21. AIRFRAME AND SYSTEMS, ELECTR., POWERPLANT

21.01. AIRFRAME AND SYSTEMS

21.01.01. Fuselage

21.01.01.01. types of construction

0 id 2945 'Fail safe construction' is :

a A construction which is suitable for aerobatic flight.

b A simple and cheap type of construction.

c A type of construction for small aircraft only.

d **A type of construction in which the load is carried by other components if a part of the structure fails.**

1 id 5946 Which components do a semi-monocoque fuselage consists of?

a Steel tubing, longerons and bulkhead wires.

b **A stressed skin structure in which the skin is supported by a lightweight framework, such as longerons, stringers and formers.**

c Metal stringers, bulkheads and fabric covering.

d A stressed skin type of construction in which the stiffness of the skin provides a large measure of the strength of the structure. No truss or substructure is required.

2 id 7428 Monocoque fuselages derive their strength from:

a Bulkheads and longerons

b Longerons and formers

c **The skin.**

d Metal stringers.

21.01.01.02. structural components and materials

3 id 545 DURALUMIN alloys : 1 have an aluminium-copper base. 2 have an aluminium-magnesium base. 3 are easy to weld. 4 are difficult to weld. 5 have a good thermal conductivity. 6 have a poor air corrosion resistance The combination regrouping all the correct statements is :

a **1,4,5**

b 2,4,5

c 1,3,6

d 2,3,6

4 id 546 For FAIL-SAFE designed structural parts : 1 The mounting principle is parallel mounting. 2 No routine check is necessary. 3 The member is removed at the end of the calculated life cycle. 4 Certain components may not be accessible. 5 The principle is the redundancy of components 6 The failure of a member causes the loads to be shared between the other system componen

a 2,3,4

b **1,5,6**

c 1,3,4

d 2,5,6

5 id 5970 What are the most frequent used materials in a monocoque or semi-monocoque structure?

a Aluminium or magnesium alloy.

b Steel.

c Wood.

d Composite fibers.

6 id 8889 Monocoque fuselages derive their strength from:

a The skin

b Metal stringers

c Longerons and formers

d Bulkheads and longerons

21.01.01.03. stress

7 id 2319 The fuselage of an aircraft consists, among others, of stringers whose purpose is to:

a withstand the shear stresses.

b assist the skin in absorbing the longitudinal traction-compression stresses.

c provide sound and thermal isolation.

d integrate the strains due to pressurization to which the skin is subjected and convert them into a tensile stress.

8 id 2338 Among the different types of aircraft structures, the shell structures efficiently transmit the: 1. normal bending stresses 2. tangent bending stresses 3. torsional moment 4. shear stresses The combination regrouping all the correct statements is :

a 1, 2, 4

b 2, 3, 4

c 1, 3, 4

d 1, 2, 3

9 id 3720 The reason for the fact that an aeroplane designed for long distances cannot simply be used for short haul flights at higher frequencies is that

a the procedures and checklists for this kind of aeroplanes will take too much time

b the lifetime of the fatigue sensitive parts has been based on a determined load spectrum

c these aeroplanes often consume too much fuel on short haul flights.

d in that case some fuel tanks remain empty during the whole flight, which stresses the aeroplane's structure in an unacceptable way

21.01.03. Wings

21.01.03.01. types of construction

10 id 5951 When do you say that an aircraft has a cantilever wing?

a When the wing is attached to the fuselage at or near one end only.

b When the wing planform is other than rectangular.

c When the wing is supported by braces or strut, linked to the fuselage.

d When the wing is attached to the lower part of the fuselage.

11 id 5971 What mission does the strut have, often observed between the fuselage and the wing, on small high wing aircraft, (Cessna 172)?

a Serves as a facilitating access to the upper side of the wing.

b Supporting the wing while the aircraft is on ground only.

c **Supporting the wing while the aircraft is on ground and when airborne.**

d Supporting the wing if the airplane should become inverted.

12 id 7429 Wings without exterior support is called:

a Wire braced

b Strut braced

c **Cantilever**

d Sweepback

21.01.03.03. stress relief of engines, etc.

13 id 2151 The wing of an aircraft in flight, powered by engines located under the wing, is subjected to a bending moment which causes its leading edge, from the wing root to the wing tip, to operate in:

a compression.

b tension, then in compression.

c tension.

d **compression, then in tension.**

21.01.03.04. stress

14 id 547 In flight the wing of an aircraft containing fuel is subjected to vertical loads that produce a bending moment which is:

a equal to half the weight of the aircraft multiplied by the semi span

b equal to the zero -fuel weight multiplied by the span

c **highest at the wing root**

d lowest at the wing root

15 id 548 The Maximum Zero Fuel Weight: 1 Is a limitation set by regulation. 2 Is designed for a maximum load factor. 3 Is due to the maximum bending moment at wing root. 4 Requires to empty external tanks first. 5 Requires to empty internal tanks first. The correct combinaison of true statements is :

a 2,5

b **1,2,3**

c 2,4

d 1,3,5

16 id 2339 On a non-stressed skin type wing, the wing structure elements which take up the vertical bending moments Mx are:

a the skin.

b the ribs.

c the webs.

d **the spars.**

21.01.04. Stabilising surfaces

21.01.04.01. vertical, horizontal and V-tail surfaces

17 id 8890 The elevators of a conventional airline are used to provide rotation about the

a Longitudinal axis

b **Lateral axis**

c Directional axis

d Vertical axis

18 id 8891 What is the name of the control surface that rotates an aeroplane about its vertical axis?

a The elevator

b **The rudder**

c The trim tabs

d The ailerons

19 id 8892 If the control stick of an aircraft is moved forward the attached control surface will move:

a **the elevator will move down.**

b the rudder will move up.

c the aileron will move up.

d the rudder will move down.

20 id 8893 Which controls act together by a V-tail aircraft?

a The stick in both axis (Push Pull and turn)

b The stick in one axis and the throttle

c **The stick in one axis and the rudder-pedales**

d The rudder-pedales and the Mixture

21.01.04.03. Efforts

21 id 5355 The advantage of mounting the tailplane on top of the vertical stabilizer is :

a **to withdraw it from the influence of wing turbulence**

b to a have greater effectiveness at high speed

c that it does not require a de-icing system

d to decrease fuel consumption by creating a tail heavy situation

21.01.04.06. Mach trim

22 id 8894 Why is a Mach Pitchtrim nessesary for high speeds?

a Because the CG changes his position with higher speeds

b **Because the CL changes his position with higher speeds**

c Because the lift on the control surface increases unproportional with higher speeds

d Because the lift on the control surface decreases unproportional with higher speeds

21.01.05. Landing Gear

21.01.05.01. types

23 id 559 In a commercial transport aircraft the landing gear operating system is usually:

a Pneumatically driven.

b Mechanically driven.

c **Hydraulically driven.**

d Electrically driven.

24 id 3730 The part of the flight that will cause the highest loads on the torsion link in a bogie gear is

a Braking with an inoperative anti skid system.

b Touch down with crosswind

c Gear down selection

d **Taxiing with a small turning radius.**

25 id 7468 If an aircraft is equipped with a fixed gear, which of the mentioned factors will differ from a retractable landing gear?

a Horizontal stability

b Induced drag

c Lift

d **Parasite drag**

21.01.05.02. construction

26 id 558 A torsion link assembly is installed on the landing gear to :

a lock the landing gear.

b absorb the spring tension.

c control the wheels.

d **avoid rotation of the piston rod relative to the gear oleo strut.**

27 id 1805 Landing gear torque links are used to:

a prevent the extension of the landing gear oleo strut rod.

b take up the lateral stresses to which the gear is subjected.

c **prevent rotation of the landing gear piston in the oleo strut.**

d maintain the compass heading throughout taxiing and take-off.

28 id 2841 Which is (are) the damping element(s) in a landing gear shock absorber used on larger aircraft ?

a **Nitrogen and a viscous liquid.**

b Nitrogen.

c Oxygen.

d Springs.

29 id 3722 The purposes of the oil and the nitrogen in an oleo-pneumatic strut are :

a the oil supplies the spring function and the nitrogen supplies the damping function.

b **the oil supplies the damping function and the nitrogen supplies the spring function**

c the oil supplies the sealing and lubrication function, the nitrogen supplies the damping function.

d the oil supplies the damping and lubrication function, the nitrogen supplies the heat-dissipation function.

30 id 5347 A scissor is a component found on landing gears. Its function is to :

a create the wheel pitch on bogie gears.

b **prevent any rotation of the oleo strut in the undercarriage shock absorber.**

c transform the translational movement of the rudder pedals into the rotational movement of the nosewheel.

d make the body gears pivot when the nosewheel is turned through more than 20°.

31 id 5952 An oleo-type landing gear shock absorber is often equipped with a torque link, why?

a To prevent the nose wheel from shimmying

b To allow the piston to move freely in and out the landing gear cylinder

c To prevent the landing gear cylinder from rotating

d **Both b and c are correct**

32 id 7463 Gear retraction systems are classified according to the power source used for retraction and extension. Which are the most frequently used on larger aircraft?

a Electrical and hydraulic.

b **Hydraulic**

c Electrical and pneumatic.

d Mechanical

33 id 7469 What is reducing the shocks on the landing gear on an oleo shock absorber?

a The oil that is forced through a metering orifice.

b Compression of the oil.

c Springs inside the strut.

d **Cushion of compressed air.**

21.01.05.03. locking devices and emerg. ext. systems

34 id 560 In a modern jet transport aircraft, how can the landing gear be extended if there is a complete hydraulic system failure.

a Pneumatically.

b Electrically.

c **Mechanically**

d By hydraulic accumulators.

35 id 2884 In some aircraft, there is a protection device to avoid the landing gear being inadvertently retracted on the ground. It consists of :

a A warning light which is activated by the WOW (Weight On Wheels) sensor system.

b An aural warning horn.

c **A latch located in the landing gear lever.**

d A bolt.

36 id 5953 If the normal method of lowering the hydraulic operated retractable landing gear fails, there has to be an alternate method, this usually works as?

a A fully hydraulic system in parallel with the normal system.

b A fully mechanical system that replace the hydraulic system if this one fails. Such a system is activated with separate controls.

c **A system integrated with the original that allows the gear, by mean of its own weight and aerodynamic resistance, to mechanically lock in place.**

d A system that is activated by shaking of the aeroplane, by means of abrupt movement of the aeroplane controls to lower and lock the landing gear.

37 id 7441 To prevent the landing gear from collapsing when the aircraft is parked on the ground by, following device is used:

a **locking pins with flags**

b hydraulic pressure

c chocks

d torque links

21.01.05.05. position, movement lights and indicators

38 id 1806 A main landing gear is said to be "locked down" when:

a it is in the down position.

b **the strut is locked by an overcentre mechanism.**

c the actuating cylinder is at the end of it's travel.

d the corresponding indicator lamp is amber.

39 id 1808 The illumination of the green lamp indicator corresponding to a landing gear means that the landing gear is :

a locked-down and its door is locked.

b in the required position.

c **locked-down.**

d not in the required position.

21.01.05.06. nose wheel steering

40 id 1807 Shimmy occurs on the nosewheel landing gear during taxiing when: 1. the wheels tend to describe a sinusoidal motion on the ground 2. the wheels no longer respond to the pilot's actions This effect is overcome by means of: 3. the torque link 4. an accumulator associated with the steering cylinder The combination of correct statements is:

a 2, 3.

b 1, 4.

c 2, 4.

d **1, 3.**

41 id 3562 "Nose wheel shimmy" may be described as :

a aircraft vibration caused by the nose wheel upon extension of the gear.

b the oscillatory movement of the nose wheel when extended prior to landing.

c the amount of free movement of the nose wheel before steering takes effect.

d **a possibly damaging vibration of the nose wheel when moving on the ground.**

42 id 5947 The cause of rather violent vibration of the nose wheel, described as shimmy, is often ;

a Tyre imbalance.

b An uneven surface.

c Looseness of the nose wheel support mechanism.

d **Both a and c are correct**

43 id 5954 A hydraulically operated nose gear steering cylinder has at least two functions. The first is to allow the pilot to steer the aeroplane, and the second function is?

a **Shimmy dampener.**

b Supporting actuator to lower and rise the landing gear.

c Downlock mechanism for the nose gear.

d An emergency extension cylinder for the nose gear.

44 id 7464 Control on the ground for small aeroplanes is provided by steering the nose wheel through connections to the rudder pedals, but large aeroplanes have normally:

a Electrical power steering.

b **Hydraulic power steering.**

c Pneumatic power steering.

d Mechanical power steering

21.01.05.07. wheels and tyres

45 id 561 If the profile grooves or the tread of a new aircraft tyre are worn, the tyre can be:

a Never repaired.

b repaired once.

c **Repaired several times.**

d Used on the nose wheel only.

46 id 564 The reason for fitting thermal plugs to aircraft wheels is that they :

a prevent the brakes from overheating.

b **release air from the tyre in case of overheating.**

c prevent heat transfer from the brake disks to the tyres.

d release air from the tyre in case of overpressure.

47 id 565 Thermal plugs are installed in:

a fire warning systems.

b **wheel rims.**

c cabin windows.

d cargo compartments.

48 id 1809 A tubeless tyre has : 1- a built-in-air tube. 2- no built-in-air tube. 3- a crossed side casing. 4- a radial side casing. The combination of correct statements is:

a 1,3.

b 1, 4.

c 2, 3.

d **2, 4.**

49 id 2300 When a landing gear wheel is hydroplaning, its friction factor is equal to:

a 0.1

b 1

c **0**

d 0.5

50 id 2318 A tubeless tyre is a tyre: 1. which requires solid or branched wheels 2. whose valve can be sheared in sudden accelerations 3. whose mounting rim must be flawless 4. which requires no rim protection between rim flange and tire removing device 5. which does not burst in the event of a tire puncture 6. which eliminates internal friction between the tube and the tire<b

a 2, 3, 6.

b 3, 4, 5.

c 1, 2, 5.

d **1, 5, 6.**

51 id 3578 Tyre "creep" may be described as the :

a gradual circumferential increase of tyre wear.

b the increase in inflation pressure due to drease in ambient temperature.

c the decrease in inflation pressure due to increase in ambient temperature.

d **circumferential movement of the tyre in relation to the wheel flange.**

52 id 5334 Compared to a tyre fitted with an inner tube, a tubeless tyre presents the following characteristics : 1 - high heating 2 - valve fragility 3 - lower risk of bursting 4 - better adjustment to wheels The combination containing all the correct statements is:

a 2 - 4

b 2 - 3

c **3 - 4**

d 1 - 2 - 3 - 4

53 id 5335 On a modern aeroplane, to avoid the risk of tyre burst from overheating, due for example to prolonged braking during an aborted take-off, there is:

a a pressure relief valve situated in the filler valve.

b **a hollow bolt screwed into the wheel which melts at a given temperature (thermal fuse) and deflates the tyre.**

c the "Emergency Burst" function of the anti-skid system which adapts braking to the tyre temperature.

d water injection triggered at a fixed temperature in order to lower tyre temperature.

54 id 5344 On an aircraft landing gear, an under-inflated tyre:

a will be more subject to viscosity aquaplaning on dry runway

b it's tread will deteriorate faster

c will have an increased critical hydroplanning speed

d **will wear at the shoulders**

55 id 5963 What are purpose and placing of a "fusible plug" on the tires?

a It is placed in the wheel and by feeling the tire pressure it automatically regulates the pressure to the desired.

b **It is placed in the wheel and reacts on temperature. At excessive temperatures it melts which allows the air to escape from the tire, leaving the tire unpressurized.**

c It is placed in the brake assembly and when the brakes are overheated it turns off the hydraulic pressure fed to the brakes, allowing the brakes to cool.

d It is placed in airplane tires to seal holes.

56 id 7470 The "ply rating" of a tire is?

a **A parameter indicating the tire relative strength.**

b The read design.

c The inner liner used as a container for the air.

d The ratio between the section width and the section diameter.

21.01.05.08. braking systems

57 id 562 The operating principle of an anti skid system is as follows : the brake pressure will be :

a Decreased on the faster turning wheels.

b Increased on the faster turning wheels.

c **Decreased on the slower turning wheels.**

d Increased on the slower turning wheels.

58 id 563 The type of brake unit found on most transport aeroplanes is a:

a Drum type brake.

b **Multiple disk brake.**

c Single disk brake.

d Belt brake.

59 id 1812 In a hydraulic braking system, the accumulator is:

a a buffer accumulator whose function is to assist the hydraulic system during high intensity braking.

b a damping type accumulator designed to take up the pressure fluctuations of the automatic braking system.

c designed to take up the hydraulic energy filtered by the anti-skid system in order to prevent wheel blocking.

d **an accumulator designed to restore brake energy in the event of a hydraulic failure.**

60 id 2340 The modern anti-skid processes are based on the use of a computer whose input data is: 1. idle wheel speed (measured) 2. braked wheel speed (measured) 3. brake temperature (measured) 4. desired idle wheel train slipping rate 5. tire pressure The combination regrouping all the correct statements is :

a 2, 4.

b 1, 2, 3, 4, 5.

c **1, 2, 4.**

d 1, 3.

61 id 2739 The function of a fusible plug is to

a protect the brake against brake disk fusion due to excessive temperature.

b **protect the tyre against explosion due to excessive temperature.**

c function as a special circuit breaker in the electric system

d protect against excessive pressure in the pneumatic system.

62 id 3560 On large aeroplanes equipped with power brakes, the main source of power is derived from :

a the brake actuators.

b the master cylinders.

c pressure to the rudder pedals.

d **the aeroplane's hydraulic system.**

63 id 3721 The ABS (Auto Brake System) is being disconnected after landing ..

a **by pilot action**

b automatically

c at a certain low speed

d the system is always armed

64 id 5948 The disk brakes have more or less replaced the drum brakes. Why?

a Because disk brakes allow a greater dissipation kinetic energy.

b **Owing to a loss of braking action due to heat generation problem.**

c Because disk brakes weighted less and lasted longer.

d Because disk brakes allow an antiskid action.

65 id 5955 On the brake assembly there is an anti-skid system. From which device does the anti-skid control box get the information to regulate the brake pressure?

a From the airspeed indicator, corrected to ground speed.

b From the pitot static system.

c **From a wheel speed sensor.**

d From a hydraulic pressure sensor.

66 id 5956 On large modern transport aircraft, the brake assembly consist of?

a Boosted expander tube type.

b Single disk brake type.

c **Multiple disk brake type.**

d Boosted rotor type.

67 id 5972 With the antiskid system unserviceable, how should brake application be made?

a Fully applying the brakes.

b Releasing the pressure on the pedals after the wheels have touched the runway.

c **With an on and off braking action.**

d By carefully moderating the pressure on the pedals.

68 id 7440 The main purpose of using anti-skid units in the wheel-brake system is to:

a increase the landing distance

b **reduce tyre wear**

c prevent brake unit heating becoming excessive

d reduce the landing speed

21.01.06. Flight Controls (construction and operation)

21.01.06.01. Primary controls:

69 id 551 The trim tab :

a increases hinge moment and reduces control surface efficiency.

b reduces hinge moment and increases control surface efficiency.

c increases hinge moment and control surface efficiency.

d **reduces hinge moment and control surface efficiency.**

70 id 552 The purpose of a trim tab (device) is to:

a trim the aeroplane during normal flight.

b **reduce or to cancel control forces.**

c trim the aeroplane at low airspeed.

d lower manoeuvring control forces.

71 id 566 The advantages of fly-by-wire control are: 1. reduction of the electric and hydraulic power required to operate the control surfaces 2. lesser sensitivity to lightning strike 3. direct and indirect weight saving through simplification of systems 4. immunity to different interfering signals 5. improvement of piloting quality throughout the flight envelope The com

a **3 and 5**

b 1 and 2

c 1 and 5

d 2 and 3

72 id 567 An artificial feel unit is necessary in the pitch channel when:

a the elevators are actuated by reversible servo-control units.

b the elevators are fitted with servo-tabs or trim tabs.

c there is a trimmable stabilizer.

d **the elevators are actuated by irreversible servo-control units.**

73 id 568 An artificial feel unit system:

a must be mounted in series on an irreversible servo-control unit.

b **must be mounted in parallel on an irreversible servo-control unit.**

c is necessary on a reversible servodyne unit.

d is mounted in parallel on a spring tab.

74 id 2839 A Yaw Damper is :

a An elevator augmentor.

b **A rudder damper designed to avoid the "Dutch roll".**

c An elevator augmentor to avoid the nose-down effect at speeds greater than M=0.8.

d A roll trim tab.

75 id 2840 In a steep turn to the left, when using spoilers ...

a The right aileron will ascend, the left one will descend, the right spoiler will extend and the left one will retract.

b The right aileron will descend, the left one will ascend, the right spoiler will extend and the left one will retract.

c **The right aileron will descend, the left one will ascend, the right spoiler will retract and the left one will extend.**

d The right aileron will ascend, the left one will descend, the right spoiler will retract and the left one will extend.

76 id 3737 The reason for the trim switch on a control column to consist of two separate switches is

a To be able to use two different trim speeds, slow trim rate at high speed and high trim rate at low speed

b To prevent that both pilots perform opposite trim inputs.

c Because there are two trim motors.

d **To reduce the probability of a trim-runaway**

77 id 5957 The control surface that rotates the aircraft about its longitudinal axis is/are the

a Elevator.

b **Ailerons.**

c Rudder.

d Flaps.

78 id 5958 The function of the rudder limiter on some aircraft is to?

a Prevent that heavy gust damages the rudder.

b Prevent large rudder deflections on ground.

c **Prevent excessive loads from acting on the rudder.**

d Reduce rudder load during take-off and landing

79 id 5960 A servo tab moves?

a **Opposite of the control surface to which it is hinged.**

b In the same direction of the control surface to which it's hinged.

c According to he airflow that surrounds it.

d Parallel to the control surface to which it is hinged.

80 id 7430 The elevators of a conventional airline are used to provide rotation about the:

a Longitudinal axis

b **Lateral axis**

c Directional axis

d Vertical axis.

81 id 7435 What is the name of the control surface that rotates an aeroplane about its longitudinal or roll axis?

a The elevator.

b The rudder

c The trim tabs

d **The ailerons**

82 id 7437 Longitudinal stability involves the motion of the aircraft about its:

a Longitudinal axis

b **Lateral axis**

c Vertical axis

d Centre of pressure

83 id 7459 If the control stick of an aircraft is moved forward to the right, the left aileron will move:

a Up, and the elevator will move down.

b Up, and the elevator will move up.

c Down, and the elevator will move up.

d **Down, and the elevator will move down.**

84 id 7462 With which system is differential control associated?

a Trim system.

b **Aileron system.**

c Rudder system.

d Elevator system.

85 id 7465 If the control stick of an aircraft with properly rigged flight controls is moved rearward and to the left, the right aileron will move

a down and the elevator will move down

b up and the elevator will move down

c up and the elevator will move up

d **down and the elevator will move up**

86 id 7471 The rudder limiters on several aircraft have a specific function, which is to:

a Prevent that heavy gust damages the rudder.

b Prevent large rudder deflections on ground.

c **Prevent excessive loads from acting on the rudder.**

d Reduce rudder load during take-off and landing

87 id 7472 Some aircraft uses a fly by wire system to move the primary flight controls, this system is based on;

a Hydraulic power only.

b Mechanical power transmitted by steel wires.

c Secondary controls such as speed brakes.

d **Electrical signals from a computer sent to hydraulic actuators.**

21.01.06.02. Secondary controls lift augmentation

88 id 2838 Which of these signals are inputs, at least, in the stall warning computers?

a Angle of attack and flaps and spoilers deflection.

b **Angle of attack and flaps and slats deflection.**

c Angle of attack, flaps deflection and EPR.

d Angle of attack, flaps deflection, EPR and N1.

89 id 3001 On an aircraft, the Kruger flap is a:

a leading edge flap

b trailing edge flap

c **leading edge flap close to the wing root**

d leading edge flap close to the wing tip

90 id 5329 On an aeroplane, spoilers are :

a lower wing surface devices, their deflection is always asymmetrical.

b lower wing surface devices, their deflection is symmetrical or asymmetrical.

c upper wing surface devices, their deflection is always asymmetrical.

d **upper wing surface devices, their deflection is symmetrical or asymmetrical.**

91 id 5331 On an airplane, the Krueger flaps are:

a **leading edge flaps close to the wing root**

b trailing edge flaps close to the wing root

c trailing edge flaps close to the wing tip

d leading edge flaps close to the wing tip

92 id 5949 One type of flap used on aircraft moves down and increases the wing area by moving aft when lowered. This flap is known as:

a Slotted flap.

b **Fowler flap.**

c Aft moving flap.

d Split flap.

93 id 5959 A "slot" on a wing is?

a A leading edge flap.

b A split flap along the leading edge of the wing.

c **A leading edge device that causes some of the high energy air to flow over the upper surface of the wing**

d Another expression for fowler flap.

94 id 5961 Stall fences mounted on an aircraft wing are used:

a To increase the maximum speed of the aircraft.

b To avoid the formation of shock waves

c To increase the lift coefficient in landing.

d **To prevent the tendency of the outer portion of the wing to stall first.**

95 id 7443 What are "Kruger" flaps?

a Trailing edge flaps.

b Cowling flaps

c **Leading edge flaps**

d Aileron trim tabs

96 id 7460 Flaps which not only move down, but also increase the wing area by extending backwards on tracking are called:

a Slotted flap.

b Krüger flap.

c **Fowler flap.**

d Split flap.

97 id 7461 A Kruger flap is:

a A trailing edge flap which is operating automatically.

b **A leading edge flap type which is formed by extending an area of the wing downwards and forward at the leading edge.**

c An anti balanced type of flap with the purpose of making the controls smoother.

d To give the aircraft better short field performance.

