

(207-M12)直升機之空氣動力、結構及系統：

題號	答案	題目
1(0023016)	C	<p>The plane of rotation of a helicopter rotor is referred as (A) the tip-path plane. (B) the wing plane. (C) rotor disk.</p> <p>直昇機的旋翼旋轉造成的平面稱為 (A) 翼尖軌跡平面(tip-path plane) (B) 翼平面(wing plane) (C) 旋翼盤(rotor disk)</p>
2(0023019)	B	<p>In order to solve the asymmetry of the lift on the tip-path plane for a helicopter, what control system is designed? (A) Collective-pitch-control system. (B) Cyclic-pitch-control system. (C) Pedal-pitch-control system.</p> <p>為了解決直昇機翼尖軌跡平面左右升力不對稱的問題，設計了哪種控制系統? (A) 集體變矩控制系統 (B) 循環變矩控制系統 (C) 踏板變矩控制系統</p>
3(0023040)	A	<p>Why does a tandem-rotor helicopter have less efficiency in forward flight? (A) The back rotor is in the wake of the front one. (B) The engine power is too small to support two rotors. (C) The back rotor cannot perform forward flight.</p> <p>為何縱列式直昇機前飛時效率較差? (A) 後方旋翼在前方旋翼的尾流範圍內 (B) 引擎馬力太小，不足以支撐雙旋翼 (C) 後方旋翼沒有前飛功能</p>
4(0057087)	C	<p>Where each main rotor blade can flap, drag and feather independently of other blades, the rotor system is termed (A) Semi-rigid. (B) Universal. (C) Full articulated.</p> <p>每一個主旋翼葉片可獨立的撲動,擺振阻力,羽動.此旋翼系統為 (A) 半硬式的 (B) 通用的 (C) 全鉸接式的</p>
5(0023121)	A	<p>In a helicopter, the lower fuselage includes the integral fuel tank and provides the structure for the (A) landing gear/skid. (B) engine compartment. (C) transmission compartment.</p> <p>直升機下機身包含整體油箱及下列何者的支撐結構? (A) 起落架/滑橇 (B) 發動機艙 (C) 變速箱</p>
6(0023187)	C	<p>If the rotor rpm reduces by 10%, the total rotor thrust (not lift) will reduced by (A) 0.05. (B) 0.1. (C) 0.2.</p> <p>若旋翼轉速減少10%則總旋翼推力將會減少? (A) 0.05 (B) 0.1 (C) 0.2</p>
7(0023110)	B	<p>What turns the main rotor during autorotation? (A) The engine. (B) Aerodynamic forces. (C) A downward inflow of air.</p>

		<p>在自動旋轉時(autorotation)主旋翼片由何者驅動? (A) 發動機動力 (B) 空氣動力 (C) 向下流入的空氣氣流</p>
8(0023096)	A	<p>What is the purpose of the cyclic-pitch control system ? (A) To cause the tip-path plane of the main rotor to tilt as required to provide for movement of the helicopter in a desired direction. (B) The control is coordinated with the throttle control of the engine and the collective pitch, thereby changing lift to all blades evenly. (C) To control the collective pitch only.</p> <p>迴旋控制(cyclic-pitch control)系統的目的為何? (A) 使主旋翼片的翼尖徑面傾向需要的角度，以使直昇機朝想要的方向移動 (B) 協調引擎油門與集體槳距，由此均勻改變主旋翼片的升力 (C) 只改變集體槳距</p>
9(0023098)	A	<p>Why is a tail rotor not required on tandem-rotor and coaxial rotor helicopters? (A) The opposite rotation of the rotors causes one rotor to cancel the torque of the other, thus eliminating the need for an antitorque rotor. (B) The same rotation of the rotors causes one rotor to cancel the torque of the other, thus eliminating the need for an antitorque rotor. (C) The opposite rotation of the rotors causes one rotor to cancel the lift of the other, thus eliminating the need for an antitorque rotor.</p> <p>為何同軸(coaxial rotor)及共軛(tandem-rotor)直昇機不需要尾旋翼? (A) 相反方向的旋翼片互相抵消其扭力，因此可以省略反扭力作用的尾旋翼 (B) 相同方向的旋翼片互相抵消其扭力，因此可以省略反扭力作用的尾旋翼 (C) 相反方向的旋翼片互相抵消其升力，因此可以省略反扭力作用的尾旋翼</p>
10(0023086)	A	<p>The vertical flight of a helicopter is controlled by (A) collective pitch changes. (B) cyclic pitch changes. (C) increasing the RPM of the main rotor.</p> <p>控制直昇機之垂直飛行係透過? (A) 改變集體變距的角度 (B) 改變循環操作的角度 (C) 增加主旋翼片轉數</p>
11(0023135)	B	<p>About ground resonance, which description is not correct? (A) It is a self-excited vibration which occurs on the ground. (B) It is associated with a semi-rigid rotor head. (C) It can be aggravated by slope landing.</p> <p>有關直昇機地面共振(ground resonance)，下列何者為非? (A) 在地面上自發性抖動 (B) 與使用半硬式旋翼頭(semi-rigid rotor head)有關 (C) 它會因斜著陸而加劇</p>
12(0023089)	B	<p>Wheeling unit required between the engine and the helicopter transmission is to (A) disconnect the rotor from the engine to relieve the starter load. (B) automatically disengage the rotor from the engine in case of an engine failure. (C) permit practice of autorotation landings.</p> <p>直昇機發動機與動力傳輸裝置間之飛輪，其目的之一為何? (A) 使主旋翼片與發動機脫離以減輕啟動馬達之負載 (B) 如果發動機失效時可使主旋翼與發動機間自動解鎖 (C) 容許練習自動旋轉著陸</p>

