

(M15) 渦輪式發動機：

| 題號 | 答案 | 題目 |
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| 1(0023834) | C | <p>How does a dual axial-flow compressor improve the efficiency of a turbojet engine ? (A) By using more turbine stages. (B) By decreasing combustion chamber temperatures. (C) By higher compression ratios.</p> <p>渦噴發動機雙軸流式壓縮器如何提高效率？(A) 使用更多級數的渦輪 (B) 降低燃燒室的溫度 (C) 更高的壓縮比率</p> |
| 2(0035846) | A | <p>If an aircraft climbs with a fixed throttle position (A) thrust decreases and RPM increases. (B) thrust and RPM remain the same. (C) thrust increases and RPM remains the same.</p> <p>飛機爬升時，若油門桿位置不變，則 (A) 推力降低，轉速上升 (B) 推力及轉速維持不變 (C) 推力上升，轉速不變</p> |
| 3(0046402) | B | <p>If an electrical de-icing system is operating, thrust will.... (A) decrease. (B) remain constant. (C) increase.</p> <p>在電子式除冰(electric de-icing)系統操作下，推力會如何？(A) 降低 (B) 不變 (C) 增加</p> |
| 4(0023814) | C | <p>In a turbine engine with a dual-spool compressor, the low-speed compressor... (A) always turns at the same speed as the high-speed compressor. (B) is connected directly to the high-speed compressor. (C) seeks its own best operating speed.</p> <p>有雙軸式壓縮器的渦輪發動機中，低轉速壓縮器會如何？(A) 總是與高轉速壓縮器同一速度運轉。(B) 直接連接到高轉速壓縮器。(C) 尋求它自己的最佳運轉速度。</p> |
| 5(0023900) | C | <p>Which of the following types of combustion sections are used in aircraft turbine engines? (A) Annular, variable, and cascade vane. (B) Can, multiple-can, and variable. (C) Multiple-can, annular, and can-annular.</p> <p>下列哪些類型的燃燒室使用於飛機渦輪發動機上？(A) 環式、可變的和葉柵(Cascade)式。(B) 罐式、多罐式和可變的。(C) 多罐式、環式和環罐式。</p> |
| 6(0055717) | C | <p>The heat absorbed by engine internal components can be detrimental to</p> |

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| | | <p>thrust and is prevented by (A) reducing fuel flow to reduce internal temperature. (B) bleeding air off the compressor to heat the components. (C) bleeding air off the compressor to cool the components.</p> <p>發動機內部組件吸收熱能,對推力不利,可如何避免 (A) 減少燃油流量來減少內部的溫度 (B) 從壓縮器釋放氣體去加熱組件 (C) 從壓縮器釋放氣體去冷卻組件</p> |
| 7(0055765) | A | <p>Where does the high voltage type turbine ignition receive its voltage pulse from? (A) Primary windings. (B) Rectifier. (C) Trigger transformer.</p> <p>渦輪發動機使用高電壓點火系統，其電壓脈衝來自下列何者？(A) 主線圈 (B) 整流器 (C) 變壓器的觸發器</p> |
| 8(0023819) | B | <p>During starting of a turbine engine, a hung start is indicated if (A) exhaust-gas temperature exceeds specified limits. (B) the engine fails to reach idle rpm. (C) engine rpm exceeds specified operating speed.</p> <p>在渦輪發動機啟動期間，甚麼狀況是假啟動(hung start) (A) 排氣溫度超過規定的限額。(B) 發動機轉速未能達到怠速。(C) 發動機轉速超過規定的工作速度。</p> |
| 9(0055766) | C | <p>On a gas turbine engine DC starting circuit, if there is an open circuit on the contact of the over speed relay, (A) the starter motor will stop only when starter switch selected off. (B) the starter motor will continue to run for 30 sec and then stop. (C) no power supply is connected to the starter motor.</p> <p>汽渦輪發動機上的直流啟動馬達電路,假如連接到超轉速繼電器上的線路斷開時，下列何者正確? (A) 只有在當啟動器開關擺到"關"的位置時,啟動馬達才會停止 (B) 啟動馬達會持續轉30秒,然後停止 (C) 沒有電源提供到啟動馬達</p> |
| 10(0055816) | B | <p>A thermocouple indicator is basically a (A) milliammeter. (B) millivoltmeter. (C) milliohmeter.</p> <p>熱電偶式指示器基本上是(A) 毫安表 (B) 毫伏表 (C) 毫姆表</p> |
| 11(0055779) | A | <p>When testing an E.G.T(Exhaust Gas Temperature) system, (A) the O.A.T is always taken into consideration. (B) the O.A.T is neglected. (C) O.A.T is only taken into consideration when over 20°C.</p> |