21.01.07. Hydraulics

21.01.07.01. Basic principles of hydromechanics

98 id 569 Hydraulic fluids must have the following characteristics: 1. thermal stability 2. low emulsifying characteristics 3. corrosion resistance 4. good resistance to combustion 5. high compressibility 6. high volatility 7. high viscosity The combination regrouping all the correct statements is :

a 1, 2, 5, 7

b **1, 2, 3, 4**

c 2, 3, 4, 5

d 1, 3, 4, 6

99 id 570 In a hydraulic braking system, an accumulator is precharged to 1200 psi. An electrically driven hydraulic pump is started and provides a system pressure of 3000 psi. The hydraulic pressure gauge which is connected to the gas section of the accumulator, reads:

a 1200 psi

b **3000 psi**

c 4200 psi

d 1800 psi

100 id 572 Hydraulic fluids :

a Do not require special care.

b Cause high fire risk.

c **Are irritating to eyes and skin.**

d Are irritating to eyes and skin and cause high fire risk.

101 id 573 Hydraulic fluids used in systems of modern airliners are:

a Mineral base fluids.

b Water base fluids.

c Vegetable base fluids.

d **Phosphate ester base fluids.**

102 id 574 Hydraulic power is a function of :

a Pump RPM only.

b **System pressure and volume flow.**

c System pressure and tank capacity.

d Pump size and volume flow.

103 id 577 The type of hydraulic oil used in modern hydraulic systems is:

a mixture of mineral oil and alcohol

b vegetable oil

c **synthetic oil**

d mineral oil

104 id 2316 Hydraulic fluids of synthetic origin are:

a pink.

b **purple.**

c blue.

d red.

105 id 2946 The type of hydraulic fluid which has the highest resistance against cavitation is :

a Mineral oil based fluid.

b **Synthetic fluid.**

c Vegetable oil based fluid (caster oil).

d Water and glycol based fluid.

106 id 5943 A "hydraulic fuse" will:

a In case of a too high pressure in the system, open up and relieve the pressure by dumping the fluid overboard or back to the reservoir.

b **Detect a sufficient pressure drop across itself, or a specified volume of fluid passing through itself, and then shut off the flow of fluid to prevent the system of emptying itself.**

c Activate the actuators after the pilot has used the emergency hand pump.

d Direct the hydraulic fluid to the proper actuator according to the power pack and sequence valve.

107 id 5944 The main reasons for using pressurised hydraulic reservoirs on jet transport aircraft is/are:

a To assure that an adequate supply of fluid free from foaming always is present at the pump inlet.

b To increase the output pressure of the system.

c To maintain a minimum system pressure in case of hydraulic pump failure and enabling the pilot to lower flaps and gear with the help of this reservoir pressure.

d To compress the hydraulic fluids.

108 id 5962 The oil reservoir in a hydraulic system has the purpose to serve as:

a The compartment that stores the fluid.

b A point at which the fluid can purge itself of air.

c An expansion chamber to provide a space for the fluid when its volume increases due to a high temperature.

d All of the above alternatives are correct.

109 id 5969 The reason for the pressure accumulator in the hydraulic system is.

a It works as a backup fluid reservoir, which increases the capacity of the system.

b It serves as a water reservoir that collects water from the hydraulic fluid.

c The accumulator serves as an internal shock absorber for the hydraulic system.

d The accumulator compensates for fluid-volume variation due to changes in temperature.

110 id 5973 A variable displacement type hydraulic pump:

a Moves no fluid when engine runs on idle.

b Delivers almost constant pressure independent on system resistance.

c Moves fluid quantity dependent on the system demand.

d Moves a constant flow of fluid.

111 id 5974 A complex hydraulic systems may pressurise the oil reservoir by means of bleed air from the engines, this is

a To secure reliable oil supply to the hydraulic pumps.

b To increase the hydraulic pressure in the system and thereby alter its performance.

c To avoid air from developing in the system.

d In case of oil leakage the air might serve as a backup medium.

112 id 7411 State the advantages of the variable displacement hydraulic pump compared to the constant displacement pump.

a The variable displacement pump is very rugged and dependable, and inexpensive to manufacture.

b The variable displacement pump only consists of two moving parts, and is therefore small in size, and very efficient compared to size.

c The variable displacement pump adjusts the fluid pumped to the fluid required, and the pump thereby adjusts the pressure output itself, and it moves fluid only when necessary.

d The variable displacement pump is simple in construction and very well suited for light aircraft's.

113 id 7442 Pascal's law states that:

a For every action there is an opposite and equal reaction.

b The volume of a liquid is constant, regardless of pressure and temperature.

c The force produced by a fluid depends only on the amount of fluid.

d **Pressure in an enclosed container is transmitted equally and undiminished to all parts of the container and acts at right angles to the enclosing walls.**

114 id 7476 A thermal relief valve is installed in order to?

a Sense the hydraulic fluid temperature changes.

b Activate a cooling process when the fluid temperature exceeds a pre-determined value.

c Sense the fluid pressure.

d **Sense the ambient fluid temperature and when this temperature exceeds a pre-determined value, the valve depressurises the hydraulic system.**

21.01.07.02. Hydraulic systems

115 id 571 Where in a hydraulic system might overheat indicators be installed?

a At actuators.

b In the reservoirs.

c **At the pumps.**

d At the coolers.

116 id 575 Large transport aeroplane hydraulic systems usually operate with a system pressure of approximately:

a 4000 psi

b **3000 psi**

c 2000 psi

d 1000 psi

117 id 576 In hydraulic systems of modern transport category airplanes the fluids used are:

a Vegetable oil.

b Mineral oil.

c **Synthetic oil.**

d Water and glycol.

118 id 578 In a modern hydraulic system, "hydraulic fuses" can be found. Their function is :

a **To prevent total system loss in case of a leaking hydraulic line.**

b To switch to the secondary system in case of a leak in the primary brake system.

c To isolate a part of the system and protect it against accidental pollution.

d To allow by-passing of a hydraulic pump in case it is subject to excessive pressure, without further damage to the system.

119 id 579 In a hydraulic system, the reservoir is pressurized in order to:

a reduce fluid combustibility

b seal the system

c keep the hydraulic fluid at optimum temperature

d **prevent pump cavitation**

120 id 580 The purpose of a shuttle valve is to:

a Protect a hydraulic system from overpressure.

b **Supply an operating unit with the most appropriate system pressure.**

c Relieve excess pressure in hydraulic systems.

d Prevent overloading of the hydraulic pump.

121 id 581 Shuttle valves will automatically:

a **Switch hydraulically operated units to the most appropriate pressure supply.**

b Shut down systems which are overloaded.

c Guard systems against overpressure.

d Reduce pump loads.

122 id 582 In addition to energy storage the accumulator of the hydraulic system is used :

a for fluid storage.

b **for dampening pressure surges in the system.**

c for pressure storage.

d as a pressure relief valve.

123 id 2885 The function of the selector valve is to:

a automatically activate the hydraulic system.

b select the system to which the hydraulic pump should supply pressure.

c **communicate system pressure to either side of an actuator.**

d discharge some hydraulic fluid if the system pressure is too high.

124 id 2886 The component that transforms the hydraulic pressure into a linear motion is called ...

a An accumulator.

b A hydraulic pump.

c **An actuator or jack.**

d A Pressure regulator.

125 id 2887 The aircraft hydraulic system is designed to produce:

a high pressure and small flow.

b **high pressure and large flow.**

c small pressure and large flow.

d small pressure and small flow.

126 id 2897 The hydraulic device similar to an electronic diode is a :

a shutoff valve.

b flow control valve.

c distribution valve.

d **check valve.**

127 id 3558 Assuming an accumulator is pre-charged with air to 1000 psi and the hydraulic system is pressurised to 1500 psi, the accumulator gauge will read :

a 2500 psi.

b **1500 psi.**

c 1000 psi.

d 500 psi.

128 id 3559 Internal leakage in a hydraulic system will cause :

a a decreased fluid temperature.

b fluid loss.

c **an increased fluid temperature.**

d an increased fluid pressure.

129 id 3570 Discounting the possibility of leak, the level in a hydraulic reservoir will :

a initially increase with system pressurisation.

b always remain the same.

c **fluctuate with jack displacement and accumulator pressure.**

d increase as ambient temperature decreases.

130 id 3571 An accumulator in a hydraulic system will :

a increase pressure surges within the system.

b **store fluid under pressure.**

c reduce fluid temperature and pressure.

d reduce fluid temperature only.

131 id 3572 Assuming a hydraulic accumulator is pre-charged with air to 1000 psi. If the hydraulic system is then pressurised to its operating pressure of 3000 psi, the indicated pressure on the air side of the accumulator should be :

a 4000 psi.

b 2000 psi.

c 1000 psi.

d **3000 psi.**

132 id 3574 In hydraulic system, a shuttle valve :

a regulates pump delivery pressure.

b is a self-lapping non-return valve.

c allows two units to be operated by one pressure source.

d **allows two possible sources of pressure to operate one unit.**

133 id 3575 To allow for failure of the normal method of system pressure limiting control, a hydraulic system often incorporates

a a stand-by hydraulic pump.

b **a high pressure relief valve.**

c an accumulator.

d auxiliary hydraulic motors.

134 The Ram Air Turbine (RAT) provides emergency hydraulic power for :
id 3576

a undecarriage selection and automatic brake system.

b nose wheel steering after the aeroplane has landed.

c **flight controls in the event of loss of engine driven hydraulic power.**

d flap extension only.

135 The hydraulic oil, entering the hydraulic pump, is slightly pressurised to :
id 3741

a prevent vapour locking.

b ensure sufficient pump output

c prevent overheating of the pump.

d **prevent cavitation in the pump**

136 The low pressure switch of a hydraulic circuit sets off an alarm if :
id 5338

a **the pump output pressure is insufficient.**

b the reservoir level is at the normal operation limit.

c there is a leak in the reservoir return line.

d the pump power accumulator is deflated.

137 For an aeroplane hydraulic supply circuit, the correct statement is :
id 5348

a **the security components comprise the filters, the pressure relief valves, the by-passes, and the fire shut-off valve.**

b the pumps are always electric due to the high pressures which they must deliver (140 to 210 kg/cm^2).

c the regulation system deals only with emergency operation and is not applied to all hydraulic services but only those considered as essential.

d the reservoir constitutes a reserve of hydraulic fluid maintained under pressure by a pneumatic back pressure (air or nitrogen) and destined to serve as a fluid or pressure reserve.

138 The tanks of a hydraulic system are pressurized:
id 5373

a in flight only.

b **by bleed air coming from the turbine-engine.**

c by the air conditioning system.

d by an auxiliary system.

139 Relationships between the force, pressure and area
id 5942

a **force = pressure x area**

b Pressure = force x area

c pressure = area x distance

d force = volume ./. area

140 The following is normally true regarding hydraulic hand pumps. They are:
id 5979

a connected to the reservoir stack pipe

b single acting

c **connected to the bottom of the reservoir**

d of a double cylinder design

141 id 7433 What is the purpose of a "relief valve" in the hydraulic system?

a Make sure that the pressure in the system exceeds a certain minimum pressure.

b **Make sure that the pressure does not exceed the max. permitted pressure in the system.**

c To "even out" the pressure in the system.

d Make sure that the emergency handpump will produce enough pressure when used.

142 id 7438 The indication of an internal leak in a hydraulic system will be:

a a fall in reservoir fluid level

b a rise in reservoir fluid level

c **a rise in fluid temperature**

d excessive system pressure

143 id 7439 The purpose of pressurising some hydraulic reservoirs is to:

a provide emergency pressure if the pump should fail

b provide a positive pressure to the return line

c **provide a positive feed to the main pump**

d prevent cavitation at the pressure filter

144 id 7474 A modern aeroplane is equipped with warning lights in the cockpit to monitor the hydraulic system. What does the illumination of the hydraulic oil temperature light indicate?

a Mechanical failure of one engine driven pump.

b **Overheated hydraulic fluid in one of the pump return lines.**

c High fluid temperature in the main pressure line.

d Overheated fluid in either the main or the emergency reservoir.

21.01.08. Air driven systems (piston engines only)

21.01.08.02. Air conditioning system

145 id 7478 A combustion heater system is normally supplied from?

a **Fuel from the aircraft fuel system.**

b An inflammable gas from a pressurised tank.

c Oil from the hydraulic system.

d An inflammable mixture for this particular purpose.

21.01.08.03. Pressurization

146 id 584 If the cabin altitude rises (aircraft in level flight), the differential pressure:

a may exceed the maximum permitted differential unless immediate preventative action is taken.

b increases

c remains constant

d **decreases**

147 id 585 The purpose of the cabin pressure controller, in the automatic mode, is to perform the following functions: 1. control of cabin altitude, 2. control of cabin altitude rate-of-change indicator, 3. limitation of differential pressure 4. balancing aircraft altitude with cabin altitude 5. cabin ventilation 6. keeping a constant differential pressure throughout all the f

a 2, 6, 4

b **1, 2, 3**

c 5, 6, 1

d 4, 5, 3

148 id 586 During a normal pressurised climb after take-off:

a **cabin pressure decreases more slowly than atmospheric pressure**

b the pressurisation system is inoperative until an altitude of 10 000 feet is reached

c the cabin differential pressure is maintained constant

d absolute cabin pressure increases to compensate for the fall in pressure outside the aircraft

149 id 587 In a pressurized aircraft whose cabin altitude is 8000 ft, a crack in a cabin window makes it necessary to reduce the differential pressure to 5 psi. The flight level to be maintained in order to keep the same cabin altitude is:

a **FL 230**

b FL 340

c FL 280

d FL 180

150 id 589 The purpose of cabin air flow control valves in a pressurization system is to :

a regulate cabin pressure to the selected altitude.

b **Maintain a constant and sufficient mass air flow to ventilate the cabin and minimise cabin pressure surges.**

c discharge cabin air to atmosphere if cabin pressure rises above the selected altitude.

d regulate cabin pressure at the maximum cabin pressure differential.

151 id 590 Assuming cabin differential pressure has attained the required value in normal flight conditions, if flight altitude is maintained:

a the outflow valves will move to the fully closed position.

b the outflow valves will move to the fully open position.

c the pressurisation system ceases to function until leakage reduces the pressure.

d **a constant mass air flow is permitted through the cabin.**

152 id 591 Cabin pressure is controlled by :

a the cabin air re-circulation system.

b controlling the flow of air into the cabin with a constant outflow.

c **delivering a substantially constant flow of air into the cabin and controlling the outflow.**

d the cabin air mass flow control inlet valve(s).

153 id 592 During level flight at a constant cabin pressure altitude (which could be decreased, even at this flight level), the cabin discharge valves are:

a At the pre-set position for take-off.

b fully closed until the cabin climbs to a selected altitude.

c **Partially open.**

d Fully closed until the cabin descends to a selected altitude.

154 id 593 The purpose of a ditching control is to:

a achieve rapid depressurisation.

b **close the outflow valve(s).**

c open the outflow valve(s).

d direct pressurisation air to the flotation bags.

155 id 594 The cabin pressure is regulated by the:

a Air cycle machine.

b **Outflow valve.**

c Air conditioning pack.

d Cabin inlet airflow valve.

156 id 595 The pressurization of the cabin is controlled by :

a The engine's bleed valves.

b The cabin inlet airflow.

c The engine's RPM.

d **The cabin outflow valve.**

157 id 596 Cabin differential pressure means the pressure difference between:

a actual cabin pressure and selected pressure.

b cockpit and passenger cabin.

c cabin pressure and ambient air pressure at MSL.

d **cabin pressure and ambient air pressure.**

158 id 597 Under normal conditions (JAR 25) the cabin pressure altitude is not allowed to exceed:

a **8000 ft**

b 4000 ft

c 6000 ft

d 10000 ft

159 id 598 Cabin altitude means the:

a **cabin pressure expressed as altitude.**

b difference in height between the cabin floor and ceiling.

c flight level the aircraft is flying at.

d flight level altitude at maximum differential pressure.

160 id 599 On a modern large pressurized transport aircraft, the maximum cabin differential pressure is approximately:

a 22 psi

b 3 - 5 psi

c 13 - 15 psi

d **7 - 9 psi**

161 id 600 On most modern airliners the cabin pressure is controlled by regulating the:

a RPM of the engine.

b Airflow entering the cabin.

c **Airflow leaving the cabin.**

d Bleed air valve.

162 id 601 If the maximum operating altitude of an airplane is limited by the pressurized cabin, this limitation is due to the maximum:

a Negative differential pressure at maximum cabin altitude.

b **Positive cabin differential pressure at maximum cabin altitude.**

c Positive cabin differential pressure at maximum operating ceiling.

d Negative cabin differential pressure at maximum operating ceiling.

163 id 602 The "cabin differential pressure" is:

a the pressure differential between the air entering and leaving the cabin.

b approximately 5 psi at maximum.

c approximately 15 psi at maximum.

d **cabin pressure minus ambient pressure.**

164 id 603 The cabin rate of descent is:

a always the same as the airplane's rate of descent.

b **a cabin pressure increase.**

c a cabin pressure decrease.

d is not possible at constant airplane altitudes.

165 id 604 The maximum differential pressure of a transonic transport category airplane is approximately:

a 15.5 psi

b 3.5 psi

c 13.5 psi

d **9.0 psi**

166 id 626 A warning device alerts the crew in case of an excessive cabin altitude. This warning must be triggered on reaching the following altitude:

a 14000 ft (approx. 4200 m)

b **10000 ft (approx. 3000 m)**

c 8000 ft (approx. 2400 m)

d 12000 ft (approx. 3600 m)

167 id 630 The term "cabin pressure" applies when an aeroplane:

a has the ability to maintain constant any cabin differential pressure.

b is only pressurized in the area of the control cabin.

c **has the means to maintain the cabin pressure at a higher level than the ambient pressure.**

d has the ability to maintain a constant cabin altitude at all flight altitudes.

168 id 631 When air is compressed for pressurization purposes, the percentage oxygen content is:

a dependent on the degree of pressurisation.

b decreased.

c increased.

d **unaffected.**

169 id 1811 An aircraft with a pressurized cabin is settled at its cruise level. During the flight, a malfunction of the pressure controller is detected by the crew and the cabin rate of climb indicator reads -200ft/min. Given that : DELTA P: Differential pressure Zc: Cabin altitude

a A descent must be initiated to prevent the oxygen masks dropping when Zc reaches 14000ft.

b **DELTA P will rise up to its maximum value, thus causing the safety relief valves to open.**

c The aircraft has to climb to a higher flight level in order to reduce Zc to its initial value.

d The crew has to intermittently cut off the incoming air flow in order to maintain a zero Zc.

170 id 2334 An aircraft with a pressurized cabin flies at level 310. Following a malfunction of the pressure controller, the outflow valve runs to the open position. Given : VZc: Cabin rate of climb indication Zc: Cabin pressure altitude DELTA P: Differential pressure This will result in a:

a VZc increase Zc increase DELTA P increase

b VZc decrease Zc increase DELTA P decrease

c **VZc increase Zc increase DELTA P decrease**

d VZc decrease Zc decrease DELTA P increase

171 id 2740 If the pressure in the cabin tends to become lower than the outside ambient air pressure the :

a **negative pressure relief valve will open.**

b negative pressure relief valve will close

c outflow valve open completely.

d air cycle machine will stop.

172 id 3555 A cabin pressure controller maintains a pre-set cabin altitude by regulating the :

a position of the duct relief valve(s).

b mass air flow into the cabin.

c position of the inward relief valve.

d **position of the outflow valve(s).**

173 id 3556 In a manually operated system, the cabin altitude rate of change is normally controlled by :

a the duct relief valve when operating at the maximum cabin differential pressure.

b the difference between the altitude selected on the cabin pressure controller and the aeroplane altitude.

c the difference between the barometric pressure selected on the cabin pressure controller and ambient barometric pressure.

d **a rate of change selector.**

174 id 3566 The term "pressure cabin" applies when an aeroplane :

a **has the means to maintain cabin pressure higher than ambient pressure.**

b is only pressurised in the area of the control cabin.

c has the ability to maintain a constant cabin differential pressure at all flight altitudes.

d has the ability to maintain a constant cabin altitude at all flight altitudes.

175 id 3567 Under normal flight conditions, cabin pressure is controlled by :

a pressurisation duct relief valve(s).

b **regulating the discharge of air through the outflow valve(s).**

c engine rpm.

d inward relief valve(s).

176 id 3568 Assuming cabin differential pressure has attained the required value in normal flight conditions, if flight altitude is maintained :

a the pressurisation system must be controlled manually.

b the pressurisation system ceases to function until leakage reduces the pressure.

c the outflow valves will move to the fully open position.

d **a constant mass air flow is permitted through the cabin.**

177 id 3569 Assuming cabin pressure decreases, the cabin rate of climb indicator should indicate :

a zero.

b a rate of descent of approximately 300 feet per minutes.

c **a rate of climb.**

d a rate of descent dependent upon the cabin differential pressure.

178 id 3738 Assume that during cruise flight with airconditioning packs ON, the outflow valve(s) would close. The result would be that:

a the skin of the cabin would be overstressed

b the cabin pressure would become equal to the ambient outside air pressure

c the air supply would automatically be stopped

d **the pressure differential would go to the maximum value**

179 id 5941 When pressurising the cabin of an aircraft, the cabin pressure controller operates the

a discharge valves

b differential valve

c **outflow valve**

d dump valves

180 id 5976 A cabin pressurisation system is often installed on board turbine powered aircraft. If installed, it normally has

a One mode of operation.

b **Two modes of operation.**

c Three modes of operation.

d Four modes of operation.

181 id 7452 Most of the cabin pressurisation systems have two modes of operation:

a The differential mode and the pressure mode.

b The differential pressure and the constant pressure mode.

c The cabin mode and the external mode.

d **The isobaric mode and the constant pressure differential mode.**

182 id 7467 An aircraft climbs and in order to maintain the same cabin pressure during climb, what mode of operation will the pressurisation system make use of?

a Differential.

b **Isobaric.**

c Max differential.

d Manual.

183 id 7479 The term "pressure differential" can be defined as the pressure difference between

a the cabin pressure level and it's rate of change.

b the pressure of the cabin and the pressure of any non-pressurised zone.

c **the inside and the outside of the aircraft.**

d the pressure at sea level and at the altitude at which the aircraft is flying.

184 id 7480 An aircraft with pressurised cabin has maximum cabin altitude of 8000 feet, which equals 10.9 PSI. Present flight altitude is 30.000 feet, which equals 4.36 PSI. Pressure at sea level equals 14.7 PSI. Calculate the difference pressure that influence the cabin structure:

a 10.34 psid

b **6.54 psid.**

c 10.9 psid.

d 4.36 psid.

21.01.08.04. De-ice systems

185 id 605 The pneumatic ice protection system is mainly used for:

a pitot tubes.

b **wings.**

c propellers.

d engine intakes.

186 id 643 With regard to the pneumatic mechanical devices which afford protection against the formation of ice, the only correct statement is:

a The pneumatic mechanical device can only be used as a de-icing device.

b The pneumatic mechanical device is used a lot on modern aircraft as it is inexpensive and easy to maintain.

c The pneumatic mechanical device can only be used as an anti-icing device.

d The inflatable de-ice boots of the pneumatic mechanical device are arranged perpendicular to the leading edges.

187 id 2952 A pneumatic de-ice system should be operated ..

a When there is approximately 1,5 cm of ice on leading edges.

b When entering areas with icing conditions.

c When there are approximately 5 cm of ice on leading edges

d Only at take-off and during approach.

188 id 5339 Concerning the sequential pneumatic impulses used in certain leading edge de-icing devices, one can affirm that : 1 - They prevent ice formation. 2 - They are triggered from the flight deck after icing has become visible. 3 - A cycle lasts more than ten seconds. 4 - There are more than ten cycles per second. The combination which regroups all the correct statement

a 1 - 4

b 2 - 4

c 1 - 3

d 2 - 3

189 id 5950 The tubes in the de-ice boots are usually inflated alternately. Why?

a Because alternate inflation of de-ice boot tubes keeps disturbance of the airflow to minimum.

b Because alternate inflation of de-ice boot tubes does not affect the balance of the aircraft.

c Because alternate inflation of de-ice boot tubes relieves the load on the airpump.

d Because alternate inflation of de-ice boot tubes relieves the strain on the attack point.

190 id 5965 How much ice should be allowed to accumulate on the leading edge of the wing before the "de-ice boot" system is activated?

a 2" - 4"

b 1" - 1 1/2"

c 1 1/4" - 1 1/2"

d 1/4" - 1/2"

191 id 7444 The power source for hot air in de-ice / anti ice systems on jet A/C is :

a A separate "hot air generator", called APU.

b Exhaust gases from the engines.

c Bleed air from the engines' compressor.

d Warm cabin air from the A/C air-conditioning system.

192 id 7447 The boots of a pneumatic de-icing system are normally made of:

a **neoprene rubber**

b plastic

c porous metal

d synthetic rubber

193 id 7466 The correct procedure for using de-ice systems is to wait until the ice has built up on the parts of the A/C, before activating the system

a FALSE.

b **TRUE.**

c

d

194 id 7473 The accurate method of removing snow and ice that has accumulated on the aircraft during parking, is;

a Hot water that melts the contamination.

b The aeroplane's own de-ice equipment for five minutes.

c Hot air from the engines.

d **De-ice all surfaces with approved de-ice fluid**

195 id 7482 Why do the deice boots inflate alternately?

a **Alternate inflation of the tubes keeps the disturbance of the airflow to a minimum.**

b Alternate inflation of deice boot tubes relieves the strain on the attach point.

c Alternate inflation relieves the load on the airpump.

d The pumps used to inflation do not have enough capacity to inflate all tubes simultaneously

21.01.09. Air Driven Systems (Turboprop and Jet aircraft)

21.01.09.01. Pneumatic system

196 id 2904 The pneumatic system accumulator is useful :

a to eliminate the fluid flow variations.

b **to eliminate the fluid pressure variations.**

c to offset for the starting of some devices.

d in emergency cases.

