressor is statically balanced
- b) To ensure HP compressor is dynamically balanced
- c) To ensure the location bearing is adequately loaded throughout the engine thrust range

7. The velocity of air on entry to compressor inlet on an aircraft flying supersonic speed would be controlled at

- a) Mach 1
- b) Mach 2.2
- c) Mach 0.4

8. The optimum air speed for entrance into the compressor is approx

- a) Mach 0.4
- b) same as aircraft speed
- c) Mach 1

9. When EEC supervisory circuit sense a fault on the engine, fault annunciator light will be on and EEC will

- a) remove fuel, down trimming signal immediately
- b) remove fuel, down trimming signal only after landing
- c) remove fuel, down trimming signal only when EEC switch selected off

10. When installing flow valve on "two shot" fire extinguishing system care must be taken to make sure

- a) flow valve is pointing towards the respective bottle
- b) priority system must have the bigger flow side

c) flow arrow should be in a correct direction

This is exam number 40.

1.	2	3	4	5	6	7	8	9	10
A	A	B	A	A	A	A	B	C	B

1. On a gas turbine engine DC starting circuit, if there is an open circuit on the contact of the over speed relay

- a) no power supply is connected to the starter motor
- b) starter motor will stop only when starter switch selected off
- c) starter motor will continue to run for 30 sec and then stop

2. The field of the D.C. starter motor used on gas turbine engine is

- a) series or compound
- b) series only
- c) shunt or compound

3. Omission of crushable washer on engine fire wire connector will

- a) affect fire wire continuity
- b) allow moisture ingress
- c) affect fire wire capacitance

4. Discharge cartridges of the fire bottle have

- a) life time in hours/or calendar and replace which ever is sooner
- b) life time in hours/calendar and replace which ever is longer
- c) no life time it is only replaced when unserviceable

5. In-Flight the engine EEC controls

- a) fuel flow
- b) throttle position
- c) EGT

6. When "blow out" is selected on the Gas Turbine Engine starting circuit

- a) the starter motor stopped only when starter switch selected off
- b) ignition is continuously on
- c) the over-speed relay will de-energise the starter circuit

7. After an unsuccessful start of an engine

- a) unburnt fuel can be evacuated by motoring the engine with HP cock closed
- b) the engine has to be left for some time before another start
- c) unburnt fuel can be drained from fuel drainage lines

8. When cleaning salt from compressor

- a) use water then manufacture cleaning solution
- b) use water at low power then water at high power
- c) never use water ,use only recommended solution

9. A FADEC does not have which of the following?

- a) An automatic starting capability
- b) Control of thrust reverser operation
- c) Automatic control of engine fire bottles

10. A full Authority FADEC consists of

- a) Electronic control only
- b) Electronic control and sensors
- c) Electronic control and throttle position transmitter

This is exam number 41..

1.	2	3	4	5	6	7	8	9	10
C	C	B	A	C	C	B	C	C	B

1. What indication does the pilot receive that thrust reversers have

deployed?

- a) A feeling of rapid deceleration
- b) An audible warning
- c) A sequence of lights

2. What angle are the exhaust gasses turned through in a clamshell type thrust reverser?

- a) 45 degrees
- b) 180 degrees
- c) 135 degrees

3. If an inlet is choked then velocity

- a) increases and pressure increases
- b) decreases and pressure increases
- c) increases and pressure decreases

4. During aerobatic manoeuvres, what prevents fuel from spilling out of fuel tank vents?

- a) Float operated valves
- b) Baffle plates in tanks
- c) Booster pump differential pressure

5. If an aircraft climbs with a fixed throttle position

- a) thrust and rpm remain the same
- b) thrust increases and rpm remains the same
- c) thrust decreases and rpm increases

6. The reheat ignition system which incorporates a platinum/rhodium element is known as

- a) spark ignition system
- b) hot-shot ignition system
- c) catalytic ignition

7. A glow plug may be used in place of a spark plug on

- a) large engines
- b) small engines
- c) low temperature engines

8. When an engine being started by an air starter reaches self sustaining speed

- a) the motor is disconnected by the flyweight cut out switch
- b) the motor is disconnected by the pilot
- c) the starter valve is disconnected by the fly weight cut-out switch in the air starter

9. Squeeze film bearings are usually found on

- a) the turbine section
- b) HP compressor section
- c) LP compressor section

10. The Kidde Fault Free Fire detection system has how many internal wires in the sensing element?

- a) 1
- b) 2
- c) 3

This is exam number 42.