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| | | 要執行排氣尾溫系統測試時, (A) 外界溫度需在考慮範圍內 (B) 忽略外界溫度 (C) 當外界溫度超過20度C時,才需在考慮範圍內 |
| 12(0023962) | A | <p>If the engine is run for a performance-recovery compressor washing, it is operated at _____ RPM. (A) Idle (B) Cruise (C) Takeoff</p> <p>為恢復發動機壓縮器性能而清洗發動機時，發動機的轉速需在 (A) 慢車 (B) 巡航 (C) 起飛</p> |
| 13(0055858) | C | <p>A free turbine is usually found on a (A) turbo-jet. (B) turbo-fan. (C) turbo prop.</p> <p>自由或動力渦輪 (free turbine)一般是用在什麼發動機上 (A) 噴射渦輪發動機 (B) 渦輪風扇發動機 (C) 渦輪螺旋槳發動機</p> |
| 14(0055861) | A | <p>Torque measurement is taken from the (A) reduction gearbox. (B) prop shaft. (C) free turbine shaft.</p> <p>螺旋槳發動機扭力的量測位置為 (A) 減速齒輪箱 (B) 螺旋槳軸 (C) 自由或動力渦輪軸</p> |
| 15(0023818) | C | <p>A turboprop powerplant propeller (A) is governed at the same speed as that of the turbine. (B) controls the speed of the engine in the beta range. (C) accounts for 75 to 85% of the total thrust output.</p> <p>一架渦輪螺旋槳發動機的螺旋槳 (A) 應與渦輪機在同一速度。(B) 控制發動機轉速在測試範圍內。(C) 佔75至85%的總推力輸出。</p> |
| 16(0055712) | B | <p>In an axial flow turbine engine, compressor bleed air is sometimes used to aid in cooling the (A) compressor inlet guide vanes. (B) stator vanes, rotor blades, and bearings in turbine section. (C) fuel.</p> <p>在直流渦輪發動機中,壓縮器的壓縮空氣會被用於冷卻 (A) 壓縮器進氣導片 (B) 渦輪段的轉定子葉片及軸承 (C) 燃油</p> |
| 17(0023950) | A | <p>Air used to cool the turbine blades is taken from the (A) high pressure compressor. (B) low pressure compressor. (C) turbofan.</p> <p>用來冷卻渦輪葉片的氣體來自 (A) 高壓壓縮器 (B) 低壓壓縮器 (C) 渦輪扇</p> |
| 18(0055720) | B | <p>Air bleed for an anti-ice system is (A) tapped directly off the compressor. (B) sent through a pressure regulator. (C) sent through the air conditioning.</p> |