197 id 5333 In the pneumatic supply system of a modern transport aircraft, the air pressure is regulated. This pressure regulation occurs just before the manifold by the :

a high pressure bleed air valve

b **low pressure bleed air valve**

c fan bleed air valve

d intermediate pressure check-valve

198 id 7436 On Jet aircraft the primary source of compressed air is:

a A multi-stage compressor.

b **Bleed air from engine driven compressor.**

c Exhaust gas from the engine.

d Internal air generator

21.01.09.02. Air conditioning system

199 id 583 | In the air cycle system the air is cooled down by expansion:

a **in the turbine.**

b in a pressure relief valve.

c of Freon in a heat exchanger.

d of Freon in the turbine.

200 id 588 | Main cabin temperature is:

a **controlled automatically, or by flight crew selection.**

b controlled by individual passenger.

c not controllable at the maximum cabin differential pressure.

d Only controllable at maximum cabin differential pressure.

201 id 606 | What is the purpose of the pack cooling fans in the air conditioning system?

a Cooling of the APU compartment.

b Supplying the heat exchangers with cooling air during cruise flight.

c Supplying the Passenger Service Unit (PSU) with fresh air.

d **Supplying the heat exchangers with cooling air during slow flights and ground operation.**

202 id 607 | The cabin air for modern airplanes is usually supplied by:

a **main engine compressors.**

b piston compressors.

c roots type compressors.

d single radial compressors.

203 id 608 | Cabin air for modern airplanes is usually taken from:

a the low pressure compressor.

b the second fan stage.

c **the low pressure compressor and from the high pressure compressor if necessary.**

d the high pressure compressor.

204 id 609 | In an airplane air conditioning system the air cannot be treated for:

a **humidity.**

b purity.

c pressure.

d temperature.

205 id 625 | In a bootstrap system, the purpose of the heat exchangers is to:

a allow a homogeneous temperature by mixing air flows from various air conditioning groups in operation.

b **cool bleed air and compressor air from the turbo refrigerator.**

c cool bleed air.

d allow a steady compressor outlet temperature.

206 id 627 Environmental system: in the air refrigeration unit, the water separation unit is placed:

a after the cooling turbine.

b before the heat exchangers.

c before the cooling turbine.

d just after the heat exchangers.

207 id 628 The air-conditioning pack of a present-day aircraft consists of several components: these include two heat exchangers; the primary exchanger (P) and the secondary exchanger (S). The functions of these heat exchangers are as follows:

a P: warms up engine bleed air S: recirculates the cabin air, reducing its temperature.

b P: precools the engine bleed air S: reduces the temperature of the air from the primary exchanger or from the pack's compressor.

c P: warms up engine bleed air S: increases the temperature of air originating from the compressor of the pack.

d P: pre-cools the engine bleed air S: increases the temperature of the air used for air-conditioning of cargo compartment (animals).

208 id 629 "Conditioned" air is air that has:

a been controled in respect of temperature and pressure.

b oxygen content regulated to a preset value.

c oxygen content increased.

d oxygen content reduced.

209 id 632 The term "bootstrap", when used to identify a cabin air conditioning and pressurisation system, refers to the:

a means by which pressurisation is controlled.

b source of the charge air.

c cold air unit (air cycle machine) arrangement.

d charge air across the inter-cooler heat exchanger.

210 id 633 In a bootstrap cooling system the supply air is first:

a passed across an expansion turbine, then compressed and passed through a heat exchanger.

b compressed, then goes through a heat exchanger, and across an expansion turbine.

c passed across an expansion turbine, then directly to the heat exchanger.

d compressed, then passed across an expansion turbine through a heat exchanger.

211 id 634 In a cabin air conditioning system, equipped with a bootstrap, the mass air flow is routed via the:

a turbine outlet of the cold air unit to the primary heat exchanger inlet.

b secondary heat exchanger outlet to the compressor inlet of the cold air unit.

c secondary heat exchanger outlet to the turbine inlet of the cold air unit.

d compressor outlet of the cold air unit to the primary heat exchanger inlet.

212 id 635 Engine bleed air used for air conditioning and pressurization in turbo-jet aeroplanes is usually taken from the:

a by-pass ducting.

b fan section.

c turbine section.

d compressor section.

213 id 636 The turbine in a cold air unit (air cycle machine):

a drives the compressor which provides pressurisation.

b drives the compressor in the unit, creating a temperature drop in the conditioning air.

c increases the pressure of the air supply to the cabin.

d drives the compressor in the unit and causes a pressure increase in the conditioning air.

214 id 637 In an air cycle type air conditioning system, reduction of air temperature and pressure is achieved by:

a an evaporator.

b a compressor.

c a condenser.

d an expansion turbine.

215 id 638 In a "bootstrap" cooling system, the charge air is first compressed in the cold air unit to:

a maintain a constant cabin mass air flow.

b increase the cabin air supply pressure when the charge pressure is too low.

c ensure an adequate charge air flow across the inter-cooler heat exchanger.

d ensure an adequate pressure and temperature drop across the cooling turbine.

216 id 639 A turbo-fan cold air unit will:

a decrease charge air pressure whilst causing the temperature to rise in the heat exchanger.

b not affect the charge air pressure.

c increase charge air pressure whilst causing the temperature to drop in the heat exchanger.

d cause a pressure drop as well as an associated temperature drop in the charge air.

217 id 640 The cabin heating supply in a heavy jet transport aircraft is obtained from :

a hot air coming from the engine's compressors.

b hot air coming from the engine's turbines.

c a fuel heater system.

d an electrical heater system.

218 id 641 The pack cooling fan provides:

a cooling air to the primary and secondary heat exchanger during cruise.

b cooling air to the pre-cooler.

c air to the eyeball outlets at the Passenger Service Unit (PSU).

d cooling air to the primary and secondary heat exchanger during slow flight and ground operation.

219 id 2337 The water separator of an air-conditioning unit is located at the cooling unit :

a inlet and uses an evaporation process.

b inlet and uses a centrifugal process.

c outlet and uses an evaporation process.

d outlet and uses a centrifugal process.

220 id 3554 "Conditioned" air is air that has :

a had any moisture removed from it.

b **been controlled in respect of temperature and pressure.**

c had the oxygen content increased.

d had the oxygen content reduced.

221 id 3564 The term "Bootstrap", when used to identify a cabin air conditioning and pressurisation system, refers to the :

a source of the charge air.

b **cold air unit (air cycle machine) arrangement.**

c means by which pressurisation is controlled.

d charge air across the inter-cooler heat exchanger.

222 id 3565 In a bootstrap cooling system the supply air is first :

a used to increase the cabin air supply pressure when the charge pressure is too low.

b passed across an expansion turbine, then compressed and passed through a secondary heat exchanger.

c passed across an expansion turbine, then directly to the heat exchanger.

d **compressed, passed through a secondary heat exchanger, and then across an expansion turbine.**

223 id 3740 The function of an air cycle machine is to :

a remove the water from the bleed air.

b decrease the pressure of the bleed air.

c **cool the bleed air.**

d pump the conditioned air into the cabin.

224 id 7448 The air-cycle cooling system produces cold air by:

a Routing conditional air through the cooling fan.

b Passing heated air through a compressor.

c Passing air through cooling coils than contain a refrigerant.

d **Extracting heat energy across an expansion turbine.**

225 id 7450 A complete air-conditioning system includes at least:

a **air cycle machine**

b cooling valve

c air separator

d water compressor

226 id 7451 Why is the heater combustion chamber in an aircraft pressurisation system completely separated from the ventilating system?

a To develop the required heat.

b To stop the solenoid valve.

c **To prevent any exhaust gases from contaminating the cabin air.**

d For proper operation of the heater

227 id 7483 The main elements of a vapour cycle cooling system are?

a Turbine, water separator, heat exchanger, compressor.

b **Compressor, condenser, dryer, expansion valve, evaporator.**

c Compressor, dryer filter, distribution nozzles.

d Reservoir, compressor, expansion valve, evaporator.

21.01.09.03. Anti-ice systems

228 id 642 In flight, the most commonly used anti-icing method for the wings of modern commercial aircraft fitted with turbo-jet units is:

a Mechanical (pneumatic source which acts by deforming the profiles of the leading edge).

b Physical/chemical (glycol-based liquid).

c Electrical (electrical resistances).

d **Thermal (use of hot air).**

229 id 644 Concerning electrically powered ice protection devices, the only true statement is:

a **on modern aeroplanes, electrically powered thermal devices are used to prevent icing on small surfaces (pitot-static, windshield...).**

b on modern aeroplanes, electrical power supply being available in excess, this system is very often used for large surfaces de-icing.

c on modern aeroplanes, electrically powered thermal devices are very efficient, therefore they only need little energy.

d on modern aeroplanes, electrically powered thermal devices are used as de-icing devices for pitot-tubes, static ports, windshield...

230 id 645 The elements specifically protected against icing on transport aircraft are: 1) engine air intake and pod. 2) front glass shield. 3) radome. 4) pitot tubes and waste water exhaust masts. 5) leading edge of wing. 6) cabin windows. 7) trailing edge of wings. 8) electronic equipment compartment. The combination regrouping all the correct statements is :

a 1, 2, 5, 6

b 1, 4, 5, 7

c **1, 2, 4, 5**

d 1, 2, 3, 8

231 id 2947 The ice protection system currently used for the most modern jet aeroplanes is the

a Liquid de-icing system.

b Pneumatic system with expandable boots.

c **Hot air system.**

d Electrical de-icing system.

232 id 2948 During flight, the wing anti-ice system has to protect

a **leading edges, slats and the leading edge flaps.**

b the whole upper wing surface and the flaps.

c slats and the leading edge flaps only.

d leading edges only.

233 id 2949 In jet aeroplanes the 'thermal anti-ice system' is primary supplied by

a bleed air from the engines.

b turbo compressors.

c ram air, heated via a heat exchanger.

d the APU.

234 id 2950 The anti-ice or de-icing system which is mostly used for the wings of modern turboprop aeroplanes is :

a Fluid de-icing.

b Electrical heating.

c Thermal anti-icing.

d Pneumatic boots.

235 id 2951 The ice protection for propellers of modern turboprop aeroplanes works

a with anti-icing fluid.

b pneumatically.

c with hot air.

d electrically.

236 id 4174 The advantages of thermal anti-icing are : 1. Simple and reliable system 2. Profiles maintained 3. Greater efficiency than that of an electrical resistor 4. Direct use of the hot air from the jet engine without substantial reduction in engine thrust The combination of correct statements is:

a 1,2

b 3,4

c 1,3

d 2,4

237 id 5945 Regarding carburettor ice, state the environmental caution areas for the formation of this type of ice.

a Temperature between + 5° C and + 18° C, visible moisture or relative humidity greater than 60 %.

b Temperature between - 5° C and + 18° C, visible moisture or relative humidity greater than 60 %.

c Temperature less than 0° C, and clouds present.

d Temperature between + 5° C and 18° C and clouds present.

238 id 5968 The engine anti ice system should be used based upon the following information:

a Ram air temperature, only.

b Reported temperature, always.

c Reported temperature when airborne, and ram air temperature when on ground.

d Reported temperature when on ground, and ram air temperature when airborne.

239 id 7484 Essential information whether to use the engine anti-ice system or not, is?

a Ram air temperature, only.

b Reported temperature, always.

c Reported temperature when airborne, and ram air temperature when on ground.

d Reported temperature when on ground, and ram air temperature when airborne.

21.01.10. Non-pneumatic operated de-ice systems

21.01.10.01. Schematic construction, functioning and oper.

240 id 610 | On modern transport aircraft, cockpit windows are protected against icing by :

a Vinyl coating.

b **Electric heating.**

c Anti-icing fluid.

d Rain repellent system.

241 id 611 | Usually, electric heating for ice protection is used on:

a Slat leading edges.

b Elevator leading edges.

c **Pitot tubes.**

d Fin leading edges.

242 id 646 | The heating facility for the windshield of an aircraft is:

a Used only at low altitudes where there is a risk of ice formation.

b Harmful to the integrity of the windows in the event of a bird strike.

c Only used when hot-air demisting is insufficient.

d **Used on a continual basis as it reduces the thermal gradients which adversely affect the useful life of the components.**

243 id 5286 | The correct statement about rain protection for cockpit windshields is that :

a the electric de-icing system for cockpit windows is also suitable for rain protection

b wipers are sufficient under heavy rain conditions to provide adequate view through the cockpit windows.

c **rain repellent should never be sprayed onto the windshield unless the rainfall is very heavy**

d the alcohol de-icing system for cockpit windows is also suitable for rain protection

244 id 5940 | In the case of a thermal de-icing system overtemperature, this indicated by:

a temperature gauges

b **warning lights**

c yellow flags

d a buzzer

245 id 7485 | The probe heater operates

a when the switch is ON and both engines are running.

b **automatically, when the probe detects ice.**

c automatically when airborne.

d automatically, underneath a present temperature.

246 id 7486 In order to prevent/eliminate ice buildups on a pitot tube on light aircraft, the pilot can use

a an alcohol fluid de-icing system.

b **a heating system consisting of an electric resistor inside the tube itself.**

c a heating system that uses bleed air coming from the engines.

d a pneumatic de-icing system with rubber boots that inflates and deflates continuously.

21.01.11. Fuel system

21.01.11.01. Fuel tanks

247 id 618 The purpose of the baffles in an aircraft's integral fuel tank is to:

a Prevent overpressure in the tank.

b **Prevent the fuel from flowing to the wing tips during abnormal manoeuvre (side slipping...).**

c Prevent the fuel from flowing in the vent lines.

d Prevent mixture of the fuel and hydraulic fluid.

248 id 619 On a transport type aircraft the fuel tank system is vented through:

a **Ram air scoops on the underside of the wing.**

b A pressure regulator in the wing tip.

c Bleed air from the engines.

d The return lines of the fuel pumps.

249 id 620 The types of fuel tanks used on most modern transport aircraft are:

a Cell tanks.

b **Integral tanks.**

c Combined fuel tanks.

d Fixed built-in tanks.

250 id 621 The purpose of baffle check valves fitted in aircraft fuel tanks is to :

a damp out movement of the fuel in the tank.

b **prevent fuel movement to the wing tip.**

c close the vent lines in case of turbulence.

d prevent positive pressure build up inside the tank.

251 id 624 The pressurization of tanks is maintained by the fuel:

a **vent system.**

b tank drains.

c top off unit.

d dump system.

252 id 680 The automatic fuelling shut off valve:

a **stops fuelling as soon as a certain fuel level is reached inside the tank.**

b cuts off the fuel in case of engine fire.

c stops fuelling as soon as the fuel spills into the ventline.

d stops fuelling as soon as a certain pressure is reached.

253 The refueling in a transport jet aircraft is made ...
id 2901

a By means of the aircraft suction pumps.

b Through the refueling cap of every tank

c **Through a unique point (an underwing refueling center).**

d By means of the aircraft suction pumps through a unique point (an underwing refueling center).

254 Fire precautions to be observed before refuelling are :
id 3561

a Ground Power Units (GPU) are not to be operated.

b **All bonding and earthing connections between ground equipment and the aircraft should be made before filler caps are removed.**

c Passengers may be boarded (traversing the refuelling zone) providing suitable fire extinguishers are readily available.

d Aircraft must be more than 10 metres from radar or HF radio equipment under test.

255 The function of a feed box in the fuel tank is to
id 3729

a distribute the fuel to the various tanks during refuelling

b trap fuel sediments or sludge in the lower part of the tank

c **increase the fuel level at the boost pump location**

d ventilate the tank during refuelling under high pressure

256 Special fuel consumption schedules during flight are designed due
id 5977

a to keep wing fuel as low as possible in event of a crash-landing.

b **to minimise the wing G-loads and preserve main tank fuel for landing.**

c to keep fuel from freezing during high level cruise for a longer period of time.

d to ensure fastest rate of fuel dumping in case of emergency where time is critical.

257 When checking the fuel for possible water content, the presence of water will be indicated by:
id 7431

a Change in the colour of the fuel.

b Impossible to tell because they will mix.

c The water will be on top of the fuel in the fuel strainer because the fuel is lighter than the fuel

d **The water will be found at the bottom of the strainer, because it is heavier than the fuel.**

258 The fuel tanks in small aircraft are mainly located:
id 7432

a **In the wings**

b In the tail section of the aircraft

c In the fuselage

d Close to the engine

259 In a hydraulic system the master cylinders inner diameter is 10 mm2, and the actuator cylinders inner diameter is 100 mm2. If you press the master-cylinder 2 cm by using a 100 N force, the actuator cylinder will move:
id 7434

a 2 cm and produce a force of 100 N

b **2 mm and produce a force of 1000 N**

c 1 mm and produce a force of 500 N

d 2 mm and produce a force of 100 N

260 id 7487 Modern jet aircraft: What are the fuel tank types and their location?

a Rigid tanks in the tailcone.

b Bladder tanks in the wings.

c **Integral tanks in the wings and in the fuselage.**

d Rigid tanks in the wings and bladder tanks in the fuselage.

261 id 7488 Baffles can be mounted inside the tanks to

a create sealed and safe fuel compartments.

b prevent collapses in the wing structure.

c **prevent fuel sloshes.**

d prevent fuel explosions.

21.01.11.02. Fuel feed

262 id 273 During fueling the automatic fueling shut off valves will switch off the fuel supply system when:

a there is fire.

b fuelling system has reached a certain pressure.

c the surge vent tank is filled.

d **the fuel has reached a predetermined volume or mass.**

263 id 612 On most transport aircraft, the low pressure pumps of the fuel system are:

a **centrifugal pumps, driven by an electric motor.**

b electro-mechanical wobble pumps, with self-regulated pressure.

c mechanically driven by the engine's accessory gearbox.

d removable only after the associated tank has been emptied.

264 id 613 The fuel supply system on a jet engine includes a fuel heating device, upstream of the main fuel filter so as to:

a ease low pressure pumps work by increasing fuel fluidity.

b maintain and improve fuel heating power.

c **prevent, at low fuel temperature, the risk of ice formation from water contained in the fuel.**

d prevent fuel from freezing in fuel pipes due to low temperatures at high altitude.

265 id 614 On most transport jet aircraft, the low pressure pumps of the fuel system are supplied with electric power of the following type:

a 28 V AC

b **115 V AC**

c 28 V DC

d 115 V DC

266 id 617 The fuel crossfeed system:

a **allows feeding of any engine from any fuel tank.**

b is only used to feed an engine from the tank of the opposite wing.

c is only used on the ground for fuel transfer from one tank to another.

d is only used in flight for fuel transfer from one tank to another.

267 id 623 On most transport aircraft, the low pressure pumps of the fuel system are:

a Piston pumps.

b Gear type pumps.

c **Centrifugal pumps.**

d Diaphragm pumps.

268 id 679 On a jet aircraft fuel heaters are :

a Installed only in the center tank.

b Installed in each tank.

c **Located on the engines.**

d not necessary at all.

269 id 2898 The cross-feed fuel system is used to :

a allow the unusable fuel elimination.

b allow the fuel to be quickly thrown away in case of emergency

c **feed every engine from any fuel tank.**

d automatically fill every tank up to the desired level.

270 id 2899 The fuel system boost pumps are submerged in the fuel ..

a Because their efficiency is greater.

b **To prime the pumps.**

c To shorten the fuel lines, so minimising the pressure losses.

d To cool the pumps.

271 id 2902 The vapor lock is :

a The exhaust gases obstructions caused by an engine overheating.

b **A stoppage in a fuel feeding line caused by a fuel vapor bubble.**

c The effect of the water vapor bubbles in the induction manifold caused by the condensation

d The abnormal mixture enrichment caused by a greater gasoline vaporisation in the carburettor.

272 id 2903 The fuel system boost pumps are used to :

a feed the fuel control units, which inject the pressurized fuel into the engine.

b avoid the bubbles accumulation.

c feed the lines with fuel for directing it to the engine at a positive pressure.

d **avoid the bubbles accumulation and feed the lines with fuel for directing it to the engine at a positive pressure.**

273 id 5375 The cross-feed fuel system enables:

a the supply of the outboard jet engines from any outboard fuel tank.

b the supply of the jet engines mounted on a wing from any fuel tank within that wing.

c **the supply of any jet engine from any fuel tank.**

d only the transfer of fuel from the centre tank to the wing tanks.

274 id 5376 Fuel pumps submerged in the fuel tanks of a multi-engine aircraft are:

a low pressure variable swash plate pumps.

b **centrifugal low pressure type pumps.**

c centrifugal high pressure pumps.

d high pressure variable swash plate pumps.

275 id 5978 Given the following information, which statement is the most correct? While in cruise flight, a circuit breaker corresponding to one of the fuel boost pumps, trips. The circuit breaker can not be reset:

a **The pump remains inoperative.**

b The output of the pump will still be satisfactory for normal requirements.

c The pump motor will fail unless the remaining circuit breakers are pulled immediately.

d The DC circuit breakers should be pulled to prevent the control relay from melting.

276 id 7446 When baffles are fitted to aircraft fuel tanks, the purpose is to:

a separate air from the fuel during fuelling operations

b reduce fire risk when fuelling

c control the fuel flow to the main feed

d **prevent surge of fuel within the tank during flight**

277 id 7489 The most appropriate statement concerning multi engine jet aeroplane fuel systems, is:

a A mechanically operated and activated fuel valve is called a solenoid valve.

b **The fuel system may have provisions for heating the fuel before it enters the fuel filter.**

c Fuel pumps have no provisions for by-pass of fuel.

d There are no provisions for crossfeed, because each engine has its own tank(s).

21.01.11.03. Fuel dumping system

278 id 276 The maximum quantity of fuel that can be dumped with the jettisoning system is:

a All fuel until the maximum landing weight is reached.

b 15 tons.

c All fuel.

d **All up to a defined reserve quantity.**

279 id 622 Fuel dump systems are required:

a **on all transport category aircraft where the Maximum Take-Off Weight (MTWO) is significant higher than the Maximum Landing Weight (MLW).**

b on all transport category aircraft.

c on all transport category aircraft with more than 150 seats.

d on aircraft with a Maximum Take-Off Weight (MTOW) higher than 5.7 tons.

21.01.11.04. Fuel system monitoring

280 id 2900 The capacitance type fuel gauging system indicates the fuel quantity by measuring the:

a resistivity variation of the fuel.

b density variation of the fuel.

c **dielectric change between fuel and air.**

d electrical resistance change.

281 id 3577 In a compensated capacitance type quantity indicating system, the contents gauge of a half-full fuel tank indicates a fuel mass of 8000 lb. If a temperature rise increased the volume of fuel by 5 %, the indicated fuel weight would :

a decrease by 5 %.

b increase by 5 %.

c **remain the same.**

d increase by 10 %.

282 id 5964 On A/C with a fuel pressure gauge, where is the pressure normally measured? (Aircraft with fuel injection)

a Tank outlet.

b Selector valve outlet.

c At the injection nozzles.

d **Inlet of the fuel injection metering unit.**

283 id 5966 Why is the capacitance-type fuel quantity gauge system the system that is most often used on large turbine aircraft?

a **Because it measures the mass of fuel rather than the volume of fuel in the tank.**

b Because it measures the volume of fuel more accurately.

c Because it is more cost efficient in the way it is constructed and installed.

d Because it is a lot simpler and it's weight are less than other systems.

284 id 5967 An electrically activated and operated fuel valve is called a(n):

a Motor valve.

b **Solenoid valve.**

c Electronically valve.

d Emergency valve.

285 id 7445 The indications of a failure of the capacitive fuel indication system will be:

a **a full deflection of the gauge to empty**

b a deflection of the gauge to full

c no change in contents indication

d a yellow flag on the gauge

21.02. ELECTRICS

21.02.01. Direct Current (DC)

21.02.01.01. General

286 id 1292 Fuses are rated to a value by :

a their wattage.

b the number of volts they will pass.

c **the number of amperes they will carry.**

d their resistance measured in ohms.

287 id 2738 The difference between (1) a fuse and (2) a circuit breaker is:

a (1) suitable for high currents, (2) not suitable for high currents.fuse circuit breaker

b **(1)not resettable, (2)resettable.**

c (1) not suitable for high currents, (2) suitable for high currents.fuse circuit breaker

d (1)not resettable, (2) not resettable.

288 id 3502 An aircraft electrical circuit which uses the aircraft structure as a return path to earth, may be defined as a

a complete negative system.

b **single pole circuit.**

c double pole circuit.

d semi-negative system.

289 id 3505 When an electrical supply becomes "open circuit" the :

a load as indicated by the ammeter will increase.

b fuse or CB should isolate the circuit due to excess current drawn.

c component will operate normally, but will not switch off.

d **loss of continuity will prevent its working components from functioning.**

290 id 3510 If a current is passed through a conductor which is positioned in a magnetic field :

a the current will increase.

b **a force will be exerted on the conductor.**

c there will be no effect unless the conductor is moved.

d the intensity of the magnetic field will decrease.

291 id 3529 A current limiter fuse in a DC generation system is used to :

a limit the current in the field circuit.

b **allow a short term overload before rupturing.**

c instantaneously rupture to limit the current in the load.

d limit the current in the armature.

292 id 3543 The true statement among the following in relation to the application of Ohm's law is :

a power in the circuit is inversely proportional to the square of the current.

b The current in a circuit is directly proportional to the resistance of the circuit.

c **Current in a circuit is directly proportional to the applied electromotive force.**

d current in a circuit is inversely proportional to the electromotive force.

293 id 3710 A condenser in parallel with breaker points will

a assist in negative feedback to secondary coil

b permit arcing across points

c **intensify current in secondary winding**

d assist in collapse of secondary winding.