13(0023027)	A	<p>If the rotor of a helicopter rotates COUNTERCLOCKWISE from top view, what direction should the force of the tail rotor produce point? (A) Right. (B) Left. (C) Up.</p> <p>假設某一直昇機由上往下看時，其旋翼為逆時鐘旋轉，則其尾旋翼產生之力量應該指向何方? (A) 向右 (B) 向左 (C) 向上</p>
14(0023099)	B	<p>Which statement is correct concerning torque effect on helicopters ? (A) As horsepower decreases, torque increase. (B) Torque direction is the opposite of rotor blade rotation. (C) Torque direction is the same as rotor blade rotation.</p> <p>關於直昇機的扭力影響何者正確? (A) 當馬力降低則扭力增加 (B) 扭力方向與主旋翼片旋轉方向相反 (C) 扭力方向與主旋翼片旋轉方向相同</p>
15(0023023)	C	<p>During cruising, the rotor blade stall might occur (A) uniformly. (B) at the advancing rotor. (C) at the retreating rotor.</p> <p>直昇機巡航時旋翼葉片失速可能發生於? (A) 均勻地發生 (B) 朝前轉動之旋翼片 (C) 朝後轉動之旋翼片</p>
16(0023018)	B	<p>When a helicopter is cruising, the lift forces in the right hand side and the left hand side of the tip-path plane are (A) asymmetric. (B) symmetric. (D) uniform distribution.</p> <p>當直昇機巡航時，翼尖軌跡平面左右兩側的升力為 (A) 不對稱 (B) 對稱 (D) 均勻分佈</p>
17(0023022)	B	<p>What causes the movement of blade leading and lagging? (A) Centrifugal force. (B) Acceleration and deceleration caused by momentum conservation. (C) Gravity.</p> <p>何者造成直昇機旋翼葉片前後移動? (A) 離心力 (B) 動量守恆造成的加速及減速 (C) 重力</p>
18(0023024)	A	<p>What is the height where the ground effect occurs? (A) 0.5 rotor diameter. (B) 1 time rotor diameter. (C) 2 times rotor diameter.</p> <p>在何種高度會產生地面效應? (A) 0.5倍旋翼直徑 (B) 1倍旋翼直徑 (C) 2倍旋翼直徑</p>
19(0049707)	C	<p>A two bladed helicopter rotor on a central gimbal is called (A) quarter articulated rotor. (B) fully articulated rotor. (C) semi rigid rotor.</p> <p>在一中心平衡環上之雙葉片直升機旋轉翼稱為? (A) 四分之一鉸接式的旋轉翼 (B) 全鉸接式的旋轉翼 (C) 半剛性旋轉翼</p>
20(0023080)	B	<p>A single-rotor helicopter wishing to move toward the 6:00 position would need the highest blade pitch imputed at the (A) 12:00 position. (B) 3:00 position. (C) 6:00 position.</p> <p>單旋翼軸直昇機想飛往六點鐘方向，需要在何處進行最高的葉片槳矩控制? (A) 12點鐘方向 (B) 3點鐘方向 (C) 6點鐘方向</p>