1.	2	3	4	5	6	7	8	9	10
B	A	C	C	C	A	A	A	A	C

1. Which of the following is most likely to occur in the turbine section of a GTE?

- a) galling
- b) cracking
- c) pitting

2. EGT is displayed in

- a) degrees centigrade
- b) degrees fahrenheit
- c) kelvin

3. A hot start refers to

- a) too much fuel being supplied
- b) early ignition
- c) high EGT before idle RPM is achieved

4. When testing a two pin fire bottle connector

- a) continuity test 1 pin then short two together
- b) continuity test 1 pin, then the other, then short two together
- c) short two pins together

5. After a bag tank replacement, where would you disconnect the system to carry out the flow checks?

- a) At tank outlet
- b) Tank isolation cock
- c) At the engine

6. Aluminium deposits on the turbine show up as

- a) white or silver speckles
- b) black stains
- c) white powder traces

7. Vibration in the cockpit is indicated in

- a) amps
- b) dB
- c) phons

8. Water or water/methanol injected into the combustion chamber inlet increases

- a) mass airflow through the turbine
- b) fuel to air ratio by up to 20%
- c) combustion chamber outlet temperatures

9. An impulse/reaction turbine is designed to ensure

- a) uniform axial velocity from blade root to tip
- b) greater axial velocity at the blade tip
- c) greater axial velocity at the blade root

10. Ram pressure recovery will generally take effect at aircraft speeds of

- a) mach 1
- b) only when the aircraft is stationary with engines running
- c) mach 0.1 - 0.2

This is exam number 43.

1.	2	3	4	5	6	7	8	9	10
B	A	B	B	A	B	B	A	B	C

1. The Brayton cycle is

- a) the name given to the intermittent cycling of an electrical de-icing system
- b) the continuous combustion cycle taking place in a gas turbine engine
- c) the constant velocity cycle taking place in a gas turbine engine

2. Excessive turbine temperatures can lead to

- a) turbine blade creep and an increase in the diameter of the turbine
- b) a serious fire risk in the engine "hot end"
- c) not a serious problem as long as engine oil pressure is within limits

3. What is the purpose of a silver strip on a fuel filter?

- a) To detect excess metal
- b) To detect sulphur in fuel
- c) To strain oil for contamination

4. In an aircraft flying at supersonic speed, to reduce the air velocity at the compressor, the variable intake

- a) throat area is increased
- b) throat area is decreased
- c) exhaust jet cone area increased

5. As the air passed through the turbine due to the convergent shape formed between adjacent blades

- a) pressure decreases, velocity increases, temperature decreases
- b) pressure decreases, velocity increases, temperature increases
- c) pressure increases, velocity increases, temperature constant

6. An oil spectroscope measures

- a) contaminants in the surface of the oil
- b) contaminants suspended in the oil
- c) S.G. of the oil

7. The purpose of a diffuser is to

- a) increase the kinetic energy of the air
- b) increase the static pressure of the air
- c) induce a swirl to the air prior to combustion

8. The hottest component in a gas turbine engine is

- a) the combustion chamber
- b) the turbines
- c) the nozzle guide vanes

9. The purpose of a propelling nozzle is to

- a) decrease the velocity of the exhaust to increase static pressure

- b) increase the velocity of the air and increase thrust
- c) direct the air onto the turbines

10. On a triple spool engine, the first stage of turbines drive

- a) the LP compressor
- b) the IP compressor
- c) the HP compressor

This is exam number 44.

1.	2	3	4	5	6	7	8	9	10
A	C	C	C	B	C	C	C	C	B

1. On a twin spool turbo shaft, the free turbine is connected to the

- a) output gearbox
- b) HP gearbox
- c) LP gearbox

2. The basic concept of HP fuel control is

- a) the bleeding of excess fuel back to the input of the HP pump swash plate piston
- b) automatic adjustment of the fuel control unit by preventing excess fuel reaching the burners
- c) constant adjustment of the swash plate angle of the HP fuel pump

3. Ram effect is

- a) the increase of dynamic pressure at the face of the compressor
- b) conversion of static pressure to kinetic pressure at the face of the compressor
- c) Conversion of kinetic energy to pressure energy at the face of the compressor

4. To prevent compressor surge and overheating of the combustion chamber due to over fuelling

- a) a throttle unit is fitted
- b) a barometric unit is fitted
- c) an acceleration control unit is fitted

5. The basic equation for thrust is

- a) thrust = mass x velocity
- b) thrust = mass x acceleration
- c) thrust = force x acceleration

6. In the majority of helicopters the thrust generated by a gas turbine is absorbed by the

- a) HP turbine
- b) LP turbine
- c) Free power turbine

7. When FADEC is in normal mode

- a) channel A will be in command
- b) channel B will be in command
- c) channel A or B will be in command

8. To maintain the selected rpm of a gas turbine at altitude

- a) the pilot will have to throttle back
- b) more fuel will automatically be added
- c) the fuel will automatically be reduced as the aircraft climbs

9. A well designed intake will take advantage of forward speed by

- a) converting pressure energy of the air into kinetic energy
- b) converting velocity energy into kinetic energy
- c) converting kinetic energy into pressure energy

10. Out of the following thrust lever resolver angles, which one is the fwd idle setting

- a) 5 degrees
- b) 40 degrees

c) 85 degrees

This is exam number 45.