294 id 5356 R1 and R2 resistances are connected in parallel. The value of the equivalent resistance (Req) so obtained is given by the following formula:

a 1/Req = 1/(R1 + R2)

b Req = R1 + R2

c Req = R1 x R2

d **1/Req = 1/R1 + 1/R2**

295 id 5382 The connection in parallel of two 12 volt/ 40 amphours batteries, will create a unit with the following characteristics;

a 24 volt / 40 amp hours

b 12 volt / 40 amp hours

c 24 volt / 80 amp hours

d **12 volt / 80 amp hours**

296 id 6092 The main difference between a fuse and a circuit breaker is that:

a The fuse can be reset after having been tripped, the circuit breaker can not.

b **The fuse has to be replaced, but the circuit breaker can be reset.**

c The circuit breaker is used to protect inductive loads, while the fuse is used to protect resistive loads, otherwise no difference.

d The circuit breaker is used for high loads, while the fuse is used for small, electronic loads.

297 id 6093 The most common overload protection device used in aircraft is:

a **Circuit breakers**

b Fuses

c Blow torches

d Relays.

298 id 6099 Usually, in conductive materials

a the resistance decreases with increasing temperature.

b **the resistance increases with increasing temperature.**

c the resistance remains constant regardless of temperature.

d resistance and temperature are not related.

299 id 6100 One essensial law of magnetism is:

a Magnetic power equals the product of current and voltage.

b **A permanent magnet bar will always have a north and a south pole.**

c Equal poles attracts each other and unequal poles repel each other.

d The distance between the poles does not affect the amount of attraction between poles.

300 id 6102 The most commonly used circuit protecion device in modern aircraft is a

a resistor.

b fuse.

c **push and pull circuit breaker.**

d current limiter.

301 id 6103 Modern aircraft can have many different types of circuit breakers (CB). Generally speaking a CB is an electric component that:

a When excessive current flows through it, it will open the circuit. It has to be replaced to regain a closed electrical circuit.

b **When excessive current flows through it, it will open the circuit, but a closed circuit is regained when it is reset.**

c Is seldom used in electrical systems.

d Prevents high voltage, but can not handle high values of current.

302 id 6104 The common used symbol of voltage is .....

a I and it is measured in volts.

b I and it is measured in amperes.

c **U and it is measured in volts.**

d R and it is measured in volts.

303 id 6105 The current in a DC circuit, according to Ohm's law, can be described as:

a Proportional to both the voltage and the resistance.

b **Inversely proportional to the resistance and proportional to the voltage.**

c Equal to the voltage regardless of the resistance.

d Independent on both the voltage and the resistance.

304 id 6108 The international symbol of electrical power is

a **P and it is measured in watts.**

b I and it is measured in amperes.

c U and it is measured in volts.

d R and it is measured in ohms.

305 Ohm's law claims the following
id 6109

a the current flowing in a circuit is inverse proportional to the applied voltage, and proportional to the resistance through which the current flows.

b **the current flowing in a circuit is proportional to the applied voltage, and inverse proportional to the resistance through which the current flows.**

c the current flowing in a circuit is proportional to both the applied voltage, and to the resistance trough which the current flows.

d the current flowing in a circuit is inverse proportional to both the applied voltage, and to the resistance trough which the current flows.

306 The common used symbol of resistance is
id 6110

a U and it is mesured in volts.

b **R and it mesured in ohms.**

c P and it is measured in watts.

d I and it is measured in amperes.

21.02.01.02. Batteries

307 If one of the 12 cells of a lead-acid battery is dead, the battery:
id 1189

a has 1/12 less capacity, but can still be used.

b has 1/12 less voltage, but can still be used.

c **is unserviceable.**

d has 1/12 less voltage and less capacity, but can still be used.

308 On board present aircraft, the batteries used are mainly Cadmium-Nickel. Their advantages are: 1. low risk of thermal runaway 2. high internal resistance, hence higher power 3. good charging and discharging capability at high rating 4. wider permissible temperature range 5. good storage capability 6. sturdiness owing to its metal casing 7. the electrolyte density rem
id 1793

a **3, 4, 5, 6**

b 1, 2, 5, 6, 7

c 2, 3, 4, 5, 6

d 3, 4, 6, 7

309 The voltage of a fully charged lead-acid battery cell is :
id 2345

a 1,8 volts.

b 1,4 volts.

c **2,2 volts.**

d 1,2 volts.

310 Batteries are rated in :
id 2346

a Amperes/volts.

b **Amperes.hours.**

c Watts.

d Ohms.

311 id 2893 In aeronautics, the most commonly used batteries are NiCd because...

a their output voltage is less constant than lead-acid batteries.

b **they weigh less than lead-acid batteries.**

c their electrolyte is neither corrosive nor dangerous.

d they are cheaper than lead-acid batteries.

312 id 3503 The capacity of a battery is expressed in terms of :

a watts.

b volts.

c **ampere-hours.**

d internal resistance.

313 id 3504 A test to assess the state of charge of a lead-acid battery would involve :

a checking the level of the electrolyte.

b **comparing the "on-load" and "off-load" battery voltages.**

c checking the discharge current of the battery "on-load".

d checking the battery voltage "off-load".

314 id 3523 When carrying out battery condition check using the aeroplan's voltmeter :

a **a load should be applied to the battery in order to give a better indication of condition.**

b no load should be applied to the battery because it would depress the voltage.

c the battery should be isolated.

d the load condition is unimportant.

315 id 3524 Connecting two 12 volt 40 ampere-hour capacity batteries in series will result in a total voltage and capacity respectively of :

a **24 volts, 40 ampere-hours.**

b 12 volts, 40 ampere-hours.

c 24 volts, 80 ampere-hours.

d 12 volts, 80 ampere-hours.

316 id 3544 When a battery is almost fully discharged there is a tendency for the :

a **voltage to decrease under load.**

b voltage to increase due to the current available.

c current produced to increase due to the reduced voltage.

d electrolyte to "boil".

317 id 3545 Immediately after starting engine(s) with no other electrical services switched on, an ammeter showing a high charge rate to the battery :

a **would be normal and is only cause for concern if the high charge rate persists.**

b indicates a battery failure since there should be no immediate charge.

c indicates a generator failure, thus requiring the engine to be shut down immediately.

d indicates a faulty reverse current relay.

318 One of the main functions of the airline battery is to:
id 6091

a Provide electric power for heating.

b **Be an emergency source of electric power.**

c Provide DC power for certain equipment.

d Provide AC power for certain equipment.

319 Obvious disadvantages using Lead-Acid batteries in airplanes are:
id 6111

a They only carry 12 volt, and most modern airplanes use 24 volt circuits.

b They are expensive compared to other batteries used in airplanes.

c **They have insufficient capacity and is volume and weight inefficient.**

d The Lead-Acid battery is too heavy.

320 What is the best way to test the charge level of a lead acid battery ?
id 6112

a By using a voltmeter.

b By using an ammeter.

c By checking the level of the electrolyte.

d **By checking the specific gravity of the elctrolyte.**

321 The capacity of a typical lead acid battery for aviation use is
id 6113

a 24 V.

b **12-18 Ah.**

c 4-8 Ah.

d 12 Volts

21.02.01.03. Magnetism

322 A relay is :
id 1293

a a unit which is used to convert electrical energy to heat energy.

b another name for a solenoid valve.

c **a magnetically operated switch.**

d a device which is used to increase electrical power.

323 A relay is :
id 2888

a An electrical security switch.

b **An electromagnetically operated switch.**

c A switch specially designed for AC circuits.

d An electrical energy conversion unit.

324 When a conductor cuts the flux of a magnetic field :
id 3525

a **an electromotive force (EMF) is induced in the conductor.**

b there will be no effect on the conductor.

c the field will collapse.

d current will flow in accordance with Flemings left hand rule.

325 id 3528 A circuit breaker :

a is self resetting after the fault has been rectified.

b **may be reset manually after the fault has been rectified.**

c can only be reset after major maintenance.

d can be reset on the ground only.

326 id 3546 Circuit breakers protecting circuits may be :

a reset at any time.

b used only in AC circuits.

c used only in DC circuits.

d **used in AC and DC circuits.**

327 id 3547 A "trip-free" type circuit breaker is a circuit protection device which :

a is free from the normal CB tripping characteristic.

b **will not allow the contacts to be held closed while a current fault exists in the circuit.**

c can be reset at any time.

d will allow the contacts to be held closed in order to clear a fault in the circuit.

21.02.01.04. Generators

328 id 1795 A feeder fault on a direct current circuit results from a flux unbalance between the:

a generator and the series winding turn.

b voltage coil and the series winding.

c **voltage coil and the series winding turn.**

d shunt exciter and the series winding turn.

329 id 1800 A DC generator fitted to a commercial aircraft is cooled by :

a **air via a ram air intake.**

b water at 8 degrees centrigade from the air-conditioning system.

c a fan located before the generator.

d air tapped from the low pressure compressor.

330 id 1801 The voltage regulator of a DC generator is connected in :

a parallel with the armature.

b series with the armature.

c parallel with the shunt field coil.

d **series with the shunt field coil.**

331 id 2890 Assume a constant speed DC generator providing a constant output voltage. If the electrical load increases, the voltage regulator will :

a decrease the intensity of the excitation current.

b change the direction of the excitation current.

c maintain the intensity of the excitation current constant.

d **increase the intensity of the excitation current.**

332 id 3526 In order that DC generators will achieve equal load sharing when operating in parallel, it is necessary to ensure that :

a **their voltages are almost equal.**

b the synchronising bus-bar is disconnected from the busbar system.

c equal loads are connected to each generator busbar before paralleling.

d adequate voltage differences exists.

333 id 5357 The function of the Generator Breaker is to close when the voltage of the :

a battery is greater than the generator voltage and to open when the opposite is true

b **generator is greater than battery voltage and to open when the opposite is true**

c alternator is greater than the battery voltage and to open when the opposite is true

d battery is greater than the alternator voltage and to open when the opposite is true

334 id 6090 The primary purpose of the reverse current relay is to :

a Prevent the generator from delivering current to the generator.

b **Prevent the battery from delivering current to the generator.**

c Prevent the generator from delivering too much current.

d Allow the battery to be charged.

335 id 6094 The output voltage of DC generators used in aircraft is normally regulated by:

a Varying the RPM of the generator.

b Controlling the current in the armature (anker) windings.

c **Controlling the current in the field windings.**

d Varying the torque applied to the generator.

336 id 6095 The purpose of the voltage regulator is to :

a Keep a constant power output from the generator.

b Keep a constant current output from the generator.

c Keep a constant frequency.

d **Keep a constant voltage output from the generator.**

21.02.01.05. Distribution

337 id 1290 The type of windings commonly used in DC starter motors are :

a **series wound.**

b shunt wound.

c series shunt wound.

d compound wound.

338 id 2891 The so-called "hot buses" or "direct buses" are:

a **directly connected to the battery.**

b kept in operating conditions by an electrical resistance in the case of energy failure.

c automatically connected to the battery if generators have failed.

d providing an alternative current.

339 id 3506 When two DC generators are operating in parallel, control of load sharing is achieved by :

a the synchronous bus-bar.

b an equalising circuit which, in turn, controls the speed of the generators.

c carrying out systematic load-shedding procedures.

d **an equalising circuit which, in conjunction with the voltage regulators, varies the field excitation current of the generators.**

340 id 3508 In a two generator system, a differential relay will ensure that :

a only one generator can supply the bus-bar at a time.

b **generator voltages are almost equal before the generators are paralleled.**

c generator voltages are not equal, dependent on load.

d one generator comes "on-line" before the other.

341 id 3516 A bus-bar is :

a **a distribution point for electrical power.**

b a device permitting operation of two or more switches together.

c the stator of a moving coil instrument.

d a device which may only be used in DC circuits.

342 id 5328 The purpose of a battery protection unit is generally to isolate the battery: 1 - from the bus when the battery charge is deemed satisfactory 2 - when there is a battery overheat condition 3 - in case of an internal short circuit 4 - in case of a fault on the ground power unit The combination which regroups all of the correct statements is :

a 1

b 1 - 2

c 1 - 2 - 3 -4

d **1 - 2 -3**

21.02.01.06. Inverter (applications)

343 id 1196 A static inverter is a:

a device for reversing the polarity of the static charge.

b **transistorized unit used to convert DC into AC.**

c static discharger.

d filter against radio interference.

344 id 2894 The reason for using inverters in an electrical system is ..

a **To change DC into AC.**

b To change the DC voltage.

c To change AC into DC.

d To avoid a short circuit.

345 id 3509 In an aeroplane equipped with a DC main power system, AC for instrument operation may be obtained from :

a a rectifier.

b **an inverter.**

c a contactor.

d a TRU.

346 id 3717 A unit that converts electrical DC into AC is :

a a thermistor.

b an AC generator.

c a transformer rectifier unit.

d **an inverter.**

347 id 6097 A component that provides 115 VAC output after an input of 28 VDC is called:

a **An inverter, static or rotary.**

b A transformer / rectifier unit.

c A rotary transformer.

d A static rectifier.

21.02.01.07. The aircraft structure as an electr. conductor

348 id 2283 The advantages of grounding the negative pole of the aircraft structure are: 1. Weight saving 2. Easy fault detection 3. Increase of short-circuit risk 4. Reduction of short-circuit risk 5. Circuits are not single-wired lines The combination regrouping all the correct statements is :

a 1, 2, 3

b **1, 2, 4**

c 2, 3, 5

d 1, 3, 5

349 id 2289 Electrical bonding of an aircraft is used to: 1. protect the aircraft against lightning effects. 2. reset the electrostatic potential of the aircraft to a value approximating 0 volt 3. reduce radio interference on radiocommunication systems 4. set the aircraft to a single potential The combination regrouping all the correct statements is:

a 2, 4

b 1, 2, 3

c 3, 4

d **1, 3, 4**

350 id 2342 The purpose of static wick dischargers is to :

a dissipate static charge from the aircraft skin after landing.

b **dissipate static charge of the aircraft inflight thus avoiding radio interference as a result of static electricity.**

c provide a path to ground for static charges when refuelling.

d be able to fly higher because of less electrical friction.

351 id 2347 It may be determined that an aircraft is not properly bonded if :

a a circuit breaker pops out.

b **static noises can be heard on the radio.**

c there is interference on the VOR receiver.

d there is heavy corrosion on the fuselage skin mountings.

352 id 2619 Static dischargers : 1. are used to set all the parts of the airframe to the same electrical potential 2. are placed on wing and tail tips to facilitate electrical discharge 3. are used to reset the electrostatic potential of the aircraft to a value approximating 0 volts 4. are located on wing and tail tips to reduce intererence with the on-board radiocommunication system

a 1,2,5.

b **2,4,5.**

c 1,3,4.

d 3,4,5.

353 id 3530 The primary purpose of bonding the metallic parts of an aeroplane is to :

a prevent electrolytic corrosion between mating surfaces of similar metals.

b provide a single earth for electrical devices.

c **provide safe distribution of electrical charges and currents.**

d isolate all components electrically and thus make the static potential constant.

21.02.02. Alternating Current (AC)

21.02.02.01. General

354 id 1792 The advantages of alternating current on board an aircraft are: 1. simple connection 2. high starting torque 3. flexibility in use 4. lighter weight of equipment 5. easy to convert into direct current 6. easy maintenance of machines The combination of correct statements is:

a **3, 4, 5, 6**

b 1, 2, 3, 4, 5, 6

c 1, 2, 3, 5, 6

d 1, 4, 6

355 id 2889 The most widely used electrical frequency in aircraft is :

a 60 Hz.

b 200 Hz.

c 50 Hz.

d **400 Hz.**

356 id 3539 If the frequency of the supply in a series capacitive circuit is increased, the current flowing in the circuit will :

a remain the same.

b be zero.

c decrease.

d **increase.**

357 id 6096 The most common voltage / frequency used in jet transport A/C is:

a **115 VAC / 400 Hz**

b 115 VDC / 400 Hz

c 28 VDC

d 400 VAC / 115 Hz

21.02.02.02. Generators

358 id 1190 When the AC generators are connected in parallel, the reactive loads are balanced by means of the:

a torque of the Constant Speed Drive (CSD).

b frequency.

c voltage.

d **energizing current.**

359 id 1194 In order to produce an alternating voltage of 400 Hz, the number of polepairs required in an AC generator running at 6000 rpm is:

a 12

b 24

c **4**

d 8

360 id 1195 In a generator, the Constant Speed Drive (CSD): 1- may be disconnected from the engine shaft. 2- may be disconnected from the generator. 3- is a hydro-mechanical system. 4- is an electronic system. 5- may not be disconnected in flight. 6- may be disconnected in flight. The combination regrouping all the correct statements is :

a 1, 2, 5

b **1, 3, 6**

c 2, 3, 4

d 1, 4, 5

361 id 1197 The main purpose of a Constant Speed Drive unit is to:

a **maintain a constant frequency.**

b take part in the balancing of reactive loads.

c mechanically protect the alternator drive shaft during coupling.

d take part in the voltage regulation.

362 id 1291 The output of a generator is controlled by :

a **varying the field strength.**

b varying the speed of the engine.

c varying the length of wire in the armature windings.

d the reverse current relay circuit breaker.

363 id 1796 The detection of a feeder fault on a direct current circuit results in: 1. automatic disconnection of the generator from the aircraft AC busbar 2. opening of generator field current relay 3. opening of the main relay of the generator breaker 4. opening of balancing circuit connecting two generators 5. lighting of an indicator lamp The combination of correct statements i

a 1, 3, 5

b 2, 3, 4, 5

c 2, 4, 5

d **1, 2, 3, 4, 5**

364 id 1802 On starting, in a brushless AC generator with no commutator rings, the generator is activated by:

a the stabilizer winding jointly with the voltage regulator.

b the main field winding.

c **a set of permanent magnets.**

d the auxiliary winding.

365 id 2314 The Auxiliary Power Unit (APU) has its own AC generator which:

a is excited by its Generator Control Unit (GCU) as soon as the APU starts up.

b is driven at constant speed throught a Constant Speed Drive (CSD), in the same way as the main AC generator.

c **supplies the aircraft with three-phase 115-200 V, 400 Hz AC.**

d must have the same characteristics as the main AC generator so that it can be easily coupled with the latter.

366 id 2315 As regards the Generator Contol Unit (GCU) of an AC generator, it can be said that: 1. The GCU controls the AC generator voltage 2. Modern GCUs are provided with a permanent indication to record the failure 3. All the commands originating from the control panel are applied via the GCU, except dog clutch release 4. The Auxiliary Power Unit (APU) provides the excitation of

a 3, 4

b **2, 3**

c 2, 4

d 1, 3

367 id 2892 In flight, if the constant speed drive (CSD) temperature indicator is in the red arc the:

a pilot has to throttle back.

b pilot can disconnect it to allow it to cool and use it again.

c **pilot must disconnect it, and the generator is not available for the rest of flight.**

d pilot must disconnect it and manually control the alternator.

368 id 2895 The essential difference between aircraft AC alternators and DC generators (dynamos) is that the:

a induced windings of the alternators are rotating (rotor), and the dynamos have a rotary inductor coil.

b **induced (output) windings of the alternators are fixed (stator), and the dynamos have a fixed inductor (field) coil.**

c alternators supply all of the output current through the commutators and brush assemblies.

d The alternators generate much less power than DC generators.

369 id 2896 In an alternator rotor coil you can find :

a Three-phase AC.

b AC.

c Only induced current.

d **DC.**

370 id 3511 The moving part in an AC generator is usually referred to as the :

a oscillator.

b stator.

c **rotor.**

d slip ring.

371 id 3512 The frequency of an AC generator is dependent upon the :

a field strength and the speed of the rotor.

b number of individual poles and the field strength.

c **number of pairs of poles and the speed of the rotor.**

d number of individual poles only.

372 id 3513 The function of a constant speed drive (CSD) in an AC generating system is to :

a vary the engine rpm (within limits) to compensate for various AC loads.

b vary generator rpm in order to compensate for various AC loads.

c directly maintain a constant proportion between the rpm of an engine and a generator.

d **drive the generator at a constant speed.**

373 id 3514 If two constant frequency AC generators are operating independently, then the phase relationship of each generator:

a must be synchronised.

b **is unimportant.**

c must be 120° out of phase.

d must be 240° out of phase.

374 id 3517 A CSD of an AC generator may be disconnected in flight. The primary reason(s) for disconnection are :

a **low oil pressure and/or high oil temperature of the generator drive.**

b excessive variation of voltage and kVAR.

c illumination of the CSD disconnect warning light.

d slight variation about the normal operating frequency.

375 id 3518 A CSD unit which has been disconnected in flight :

a automatically resets at engine shut-down.

b may be reset in flight using the reset mechanism.

c automatically resets in flight providing engine rpm is below a given value.

d **may be reset on the ground only, after engine shut-down.**

376 id 3527 The purpose of a voltage regulator is to control the output voltage of the :

a generators at varying speeds and the batteries at varying loads.

b batteries at varying loads.

c **generator at varying loads and speeds.**

d output of the TRU.

377 id 3531 A 3 phase AC generator has 3 separate stator windings spaced at :

a 90°.

b 60°.

c 45°.

d **120°.**

378 id 3532 On the flight deck, an oil operated CSD unit is normally provided with means of monitoring the:

a low oil temperature and low oil quantity.

b oil temperature and synchronous speed.

c output speed and oil pressure.

d **oil over-temperature and low oil pressure.**

379 id 3533 An AC generator driven by a CSD unit :

a does not need a voltage controller since the CSD will ensure constant voltage.

b **requires a voltage controller to maintain constant voltage under load.**

c does not need a voltage controller since an AC generator voltage cannot alter under load.

d requires a voltage controller to maintain constant frequency.

380 id 3534 Assuming a CSD fault is indicated, the CSD should be disconnected :

a on the ground only.

b at flight idle engine rpm.

c in accordance with the regulated voltage level of the AC generator.

d **during engine operation only.**

381 id 3537 The measured output power components of a constant frequency AC system are :

a volts and amperes.

b **kVA and kVAR.**

c volts and kilowatts.

d amperes and kilowatts.

382 id 3538 "Frequency wild" in relation to a AC generation system means the generator :

a **output frequency varies with engine speed.**

b output frequency is too high.

c voltage regulator is out of adjustment.

d output frequency is too low.

383 The function of a CSD in an AC generating system is to:
id 3548

a vary the engine rpm (within limits) to compensate for various AC loads.

b **drive the generator at a constant speed.**

c vary generator rpm in order to compensate for various AC loads.

d directly maintain a constant proportion between the rpm of engine and generator.

384 The frequency of an AC generator is dependent on the :
id 3549

a **number of pairs of poles and the speed of the moving part.**

b number of individual poles and the field strength.

c field strength and the speed of the moving part.

d number of individual poles only.

385 A Constant Speed Drive aims at ensuring
id 3718

a equal AC voltage from all generators.

b that the starter-motor maintains a constant RPM not withstanding the acceleration of the engine.

c that the CSD remains at a constant RPM not withstanding the generator RPM

d **that the electric generator produces a constant frequency.**

386 On-board electrical systems are protected against faults of the following type: 1. AC generator over-voltage 2. AC generator under-voltage 3. over-current 4. over-speed 5. under-frequency 6. undue vibration of AC generators The combination of correct statements is :
id 4175

a **1,2,4,5**

b 1,2,4,6

c 1,3,5,6

d 2,3,4,5,6

387 The frequency of the current provided by an alternator depends on...
id 5354

a **its rotation speed**

b the strength of the excitation current

c its load

d its phase balance

388 Generator paralleling through busbars is done to assure that
id 6098

a the biggest generator gets the highest load.

b **different consumers can be fed from different sources.**

c all consumers receive the same generator voltage.

d wiring is done properly, and so that we easily can detect errors in the system.

389 The purpose of a Constant Speed Drive (CSD), often connected to a generator, is to keep
id 6101

a Constant airspeed.

b Constant speed on the engines.

c **Constant speed on the generator.**

d Constant speed on the gearbox.

390 id 6114 The generator of the auxiliary power unit (APU) can only be used when:

a the aircraft is on the ground

b another generator is on line

c the bus bars are being fed from another source

d **no other power source is feeding the bus bars**

21.02.02.03. AC power distribution

391 id 1794 On detection of a persistent overvoltage fault on an AC generator connected to the aircraft AC busbars, the on-board protection device opens:

a **the exciter breaker and the generator breaker.**

b the exciter breaker, the generator breaker and tie breaker.

c The generator breaker and tie breaker.

d The generator breaker.

392 id 1797 When a persistent top excitation limit fault on an AC generator connected to the mains with another AC generator, the overexcitation protection device opens:

a the generator breaker.

b the tie breaker.

c the exciter breaker and the generator breaker.

d **the exciter breaker, the generator breaker and the tie breaker.**

393 id 1798 When a persistent overexcitation fault is detected on only one AC generator, the protection device opens the :

a tie breaker.

b exciter breaker, generator breaker and tie breaker.

c **exciter breaker and generator breaker.**

d generator breaker and tie breaker.

394 id 1799 When an underspeed fault is detected on an AC generator connected to the aircraft AC busbar, the protection device opens the:

a exciter breaker and generator breaker.

b exciter breaker.

c **generator breaker.**

d exciter breaker, generator breaker and tie breaker.

395 id 2281 In an aircraft electrical system where AC generators are not paralleled mounted, the changover relay allows :

a connection of the Auxiliary Power Unit (APU) to its main busbar.

b connection of the AC generator to its distribution busbar.

c connection of the ground power truck to its distribution busbar.

d **power supply to the faulty AC generators busbar.**

396 id 2282 Pulling the fire shutoff handle causes a number of devices to disconnect. In respect of the AC generator it can be said that the:

a exciter control relay opens.

b **exciter control relay and the generator breaker open.**

c generator breaker opens.

d exciter control relay, the generator breaker and the tie breaker open.