21(0023088)	C	<p>In a hovering helicopter equipped with a tail rotor, directional control is maintained by (A) tilting the main rotor disk in the desired direction. (B) changing the tail rotor RPM. (C) varying the pitch of the tail rotor blades.</p> <p>若附有尾旋翼之直昇機停懸時，方向控制是 (A) 傾斜旋轉面至想要的方向 (B) 變更尾旋翼轉數 (C) 改變尾旋翼片攻角</p>
22(0023025)	B	<p>What is the effect when a helicopter moves faster than 15 knots and the lift of the rotor improves greatly? (A) Rotational lift. (B) Translational lift. (C) Longitudinal lift.</p> <p>當直昇機前飛速度超過 15 knots 時，旋翼效能會大幅提昇，請問此為何種效應? (A) 旋轉升力效應 (B) 平移升力效應 (C) 縱向升力效應</p>
23(0056999)	C	<p>The helicopter's normal axis is (A) through the centre of lift, perpendicular to air flow. (B) through the centre of gravity, between the main and tail rotor. (C) through the centre of gravity, perpendicular to longitudinal and lateral axis.</p> <p>直升機的法軸(normal axis)為 (A) 經升力中心,垂直於氣流 (B) 經重心,在主旋翼和尾旋翼間 (C) 經重心,垂直於縱軸和橫軸</p>
24(0023028)	B	<p>Besides the antitorque force, what additional effect will the tail rotor cause? (A) Longitudinal drift tendency. (B) Lateral drift tendency. (C) Vertical drift tendency.</p> <p>除了反扭力之外，直昇機尾旋翼還會造成何種額外效應? (A) 縱向飄移趨勢 (B) 側向飄移趨勢 (C) 垂直飄移趨勢</p>
25(0056888)	A	<p>During an autorotative decent, rotor RPM will be (A) higher than in powered flight. (B) lower than in powered flight. (C) approximately the same as in powered flight.</p> <p>自旋下降期間,旋翼轉速將 (A) 比動力飛行高 (B) 比動力飛行低 (C) 與動力飛行大約相當</p>
26(0056841)	C	<p>To maintain the position of the helicopter with a decrease in air density, the pilot must increase the (A) main rotor RPM. (B) cyclic pitch. (C) collective pitch.</p> <p>當空氣密度減少時，駕駛員若要維持直昇機原姿態，必須增加 (A) 主旋翼轉速 (B) 循環變距 (C) 集體變距</p>
27(0023157)	B	<p>The mast usually absorbs (A) compression and torsional loads. (B) tension and torsional loads. (C) compression and tension loads.</p> <p>主承桿(mast)通常吸收? (A) 壓縮力與扭力 (B) 張力與扭力 (C) 壓縮力與張力</p>
28(0056931)	A	<p>When carrying out blade tracking by using the flag method, (A) the collective pitch lever would be fully down. (B) the collective pitch lever would be mid-way between the down stop and the up stop. (C) the cyclic stick would be fully forward.</p>

		當執行葉片打軌跡，使用旗幟標示方法時 (A) 集體變距桿要完全放到底(B) 集體變距桿要在最下止檔和最上止檔的中間(C) 迴旋駕駛桿要完全向前
29(0056941)	C	The HUMS(Health and Usage Monitoring Systems) receives signals from (A) transponders. (B) transformers. (C) transducers. 直昇機健康與使用監控系統(HUMS)所接收訊號來自(A) 詢答機 (B) 變壓器 (C) 換能器(transducer)
30(0023094)	C	The ground cushion is usually effective to a height of approximately one-half the diameter of the main rotor while the helicopter is (A) cruising. (B) climbing. (C) hovering. 氣墊效應發生於大約主旋翼面半徑的高度且當直昇機正在 (A) 巡航飛行(cruising) (B) 爬升飛行(climbing) (C) 停懸(hovering)
31(0057765)	A	The cylinder in a life jacket is inflated using (A) CO ₂ . (B) nitrogen. (C) compressed air. 使救生背心充氣之鋼瓶填充物為 (A) 二氧化碳 (B) 氮 (C) 壓縮空氣
32(0023074)	C	When the lift of an airfoil increases, the drag will (A) decrease. (B) not be affected. (C) also increase. 當某翼型升力增加時，則阻力 (A)減少 (B) 不受影響 (C) 亦增加
33(0057759)	B	Where would you find information on life-raft deployment? (A) JARs(Join Air Worthiness Regulations). (B) Cabin safety on-board card. (C) Flight operations manual. 下述何者可發現救生艇展開資訊? (A) JARs(Join Air Worthiness Regulations). (B)在飛機上的客艙安全卡 (C) 飛航操作手冊
34(0023063)	C	As the number of rivets in an area increases, the (A) shear load-carrying capability decreases. (B) tensile load-carrying capability of the sheet decreases. (C) the repair becomes stronger. 當某區域的鉚釘數量增加時，(A) 剪力負載能力變小 (B) 張力負載能力變小 (C) 修復處更強
35(0056971)	A	In the ATA 100 zonal system the passenger entry door will have a designation of (A) 800. (B) 400. (C) 600. ATA 100區域系統中,乘客進入門的區域碼為 (A) 800 (B) 400 (C) 600
36(0023064)	B	The load-carrying capabilities of a rivet of a given material are function of the (A) style of head of the rivet. (B) the diameter of the rivet. (C) the width of the bucked head. 鉚釘的負載能力是何者的函數? (A) 鉚釘頭的形式 (B) 鉚釘的直徑 (C) 形變頭的寬度
37(0023066)	C	The use of pencils for marking on sheet metal parts should be avoided because (A) they harden the sheet. (B) they are too easily erased. (C) they may leave graphite on the surface of the material.