1.	2	3	4	5	6	7	8	9	10
C	B	B	C	C	B	C	C	C	A

1. N2 is taken from

- a) a speed transducer
- b) a tachometer attached on the N1 gearbox
- c) an alternator attached to the N2 gearbox

2. The term Pb means

- a) burner pressure measured at the NGV
- b) burner pressure measured at the combustion chamber
- c) burner pressure measured at the diffuser case

3. What are blue and golden deposits evidence of on a turbine blade

- a) aluminium
- b) titanium
- c) magnesium

4. What is the acceptable damage on stator blades that have been blended?

- a) one third chord wise
- b) one third along from root to tip
- c) one third from tip to root

5. Necking and mottling of turbine blades

- a) is formed during manufacture
- b) is due to bending when the gas hits the blades
- c) is due to thermal stress

6. In subsonic multi-engine aircraft, a normal inlet duct will
- a) decrease and then increase in size, front to rear, along length of the duct
 - b) increase in size, front to rear, along length of the duct
 - c) increase and then decrease in size, front to rear, along length of the duct
7. If a Compressor Surge occurs it is recognized by
- a) fluctuating RPM and fuel flow
 - b) fluctuating EGT and thrust
 - c) coughing in the compressor and vibration
8. With regard to compressor blades, which of the following is true. No damage is permissible on
- a) the last third of the outboard leading edge
 - b) the lip of a blade
 - c) a shroud fillet area
9. Which of the following is not an engine rating?
- a) Maximum Take Off
 - b) Maximum Continuous
 - c) Idle
10. When reconnecting a HEIU, which cable must be reconnected first?
- a) HT before LT
 - b) LT before HT
 - c) It makes no difference

This is exam number 46.

1.	2	3	4	5	6	7	8	9	10
B	B	C	A	B	C	B	B	C	A

1. Auxiliary power units provide

- a) hydraulic and electrical power
- b) pneumatic and electrical power
- c) hydraulic and pneumatic power

2. At higher than standard day ambient temperatures observed compressor speed will be

- a) lower than standard day speed
- b) higher than standard day speed
- c) no different

3. Trimming is a term applied to adjusting the

- a) fuel specific gravity
- b) part trim stop
- c) idle speed and maximum thrust

4. Cracks may occur in hot section components of a turbine engine if they are marked during inspection with

- a) a lead pencil
- b) chalk
- c) layout dye

5. Engine vibration is monitored using

- a) Fenwall type sensors
- b) piezoelectric accelerometer
- c) electromechanical devices

6. Carbon forming on fuel spray nozzles will have the effect of

- a) producing turbulent air flow
- b) increasing the combustion chamber pressure ratio
- c) changing the fuel spray angle

7. Impulse blades operate cooler than reaction blades because

- a) the NGV's cool the air
- b) the airflow has a higher velocity through a impulse turbine NGV

c) impulse blades rotate at higher speeds

8. What must not be used during an engine compressor wash?

a) Crushed almond

b) Chlorine

c) Desalinization solution

9. An aircraft flying through heavy rain may use, as a precaution

a) engine intake de-icing

b) airframe de-icing

c) continuous ignition

10. Gas type fire wires operate by utilising

a) the change in the gas pressure

b) the change in the gas dielectric level

c) the change in the electrical resistance of the gas

This is exam number 47.