397 id 2285 As regards three-phase AC generators, the following conditions must be met for paralleling AC generators: 1. Equal voltage 2. Equal current 3. Equal frequencies 4. Same phase rotation 5. Voltages of same phase The combination regrouping all the correct statements is :

a 1, 3, 4, 5

b 1, 2, 3, 4

c 1, 3, 5

d 1, 4, 5

398 id 2313 A thermal circuit breaker:

a can be reset without any danger even if the fault remains.

b is a protection system with a quick break capacity of about one hundredth of a second.

c forbids any overcurrent.

d protects the system in the event of overheating, even without exceeding the maximum permissible current.

399 id 2317 A magnetic circuit-breaker is:

a permits an overcurrent limited in time.

b a protection system that has a quick tripping response.

c can be reset without any danger even when fault remains.

d is a system with a slow response time.

400 id 3507 The services connected to a supply bus-bar are normally in:

a parallel, so that isolation of loads decreases the bus-bar voltage.

b series, so that isolating one load increases the bus-bar current consumption.

c parallel, so that isolating individual loads decreases the bus-bar current consumption.

d series, so that isolation of loads increases the bus-bar voltage.

401 id 3515 To ensure correct load sharing between AC generators operating in parallel :

a the matching of loads is unimportant.

b both real an reactive loads must be matched.

c only reactive loads need to be matched.

d only real loads need to be matched.

402 id 3535 When operating two AC generators unparalleled, the phase relationship of each generator:

a must be synchronous.

b is unimportant.

c must be in opposition.

d must be 90° out of synchronisation.

403 id 3536 When AC generators are operated in paralllel, they must be of the same:

a frequency and amperage.

b amperage and kVAR.

c voltage and amperage.

d voltage and frequency.

404 id 3540 Real load sharing in a parallel AC system is achieved by :

a monitoring the kVAR of each generator/alternator.

b controlling the generator field current.

c carefully selecting the number of loads on the bus-bars at any one time.

d **automatic adjustment of the torque on each generator rotor via the CSD unit.**

405 id 3550 Real load sharing in a parallel AC system is achieved by :

a carefully secting the number of loads on the bus-bars at any one time.

b **adjusting the torque on each generator rotor via the CSD unit.**

c controlling the generator field current.

d monitoring the kVAR of each generator/alternator.

406 id 3724 Load shedding means ..

a **Temporarily or permanent switching off of certain electric users to avoid overload of electric generators**

b To leave behind extra cargo if the centre of gravity moves outside limits

c Reduction of airloads on the flaps by means of the flap load relief value

d A procedure used in control systems to reduce the stick forces

21.02.02.04. Transformers

407 id 6107 A transformer with 2400 windings on the primary coil shall give 28 VAC output from the secondary coil when 115 VAC is connected to the primary coil. How many windings are needed on the secondary coil ?

a 85 windings.

b 9857 windings.

c 820 windings.

d **585 windings.**

408 id 8869 What is the Formula for the ideal Transformator

a **ü= U1/U2**

b U1= ü/U2

c ü= U1/ W1

d ü= P1 * (P2/60)

21.02.02.05. Synchronous and asynchronous motors

409 id 2284 The speed of an asynchronous four-pole motor fed at a frequency of 400 Hertz is:

a 800 revolutions per minute.

b 6000 revolutions per minute.

c **12000 revolutions per minute.**

d 1600 revolutions per minute.

410 id 8871 What are the advantages or disadvantages of a asynchronus motor?

a low starting current and constant torque

b low starting current and works also with only two connected phases

c **works on also with only two connected phases but high starting current**

d none is correct

411 id 8872 What is the condensator in the one phase asynchronusmotor for?

a **To generat a elyptic field**

b To prevent the system from a short circuit

c To generat a second phase for a sinus field

d To change the rotating direction

21.02.02.06. Transformer/rectifier units

412 id 3541 In an aeroplane utilising a constant frequency AC power supply, DC power is obtained from a :

a static inverter.

b **Transformer Rectifier Unit.**

c 3 phase current transformer unit.

d rotary converter.

413 id 3542 On an aeroplane utilising AC as primary power supplies, the batteries are charged in flight from :

a the AC bus via current limiters.

b a static inverter.

c a DC transformer and rectifier.

d **a Transformer Rectifier Unit.**

414 id 6106 A rectifier is a unit that

a prevents rectified current from occurring in the electrical system.

b transforms one Ac-voltage to a greater / smaller AC-voltage.

c **produces a DC output from AC input.**

d protects the electrical system from overvoltages induced in the system itself.

21.02.03. Semiconductors

21.02.03.01. principles of semiconductors

415 id 8873 Which of the following materials is a semi conductor

a Fe

b Al

c H

d **Si**

416 id 8874 Which of the following materials is a semi conductor

a **Ge**

b O

c C

d Ar

417 id 8875 Which of the following parts is a typical semiconductor part?

a Coil

b Condensator

c Relais

d **Diode**

418 id 8876 Which of the following parts is a typical semiconductor part?

a **Transistor**

b Resistor

c Relais

d Coil

21.02.04. Basic knowledge of computers

419 id 2997 In computer technology, an output peripheral is a:

a **screen unit**

b keyboard

c hard disk drive

d diskette drive

420 id 2998 In computer technology, an input peripheral is a:

a screen unit

b **keyboard**

c hard disk drive

d diskette drive

421 id 2999 In computer technology, a storage peripheral is a:

a screen unit

b printer

c key board

d **hard disk drive**

422 id 3000 In computer technology, an EPROM is: 1. a read-only memory 2. a write memory 3. erases its content when power suplly is cut off 4. keeps its content when power supply is cut off The combination regrouping all the correct statements is:

a 2,4

b 1,3

c 2,3

d **1,4**

21.02.04.02. Logical symbols

423 id 3519 The logic symbol shown represents (assuming positive logic) :

a a NAND gate.

b **an INVERT or NOT gate.**

c a NOR gate.

d an EXCLUSIVE gate.

424 id 3551 Because of the input/output relationship of an AND gate, it is often referred to as the :

a "any or all" gate.

b **"all or nothing" gate.**

c "state indicator" gate.

d "inhibited" or "negated" gate.

425 id 3552 The function of a NOT logic gate within a circuit is to :

a ensure the input signal is DC only.

b ensure the input signal is AC only.

c **invert the input signal such that the output is always of the opposite state.**

d ensure the output signal is of the same state as the input signal.

426 id 8886 The logic symbol shown represents (assuming positive logic) :

a OR-Gate

b NOT-Gate

c **AND-Gate**

d "any or all" gate.

427 id 8887 The logic symbol shown represents (assuming positive logic) :

a **OR-Gate**

b NOT-Gate

c AND-Gate

d "inhibited" or "negated" gate.

428 id 8888 The logic symbol shown represents (assuming positive logic) :

a a NOT-Gate

b **a NOR-Gate.**

c a AND-Gate

d an EXCLUSIVE-Gate.

21.02.04.03. Switching circuits and logical symbols

429 id 3520 Because of the input/output relationship of an OR gate, it is often referred to as the :

a "all or nothing" gate.

b "inhibited" or "negated" gate.

c "state indicator" gate.

d **"any or all" gate.**

21.02.05. Basic radio propagation theory

21.02.05.01. Basic principles

430 id 528 The wavelength of a radio transmitted on frequency 121.95 MHz is:

a 24.60 m

b 24.60 cm

c 2.46 cm

d **2.46 m**

431 id 529 For weather radar, the frequency 9375 MHz in X Band is preferable to C Band because:

a Its penetration power is higher.

b **It better detects clouds contour and range is greater with the same transmission power.**

c It is not absorbed by heavy precipitations.

d It allows greater scanning rates.

432 id 2298 The wavelength of a non-directional beacon (NDB) at a frequency of 300 kHz is:

a **1000 metres.**

b 100 metres.

c 10 metres.

d 1 metre.

433 id 2301 The minimum airborne equipment required for operation of a VHF direction finder is a:

a VHF compass operating in the 200 kHz to 1750 kHz range.

b **VHF transmitter-receiver operating in the 118 MHz to 136 MHz range.**

c VHF receiver operating in the 118 MHz to 136 MHz range.

d cathode-ray tube.

434 id 2302 The secondary Surveillance Radar (SSR) uses the following wavelengths:

a myriametric.

b centimetric.

c hectometric.

d **decimetric.**

435 id 2303 The airborne weather radar uses the following wavelengths:

a myriametric.

b metric.

c hectometric.

d **centimetric.**

436 id 2304 The VHF Omnirange (VOR) uses the following wavelengths:

a centimetric.

b hectometric.

c decimetric.

d **metric.**

437 The Instrument Landing System (ILS) uses the following wavelengths:
id 2305

a **metric.**

b hectometric.

c decimetric.

d centimetric.

438 The Distance Measuring Equipment (DME) uses the following wavelengths:
id 2306

a **decimetric.**

b hectometric.

c metric.

d centimetric.

439 The Fan Markers uses the following wavelengths:
id 2307

a **metric.**

b centimetric.

c hectometric.

d myriametric.

440 The VHF direction finder uses the following wavelengths:
id 2308

a decimetric.

b hectometric.

c **metric.**

d centimetric.

441 The Microwave Landing System (MLS) uses the following wavelengths:
id 2309

a myriametric.

b metric.

c hectometric.

d **centimetric.**

442 The high Altitude Radio Altimeter uses the following wavelengths:
id 2310

a hectometric.

b metric.

c **decimetric.**

d myriametric.

443 The Low Altitude Radio Altimeter uses the following wavelengths:
id 2311

a myriametric.

b **centimetric.**

c decimetric.

d metric.

444 id 2312 The Automatic Direction Finder uses the following wavelengths:

a decimetric.

b metric.

c **hectometric or kilometric.**

d centimetric.

445 id 2541 In the response curve of an amplifier, the bandwidth is:

a The frequency band corresponding to maximum gain less 20 decibels.

b The frequency band corresponding to maximum gain.

c **The frequency band corresponding to maximum gain less 3 decibels.**

d The frequency band corresponding to maximum gain, increased by 10 kHz at each end.

21.02.05.03. Wave propagation

446 id 527 In aviation, the reflection on ionosphere layers phenomenon is used in the following frequencies:

a VHF

b **HF**

c UHF

d VLF

447 id 2993 Skip distance is the:

a highest critical frequency distance

b **range from the transmitter to the first sky wave**

c wavelength distance of a certain frequency

d thickness of the ionosphere

448 id 2994 A radio signal looses strength as range from the transmitter increases, this is called :

a refraction

b **attenuation**

c propagation

d ducting

449 id 3332 The skip zone of HF-transmission will increase when the following change in circumstance occurs :

a **Higher frequency and higher position of the reflecting ionospheric layer**

b Lower frequency ang higher position of the reflecting ionospheric layer

c Higher frequency and lower position of the reflecting ionospheric layer

d Lower frequency and lower position of the reflecting ionospheric layer

450 id 5364 In the propagation of MF waves, the phenomenon of FADING is particularly found :

a by day, due to the combination of sky and ground waves.

b **at night, due to the combination of the sky and ground waves.**

c at night and when raining.

d by day and when raining.

21.03. POWER PLANT

451 The five events of a four-stroke cycle engine in the order of their occurrence are:
id 6115

a Intake, ignition, compression, power, exhaust.

b Intake, power, compression, ignition, exhaust.

c **Intake, compression, ignition, power, exhaust.**

d Intake, ignition, power, compression, exhaust.

452 Compression ratio is the ratio between the:
id 6116

a piston travel on the compression stroke and the intake stroke.

b combustion chamber pressure on the combustion stroke and on the exhaust stroke.

c **cylinder volume with piston at bottom dead centre and at top dead centre.**

d fuel and air in the combustion chamber.

453 What are the functions of the lubricating oil in an aircraft engine?
id 6117

a Lubricates, cools, cleans and prevents fatigue of parts.

b Lubricates, cools, seals and prevents internal pressure build-up.

c **Lubricates, seals, cools, cleans and prevents corrosion.**

d Lubricates and increases friction between moving parts.

454 What is meant by a wet sump engine?
id 6118

a One that uses hydraulic valve lifters

b One that uses water injection for detonation suppression.

c One that carries its oil supply in an external oil tank.

d **One that carries its oil supply in the engine itself.**

455 What type of oil do most engine manufacturers recommend to new reciprocating engine break-in?
id 6119

a Metallic-ash detergent oil.

b Ashless-dispersant oil.

c **Straight mineral oil.**

d Semi-synthetic oil.

456 Where are cooling fins usually located on air-cooled engines?
id 6120

a Exhaust side of cylinder head, connecting rods, and cylinder walls.

b Exhaust side of the cylinder head, inside the pistons, and connecting rods.

c Cylinder head, cylinder walls, and inside the piston skirt.

d **Cylinder head, cylinder barrel, and inside the piston head.**

457 During ground operation of an engine, the cowl flaps should be in what position?
id 6121

a Fully closed.

b Fully open.

c One-third open.

d **Two-thirds open**

458 id 6123 | One reason for the dual ignition system on an aircraft engine is to provide for one of the following:

a Improved engine performance.

b Uniform heat distribution.

c Balanced cylinder head pressure.

d One ignition system serves as stand by in case the system in operation fails.

21.03.01. Piston engine

21.03.01.01. General

459 id 1954 | The correct formula to calculate the multi-cylinder engine displacement is :

a piston area * piston stroke * number of cylinders

b piston area * piston stroke

c cylinder volume * number of cylinders

d cylinder length * cylinder diameter

460 id 1955 | In most cases aeroplane piston engines are short stroke engines. This permits a :

a better piston cooling.

b lower fuel consumption.

c lighter construction.

d cheaper construction

461 id 2966 | The useful work area in an ideal Otto engine indicator diagram is enclosed by the following gas state change lines

a 2 adiabatic and 1 isothermic lines.

b 2 adiabatic and 2 isochoric lines.

c 2 adiabatic and 2 isobaric lines.

d 2 adiabatic, 1 isochoric and 1 isobaric lines.

462 id 2967 | The ignition occurs in each cylinder of an four-stroke engine (TDC = Top Dead Center)

a behind TDC at each second crankshaft revolution.

b before TDC at each crankshaft revolution.

c behind TDC at each crankshaft revolution.

d before TDC at each second crankshaft revolution.

463 id 2968 | The power output of a piston engine can be calculated by :

a Pressure times arm.

b Work times velocity.

c Force times distance.

d Torque times RPM.

464 id 2969 | The power of a piston engine which will be measured by using a friction brake is :

a Friction horse power.

b Brake horse power.

c Heat loss power.

d Indicated horse power.

465 The torque of an aeroplane engine can be measured at the:
id 2970

a camshaft.

b propeller blades.

c accessory gear box.

d **gear box which is located between the engine and the propeller.**

466 The crank assembly consists of
id 2990

a **crankshaft, connecting rods and pistons.**

b propeller, crankshaft, pistons and connecting rods.

c Crankcase, crankshaft, connecting rods and pistons.

d crankshaft, camshaft, valves, valve springs and push rods.

467 On four-stroke piston engines, the theoretical valve and ignition settings are readjusted in order to increase the:
id 2995

a engine r.p.m.

b compression ratio

c piston displacement

d **overall efficiency**

468 In a four-stroke piston engine, the only "driving" stroke is :
id 2996

a compression

b intake

c **firing-expansion**

d exhaust

469 The positions of the intake and exhaust valve at the end of the power stroke are :
id 3391

a both valves open.

b **intake valve closed and exhaust valve open.**

c both valves closed.

d exhaust valve closed and intake valve open.

470 A piston engine compression ratio is the ratio of the :
id 3460

a swept volume to the clearance volume.

b clearance volume to the swept volume.

c total volume to the swept volume.

d **total volume to the clearance volume.**

471 The working cycle of a four-stroke engine is :
id 3465

a **induction, compression, power, exhaust.**

b induction, power, compression, exhaust.

c compression induction, power, exhaust.

d induction, compression, expansion, power.

472 id 3485 The compression ratio of a piston engine is the ratio of the:

a diameter of the bore to the piston stroke.

b **volume of the cylinder with the piston at bottom dead centre to that with the piston at top dead centre.**

c area of the piston to the cylinder volume.

d weight of the air induced to its weight after compression.

473 id 3582 The part of a piston engine that transforms reciprocating movement into rotary motion is termed the :

a **crankshaft**

b piston

c camshaft

d reduction gear

474 id 6138 If the exhaust valve of a four-stroke cycle engine is closed and the intake valve is just closing, the piston is on the

a intake stroke.

b power stroke.

c exhaust stroke.

d **compression stroke.**

475 id 6139 The horsepower developed in the cylinders of a reciprocating engine is known as the

a shaft horsepower.

b **indicated horsepower.**

c brake horsepower.

d thrust horsepower.

476 id 6140 In a piston engine, the camshaft

a rotates at the same speed as the crankshaft.

b **rotates at half the speed of the crankshaft.**

c rotates at twice the speed of the crankshaft.

d is independent of the crankshaft

477 id 6141 On which stroke or strokes are both valves on a four-stroke cycle reciprocating engine cylinder open during a part of the strokes.

a Exhaust.

b Intake.

c Power and intake.

d **Exhaust and intake.**

478 id 6142 What does valve overlap promote?

a Lower intake manifold pressure and temperature.

b A backflow of gases across the cylinder.

c An overlap of the power and intake strokes.

d **Better scavenging and cooling characteristics.**

479 id 6143 At what speed must a crankshaft turn if each cylinder of a four-stroke cycle engine is to be fired 800 times a minute?

a 200 RPM.

b 800 RPM.

c **1600 RPM.**

d 3200 RPM.

480 id 6144 Which of the following will decrease volumetric efficiency of a reciprocating engine?

a High fuel octane rating.

b Short intake pipes of large diameter.

c Low carburetor air temperature.

d **High cylinder head temperature.**

481 id 6166 In a four-stroke cycle aircraft engine, when does the ignition event take place?

a After the piston reaches TDC on intake stroke.

b **Before the piston reaches TDC on compression stroke.**

c After the piston reaches TDC on power stroke.

d After the piston reaches TDC on compression stroke.

21.03.01.02. Lubrication system

482 id 1974 The oil viscosity depends on the:

a quantity of oil.

b outside pressure.

c oil pressure.

d **oil temperature.**

483 id 3390 For internal cooling,reciprocating engines are especially dependent on:

a a rich fuel/air mixture

b **the circulation of lubricating oil**

c a properly functioning thermostat

d a lean fuel/air mixture

484 id 3401 In addition to the fire hazard introduced, excessive priming should be avoided because :

a it fouls the spark plugs

b **it washes the lubricant of cylinder walls**

c it drains the carburettor float chamber

d the gasoline dilutes the oil and necessitates changing oil

485 id 3491 The reading on the oil pressure gauge is the:

a **pressure of the oil on the outlet side of the pressure pump.**

b difference between the pressure pump pressure and the scavenge pump pressure.

c pressure in the oil tank reservoir.

d pressure of the oil on the inlet side of the pressure pump.

486 id 3586 The oil system for a piston engine incorporates an oil cooler that is fitted :

a after the oil has passed through the engine and before it enters the sump

b between the oil tank and the pressure pump

c after the pressure pump but before the oil passes through the engine

d **in the return line to the oil tank after the oil has passed through the scavenge pump**

487 id 3715 Low oil pressure is sometimes the result of a

a restricted oil passage

b too large oil pump

c **worn oil pump**

d too small scavenger pump.

488 id 6148 In a reciprocating engine oil system, the temperature bulb senses oil temperature

a and indicates the average oil temperature.

b **at a point after the oil has passed through the oil cooler.**

c while the oil is in the hottest area of the engine.

d immediately before the oil enters the oil cooler.

489 id 6149 Cylinder walls are usually lubricated by

a **splashed or sprayed oil.**

b a direct pressure system fed through the crankshaft, connecting rods, and the piston pins to the oil control ring groove in the piston.

c oil that is picked up by the oil control ring when the piston is at bottom centre.

d oil migration past the rings during the intake stroke.

21.03.01.04. Ignition

490 id 2991 Ignition systems of piston engines used for small general aviation aeroplanes are

a **independant from the electrical system of the aeroplane.**

b dependant on the battery.

c dependant on the DC-Generator.

d dependant on the AC-Generator.

491 id 3389 If the ground wire between the magnetos and the ignition switch becomes disconnected the most noticeable result will be that:

a the engine cannot be started with the ignition switch in the "ON" position

b a still operating engine will run down

c **the engine cannot be shut down by turning the ignition switch to the "OFF" position**

d the power developed by the engine will be strongly reduced

492 id 3468 The purpose of an ignition switch is to :

a connect the battery to the magneto

b connect the secondary coil to the distributor

c **control the primary circuit of the magneto**

d connect the contact breaker and condenser in series with the primary coil

493 id 3469 Under normal running conditions a magneto draws primary current :

a from the aircraft batteries via an inverter.

b from the booster coil.

c directly from the aircraft batteries.

d **from a self-contained electro-magnetic induction system.**

494 id 3486 Prolonged running at low rpm may have an adverse effect on the efficiency of the:

a carburettor.

b **sparking plugs.**

c oil pump.

d fuel filter.

495 id 3489 The purpose of a distributor in an ignition system is to distribute:

a **secondary current to the sparking plugs.**

b primary current to the condenser.

c secondary current to the condenser.

d primary current to the sparking plugs.

496 id 3490 The very rapid magnetic field changes (flux) around the primary coil in a magneto are accomplished by the:

a contact breaker points closing.

b distributor arm aligning with one of the high tension segments.

c **contact breaker points opening.**

d rotor turning past the position of maximum flux in the armature.

497 id 3708 An aircraft magneto is switched off by

a opening the primary circuit

b **grounding the primary circuit**

c opening the secondary circuit

d grounding the secondary circuit.

498 id 3711 An impulse magneto coupling

a advances ignition timing and gives a hotter spark at starting

b reduces magneto speed during engine warm-up

c **gives a retarded spark at starting**

d gives an automatic spark increase during high speed operation.

499 id 3712 If an engine fails to stop with the magneto switch in OFF position, the cause may be :

a **excessive carbon formation in cylinder head.**

b switch wire grounded

c defective condenser

d fouled spark plugs

500 id 3713 If the ground wire between the magneto and the ignition switch becomes disconnected, the most noticeable result will be that the engine

a will not operate at the left magneto

b **cannot be shut down by turning the switch to the OFF position.**

c will not operate at the right magneto

d cannot be started with the switch in the ON position

501 id 3714 An impulse coupling used on a magneto for a piston engine is for

a advancing ignition timing

b **providing a retarded spark for engine starting.**

c quick removal and installation

d absorbing starting loads

502 id 5351 When the magneto selector switch is set to "OFF" position, the piston engine continues to run normally. The most probable cause of this failure is that:

a There is a carbon deposit on the spark plugs electrodes.

b **On a magneto, a grounding wire is broken.**

c A wire from the magneto is in contact with a metallic part of the engine.

d There are local hot points in the engine (probably due to overheating of the cylinder heads).

503 id 5374 In a piston engine, magnetos are used to produce the spark which ignites the fuel/air mixture. The operating principle of magnetos consists in :

a accumulating in a condenser a low volt current from the battery, reconstitute it as high voltage current at the moment the spark is generated.

b obtaining a high amp low volt current in order to generate the spark.

c **breaking the primary current in order to induce a low amp high volt current which is distributed to the spark plugs.**

d creating a brief high intensity magnetic field which will be sent through the distributor at the appropriate time.

504 id 6137 Which of the following conditions most likely lead to detonation?

a Improper ignition timing.

b **Use of fuel with too low octane rating.**

c Improper valve grinding at overhaul.

d Use of fuel with too high octane rating.

505 id 6167 In order to turn a magneto off, the primary circuit must be:

a Shunted to the battery circuit.

b **Grounded.**

c Opened.

d Shorted.

506 id 6168 If the ground wire of a magneto is disconnected at the ignition switch, the result will be:

a The affected magneto will be isolated and the engine will run on the opposite magneto.

b A decrease in magnetic lines of force.

c The engine will stop running.

d **The engine will not stop running when the ignition switch is turned off.**

507 id 6169 When performing a magneto ground check on an engine, correct operation is indicated by:

a A decrease in manifold pressure.

b An increase in RPM.

c No drop in RPM.

d **A slight drop in RPM.**

21.03.01.05. Engine fuel supply

508 id 1967 On modern carburettors, the variations of mixture ratios are obtained by the adjustment of :

a fuel flow and air flow.

b air flow.

c **fuel flow.**

d fuel flow, air flow and temperature.

509 id 3393 In which sections of the carburettor would icing most likely occur?

a main air bleed and main discharge nozzle

b float chamber and fuel inlet filter

c accelerator pump and main metering jet

d **venturi and the throttle valve**

510 id 3394 The operating principle of float-type carburettors is based on the:

a increase in air velocity in the throat of a venturi causing an increase in air pressure

b automatic metering of air at the venturi as the aircraft gains altitude

c **difference in air pressure at the venturi throat and the air inlet**

d measurement of the fuel flow into the induction system

511 id 3395 In an engine equipped with a float-type carburettor, the low temperature that causes carburettor ice is normally the result of:

a freezing temperature of the air entering the carburettor

b **vaporization of fuel and expansion of the air in the carburettor**

c compression of air at the carburettor venturi

d low volatility of aviation fuel

512 id 3397 Which statement is true concerning the effect of the application of carburettor heat?

a **it reduces the density of air entering the carburettor, thus enriching the fuel/air mixture**

b it reduces the volume of air entering the carburettor,thus leaning the fuel/air mixture

c it reduces the density of air entering the carburettor, thus leaning the fuel/air mixture

d it reduces the volume of air entering the carburettor,thus enriching the fuel/air mixture

513 id 3399 Vapour lock is :

a **vaporizing of fuel prior to reaching the carburettor**

b the formation of water vapour in a fuel system

c vaporizing of fuel in the carburettor

d the inability of a fuel to vaporize in the carburettor

514 id 3464 A fuel strainer when fitted to a carburettor will be positioned :

a between the metering jet and the discharge nozzle.

b between the needle valve and the metering jet.

c **upstream of the needle valve.**

d downstream of th discharge nozzle.