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| | | 發動機釋出的熱氣是怎樣送到防冰系統 (A) 從壓力縮器直接送至 (B) 經過壓力調節閥送至 (C) 經過空調系統送至 |
| 19(0055750) | B | <p>Inspection of pneumatic starters by maintenance technicians usually includes checking the (A) stator and rotor blades for FOD. (B) oil level and magnetic drain plug condition. (C) rotor alignment.</p> <p>維修人員在檢查氣動啟動器時,一般會檢查哪些部分 (A) 定子和轉子之葉片,是否有被外物損壞 (B) 滑油量和油路磁性堵頭 (C) 轉子是否有偏位不正</p> |
| 20(0023918) | A | <p>During starting of a turbine engine, (A) a hot start is indicated if the exhaust-gas temperature exceeds specified limits. (B) an excessively lean mixture is likely to cause a hot start. (C) the engine ignition should start from 60s to 80s after the fuel shutoff valve is opened.</p> <p>在渦輪發動機起動過程中,下列何者正確? (A) 如果排氣溫度超過規定的限制表示熱起動(hot start)。 (B) 過稀混合可能導致熱起動。 (C) 發動機應該從燃油關斷閥被打開後60秒到80秒啟動點火。</p> |
| 21(0055741) | A | <p>High energy ignition is required because of the (A) high flash point of the fuel. (B) absorbed moisture content. (C) low flash point of the fuel.</p> <p>要用高電能點火,其原因為 (A) 燃油燃點高 (B) 承受潮氣含量 (C) 燃油燃點低</p> |
| 22(0023819) | B | <p>During starting of a turbine engine, a hung start is indicated if (A) exhaust-gas temperature exceeds specified limits. (B) the engine fails to reach idle rpm. (C) engine rpm exceeds specified operating speed.</p> <p>在渦輪發動機啟動期間,甚麼狀況是假啟動(hung start) (A) 排氣溫度超過規定的限額。 (B) 發動機轉速未能達到怠速。 (C) 發動機轉速超過規定的工作速度。</p> |
| 23(0055800) | B | <p>Engine pressure ratio is the total pressure ratio between the (A) front of the engine inlet and the aft end of the compressor. (B) front of the compressor and the rear of the turbine. (C) aft end of the compressor and the aft end of the turbine.</p> <p>發動機壓縮比是指在什麼之間的總壓縮比 (A) 發動機風扇進口和壓縮段尾端 (B) 壓縮段的進口與渦輪後面 (C) 壓縮段尾端和渦輪尾端</p> |
| 24(0046381) | C | Thrust will (A) increase at high ambient temperatures. (B) be |

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| | | <p>independent from the ambient temperatures. (C) increase at low ambient temperatures.</p> <p>有關推力之敘述何種正確? (A) 隨大氣溫度增加而增加 (B) 與大氣溫度無關 (C) 隨大氣溫度降低而增加</p> |
| 25(0055780) | B | <p>What is the Engine Pressure Ratio (E.P.R.) used for? (A) To limit the maximum exhaust gas temperature. (B) To indicate the thrust produced by the engine. (C) As a cross check for minimum acceptable thrust.</p> <p>發動機壓縮比之作用為何 (A) 用來限制最大的排氣溫度 (B) 指示發動機所產生的推力 (C) 用來相互檢驗最小容許推力</p> |
| 26(0055806) | A | <p>Motor driven impeller and turbine fuel flow transmitters are designed to transmit data (A) by using aircraft electrical system power. (B) mechanically. (C) by fuel pressure.</p> <p>馬達驅動的葉輪片和渦輪的燃油流量傳送器之下列敘述何者正確? (A) 使用飛機電力系統電力 (B) 機械式 (C) 藉由燃油壓力</p> |
| 27(0023911) | C | <p>What is the function of gas generator or gas producer of a free-turbine turboprop engine? (A) produce electricity. (B) produce thrust. (C) produce high-velocity gases which drive the power turbine.</p> <p>自由渦輪螺旋槳發動機的氣體產生器(gas generator or gas producer)的功能為何? (A) 產生電力。 (B) 產生推力。 (C) 產生高流速氣體以驅動動力渦輪。</p> |
| 28(0055878) | A | <p>Fuel scheduling during A.P.U(Auxiliary Power Unit) start and under varying pneumatic bleed and electrical loads is maintained (A) automatically by the A.P.U fuel control system. (B) manually through power control lever position. (C) semi automatic through power control lever position.</p> <p>輔助動力單元(APU)因起動及不同氣動供應和電力負載時,燃油供應的行程為 (A) 由燃油控制系統自動供應 (B) 手動,藉由推力控制連桿控制位置 (C) 半手動,藉由推力控制連桿控制位置</p> |
| 29(0055872) | B | <p>An A.P.U(Auxiliary Power Unit) shut down is initiated by (A) high oil pressure, fire warning, hot oil temperature. (B) low oil pressure, fire warning, hot oil temperature. (C) low oil pressure, fire warning.</p> <p>什麼情況下, 會將啟動輔助動力單元(APU)關車? (A) 高滑油壓力, 火警, 高滑油溫 (B) 低滑油壓力, 火警, 高滑油溫 (C) 低滑油壓</p> |