1.	2	3	4	5	6	7	8	9	10
C	A	C	A	B	B	A	B	A	A

1. Trend monitoring of spectrometric oil analysis is carried out how often?

a) After every repair or modification

b) During each scheduled maintenance period

c) At set periods once the rate of wear has been established

2. When starting an APU what would the normal duty cycle be on a modern aircraft?

a) 3 attempted starts per hour with 5 minutes between each attempt

b) 6 attempted starts per hour with 5 minutes between attempts

c) 6 attempted starts per half hour with 5 minutes between attempts

3. What is the purpose of the reduction gear on a propeller driven engine?

- a) To enable torque measurement
- b) To maintain a constant propeller blade speed
- c) To prevent the propeller tips reaching the speed of sound

4. Fuel boost pumps are cooled using

- a) fuel
- b) ram air
- c) Fuel pumps do not require cooling

5. The starter light is on during a start cycle (low voltage electrical starter).

- a) This is normal for 30 seconds, take no action
- b) If the light stays on after 30 seconds action is required
- c) Indicates electrical power is flowing to the starter

6. A DC starter motor disconnects due to

- a) current increasing switching off an overspeed relay
- b) current decreasing switching off an overspeed relay
- c) a centrifugal switch that acts like an overspeed relay

7. If a thrust reverser is deployed at lower than normal landing speed

- a) exhaust gases can be ingested into the engine
- b) if the EGT gets too high the thrust reverser will automatically restow
- c) the thrust reverser will be ineffective

8. A fuel trimmer unit is adjusted at altitude

- a) manually to compensate for EGT change
- b) automatically, via a fuel trim unit
- c) manually to compensate for propeller torque

9. Baffles in a rigid fuel tank

- a) prevent surge
- b)strengthen the tank structure
- c) help prevent micro-biological corrosion

10. Which of the following statements is true on a high bypass ratio turbo fan?

- a) Both the compressor and combustion chamber are smaller than their turbo jet equivalent
- b)Both the compressor and combustion system are larger than their turbo jet equivalent
- c) The compressor assembly is larger and combustion chamber smaller than their turbo jet equivalent

This is exam number 48.

1.	2	3	4	5	6	7	8	9	10
C	B	C	B	B	C	A	C	C	B

1. Starting an engine with a bleed valve stuck closed would cause:

- a) high EGT
- b)low EGT
- c) possible stalling of the engine

2. To inhibit the fuel system of an installed engine

- a) remove the ignitor plugs
- b)dry motor the engine
- c) pump oil into the engine when stationary

3. Integrated fuel flow gives

- a) fuel flow and acceleration
- b)average fuel flow
- c) total fuel consumed

4. During a boroscope check of the HP turbine blades

- a) hand turn the turbine wheel
- b) attach a device to the accessory gearbox and rotate slowly
- c) dry motor the engine at minimum speed

5. From where does the APU receive a fire signal?

- a) It is dependent on the engine fire system
- b) It has its own system
- c) It is dependent on the airframe system

6. In a FADEC system what does the EEC measure along with RPM?

- a) Pressure
- b) Temperature
- c) Pressure and Temperature

7. In a FADEC system how are the power supply windings for channel A and Channel B wound?

- a) On one generator with 2 separate windings
- b) Two independent generators
- c) One generator and one winding

8. When is the humidity indicator checked on a preserved engine?

- a) 1 Year
- b) 6 Months
- c) 1 Month

9. What type of intake is one that decreases gradually in area and then increases?

- a) Convergent
- b) Divergent
- c) Convergent / Divergent

10. What is the purpose of the current limiting resistor in a starter circuit?

- a) To prevent the starter from over speeding in the final phase of

starting

b) To prevent an initial current surge

c) To provide overall control of the the speed of the starter

This is exam number 49.

1.	2	3	4	5	6	7	8	9	10
B	C	B	B	B	A	C	B	A	A

1. Identify a function of the cascade vanes in a turbojet engine compressor section.

a) To decrease the velocity of air to the combustor

b) To remove air swirl before the combustion chamber

c) To direct the flow of air to strike the turbine blades at a desired angle

2. The turbine section of a jet engine

a) extracts heat energy to drive the compressor

b) circulates air to cool the engine

c) converts dynamic pressure into mechanical energy

3. In the dual axial flow or twin spool compressor system with a free power turbine, N_f would be an indication of

a) first stage compressor speed

b) free power turbine speed

c) turbine thrust indication

4. Galling is a condition caused by excessive

a) scoring

b) chaffing

c) temperatures

5. If a burner was down in a multi can system the engine would tend to

- a) run up
- b) surge
- c) hang up

6. The pressure ratio can be influenced by

- a) number of stages in compressor
- b) compressor inlet pressure
- c) compressor inlet temperature

7. Methanol is added to water when augmenting thrust in order to

- a) reclaim lost pressure at the compressor
- b) increase the density of air entering the compressor
- c) reclaim lost heat at the turbines

8. The sump in a dry sump oil system

- a) houses all the engine oil
- b) is used as a collecting point only
- c) provides lubrication for the main bearings

9. Taper roller bearings accept loads in which direction

- a) radial and axial in one direction only
- b) radial and axial in both directions
- c) axial loads only

10. 'Ram Recovery' is a measure of

- a) intake efficiency
- b) forward air speed
- c) net thrust

This is exam number 50.