515 id 3487 The purpose of the venturi in a carburettor is to:

a create a rise in pressure at the throat before the mixture enters the induction system.

b prevent enrichment of the mixture due to high air velocity through the carburettor.

c ensure complete atomisation of the fuel before entering the induction system.

d **create the depression necessary to cause fuel to flow through the carburettor jets.**

516 id 3579 With respect to a piston engined aircraft, ice in the carburettor :

a will only form at OAT's below the freezing point of fuel.

b will only form at OAT's below +10°C.

c will only form at outside air temperatures (OAT's) below the freezing point of water.

d **may form at OAT's higher than +10°C.**

517 id 3585 To ensure that the fuel flow is kept directly proportional to the volume of air flowing through the choke, thus preventing the main jet supplying excessive fuel as engine speed is increased, a carburettor is fitted with :

a an accelerator pump

b a power jet

c **a diffuser**

d a mixture control

518 id 3709 Spark timing is related to engine speed in the way that the:

a faster the engine functions, the more retarded the spark is.

b slower the engine functions, the more the spark is advanced

c faster the engine functions, the further past TDC the spark occurs

d **faster the engine functions, the more the spark is advanced**

519 id 5372 "Vapour lock" is the phenomenon by which:

a water vapour plugs are formed in the intake fuel line following the condensation of water in fuel tanks which have not been drained for sometime.

b **heat produces vapour plugs in the fuel line.**

c abrupt and abnormal enrichment of the fuel/air mixture following an inappropriate use of carburettor heat.

d burnt gas plugs forming and remaining in the exhaust manifold following an overheat and thereby disturbing the exhaust.

520 id 6125 Which statement is true concerning the effect of the application of carburetor heat?

a **It reduces the density of air entering the carburetor, thus enriching the fuel/air mixture**

b it reduces the volume of air entering the carburettor,thus enriching the fuel/air mixture

c It reduces the volume of air entering the carburetor, thus leaning the fuel/air mixture.

d It reduces the density of air entering the carburetor, thus leaning the fuel/air mixture.

521 id 6127 Carburettor icing can occur when the outside airtemperature is between:

a -15° C to + 5° C.

b 0° C to + 15° C.

c + 15° C to + 30° C.

d **-5° C to + 18° C.**

522 id 6128 In an aircraft equipped with a float-type carburetor and a constant-speed propeller, carburetor icing would probably first be detected by:

a A drop in engine RPM.

b Detonation.

c A drop in manifold pressure and engine RPM.

d **A drop in manifold pressure.**

523 id 6130 If the volume of air passing through a carburetor venturi is reduced, the pressure at the venturi throat will

a decrease.

b be equal to the pressure at the venturi inlet.

c be equal to the pressure at the venturi outlet.

d **increase.**

524 id 6156 The amount of fuel that flows through the carburettor is directly controlled by

a Throttle.

b Mixture control.

c **Airflow through the carburettor venturi.**

d Main metering jet.

525 id 6161 The presence of carburetor ice, in an airplane equipped with a fixed-pitch propeller can be verified by applying carburettor heat and noting

a an increase in RPM and then a gradual decrease in RPM.

b a decrease in RPM and then constant RPM

c an immediate increase in RPM with no further change in RPM.

d **a decrease in RPM, followed by an increase in RPM.**

526 id 7481 Icing of the carburetor can take place?

a When the temperature drops below -5° C.

b When the temperature drops and precipitation occurs.

c **When the temperature drops and sufficient moisture is present for sublimation.**

d When the temperature drops below 0° C

21.03.01.06. Engine performance

527 id 2971 The power of a piston engine decreases during climb with a constant power lever setting, because of the decreasing :

a **air density.**

b engine temperature.

c humidity.

d temperature.

528 id 2972 The conditions under which you obtain the highest engine power are :

a warm and dry air at high pressure.

b warm and humid air at low pressure.

c cold and humid air at high pressure.

d **cold and dry air at high pressure.**

529 id 2973 The power output of a normally aspirated piston engine increases with increasing altitude at constant Manifold Air Pressure (MAP) and RPM because of the :

a lower friction losses.

b lower losses during the gas change.

c **lower back pressure.**

d leaner mixture at higher altitudes.

530 id 2974 During climb with constant Manifold Air Pressure (MAP) and RPM indication and constant mixture setting, the power output of a piston engine :

a **increases.**

b decreases.

c only stays constant if the speed control lever is pushed forward.

d stays constant.

531 id 5381 The global output of a piston engine is of: (global output = Thermal energy corresponding to the available shaft/power over the total thermal energy produced).

a 0.50

b **0.30**

c 0.75

d 0.90

532 id 6160 The power combination that is most likely to result in excessive cylinder pressure is a relatively

a low manifold pressure with high RPM

b **high manifold pressure with low RPM.**

c low manifold pressure with low RPM.

d high manifold pressure with high RPM.

21.03.01.07. Power augmentation devices

533 id 2975 The kind of compressor normally used as a supercharger is :

a a hybrid compressor.

b an axial compressor.

c **a radial compressor.**

d a piston compressor.

534 id 2976 What can be the consequence during a descent with a fully open throttle if the waste gate is seized ?

a The turbine blades will separate.

b The power of the motor will decrease.

c The turbine shaft will break.

d **The manifold air pressure (MAP) value may exceed the maximum allowed value.**

535 One of the advantages of a turbosupercharger is that :
id 2977

a there is no danger of knocking.

b it has a better propulsive efficiency.

c there is no torsion at the crankshaft.

d **it uses the exhaust gas energy which normally is lost.**

536 The primary purpose of a supercharger is to :
id 3402

a increase quantity of fuel at metering jet

b **maintain power at altitude**

c provide leaner mixtures at altitudes below 5000 ft

d provide a richer mixture at high altitudes

537 The air in a piston engine turbo-supercharger centrifugal compressor :
id 3471

a **enters the eye of the impeller and leaves at a tangent to the periphery.**

b enters via the diffuser and is fed to the impeller at the optimum angle of attack.

c enters at the periphery and leaves via the eye of the impeller.

d enters at a tangent to the rotor and leaves via the stator.

538 In a piston engine, turbocharger boost pressure may be monitored by :
id 3472

a both a CHT gauge and manifold pressure gauge.

b a cylinder head temperature gauge (CHT), a manifold pressure gauge, and engine rpm readings.

c **a manifold pressure gauge only.**

d both engine rpm readings and a manifold pressure gauge.

539 A turbocharger system is normally driven by:
id 3492

a an hydraulic motor.

b an electric motor.

c **the exhaust system.**

d an electrically activated hydraulically powered clutch.

540 A turbocharger consists of a :
id 3493

a turbine driving a compressor via a reduction gear.

b compressor and turbine on individual shafts.

c compressor driving a turbine via a reduction gear.

d **compressor and turbine mounted on a common shaft.**

541 If the turbocharger waste gate is completely closed
id 6134

a None of the exhaust gases are directed through the turbine.

b The manifold pressure will be lower than normal.

c The turbosupercharger is in the OFF position.

d **All the exhaust gases are directed through the turbine**

542 id 6135 What is the purpose of a turbocharger system for a small reciprocating aircraft engine?

a Compresses the air to hold the cabin pressure constant after the aircraft has reached its critical altitude.

b Maintains constant air velocity in the intake manifold.

c **Compresses air to maintain manifold pressure constant from sea level to the critical altitude of the engine.**

d Maintains variable air pressure to the carburetor venturi.

543 id 6136 An engine turbocharger is said to be "ground boosted"when it

a **maintains a manifold pressure above sea level conditions**

b maintains sea level conditions with increasing altitude

c has a fixed waste gate setting

d has one rated altitude and one full throttle height

544 id 6164 What energy source is used to drive the turbines of turbocharged airplane?

a Electrical system.

b Ignition system.

c **Engine exhaust gases.**

d Engine compressor

545 id 6165 What regulates the speed of a turbocharger?

a Turbine.

b Compressor.

c **Waste gate.**

d Throttle.

21.03.01.08. Fuel

546 id 2620 The octane rating of a fuel characterises the :

a **the anti-knock capability**

b fuel volatility

c quantity of heat generated by its combustion

d fuel electrical conductivity

547 id 3398 The octane rating of a fuel and compression rating of a piston engine have which of the following relations?

a **the higher the octane, the higher the possible compression**

b the lower the octane, the higher the possible compression

c the higher the octane,the lower the possible compression

d compression rating is independent of the octane

548 id 3400 Fuel stored in aircraft tanks will accumulate moisture.The most pratical way to minimize this when a plane is used every day or so is to :

a **keep tanks topped off when plane is not in use**

b drain tanks at end of each day's flight

c use only high octane gasoline

d keep tank vents plugged and filler cap tight

549 id 5359 A piston engine may use a fuel of a different grade than the recommended:

a provided that the grade is lower

b **provided that the grade is higher**

c never

d provided that it is an aeronautical petrol

550 id 5980 The colour of Aviation gasoline 100 LL is:

a **blue**

b green

c yellow

d no colour

551 id 5981 The flash point of fuel is:

a highest temperature of fluid

b lowest temperature of fluid

c **lowest temperature of vapour**

d highest temperature of vapour

552 id 6146 The vapour pressure of aviation gasoline is

a **lower than the vapor pressure of automotive gasoline.**

b higher than the vapor pressure of automotive gasoline.

c the same as the vapour pressure of automotive gasoline.

d approximately 20 pounds per square inch at 100°F.

553 id 6147 The viscosity of a liquid is a measure of its

a **resistance to flow.**

b rate of change of internal friction with change in temperature.

c density.

d ability to transmit force.

21.03.01.09. Mixture

554 id 1966 For piston engines, mixture ratio is the ratio between the :

a volume of fuel and volume of air entering the cylinder.

b **mass of fuel and mass of air entering the cylinder.**

c volume of fuel and volume of air entering the carburettor.

d mass of fuel and volume of air entering the carburettor.

555 id 1972 A rich mixture setting has to be used during climb segments. This results in a

a slight loss of power.

b higher efficiency.

c **lower cylinder head temperature.**

d higher torque.

556 id 1973 | Max. Exhaust Gas Temperature is theoretically associated with :

a **Mass ratio of 1/15.**

b Cruising mixture setting.

c Full rich setting.

d Mixture ratio very close to idle cut-out.

557 id 3392 | The main purpose of the mixture control is to:

a decrease the air supplied to the engine

b **adjust the fuel flow to obtain the proper fuel/air ratio**

c increase the oxygen supplied to the engine

d decrease oxygen supplied to the engine

558 id 3396 | Fuel/air ratio is the ratio between the:

a volume of fuel and volume of air entering the cylinder.

b volume of fuel and volume of air entering the carburettor.

c **mass of fuel and mass of air entering the cylinder.**

d mass of fuel and mass of air entering the carburettor

559 id 3403 | An excessively rich mixture can be detected by :

a **black smoke from exhaust.**

b high cylinder head temperatures

c white smoke from exhaust.

d a long purple flame from exhaust.

560 id 3462 | Overheating of a piston engine is likely to result from an excessively :

a rich mixture.

b **weak mixture.**

c low barometric pressure.

d high barometric pressure.

561 id 3466 | Specific fuel consumption is defined as the :

a designed fuel consumption for a given rpm.

b **mass of fuel required to produce unit power for unit time.**

c quantity of fuel required to run the engine for one minute at maximum operating conditions.

d maximum fuel consumption of the aircraft.

562 id 3467 | In a piston engine, the purpose of an altitude mixture control is to :

a enrich the mixture strength due to decreased air density at altitude.

b prevent a weak cut when the throttle is opened rapidly at altitude.

c weaken the mixture strength because of reduced exhaust back pressure at altitude.

d **correct for variations in the fuel/air ratio due to decreased air density at altitude.**

563 id 3488 The mixture control for a carburettor achieves its control by:

a moving the butterfly valve through a separate linkage to the main throttle control.

b **varying the fuel supply to the main discharge tube.**

c altering the depression on the main discharge tube.

d varying the air supply to the main discharge tube.

564 id 3584 In a piston engine if the ratio of air to fuel, by weight, is approximately 9:1, the mixture is said to be :

a weak

b **rich**

c too weak to support combustion

d normal

565 id 3588 When leaning the mixture for the most economic cruise fuel flow, excessive leaning will cause :

a high engine rpm

b **high cylinder head and exhaust gas temperature**

c low cylinder head and exhaust gas temperature

d high manifold pressure

566 id 5353 The richness of a fuel/air mixture ratio is the :

a mass of fuel relative to the volume of air.

b **real mixture ratio relative to the theoretical ratio.**

c volume of fuel relative to the volume of air.

d volume of fuel relative to the mass of the volume of air.

567 id 5380 For a piston engine, the ideal fuel/air mixture corresponding to a richness of 1 is obtained for a weight ratio of:

a 1/10th

b 1/9 th

c **1/15 th**

d 1/12th

568 id 6126 The main purpose of the mixture control is to

a **adjust the fuel flow to obtain the desired air/fuel ratio.**

b decrease the air supplied to the engine.

c increase the oxygen supplied to the engine.

d decrease oxygen supplied to the engine.

569 id 6157 The best power mixture is that fuel/air ratio at which:

a **The most power can be obtained for any given throttle setting.**

b Climbs or descents can be made without adjusting the mixture control.

c Cylinder head temperatures are the coolest.

d A given power can be obtained with the highest manifold pressure or throttle setting.

570 id 6158 When the pilot operates the mixture control, what is being accomplished?

a he changes the air to fuel ratio

b he controls the amount of fuel bleed to the diffuser

c he controls the amount of air bleed to the combustion chamber

d he controls the amount of fuel bleed to the combustion chamber

21.03.01.10. Propeller

571 id 1192 The feathering pump of a hydraulic variable-pitch propeller:

a is driven by the engine and supplies pressure oil to the propeller in case of engine problems.

b is intended to control the pitch setting of the propeller during flight in order to obtain a constant speed.

c controls the propeller, if the speed governor fails.

d is an electrically driven oil pump, which supplies the propeller with pressure oil, when the engine is inoperative.

572 id 1957 The pitch angle of a constant-speed propeller

a decreases with increasing true air speed.

b only varies with engine RPM.

c increases with increasing true air speed.

d is independent of the true air speed.

573 id 1958 A propeller blade is twisted, so as to

a keep the local Angle of Attack constant along the blade.

b avoid the appearance of sonic phenomena.

c decrease the blade tangential velocity from the blade root to the tip.

d allow a higher mechanical stress.

574 id 1959 A pilot normally uses the propeller autofeather system during :

a Landing.

b Cruise.

c Take-off.

d Take-off and landing.

575 id 1960 When increasing true airspeed with a constant engine RPM, the angle of attack of a fixed pitch propeller :

a stays constant.

b increases.

c reduces.

d stays constant because it only varies with engine RPM.

576 id 1961 When TAS increases, the pitch angle of a constant speed propeller (RPM and MAP levers are not moved) :

a first reduces and after a short time increases to its previous value.

b reduces.

c increases.

d stays constant.

577 id 1962 The main advantage of a constant speed propeller as compared to a fixed pitch propeller is a :

a higher efficiency in all operating ranges.

b constant efficiency in all operating ranges.

c lower propeller blade stress.

d higher efficiency in cruising range.

578 id 1963 To unfeather a propeller during flight you have to :

a gain speed so as to use the engine unfeathering pump.

b manually release the blade latch.

c gain speed for aerodynamic unfeathering.

d use the electric unfeathering pump.

579 id 1964 In case of engine failure during flight the blades of the constant speed propeller in a single engine aeroplane, not fitted with feathering system

a move in the lowest pitch position by the centrifugal force.

b move in low pitch position by oil pressure created by the windmilling propeller.

c move in a certain pitch position depending on windmilling RPM.

d move in the highest pitch position by the aerodynamical force.

580 id 1965 The correct combination of propeller pitch (1), and propeller lever position (2) at brake release is :

a (1) low (2) aft.

b (1) low (2) forward.

c (1) high (2) aft.

d (1) high (2) forward.

581 id 2336 Consider the variable-pitch propeller of a turbo-prop. During deceleration :

a when braking, the propeller supplies a negative thrust and absorbs engine power.

b at zero power, the propeller thrust is zero and the engine power absorbed is nil.

c when feathered, the propeller produces a thrust and absorbs no engine power.

d with propeller windmilling, the thrust is zero and the propeller supplies engine power.

582 id 2982 Which of the following qualitative statements about a fixed propeller optimized for cruise condition, is true for the take-off case? The angle of attack of the propeller :

a blades reduces to zero.

b blade is relatively small.

c airfoil section is negative.

d blade is relatively high.

583 id 2983 The 'constant speed propeller' has

a in general a worse efficiency than the fixed propeller.

b only above and below the design point a better efficiency than the fixed propeller with the same design speed.

c only at the design speed a better efficiency than the fixed propeller.

d its best efficiency during climb.

584 id 2984 What will happen to the geometrical pitch angle of a "constant speed propeller" if the manifold pressure is increased ?

a It will increase and after a short time it will be the same again

b **It will increase**

c It will decrease so that the engine can increase

d It will remain the same

585 id 2985 The 'slipstream effect' of a propeller is most prominent at:

a high airspeeds with high power setting.

b high airspeeds with low power setting.

c **low airspeeds with high power setting.**

d low airspeeds with low power setting.

586 id 2986 An asymmetric loading (p-factor) on the propeller exists ..

a If there is an unbalanced propeller.

b **If the aeroplane has a large angle of attack.**

c Only for counterrotating propeller

d Only if the 'constant speed propeller' mechanism is broken.

587 id 2987 In twin-engine aeroplanes with right turning propellers

a the 'minimum control speed' is determined by the failure of the right engine.

b the left engine produces a higher yaw moment if the right engine fails than vice versa.

c **the left engine is the critical motor.**

d the right engine is the critical motor.

588 id 2988 In general, in twin-engine aeroplanes with 'constant speed propeller'

a **the oil pressure turns the propeller blades towards smaller pitch angle.**

b the aerodynamic force turns the propeller blades towards higher pitch angle.

c the spring force turns the propeller blades towards smaller pitch angle.

d the oil pressure turns the propeller blades towards higher pitch angle.

589 id 2989 In modern aircraft, a pilot can actuate the feather system by :

a **pulling the RPM lever backwards.**

b pushing the RPM lever forward.

c pushing the power lever forward.

d pulling the power levers backwards.

590 id 3388 Fixed-pitch propellers are usually designed for maximum efficiency at :

a idling

b **cruising speed**

c full throttle

d take-off

591 id 3470 On a normally aspirated aero-engine fitted with a fixed pitch propeller :

a **manifold pressure decreases as the aircraft climbs at a fixed throttle setting.**

b the angle of advance of the propeller is constant at all indicated airspeeds.

c in level flight, manifold pressure will remain constant when the rpm are increased by opening the throttle.

d in a descent at a fixed throttle setting manifold pressure will always remain constant.

592 id 5346 The pitch angle of a propeller is the angle between the :

a propeller reference chord line and the relative airflow.

b **reference chord line and the propeller plane of rotation.**

c propeller reference chord line and the extremity of the propeller.

d propeller plane of rotation and the relative airflow.

593 id 5349 When in flight, a piston engine is stopped and the propeller blade pitch angle is near 90°, the propeller is said to be...

a at zero drag.

b windmilling.

c transparent.

d **feathered.**

594 id 5361 From the cruise, with all the parameters correctly set, if the altitude is reduced, to maintain the same mixture the fuel flow should:

a decrease

b **increase**

c remain the same

d increase or decrease, depending on the engine type

595 id 6145 What is the principle advantage of using propeller reduction gears?

a To enable the propeller RPM to be increased without an accompanying increase in engine RPM.

b The diameter and blade area of the propeller can be increased.

c **To enable the engine RPM to be increased with an accompanying increase in power and allow the propeller to remain at a lower, more efficient RPM.**

d To enable the engine RPM to be increased with an accompanying increase in propeller RPM.

596 id 6150 The propeller blade angle is defined as the acute angle between the airfoil section chord line (at the blade reference station) and which of the following?

a **The plane of rotation.**

b The relative wind.

c The propeller thrust line.

d The axis of blade rotation during pitch change.

597 id 6151 Concerning the twisting force acting on a propeller blade

a the centrifugal twisting force tends to increase the blade angle

b **the centrifugal twisting force tends to decrease the blade angle**

c the aerodynamic twisting force tends to decrease the blade angle

d the aerodynamic twisting force have no effect on the blade pitch

598 id 6152 When engine power is increased, the constant-speed propeller tries to function so that it will

a maintain the RPM, decrease the blade angle

b increase the RPM, decrease the blade angle

c **maintain the RPM, increase the blade angle**

d increase the RPM, increase the blade angle

599 id 6153 For takeoff, a constant-speed propeller is normally set in the

a HIGH PITCH, high RPM position.

b LOW PITCH, low RPM position.

c HIGH PITCH, low RPM position.

d **LOW PITCH, high RPM position.**

600 id 6154 The angle-of-attack of a rotating propeller blade is measured between the blade chord or face and which of the following?

a The plane of blade rotation.

b Full low-pitch blade angle.

c **The relative airstream.**

d The geometric pitch angle required producing the same thrust.

601 id 6155 Which of the following is identified as the cambered or curved side of a propeller blade, corresponding to the upper surface of a wing airfoil section ?

a **Blade back.**

b Blade chord.

c Blade leading edge.

d Blade face.

602 id 7381 The function of the gearbox of a turboprop is to cause the propeller to rotate at an RPM

a **less than engine RPM**

b greater than engine RPM

c the same as engine RPM

d which varies in its ratio with engine RPM

21.03.01.11. Engine handling and manipulation

603 id 1956 When changing power on engines equipped with constant-speed propeller, engine overload is avoided by :

a **increasing the RPM before the manifold pressure.**

b adjusting RPM before the manifold pressure.

c reducing the RPM before the manifold pressure.

d increasing the manifold pressure before the RPM.

604 id 1968 To adjust the mixture ratio of a piston engine when altitude increases, means to:

a increase the mixture ratio.

b decrease the amount of fuel in the mixture in order to compensate for the increasing air density.

c increase the amount of fuel in the mixture to compensate for the decreasing air pressure and density.

d **decrease the fuel flow in order to compensate for the decreasing air density.**

605 id 1969 When applying carburettor heating :

a a decrease in RPM results from the lean mixture.

b **the mixture becomes richer.**

c the mixture becomes leaner.

d no change occurs in the mixture ratio.

606 id 1970 When the pilot moves the mixture lever of a piston engine towards a lean position the :

a volume of air entering the carburettor is increased.

b volume of air entering the carburettor is reduced.

c amount of fuel entering the combustion chamber is increased.

d **amount of fuel entering the combustion chamber is reduced.**

607 id 1971 When altitude increases without adjustment of the mixture ratio, the piston engine performance is affected because of a :

a **decreasing of air density for a constant quantity of fuel.**

b constant air density for a bigger quantity of fuel.

c increasing of air density for smaller quantity of fuel.

d decreasing of air density for a smaller quantity of fuel.

608 id 2978 With which instrument(s) do you monitor the power output of an aeroplane fitted with a fixed pitch propeller?

a RPM and EGT indicator.

b RPM and Fuel Flow indicator.

c RPM and MAP indicator.

d **RPM indicator.**

609 id 2979 An EGT (Exhaust Gas Temperature) indicator for a piston engine is used to :

a control the carburator inlet air flow.

b control the cylinder head temperature.

c **assist the pilot to settle correct mixture.**

d control the fuel temperature.

610 id 2980 During climb with constant throttle and RPM lever setting (mixture being constant) the :

a RPM increases.

b RPM decreases.

c Manifold Air Pressure (MAP) increases.

d **Manifold Air Pressure (MAP) decreases.**

611 id 2981 The conditions which can cause knocking are :

a Low manifold pressure and high fuel flow.

b High manifold pressure and high revolutions per minute.

c Low manifold pressure and high revolutions per minute.

d **High manifold pressure and low revolutions per minute.**

612 id 3463 The maximum horsepower output which can be obtained from an engine when it is operated at specified rpm and manifold pressure conditons established as safe for continuous operation is termed :

a critical power.

b maximum power.

c take-off power.

d **rated power.**

613 id 3583 Which one the following factors would be likely to increase the possibility of detonation occuring within a piston engine ?

a slightly retarding the ignition timing

b the use of a fuel with a high octane rating as compared to the use of one with a low octane rating

c using an engine with a low compression ratio

d **using too lean a fuel/air mixture ratio**

614 id 5350 During a power change on an engine equipped with a constant speed propeller, a wrong combination of manifold pressure and RPM values results in excessive pressures in the cylinders. This is the case when one simultaneously selects a ...

a high manifold pressure and high RPM.

b low manifold pressure and high RPM.

c **high manifold pressure and low RPM.**

d low manifold pressure and low RPM.

615 id 5352 On a a normally aspirated engine (non turbo-charged), the manifold pressure gauge always indicates...

a **a lower value than atmospheric pressure when the engine is running.**

b a greater value than atmospheric pressure when the engine is running.

c zero on the ground when the engine is stopped.

d a value equal to the QFE when the engine is at full power on the ground.

616 id 5371 Spark plug fouling is more likely to happen if :

a the engine runs at the authorized maximum continuous power for too long.

b the aircraft descends without a mixture adjustment.

c power is increased too abruptly.

d **the aeroplane climbs without mixture adjustment.**

617 id 6159 As manifold pressure increases in a reciprocating engine the

a volume of air in the cylinder increases.

b weight of the fuel/aircharge decreases.

c **density of air in the cylinder increases.**

d volume of air in the cylinder decreases.