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| | | 力,火警 |
| 30(0055873) | C | <p>An A.P.U(Auxiliary Power Unit) start cycle is completed at (A) 100% RPM. (B) 75% RPM. (C) 95% RPM.</p> <p>輔助動力單元(APU)整個啟動過程完成在 (A) 轉速達到100% (B) 轉速達到75% (C) 轉速達到95%</p> |
| 31(0055747) | B | <p>A safety feature usually employed in pneumatic starters that is used if the clutch does not release from the engine drive at the proper time during start is the (A) spring coupling release. (B) drive shaft shear point. (C) flyweight cutout switch.</p> <p>假設氣動啟動馬達之離合器,在啟動過程中沒有在適當時間點脫離,哪一種安全特性使用在氣動馬達中會去動作 (A) 彈簧偶合脫開 (B) 轉動軸上有剪斷銷 (C) 飛錘(flyweight)會切斷開關</p> |
| 32(0055818) | C | <p>Thrust in a high bypass fan engine is indicated by (A) N3 RPM or P1/P4 ratio. (B) N1 RPM or N3 RPM. (C) N1 RPM or E.P.R.(Engine Pressure Ratio)</p> <p>高旁通比之風扇發動機推力指示為? (A) N3轉速或P1/P4 比 (B) N1轉速或N3轉速 (C) N1轉速或引擎壓縮比(E.P.R)</p> |
| 33(0023856) | C | <p>What is the instrument that indicates the thrust of a gas-turbine engine? (A) Torquemeter. (B) Exhaust-gas temperature indicator. (C) Engine pressure ratio indicator.</p> <p>燃氣渦輪發動機用什麼儀表指示推力? (A) 扭力計 (B) 排氣溫度指示器 (C) 發動機壓力比指示器</p> |
| 34(0055826) | B | <p>Vibration pick-ups are located (A) on both fan and turbine cases. (B) on the fan/compressor case. (C) on the turbine case.</p> <p>震動感測器是感測位於 (A) 風扇機匣及渦輪外殼 (B) 風扇機匣及壓縮段外殼 (C) 渦輪段外殼</p> |
| 35(0055860) | A | <p>The fuel flow in a turboprop engine within the constant speed range is controlled (A) automatically. (B) manually. (C) No Control.</p> <p>渦槳動發機在定轉速範圍內,其燃油流量控制是 (A) 自動地 (B) 手動地 (C) 沒有控制</p> |
| 36(0060601) | B | <p>Which statement regarding the engine power output for a turboshaft-engine driven helicopter is correct? (A) Power output is directly connected to both rotor and tail rotor. (B) Power output is transferred</p> |

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| | | <p>to main gearbox and thereafter to drive rotor and tail rotor after speed reduction. (C) Power output is transferred to main gearbox and but only drives rotor after speed reduction. Partial power will be allocated to drive tail rotor speed directly.</p> <p>使用渦輪軸(turboshaft)發動機的直昇機，有關其軸輸出功率傳動方式之敘述何者正確？(A) 直接傳送至直昇機旋翼及尾翼 (B) 先傳至主齒輪箱(main gearbox)減速後用以驅動主旋翼及尾翼 (C) 先傳至主齒輪箱(main gearbox)減速後用以驅動主旋翼，但部份功率直接驅動尾旋翼</p> |
| 37(0055868) | C | <p>The basic gas turbine engine is divided into two main sections: the cold section and the hot section. (A) The cold section includes the engine inlet, compressor, and turbine sections. (B) The hot section includes the compressor, diffuser, and exhaust. (C) The hot section includes the combustor, turbine, and exhaust</p> <p>Basic gas turbine engine可被分為冷區及熱區二大主要區域，以下敘述何者正確？(A) 冷區包含發動機進氣、壓縮器及渦輪。(B) 熱區包含壓縮器、擴散器及排氣。(C) 熱區包含燃燒室、渦輪及排氣。</p> |
| 38(0060600) | C | <p>Which statement regarding the rotor-speed control of a turboshaft-engine driven helicopter is correct? (A) Engine output should be raised as possible, as to increase rotor speed and flight speed. (B) Engine output should be decreased as possible, as to slow down rotor speed and hence save fuel consuming. (C) Engine fuel supply should be adjusted, as to keep constant rotor speed.</p> <p>使用渦輪軸(turboshaft)發動機的直昇機，有關其旋翼轉速(RPM)控制之敘述何者正確？(A) 應儘可能發動機提高輸出功率，以提高旋翼轉速及飛行速度 (B) 應儘可能以最小發動機輸出功率操作，以降低旋翼轉速，並達到省油目的 (C) 透過調整發動機供油，以保持固定旋翼轉速</p> |
| 39(0060599) | C | <p>The main purpose of introducing free-wheel system in the transmission system of a turboshaft-engine driven helicopter is to: (A) to improve combustion efficiency. (B) enhance output power as possible. (C) enable disconnection of engine(s) and henceforth the autorotation of helicopter rotors in case of engine(s) failure.</p> <p>在以渦輪軸(turboshaft)發動機驅動的直昇機之傳動系統中裝置自</p> |