1.	2	3	4	5	6	7	8	9	10
C	B	B	A	B	A	B	C	A	C

1. If an EPR gauge is installed on turbo fans as a measure of power output, what is used on turbo prop?
 - a) EPR gauge
 - b) Thermocouples
 - c) Torquemeter

2. The size of the exhaust section is dictated by
 - a) size of engine only
 - b) size and location of the engine
 - c) cone or diffuser size and location

3. After burning is initiated in order to
 - a) burn off the fuel that is not combusted in the combustion section
 - b) increase the local speed of sound at the jet nozzle
 - c) heat the exhaust to prevent choking at subsonic gas velocities

4. Acoustic blankets are installed to
 - a) increase thermal efficiency
 - b) aid the streamlining of the engine
 - c) reduce noise levels

5. The most likely parameter limiting the height at which a jet engine powered a/c can operate would be insufficient
 - a) oxygen to support combustion
 - b) lift to support the a/c weight
 - c) mass airflow to maintain 15:1 air/fuel ratio

6. Combustor air that is not used to support combustion
 - a) is by-pass air
 - b) is considered as the total air flow
 - c) will film cool the liner and dilute combustion chamber exit temperature

7. The temp and centrifugal loads which the turbine is subjected to during normal engine operation causes
- a) creep loading
 - b) fatigue failure
 - c) elastic stretching
8. When checking the effect of inertia on the engine after heavy landing you would first check the
- a) thrust line
 - b) module alignment
 - c) compressor shaft for distortion
9. At high rotational speed at sea level a duple burner would be passing fuel via the
- a) main nozzle
 - b) primary and the main nozzle
 - c) primary nozzle
10. If the rundown time is less than the minimum stated for a given engine
- a) the rotating assembly is free
 - b) the rotating assembly is being restricted
 - c) unacceptable wear is occurring at the main bearings

This is exam number 51.

1.	2	3	4	5	6	7	8	9	10
C	B	B	A	B	A	B	C	A	C

1. Some Labyrinth seals
- a) are spring loaded
 - b) are self lubricating
 - c) control the outflow of air at the turbine

2. A jet engine gear box breather is prevented from leaking oil to atmosphere by the action of
- air or oil valve
 - impeller and centrifugal force
 - oil thrower ring and centrifugal force
3. The purpose of 'squeeze film' type bearing is to
- improve outer race cooling
 - minimise the effect of vibration
 - increase the flow of oil to the rolling element
4. In a jet engine the rotating assembly oil seals are maintained oil tight by means of
- air pressure
 - a garter seal
 - an annular expander ring
5. Following the reports of a heavy landing you would
- examine the engine mountings and fuse pins
 - carry out a complete visual examination of the power plant
 - examine the engine mountings and borescope the nozzle guide vanes and turbine
6. The ACOC has an anti-surge valve in order to
- protect the cooler
 - restrict the engine max oil pressure
 - stop oil draining from the system when the cooler is removed
7. With increasing ram effect
- turbine temperatures decreases
 - propulsive efficiency increases
 - propulsive efficiency decreases
8. A wasted drive shaft is primarily to

- a) reduce weight
- b) achieve dynamic balance
- c) provide a fuse if the driven component is overloaded

9. The fabricated liner of a flame tube is achieved mainly by

- a) argon arc process
- b) oxyacetylene welding
- c) electric resistance welding

10. The 'core engine' or 'gas generator' is made up of the following components:

- a) inlet, compressor, combustion chamber, turbine, exhaust
- b) compressor, turbine, exhaust, propelling nozzle
- c) turbine, combustion chamber, compressor

→ **This is exam number 52.**

1.	2	3	4	5	6	7	8	9	10
B	A	B							

1. If an Engine FADEC system loses air-data permanently the pilot will:

- a) select alternate pitot static
- b) switch to Alt on the relevant EEC
- c) turn that EEC off

2. A FADEC system takes measurements from Engine Speed, and

- a) Temperature and Pressure.
- b) Temperature.
- c) Pressure.

3. Impulse reaction turbine blades form

- a) 1 stage impulse, 1 stage reaction

- b) tip half reaction, root half impulse
- c) tip half impulse, root half reaction

4.

- a)
- b)
- c)

5.

- a)
- b)
- c)

6.

- a)
- b)
- c)

7.

- a)
- b)
- c)

8.

- a)
- b)
- c)

9.

- a)
- b)
- c)