618 id 6162 Prior to starting the engine the manifold pressure gauge usually indicates approximately 29" Hg. This is because the

a pointer on the gauge is stuck at the full-power indication.

b throttle is in full-open position.

c throttle is closed, trapping a high air pressure in the manifold.

d **pressure within the manifold is the same as atmospheric pressure.**

619 id 6163 During climbing flight using a turbocharged airplane, the manifold pressure will remain approximately constant until:

a An outside temperature of -18o C is reached.

b The waste gate is fully open and the turbine is operating at minimum speed.

c **The engine's critical altitude is reached.**

d An atmospheric pressure of 14.9o is reached.

21.03.01.12. Operational criteria

620 id 3461 Pre-ignition refers to the condition that may arise when :

a the mixture is ignited before the piston has reached top dead centre.

b **the mixture is ignited by abnormal conditions within the cylinder before the spark occurs at the plug**

c a rich mixture is ignited by the sparking plugs.

d the sparking plug ignites the mixture too early.

621 id 5360 With a piston engine, when detonation is recognised, you:

a Increase manifold pressure and enrich the mixture

b Reduce manifold pressure and lean the mixture

c **Reduce manifold pressure and enrich the mixture**

d Increase manifold pressure and lean the mixture

21.03.02. Turbine engine

21.03.02.01. Principles of operation

622 id 5345 In a turbo-jet, the purpose of the turbine is to ...

a clear the burnt gases, the expansion of which provide the thrust

b **drive the compressor by using part of the energy from the exhaust gases**

c compress the air in order to provide a better charge of the combustion chamber

d drive devices like pumps, regulator, generator.

21.03.03. Engine construction

21.03.03.01. Air inlet

623 id 2992 The purpose of the blow-in-doors at the air inlets is to:

a feed cooling air to the engine cowling.

b provide the engine with additional air at high power settings at cruising speed.

c **provide the engine with additional air at high power settings and low air speeds.**

d serve to increase the relative velocity at the first compressor stage.

624 id 6170 Inlet guide vanes are use to:

a remove foreign objects

b cool the engine inlet

c **impart an angular change to the air flow**

d speed up the airflow

625 id 6172 Primary airflow is routed

a **to the fuel nozzle area for combustion**

b to the combustion area for cooling

c to the oil cooler

d to the compressor

21.03.03.02. Compressor

626 id 1191 In a compressor stage of a jet engine, the sequence is:

a **rotor - stator**

b stator - rotor

c rotor - rotor - stator

d stator - stator - rotor

627 id 2286 In the axial flow compressor of a turbo-jet engine, the flow duct is tapered. Its shape is calculated so as to:

a reduce the axial speed in cruising flight.

b maintain a constant axial speed whatever the engine rating.

c **maintain a constant axial speed in cruising flight.**

d reduce the axial speed, whatever the engine rating.

628 id 2326 The compressor surge effect during acceleration is prevented by the :

a inlet guide vanes.

b **Fuel Control Unit (F.C.U.).**

c surge bleed valves.

d variable setting type nozzle guide vanes.

629 id 3475 Concerning the centrifugal compressor, the compressor diffuser is a device in which the:

a velocity, pressure and temperature rise.

b pressure rises at a constant velocity.

c **pressure rises and velocity falls.**

d velocity rises and pressure falls.

630 id 3479 The fan in a high by-pass ratio turbo-jet engine produces:

a **the greater part of the thrust.**

b half the thrust.

c the lesser part of the thrust.

d none of the thrust.

631 id 3494 In a single spool gas turbine engine, the compressor rpm is :

a greater than turbine rpm.

b independent of turbine rpm.

c **the same as turbine rpm.**

d less than turbine rpm.

632 id 3498 In a gas turbine engine, compressor blades, which are not rigidly fixed in position when the engine is stationary, take up a rigid position when the engine is running due to :

a **the resultant of aerodynamic and centrifugal forces.**

b oil pressure.

c thermal expansion.

d blade creep.

633 id 3500 The primary purpose of the bleed valves fitted to axial flow compressors is to :

a enable an external air supply to spin up the compressor for engine starting.

b control the acceleration time of the engine.

c spill compressor air should the engine overspeed thus controlling the speed.

d **reduce the likelihood of compressor stall.**

634 id 5330 The disadvantages of axial flow compressors compared to centrifugal flow compressors are : 1 - expensive to manufacture 2 - limited airflow 3 - greater risk of rupturing 4 - limited compression ratio

a 2 - 3

b 1 - 2

c **1 - 3**

d 2 - 4

635 id 5336 A stage in an axial compressor:

a **is made of a rotor disc followed by a row of stator blades**

b has a compression ratio in the order of 2.1

c is made of row of stator blades followed by a rotor disc

d has a compression ration in the order of 0.8

636 id 6122 An axial flow compressor consist of two main parts:

a compressor and turbine

b **rotor and stator**

c diffuser and compressor

d vanes and stator

637 id 6131 What is the main advantage of an centrifugal compressor:

a high efficiency at high altitudes

b large frontal area

c **simplicity and raggedness**

d able to have more than two stages

21.03.03.04. Combustion chamber

638 id 3474 In a gas turbine engine, the maximum gas temperature is attained:

a at the entry to the exhaust unit.

b across the turbine.

c in the cooling airflow around the flame tube.

d **within the combustion chamber.**

21.03.03.05. Turbine

639 id 1804 An impulse turbine is a turbine in which the expansion takes place:

a **fully in the stator.**

b fully in the rotor.

c in the stator and in the rotor.

d in order to produce a degree of jet propulsion < 1/2.

640 id 2287 In the stator of a turbine, the speed V and static pressure Ps vary as follows:

a **V increases, Ps decreases.**

b V decreases, Ps increases.

c V increases, Ps increases.

d V decreases, Ps decreases.

641 id 3476 A "fan" stage of a ducted-fan turbine engine is driven by:

a the high pressure compressor through reduction gearing.

b **the low pressure turbine.**

c the high pressure turbine.

d airflow drawn across it by the high pressure compressor.

642 id 3478 In a free turbine engine:

a its shaft may be connected to either a compressor or another turbine.

b **there is no mechanical connection between the compressor and the power output shaft.**

c the air enters the compressor via the input turbine.

d the compressor and power output shaft are mechanically connected.

643 id 3495 When the combustion gases pass through a turbine the :

a pressure rises.

b **pressure drops.**

c velocity decreases.

d temperature increases.

644 id 3497 The primary reason for a limitation being imposed on the temperature of gas flow is to :

a ensure that the maximum acceptable temperature within the combustion chamber is not exceeded.

b prevent damage to the jet pipe from overheating.

c prevent overheating and subsequent creep of the nozzle guide vanes.

d **ensure that the maximum acceptable temperature at the turbine blades is not exceeded.**

645 id 3501 Turbine blade stages may be classed as either "impulse" or "reaction". In an impulse blade section :

a the pressure remains constant across the nozzle guide vanes and drops across the rotor blades .

b the pressure rises across the nozzle guide vanes and remains constant across the rotor blades .

c **the pressure drops across the nozzle guide vanes and remains constant across the rotor blades .**

d the pressure remains constant across the nozzle guide vanes and rises constant across the rotor blades .

21.03.03.07. Pressure, temp. and airflow in a turb. eng

646 id 5337 For a fan jet engine, the by-pass ratio is the:

a **external airflow mass divided by the internal airflow mass**

b internal airflow mass divided by the external airflow mass

c internal airflow mass divided by the fuelflow mass

d fuelflow mass divided by the internal airflow mass

21.03.03.08. Reverse thrust

647 id 3484 A reverse thrust door warning light on the flight deck instrument panel illuminates when:

a the reverser doors have moved to the reverse thrust position.

b the reverser doors are locked.

c reverse has been selected but the doors have remained locked.

d **the reverser doors are unlocked.**

21.03.03.10. Bleed air

648 id 3480 At constant fuel flow, if engine compressor air is bled off for engine anti-icing or a similar system, the turbine temperature:

a may rise or fall depending on which stage of the compressor is used for the bleed and the rpm of the engine at the moment of selection.

b will be unchanged.

c **will rise.**

d will fall.

649 id 3499 If air is tapped from a gas turbine HP compressor, the effect on the engine pressure ratio (EPR) and the exhaust gas temperature (EGT) is that :

a EPR decreases and EGT remains constant.

b both EPR and EGT decrease.

c **EPR decreases and EGT increases.**

d EPR remains constant and EGT increases.

650 id 5358 Using compressor bleed air to power systems:

a increases aircraft performance

b has no influence on aircraft performance

c **decreases aircraft performance**

d is limited to the phases of take-off and landing

651 id 6133 Bleed air is used to

a supply the engine with high pressure airflow

b produce electricity

c **cabin pressurizing**

d secondary airflow

21.03.03.11. Auxiliary gearbox

652 id 1909 The accessory units driven by the accessory gearbox of a turbo-jet engine are the : 1. tacho-generator N1 2. tacho-generator N2 3. thrust reverser pneumatic motors 4. AC generator and its Constant Speed Unit (CSD) 5. oil pumps 6. hydraulic pumps 7. high pressure fuel pumps The combination regrouping all the correct statements is :

a 4, 5, 6, 7.

b 2, 3, 4, 5, 6, 7.

c 2, 4, 5, 6.

d **1, 4, 5, 6, 7.**

21.03.04. Engine systems

21.03.04.01. Ignition

653 id 5370 The use of igniters is necessary on a turbo-jet: 1 - throughout the operating range of the engine 2 - for accelerations 3 - for ground starts 4 - for in-flight relights 5 - during turbulence in flight 6 - under heavy precipitation or in icing conditions The combination which regroups all of the correct statements is :

a **3 - 4 - 5 - 6**

b 3

c 2 - 3 - 4

d 1

21.03.04.02. Starter

654 id 3496 For a turbine engine, the term self-sustaining speed relates to the speed at which the engine :

a will enable the generators to supply bus-bar voltage.

b is designed to idle after starting.

c operates most efficiently in the cruise..

d **will run without any external assistance.**

655 id 3707 An impulse coupling does not function at such speeds above those encountered in starting. Its engaging pawls are prevented from operating at higher speeds by

a a coil spring

b engine oil pressure

c **centrifugal force**

d electro-magnetic action of operating magneto.

21.03.04.03. Engine start malfunctions

656 id 3482 A "hung start" is the failure of an engine to accelerate to its normal idle speed. It may be caused by:

a compressor surging.

b **an attempt to ignite the fuel before the engine has been accelerated sufficiently by the starter.**

c the starter cutting out early in the starting sequence before the engine has accelerated to the required rpm for ignition.

d failure of the fuel to ignite in the starting sequence after the engine has been accelerated to the required rpm by the starter.

21.03.04.04. Fuel system

657 id 275 The purpose of the barometric correction in a fuel controller is to:

a **maintain the correct weight fuel to air ratio when the altitude increases.**

b reduce the fuel-to-air ratio when altitude increases.

c increase the fuel-to-air ratio when altitude increases.

d maintain a constant fuel metering whatever the altitude.

658 id 615 The pressure usually produced by the Boost Pumps (BP) of the fuel supply system is within the following range:

a **20 to 50 psi**

b 5 to 10 psi

c 3000 to 5000 psi

d 300 to 500 psi

659 id 3477 In a gas turbine engine, the power changes are normally made by controlling the amount of:

a air leaving the compressor by the opening or closing of bleed valves.

b air entering the compressor.

c **fuel supplied.**

d air entering the compressor and fuel entering the combustion chambers.

21.03.04.05. Lubrication

660 id 616 In a fuel system, the oil to fuel heat exchanger allows:

a fuel heating as required whenever fuel filter clogging is detected.

b fuel cooling so as to prevent vapour creation likely to unprime nozzles.

c **jet engine oil cooling through thermal exchange with fuel flowing from tanks.**

d automatic fuel heating by the engine oil so as to prevent icing in fuel filter.

661 id 3481 The reason for having a low pressure fuel-cooled oil cooler in a recirculatory type oil system is to:

a cool both the oil and the fuel.

b cool the oil only.

c **cool the oil and heat the fuel.**

d heat the fuel only.

662 id 5342 In very cold weather, the pilot notices during startup, a slightly higher than normal oil pressure. This higher pressure :

a requires an oil change.

b is abnormal and requires the engine to be shut down.

c is abnormal but does not require the engine to be shut down.

d **is normal, if it decreases after startup.**

21.03.04.06. Fuel

663 id 2621 The fuel temperature, at which, under standard conditions, the vapour ignites in contact with a flame and extinguishs immediately, is the:

a **flash point**

b combustion point

c fire point

d self ignition point

21.03.04.07. Thrust

664 id 3473 An engine pressure ratio (EPR) gauge reading normally shows the ratio of:

a jet pipe pressure to combustion chamber pressure.

b **jet pipe pressure to compressor inlet pressure.**

c combustion chamber pressure to compressor inlet pressure.

d compressor outlet pressure to compressor inlet pressure.

665 id 5369 The thrust of a turbo-jet, at the selection of full power : 1 - is proportional to the mass of air expelled by the engine and to the velocity change imparted to it. 2 - is obtained by pressure of the exhaust gas on the ambient air 3 - is equivalent to zero mechanical power since the aeroplane is not moving 4 - is independant of the outside air temperature The combi

a 2 - 3

b 1 - 2

c **1 - 3**

d 4

21.03.04.08. Power plant operation and monitoring

666 id 2290 The Engine Pressure Ratio (EPR) is the ratio of:

a the total turbine inlet pressure to the total compressor outlet pressure.

b the total turbine outlet pressure to the total compressor outlet pressure.

c the total turbine inlet pressure to the total compressor inlet pressure.

d **the total turbine outlet pressure to the total compressor inlet pressure.**

667 id 2335 Consider a jet engine whose control is based on the Engine Pressure Ratio (EPR): 1. with a constant EPR, the thrust decreases when the altitude increases 2. with a constant EPR, the thrust is independent of the Mach number 3. At same environmental conditions, a given EPR setting maintains the thrust irrespective of engine wear due to ageing. 4. the EPR is determined by th

a 1, 5.

b 2, 3, 4.

c 3, 4, 5.

d **1, 3.**

668 id 5368 The control of free turbine engines on turboprops, is accomplished by: - a propeller control lever used to select: 1 - propeller RPM 2 - turbine temperature 3 - turbine RPM - a fuel control lever used to select: 4 - propeller RPM 5 - torque 6 - turbine temperature The combination which regroups all of the correct statements is :

a 1 - 3 - 5

b **1 - 5 - 6**

c 3 - 4 - 6

d 2 - 4 - 5

669 id 6132 In a gas turbine aircraft, max continuous power is to be used:

a During climb

b **In emergency**

c Cruise on high levels

d By the mechanic only

670 id 6171 Engine pressure ratio (EPR) is a ratio of

a inlet temperature and exhaust temperature

b **compressor inlet total pressure and turbine discharge total pressure**

c static inlet pressure and dynamic exhaust pressure

d compressor speed and turbine speed in a free turbine engine

671 id 6173 The pilot identifies a compressor stall by:

a an increase in fuel flow

b an increase in airspeed

c **an increase in EGT**

d an decrease in EGT

21.03.05. Auxiliary Power Unit (APU)

21.03.05.01. General

672 id 2299 On the ground, the Auxiliary Power Unit (APU) can be substituted for the:

a ground power unit.

b ground power unit, the air conditioning unit.

c ground power unit, the starting system.

d **ground power unit, the starting system, the air conditioning unit.**

673 id 3563 A modern Auxiliary Power Unit (APU) is designed to provide power for ground starting of an engine. It also supplies both in the air (subject ot certification limitations) and on the ground :

a air conditioning and thrust in the event of engine failure.

b **air conditioning and electrical services.**

c either air conditioning or electrical services, but never both at the same time.

d air conditioning and electrical services (on the ground) electrical and hydraulic back-up services (in the air).

674
id 3580

In addition to fire detention/protection, most auxiliary power units (APUs) have automatic controls for stating, stopping and maintaining operation within safe limits. These controls provide correct sequencing of the starting cycle as well as protection against :

a high TGT only.

b high TGT and loss of oil pressure only.

c overspeed and high oil temperature only.

d **high turbine gas temperature (TGT), overspeed, loss of oil pressure and high oil temperature.**

21.04. EMERGENCY EQUIPMENT

21.04.01. Doors and emergency exits

21.04.01.01. accessibility

675 id 2960 | The number of emergency exits in transport aeroplanes

a must be arranged to allow at least 50 % of all passengers to leave the aeroplane within 2 minutes.

b **must be arranged to allow all passengers and all crew members to leave the aeroplane within 90 sec. through 50 % of the available emergency exits.**

c depends on the decision of the manufacturer in agreement with the operator.

d must be in accordance with the number of passengers on board.

676 id 4820 | An exit is considered to be out of service when the following elements are inoperative the: 1. external door opening mechanism 2. internal door opening mechanism 3. door opening aid device 4. open door locking system 5. auxiliary means of evacuation 6. emergency lighting The combination regrouping all the correct statements is:

a **1, 2, 3, 4, 5, 6**

b 1, 2, 5, 6

c 2, 3, 4, 6

d 1, 3, 4, 5

21.04.01.02. normal and emergency operation

677 id 3745 | A manual inflation handle:

a serves to inflate a life jacket when the normal inflation function fails

b **serves to actuate inflation of a slide when automatic inflation fails**

c operates a hand pump for manual inflation of a slide

d is generally not applied on slides.

678 id 3867 | When the door operation of a moderne transport airplane equipped with evacuation slides is controlled from the outside, the slide:

a **is disarmed automatically.**

b unfolds and becomes inflated.

c unfolds but does not become inflated.

d becomes inflated in its packboard thus preventing its unfolding.

21.04.01.04. floor exit markings

679 id 3875 | The purpose of the proximity of the emergency evacuation path marking system is to :

a replace the overhead emergency lighting in case of failure.

b **replace the overhead emergency lighting during an emergency evacuation with a thick smoke.**

c mark only the exits at the floor level.

d to be used only at night.

21.04.01.06. passenger emergency exits

680 id 1898 Some emergency exits must be equipped with devices so as to help the occupants to get out and reach the ground if their threshold is at a height above the ground greater than:

a 6 ft, aeroplane on the ground, one main gear or nose gear collaspe.

b **6 ft, aeroplane on the ground, landing gear extended.**

c 8 ft, aeroplane on the ground, one main gear or nose gear collaspe.

d 8 ft, aeroplane on the ground, landing gear extended.

21.04.01.07. evac. slides, general usage or as life rafts

681 id 5340 Evacuation slide inflation is ensured by :

a **a pressurized gas canister combined with the slide itself.**

b the aircraft's general pneumatic circuit.

c a manual pump, used when needed by the cabin crew.

d pressurized air from the air conditioning system.

21.04.02. Smoke detection

21.04.02.01. location, indicators, function test

682 id 2288 Ion detectors are devices used in aircraft for systems protection. They detect :

a overtemperature.

b **smoke.**

c fire.

d overtemperature and fire.

683 id 2954 Smoke detector systems are installed in the

a engine nacells.

b wheel wells.

c **upper cargo compartments (class E).**

d fuel tanks.

684 id 4345 Smoke detectors fitted on transport aircraft are of the following type :

a **optical or ionization**

b chemical

c electrical

d magnetic

685 id 7449 Where are smoke detectors if installed, located in an aircraft?

a In the cockpit, in the cabin, on the lavatory

b In the cabin, on the lavatory, in the cargo compartment

c **In the avionics, lavatory and cargo compartments**

d In the wheel wells

686 id 7454 What is normally used as a leak detector in an aircraft oxygen system?

a **A form of non-oily soap solution.**

b A form of oil solution.

c An oxygen-compatible lubricant.

d Slow opening valves.

21.04.03. Fire detection

21.04.03.01. location, warning mode, function test

687 id 1198 When a continuous element of a fire detection system is heated: 1. its resistance decreases. 2. its resistance increases. 3. the leakage current increases. 4. the leakage current decreases. The combination regrouping all the correct statements is :

a 2, 4

b 2, 3

c 1, 4

d **1, 3**

688 id 1899 A fault protection circuit in a fire detection system will:

a activate an alarm in the cockpit and in the landing gear bay for ground crew.

b activate the fire detection system when the detection line is connected to ground.

c automatically initiate APU shutdown and fire extinguisher striker activation in the event of fire.

d **inhibit the fire detector when the detection line is connected to ground.**

689 id 1900 In a fire detection system with single-loop continuous components (with no fault protection), if the line is accidently grounded:

a there will be no effect on the system

b the power supply is cut off automatically.

c **the fire alarm is triggered.**

d the engine fire extinguisher striker is automatically activated.

690 id 1901 When a wire type fire system is tested:

a a part of the wire is totally heated.

b Only the warning function is tested.

c **the wiring and the warning are tested.**

d the wire is totally heated.

691 id 2745 A Continuous-Loop-Detector-System is a:

a Carbon dioxide warning system

b Smoke detection system

c **Fire detection system**

d Fire fighting system

692 id 2953 A gaseous sensor/responder tube fire sensor is tested by

a heating up the sensor with test power connection.

b checking the continuity of the system with a test switch.

c checking the wiring harness for faults but not the sensor.

d checking the sensor with pressurized gas.

693 id 2955 The overheat warning system of a transport aeroplane consists of a warning:

a light or a warning bell.

b light and warning bell.

c light.

d bell.

694 id 2958 In transport aeroplanes overheat detection systems are installed in the:

a tyres.

b cabin.

c fuel tanks.

d landing gear bays / wheel wells.

695 id 2959 The indication of the fire detection systems is performed by a:

a gear warning.

b warning bell.

c warning light.

d warning light and a warning bell.

696 id 3581 Continuous loop fire detector systems operate on the prinicple that an increase in temperature produces :

a a decrease in the reference current

b an increase in resistance

c a decrease in resistance

d a decrease in pressure

697 id 3589 On a multi-engined aircraft a fire detection system includes :

a both a warning light and an alarm bell unique to each engine

b a single warning light but a separate alarm bell for each engine

c a single warning light and a single alarm bell

d a warning light for each engine and a single alarm bell common to all engines

698 id 4247 On an aircraft provided with resistance and capacitance variation type fire detection loops, a fire alarm is initiated by a temperature increase detected:

a at any isolated point of the loops or else generally on all the loops

b only at an isolated point of the loops

c only in a uniform way along the loops

d on at least one loop

699 id 4348 In order to enable a fire to be controlled as quickly as possible, the fire detectors are located in the highest risk compartments. Theses compartments are : 1. the main landing gear wheel wells 2. the fuel tanks 3. the oil tanks 4. the auxiliary power unit 5. around the engines The combination regrouping all the correct statements is:

a 2,3

b **1,4,5**

c 2,5

d 1,2,3,4,5

700 id 5332 When a bimetallic strip is used as a switch in a fire detection loop, a fire alarm is triggered after a delay. The purpose of this delay is to:

a allow temperatures to equalise

b **avoid false alarms in case of vibrations**

c delay the triggering of the fire extinguinshers and increase their efficiency

d wait for the triggering of the second fire detection loop in order to confirm the fire

21.04.04. Fire fighting equipment

21.04.04.01. location, operation, contents, gauge, funct.

701 id 1193 The most common extinguishing agent used in gas turbine engine fire protection system is:

a Water.

b **Freon.**

c CO2.

d Powder.

702 id 1611 In inflammable gaseous materials, like propan for example, are set on fire; the following extinguisher types should be used for fire fighting:

a Dry and water type extinguishers

b Water type extinguishers

c **BCF and CO2 type extinguishers**

d CO2 and water type extinguishers

703 id 2956 The most suitable extinguishant for use on magnesium fires is :

a **sand.**

b water.

c carbon dioxide.

d freon.

704 id 4014 An airplane whose maximum approved passenger seating configuration is 7 to 30 seats must be equipped with at least:

a **1 hand fire-extinguisher conveniently located in the passenger compartment.**

b 2 hand fire-extinguishers conveniently located in the passenger compartment.

c 3 hand fire-extinguishers conveniently located in the passenger compartment.

d 4 hand fire-extinguishers conveniently located in the passenger compartment.

705 id 4015 An airplane whose maximum approved passenger seating configuration is 31 to 60 seats must be equipped with at least:

a 4 hand fire-extinguishers conveniently located in the passenger compartment.

b 3 hand fire-extinguishers conveniently located in the passenger compartment.

c **2 hand fire-extinguishers conveniently located in the passenger compartment.**

d 5 hand fire-extinguishers conveniently located in the passenger compartment.

706 id 4016 An airplane whose maximum approved passenger seating configuration is 61 to 200 seats must be equipped with at least:

a 4 hand fire-extinguishers conveniently located in the passenger compartment.

b 2 hand fire-extinguishers conveniently located in the passenger compartment.

c **3 hand fire-extinguishers conveniently located in the passenger compartment.**

d 5 hand fire-extinguishers conveniently located in the passenger compartment.

707 id 4017 An airplane whose maximum approved passenger seating configuration is 201 to 300 seats must be equipped with at least:

a 6 hand fire-extinguishers conveniently located in the passenger compartment.

b 3 hand fire-extinguishers conveniently located in the passenger compartment.

c 5 hand fire-extinguishers conveniently located in the passenger compartment.

d **4 hand fire-extinguishers conveniently located in the passenger compartment.**

708 id 4245 When fire is detected on engine n°2, the fire shutoff handle n°2 is pulled and the extinguishing agent n°1 is discharged. This results in :

a the discharge of fire extinguisher bottle n°1 and illumination of the DISCH indicator lamp of agent n°1 on engine no. and DISCH indicator lamp of agent n°2 on engine n°1

b the discharge of fire extinguisher bottle n°1 and illumination of the DISCH indicator lamp of agent n°1 on both engines

c **the discharge of fire extinguisher bottle n°1 and illumination of the DISCH (discharge) indicator lamp**

d the discharge of fire extinguisher bottle n°2 and illumination of the DISCH indicator lamp of agent n°1 on engine n°1 and agent n°2 on engine n°2

709 id 4246 When the fire handle of the fire-extinguishing system of an aircraft is pulled, the effects are : 1. closing of the LP valve of the fuel system 2. opening of the air bleed valves and HP valves on the engine concerned 3. setting of extinguishing systems 4. closing of the isolation and de-icing valves 5. isolation of the associated electric current generators 6. immed

a 1,2,5,6

b **1,3,4,5**

c 2,3,4,5

d 1,3,4

710 id 4782 In the cockpit of a transport airplane, at least one manual fire-extinguisher must be conveniently located containing :

a water.

b powder.

c **halon.**

d special fluids.