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| | | 由飛輪(free wheel)的主要目的為 (A) 改善燃燒效率 (B) 儘可能增加輸出功率 (C) 當發動機失效時用以將發動與傳動系統脫節，以容許直昇機旋翼自旋(Autorotation) |
| 40(0055892) | C | <p>What are the two most important signals when monitoring an A.P.U(Auxiliary Power Unit)? (A) E.G.T(Exhaust Gas Temperature) and RPM. (B) Oil Pressure and Inlet Pressure. (C) E.G.T and Oil Pressure.</p> <p>監控輔助動力單元(APU)所須要哪兩個重要訊息？(A) 排氣尾溫及轉速 (B) 滑油壓力及進氣壓力 (C) 排氣尾溫及滑油壓力</p> |
| 41(0023826) | C | <p>Which of the following is not a factor in the operation of an automatic fuel control unit on a turbojet engine?(A) Compressor inlet-air density. (B) Compressor rpm. (C) Mixture control position.</p> <p>下列哪一個因數不是用在渦輪噴射發動機自動控油器的運作上？(A) 壓縮機入口的空氣密度 (B) 壓縮機轉速 (C)混合器之油氣比</p> |
| 42(0055865) | C | <p>What is the main purpose of the reduction gear on a propeller driven engine? (A) To maintain a constant propeller blade speed. (B) To enable torque measurement. (C) To prevent the propeller tips from reaching the speed of sound.</p> <p>在螺旋槳的發動機,其減速齒輪箱的主要目的為何？(A) 用來維持一定的螺旋槳葉片轉速 (B) 用來成為扭力的測量值 (C) 用來避免螺旋槳葉尖達到音速轉速</p> |
| 43(0055887) | B | <p>W hen the A.P.U(Auxiliary Power Unit) is running and pneumatics are “ON”,then the (A) bleed valve is closed, surge valve is open. (B) bleed valve is open, surge valve is closed. (C) bleed valve is open, surge valve is modulating.</p> <p>輔助動力單元(APU)在運轉且供氣時, (A) 供氣閥門關閉,喘振閥(surge valve)打開 (B) 供氣閥門打開,喘振閥(surge valve)關閉 (C) 供氣閥門打開,喘振閥(surge valve)可調的</p> |
| 44(0055881) | A | <p>The function of an A.P.U(Auxiliary Power Unit) air inlet plenum is to (A) stabilize the pressure of the air before it enters the compressor. (B) increase the velocity of the air before entering the compressor. (C) decrease the pressure of the air before entering the compressor.</p> <p>輔助動力單元(APU)進氣道中有大的空間，它的功能為何？(A) 空氣進入壓縮器前,讓氣流壓力變穩定 (B) 空氣進入壓縮器前,讓氣</p> |

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| | | 流速度加快 (C) 空氣進入壓縮器前,讓氣流壓力變小 |
| 45(0055876) | A | <p>When necessary, A.P.U.(Auxiliary Power Unit) cooling before shutdown may be accomplished by (A) closing the bleed air valve. (B) opening the bleed air valve. (C) unloading the generator(s).</p> <p>如果有需要,當輔助動力單元(APU)關車前的冷卻是要將 (A) 關上供氣閥門 (B) 打開供氣閥門 (C) 移除發電機的負載</p> |