711 id 4906 An airplane whose maximum approved passenger seating configuration is 301 to 400 seats must be equipped with at least:

a 4 hand fire-extinguishers conveniently located in the passenger compartment.

b 5 hand fire-extinguishers conveniently located in the passenger compartment.

c 6 hand fire-extinguishers conveniently located in the passenger compartment.

d 3 hand fire-extinguishers conveniently located in the passenger compartment.

712 id 4907 An airplane whose maximum approved passenger seating configuration is 401 to 500 seats must be equipped with at least:

a 7 hand fire-extinguishers conveniently located in the passenger compartment.

b 5 hand fire-extinguishers conveniently located in the passenger compartment.

c 6 hand fire-extinguishers conveniently located in the passenger compartment.

d 8 hand fire-extinguishers conveniently located in the passenger compartment.

713 id 4908 An airplane whose maximum approved passenger seating configuration is 501 to 600 seats must be equipped with at least:

a 5 hand fire-extinguishers conveniently located in the passenger compartment.

b 8 hand fire-extinguishers conveniently located in the passenger compartment.

c 6 hand fire-extinguishers conveniently located in the passenger compartment.

d 7 hand fire-extinguishers conveniently located in the passenger compartment.

714 id 4909 An airplane whose maximum approved passenger seating configuration is greater than 600 seats must be equipped with at least:

a 7 hand fire-extinguishers conveniently located in the passenger compartment.

b 9 hand fire-extinguishers conveniently located in the passenger compartment.

c 8 hand fire-extinguishers conveniently located in the passenger compartment.

d 6 hand fire-extinguishers conveniently located in the passenger compartment.

715 id 4910 An airplane whose maximum approved passenger seating configuration is greater than 60 seats must be equipped with at least:

a 4 HALON 1211 fire-extinguishers.

b 2 HALON 1211 fire-extinguishers.

c 3 HALON 1211 fire-extinguishers.

d 1 HALON 1211 fire-extinguisher.

716 id 4911 In accordance with JAR-OPS 1, an airplane whose maximum take-off mass exceeds 5 700 kg or whose maximum approved passenger seating configuration is greater than 9 seats and smaller than 200 seats must be equipped with a:

a crash axe or a crow-bar in the pilot compartment.

b crash axe and a crow-bar in the passenger compartment.

c crash axe in the cockpit and a crow-bar in the passenger compartment.

d crow-bar in the cockpit and a crash axe in the passenger compartment.

717 id 4912 In accordance with JAR-OPS 1, an airplane must be equipped with equipment or systems at each emergency exit that allow to reach the ground safely in the case of an emergency when the sill height of the passenger emergency exit is higher than:

a 1,80 m.

b 1,83 m.

c 1,86 m.

d 1,89 m.

718 id 4913 In accordance with JAR-OPS 1, during and following an emergency descent, each occupant of the cockpit seats on duty must have access to a minimum amount of oxygen in: 1. order to maintain a supply throughout the entire flight time where the cabin altitude pressure is greater than 13000 ft. 2. order to maintain a supply throughout the entire flight time where the cabin altitude

a 1, 2.

b **1, 2, 3, 4.**

c 1, 2, 4.

d 1,4.

719 id 4914 In accordance with JAR-OPS 1, the minimum requirement for the survival oxygen needed to supply 100 % of the passengers during and following an emergency descend is:

a 30 minutes.

b **10 minutes or the entire flight time where the cabin pressure altitude is above 15000 ft, whichever is the greater.**

c the entire flight time where the cabin pressure altitude is above 13000 ft.

d the entire flight time where the cabin pressure altitude is above 10000 ft minus 30 minutes.

720 id 5362 With engine fire alarm activated, the extinguisher discharge:

a is automatic after a delay to allow the pilot to stop the engine

b is automatic and immediate

c **is the pilot's task**

d does not need the engine to be stopped

721 id 5363 The main feature of BCF fire extinguishers is that they :

a use the cooling effect created by the venturi during discharge.

b **act as flame inhibitors by absorbing the air's oxygen.**

c are electrical conductors.

d are highly corrosive particularly for aluminium alloys.

722 id 7455 What is the main advantage of Halon 1301 over CO2 for extinguishing an aircraft cabin fire?

a Co2 can extinguish faster than Halon 1301, but the heat will be higher with CO2.

b Halon 1301 gives a much lower cost than Co2.

c You will need less Halon 1301 to fight the fire than CO2.

d **Halon 1301 can extinguish a fire with much lower concentration than is required for CO2, and it will not deprive the occupants of the cabin of the needed oxygen.**

21.04.05. Aircraft oxygen equipment

21.04.05.01. principles of operation

723 id 1609 The oxygen masks have dropped down from the passengers service units. The oxygen flow starts :

a immediatly

b **after pulling the oxygen mask downwards**

c only above FL200

d After the system has been switched on by a crew member

724 id 1784 Consider the flight deck oxygen supply system. The purpose of the oxygen regulator (as a function of demand and altitude) is to: 1. decrease oxygen pressure from 1800 PSI (in the bottles) down to about 50-75 PSI (low pressure system) 2. supply pure oxygen 3. supply diluted oxygen 4. supply oxygen at normal pressure 5. supply oxygen at emergency/positive pressure 6.

a 2, 3, 4, 5

b 3, 4, 5, 6

c 1, 2, 3, 4

d 1, 3, 4, 6

725 id 1785 A public transport aircraft is operated at FL 390. The total number of oxygen dispensing units and outlets in the cabin must be at least the same as the total number of :

a passengers.

b seats.

c seats exceeded by 10%.

d passengers exceeded by 10%.

726 id 1786 A public transport aircraft has a cruising altitude of FL 390. It is fitted with individual oxygen masks for the passengers. In the event of depressurisation, the masks must be automatically released before the cabin pressure altitude exceeds:

a 15000 ft.

b 13000 ft.

c 12000 ft.

d 14000 ft.

727 id 1787 Above what flight level must one pilot wear an oxygen mask at all times during commercial flight.

a 490.

b 300.

c 250.

d 410.

728 id 1788 A diluter demand oxygen regulator :

a delivers oxygen flow only above FL 100.

b delivers oxygen flow when inhaling.

c is only recommended for use with smoke in the cockpit.

d mixes air and oxygen in a passenger oxygen mask.

729 id 1789 A jet aircraft is certified for the carriage of 120 passengers. 42 passengers are on board and the expected Flight Level on route Paris-Alger is FL 330. The first aid oxygen to be on board at departure shall provide breathing supply for at least:

a 1 passenger for the entire flight after cabin depressurisation at cabin altitude of more than 8000 ft.

b no first aid required.

c 1 passenger for the entire fligth after cabin depressurisation at cabin altitude between 10000 and 14000 ft.

d 3 passengers for the entire flight after cabin depressurisation at cabin altitude between 10000 and 14000 ft.

730 id 1790 As regards passengers oxygen in public transport aircraft, information must be given to passengers through a demonstration. If a flight is to be carried out at Flight Level FL 290, this demonstration must be completed before :

a take-off.

b the aircraft reaches FL 100.

c the aircraft reaches FL 140.

d the aircraft reaches FL 250.

731 id 1791 In jet transport aircraft, breathing oxygen for the cockpit is stored in the following state:

a liquid.

b gaseous.

c chemical.

d chemical or gaseous.

732 id 1895 A public transport jet aeroplane may be operated up to FL 450. The cabin includes 180 passenger seats, made up of 30 rows (3 seats from each side of central aisle). The minimum number of cabin oxygen masks for this aeroplane must be:

a 198 (110% of the seating capacity).

b 270 (150% of the seating capacity).

c 240 (one additional mask per seat block).

d 210 (one additional mask per seat row).

733 id 1897 When quick donning masks are in use, the pilot is:

a not able to do any radio communication.

b only able to receive.

c only able to transmit.

d able to radiotelephone.

734 id 1902 In a pressurized aircraft, the first-aid (therapeutic) oxygen is designed to:

a protect the flight crew and cabin attendants against fumes and noxious gases.

b give medical assistance to passengers with pathological respiratory disorders.

c protect all the occupants against the effects of accidental depressurisation.

d protect certain passengers, and is only carried on board for these people.

735 id 1903 An aircraft is scheduled to fly from PARIS to MARSEILLE at FL 390 and has the following characteristics: Maximum permissible number of passenger specified by the certificate of airworthiness= 230 Number of seats on board= 200 Scheduled number of passengers on board= 180 The minimum number of inhaler systems provided in the aircraft cabin should be:

a 180.

b 230.

c 200.

d 220.

736 id 1904 The flight level from which regulation requires for the flight crew members in pressurized aircraft a quick donning type mask is:

a FL 100.

b FL 300.

c FL 390.

d **FL 250.**

737 id 1905 What is breathed in when using a passenger oxygen mask?

a **Cabin air and oxygen.**

b 100% oxygen.

c Cabin air and oxygen or 100% oxygen.

d A mixture of oxygen and freon gas.

738 id 2746 The demand valve of a diluter-demand type oxygen regulator in normal mode, operates when the :

a pressure in the oxygen reservoir is more than 500 psi

b diluter control is in normal position

c user requires 100 percent oxygen

d **user breathes in**

739 id 2747 The purpose of the "Pressure Relief Valve" in a high pressure oxygen system is to :

a act as a manual shut-off valve

b reduce pressure in the oxygen reservoir to a suitable manifold pressure for the regulator

c **relieve overpressure if the pressure reducing valve malfunctions**

d maximize the charging pressure of the system

740 id 2961 The state in which the breathing oxygen for the cockpit of jet transport aeroplanes is stored is :

a Chemical compound.

b **Gaseous.**

c Liquid.

d Gaseous or chemical compound..

741 id 2962 If the maximum operating pressure of the oxygen system is exceeded the:

a **oxygen is discharged overboard via a safety plug.**

b oxygen becomes unusable for the passengers.

c passenger oxygen masks will drop down.

d oxygen bottles will explode.

742 id 2963 The purpose of a diluter demand regulator in an oxygen system is to :

a is only recommended with smoke in the cockpit.

b deliver oxygen flow only above FL 100.

c **deliver oxygen flow when inhaling.**

d mix air and oxygen in a passenger oxygen mask.

743 id 2964 The built-in passenger oxygen system be activated by :

a opening the oxygen-bottle valves.

b switching the diluter demand regulator ON.

c **switching the passenger oxygen ON.**

d switching the diluter demand regulator and the passenger oxygen ON.

744 id 2965 The passenger oxygen mask will supply :

a a mixture of compressed air and oxygen or 100 % oxygen.

b 100 % oxygen.

c **a mixture of cabin air and oxygen.**

d a mixture of oxygen and freon gas.

745 id 3723 A pressurized aeroplane is operated at FL 300. It undergoes a rapid decompression so that the pressure in the cabin goes quickly down to the outside pressure value. What happens concerning the oxygen system ?

a **the oxygen masks are automatically presented to cabin crew members and passengers**

b the oxygen masks are automatically presented to flight crew members

c if the automatic mask presentation has been activated, the oxygen will flow within the first 3 minutes

d manual override of the automatic presentation of passenger oxygen masks is, generally speaking, not possible

746 id 3736 Generally speaking when the oxygen flows to the masks in the passenger cabin, the system is activated by

a pushing the mask against the face and breath normally.

b activating the relevant switch in the cockpit.

c firmly pulling the cover behind which the oxygen mask is stowed.

d **firmly pulling the mask towards the face, after the cover has opened.**

747 id 3878 The purpose of the first aid oxygen is to:

a supply all the passengers in case of depressurization.

b provide the cabin attendants with respiratory protection.

c **provide some passengers with additional respiratory assistance after an emergency descent following a depressurization.**

d provide the flight crew with respiratory assistance after depressurization.

748 id 4606 The operations of an airline plan the operation of a pressurized aircraft at a 240 flight level on its whole route with 150 passengers on board. As concerns the regulatory requirements about oxygen: 1. each crew member will have available a quick fitting inhaler device. 2. the aircraft will be equipped with a warning system indicating that the cabin altitude is higher than 3

a 1,2,3,4

b **2,3**

c 2

d 3,4

749 id 4790 Oxygen systems are systems used on pressurized airplanes in : 1. an emergency in the case of depressurization. 2. an emergency in the case of the indisposition of a passenger. 3. normal use in order to supply oxygen to the cabin. 4. an emergency in the case of smoke or toxic gases. The combination regrouping all the correct statements is:

a 3

b 1, 2, 4

c **1,4**

d 2, 3

750 id 4791 Modern pressurized transport airplanes are equipped with :

a only portable oxygen bottles.

b only one oxygen system supplying the whole aircraft.

c two oxygen systems both supplying the cockpit and the cabin.

d **two independent oxygen systems, one supplying the cockpit, the other the cabin.**

751 id 4792 When selected to normal, the oxygen proportion of the air/oxygen mixture supplied by the cockpit oxygen system regulator:

a **increases when the altitude increases.**

b decreases when the altitude increases.

c is constant whatever the altitude.

d is 100 %.

752 id 4793 In the cabin, when the oxygen mask is pulled downwards, the passenger breathes :

a pure oxygen at the ambient pressure.

b pure oxygen under pressure.

c **a mixture of oxygen and cabin air.**

d cabin air under pressure.

753 id 4798 The survival oxygen is:

a the oxygen used for protection against smoke and carbon dioxide.

b the oxygen supplied to a passenger who needs oxygen for pathological reasons.

c **the oxygen supplied to the airplane occupants in case of accidental depressurization.**

d a therapeutical oxygen specifically carried for certain passengers.

754 id 4832 The opening of the doors giving access to the oxygen masks for the passengers is : 1. pneumatic for the gaseous oxygen system, 2. electrical for the chemical oxygen system, 3. pneumatic for the chemical oxygen system, 4. electrical for the gaseous oxygen system. The combination regrouping all the correct statements is:

a **1, 2**

b 1, 3

c 2, 3

d 2, 4

755 id 4839 A passenger emergency mask is a :

a mask with flow on request and cannot be used if there is smoke in the cabin.

b **continuous flow mask and cannot be used if there is smoke in the cabin.**

c continuous flow mask and can be used if there is smoke in the cabin.

d mask with flow on request and can be used if there is smoke.

756 id 4840 A smoke mask is a :

a **mask with flow on request and covers the whole face.**

b continuous flow mask and covers the whole face.

c mask with flow on request and covers only the nose and the mouth.

d continuous flow mask and covers only the nose and the mouth.

757 id 4916 In accordance with JAR-OPS 1, each occupant of the cockpit seats on duty in a non-pressurized airplane must have an oxygen supply reserve for the entire flight time at pressure altitudes greater than:

a 12500 ft.

b **10000 ft.**

c 13000 ft.

d 14000 ft.

758 id 4917 In accordance with JAR-OPS 1, 100 % of the passengers in a non-pressurized airplane must have an oxygen supply reserve for the entire flight time at pressure altitudes greater than:

a 15000 ft.

b 10000 ft.

c 14000 ft.

d **13000 ft.**

759 id 4918 In accordance with JAR-OPS 1, 10 % of the passengers in a non-pressurized airplane must have an oxygen supply reserve for the entire flight time when the cabin altitude pressure is greater than:

a 10000 ft.

b 13000 ft.

c **10000 ft but not exceeding 13000 ft minus 30 minutes.**

d 10000 ft but not exceeding 13000 ft.

760 id 4919 In accordance with JAR-OPS 1, when an airplane flies at over 25000 ft, the total number of oxygen dispensing units and supply terminals must be at least greater than the number of:

a seats by 30 %.

b passengers by 10 %.

c **seats by 10 %.**

d passengers by 30%.

761 id 5341 Airliners are equipped with oxygen systems. It can be said that :

a **with setting on "NORMAL", the crew breathes a mixture of oxygen / cabin air.**

b the same circuit is used by the crew and the passengers.

c the seals must be carefully greased to avoid sparks.

d the passenger circuit never uses chemically generated oxygen.

762 id 5343 An oxygen regulator has 3 controls : - a power lever : ON/OFF - an "O2" lever : NORMAL/100% - an emergency lever : ON/OFF Among the following statements, the correct proposition is :

a the power lever on ON, and, the "O2" lever on NORMAL allows the oxygen to enter the regulator and enables breathing of a mixture of air/oxygen according to altitude.

b the EMERGENCY lever on ON enables breathing of pure oxygen at ambient pressure.

c the "O2" lever on ON enables breathing of the over-pressure oxygen at a constant flow rate.

d with the EMERGENCY lever on OFF, in an emergency situation, one cannot use the oxygen mask to breathe.

763 id 5366 In case of smoke in the cockpit, the crew oxygen regulator must be set to:

a on demand.

b normal.

c emergency.

d 100%

764 id 7456 Oxygen regulators used by the flight crew for most commercial jet aircraft are of the

a continuous pressure diluter demand type.

b continuous flow type.

c Pressure demand type.

d Diluter demand type

765 id 7458 The emergency oxygen systems that drop the mask to the passengers of large jet transport aircraft are normally of the:

a Continuous flow type.

b Diluter demand type.

c Pressure demand type.

d Demand type

21.04.05.02. protection and surveillance devices

766 id 1896 In a pressurized transport aircraft, the protective breathing equipment:

a gives medical assistance to certain passengers with respiratory disorders.

b protects the members of the crew against fumes and noxious gases.

c protects all the occupants against the effects of accidental depressuriation.

d protects the members of the crew against the effects of accidental depressurisation.

21.04.05.04. comparison of const. flow and outlet mask

767 id 2744 The type of a aircraft oxygen system intended for use by passengers, is mostly :

a an air recycle system

b a pressure demand system

c portable equipment only

d a continuous flow system

21.04.05.05. oxygen generators

768 id 2325 The chemical oxygen generator is a system: 1. which is inexpensive 2. requiring no external input 3. which is lightweight 4. requiring no maintenance 5. with adjustable flow rate 6. which is unsafe The combination regrouping all the correct statements is:

a 2, 4, 5

b 2, 3, 6

c 1, 4, 6

d **1, 3, 4**

769 id 3863 The chemical oxygen generator supplies oxygen for about :

a 5 minutes.

b 30 minutes.

c 2 hours.

d **15 minutes.**

770 id 3864 The advantages of a chemical oxygen source for the passenger cabin are : 1. reduced weight and volume, 2. easy storage and maintenance, 3. greater autonomy, 4. no risk of explosion, 5. reversible functioning, 6. no maintenance. The combination regrouping all the correct statements is:

a 2, 3, 5

b 1, 2, 3, 4, 5, 6

c **1, 2, 4, 6**

d 1, 3, 4, 5

771 id 3865 The disadvantages of a chemical oxygen source for the passenger cabin are : 1. a flow which cannot be modulated, 2. a heavy and bulky system, 3. non reversible functioning, 4. risks of explosion, 5. poor autonomy. The combination regrouping all the correct statements is:

a 1, 2, 3, 4, 5

b **1, 3, 5**

c 2, 4

d 1, 2, 3, 5

772 id 3866 The advantages of a gaseous oxygen source for the passenger cabin are : 1. a greater autonomy, 2. no risk of explosion, 3. reversible functioning, 4. easy storage and maintenance, 5. possibility to regulate flow. The combination regrouping all the correct statements is :

a 1, 2, 3, 4, 5

b **1, 3, 5**

c 2, 4, 5

d 2, 3, 4

773 id 4794 Chemical oxygen generators are used to furnish oxygen to the :

a **cabin only.**

b cockpit and the cabin.

c cockpit only.

d toilets only.

774 id 5367 The installation and use of on-board oxygen generators is such that: 1 - the smoking ban is imperative when used 2 - in case of accidental drop of the "continuous flow" passenger masks, no crew action is required 3 - no trace of grease must be found in the system assembly 4 - the system's filling adaptors must be greased with non freezable or graphite grease The co

a 2 - 3

b 1 - 4

c **1 - 3**

d 2 - 4

21.04.05.06. dangers of oxygen use, safety measures

775 id 1908 The safety precautions to be taken whenever using oxygen are: 1. refrain from smoking, avoid sparkes. 2. Avoid operation of radio communication equipment. 3. Slowly operate oxygen system valves. 4. Avoid greasy matter. The combination regrouping all the correct statements is :

a 1, 2, 3.

b **1, 3, 4.**

c 2, 3, 4.

d 1, 2, 4.

776 id 3728 A substance which may never be used in the vicinity or on parts of an oxygen installation is :

a Halon

b Water

c **Grease**

d Nitrogen

777 id 4818 The equipment of an oxygen supply installation must be kept absolutely free of oil or grease traces as:

a the oxygen system would be contaminated.

b **these substances catch fire spontaneously in the presence of oxygen under pressure.**

c these substances mixed with oxygen could catch fire in the presence of a spark.

d these substances could plug the oxygen masks filters.

21.04.06. Emergency equipment

21.04.06.01. portable, hand-held fire extinguisher

778 id 2957 The number of hand fire extinguishers which have to be installed in the passenger cabin according to JAR-OPS depends on the number of :

a emergency exits in the cabin.

b seat rows in the cabin.

c passengers in the cabin.

d **seats in the cabin.**

779 id 4787 The number of manual fire-extinguishers, on board the passenger cabin of an airplane, whose maximum approved configuration for passenger seats is 31, is:

a 1

b **2**

c 3

d 0

780 id 4800 An aircraft whose maximum approved configuration for passenger seats is 10 seats must be equipped with:

a three fire-extinguishers in the passenger cabin only.

b one fire-extinguisher in the cockpit and two fire- extinguishers in the passenger cabin.

c **one fire extinguisher only in the cockpit.**

d two fire-extinguishers in the cockpit and two fire-extinguishers in the passenger cabin.

781 id 4803 An aircraft whose maximum approved configuration for passenger seats is 200 seats must be equipped with:

a **3 manual fire-extinguishers in the cabin.**

b 5 manual-fire extinguishers in the cabin.

c 7 manual-fire extinguishers in the cabin.

d 4 manual fire-extinguishers in the cabin.

782 id 5008 A public transport passengers aircraft, with a seating configuration of more than 61 seats, must have in its passenger compartment(s), at least 3 portable fire-extinguishers including:

a 3 halon fire-extinguishers.

b 1 halon fire-extinguisher.

c **2 halon fire-extinguishers.**

d no halon fire-extinguisher.

21.04.06.04. emergency locator beacon, transmitter

783 id 4844 The portable emergency beacons which are used after an emergency landing or ditching have a duration of :

a 72 h

b 24 h

c 12 h

d **48 h**

21.04.06.05. life jacket, life raft

784 id 3876 In a ditching situation, the passenger life jackets will be inflated :

a once the passengers are in the water.

b immediately on the opening of the exits.

c immediately on ditching.

d **when leaving the airplane.**

785 id 4356 There are 60 passengers and crew members on board a turbo-prop aircraft. Its speed is 240 kt. At a point along the course steered, above the sea, the aircraft is at 1h45 min from an airdrome suitable for emergency landing. The minimum equipment complying with regulations is :

a One 30-seat life boat and two 20-seat life boats

b 60 life jackets

c **60 life jackets and three 30-seat life boats**

d 60 life jackets, two 30-seat life boats

786 id 4784 In accordance with the JAR-OPS and with the exception of amphibians and hydroplanes, the carriage of a life jacket per person on board is compulsory when the airplane is : 1. cruising at such a distance from the shore that it would not be able to return in the case of an engine failure. 2. is flying over a water surface at more than 50 NM off shore. 3. is using departure and

a 2, 3

b 1, 2, 3, 4

c 1, 2

d 3, 4

787 id 4915 In accordance with JAR-OPS 1 and if necessary, the number of liferafts to be found on board an aircraft must allow the transportation of the entire aircraft occupants:

a plus 10 %.

b in the case of a loss of one raft of the largest rated capacity.

c plus 30 %.

d in the case of a loss of two rafts.

21.04.06.06. pocket lamp, emergency lighting

788 id 4802 The emergency lighting system must be able to function and supply a certain level of lighting after the main electric power system has been cut off for at least:

a 90 seconds

b 10 minutes

c 5 minutes

d 30 minutes

789 id 4843 The pyrotechnic means used in case of an emergency to indicate your position to the emergency teams are a flare:

a which is used at night and a smoke device which is used in the daytime.

b and a smoke device which are only used at night.

c which is used at daytime and a smoke device which is used at night.

d and a smoke device which are only used in the daytime.

21.04.06.07. megaphone

790 id 4783 In accordance with the JAR-OPS, an airplane constituted of only one passenger deck, equipped with 61 seats and effectively carrying passengers, must be equipped with :

a 1 megaphone.

b 2 megaphones.

c 2 megaphones if there are more than 31 passengers on board.

d no megaphone.

21.04.06.08. crash axe

791 id 3731 The crash/fire axe is part of the safety equipment fitted to passenger aircraft. Its function is to :

a settle an escalating conflict with unreasonable passengers, who threaten flight safety.

b free exits in case of evacuation via the sides.

c activate a radio survival beacon by cutting off the red coloured top

d obtain forced access to a fire behind a panel and a general purpose tool during evacuation.

792
id 4788

The number of crash axes on board an airplane, whose maximum approved configuration of passenger seats is 201, is :

a 1

b **2**

c 3

d 4