		在鈹金上不應該使用鉛筆做記號，因為 (A)那會讓板金硬化 (B)很容易就擦掉 (C)可能會在材料表面殘留石墨
38(0056954)	A	Composite materials are bonded by (A) specific glue. (B) copper wire. (C) aluminum wire. 復合材料由什麼搭接 (A)專用膠料 (B)銅線 (C)鋁線
39(0056983)	C	Battery trays are (A) metal for earthing purposes. (B) absorbent to soak up electrolyte. (C) metal with PVC coating and anti corrosive paint. 電瓶承板為 (A)接地為目的之金屬 (B)吸收滲出之電解液 (C)金屬包覆PVC，外層為抗腐蝕油漆
40(0023049)	B	The normal spray pattern of painting is (A) a circle with a radius of 4 inches. (B) an elongated oval with a height 2.5 to 3 times the width. (C) a circle with a diameter of 6 inches and a slight overspray in the direction of travel. 正常的噴漆樣式為 (A)半徑4英吋的圓 (B)長橢圓型，其高度為寬度之2.5~3倍 (C)直徑為6英吋的圓，但在移動方向會多噴一點
41(0023065)	C	The bearing area of a rivet hole is a function of (A) the material of the rivet. (B) the number of rivet holes in a single plane. (C) the diameter of the hole times the material thickness. 鉚釘孔之承載面積是何者的函數? (A) 鉚釘的材質 (B) 單一平面上鉚釘孔的數目 (C) 鉚釘孔的直徑乘以材料厚度
42(0023046)	A	Aircraft structural units, such as spars, engine supports, etc., which have been built up from sheet metal, are normally (A) repairable, using approved methods. (B) repairable, except when subjected to compressive loads. (C) not repairable, but must be replaced when damaged or deteriorated. 金屬結構件，如大樑，引擎支撐座等，通常是 (A) 可修理，但須依核准之方法執行 (B) 除受到擠壓負載外，皆可修理 (C) 不可修理，但於損傷時必須更換
43(0057076)	C	What is the water line? (A) The zero datum from which all lateral locations are measured. (B) A line below which redux bonding can not be used. (C) The datum from which vertical locations refer. 水線為 (A) 測量橫向位置所使用之參考基準 (B) 在此線之下無法使用雷達克斯接合法(redux bonding) (C) 垂直位置所使用之參考基準
44(0057010)	A	The life of the helicopter structure is counted by (A) flying hours. (B) pressurization cycle. (C) landings. 直升機的結構壽命是用下述何者計算? (A) 飛行時數 (B) 加壓次數 (C) 落地次數
45(0057018)	B	A partition within the helicopter's structure is called a (A) cleat. (B) bulkhead. (C) frame.

		直昇機結構的分隔叫做 (A)栓 (B)隔框 (C)框架
46(0056928)	C	<p>In a helicopter with its main rotor turning anti-clockwise, which way does the aircraft tend to drift? (A) Port if tail rotor is mounted on the left. (B) Port if tail rotor is mounted on the right. (C) Starboard, irrespective of which side the tail rotor is mounted on.</p> <p>直昇機的主旋翼為反時鐘旋轉,直昇機會傾向何方偏移? (A)向左,假如尾旋翼裝在左側 (B)向右,假如尾旋翼裝在右側 (C)向右轉,與尾旋翼裝在那一側無關</p>
47(0056919)	B	<p>An advantage of the symmetrical section blades used on helicopters is that (A) the movement of the centre of pressure with changes of the angle of attack is greater than that of a fixed wing. (B) the position of the feather axis and the centre of pressure and centre of gravity coincide, providing stability. (C) the centre of pressure moves forward with changes in angle of attack.</p> <p>直升機使用對稱剖面之旋翼優點為何? (A)壓力中心隨攻角改變大於定翼 (B)羽動軸(feather axis)、壓力中心與重力中心之位置一致,提供穩定性 (C)壓力中心向前移動並使攻角改變</p>
48(0023202)	C	<p>When the engine fails there is, in most helicopters, a tendency for (A) the nose to pitch down and for the aircraft to roll right. (B) the nose to pitch down and for the aircraft to roll left. (C) depend on rotating direction of main rotor.</p> <p>在大多數的直升機發動機失效時姿態改變會有何種趨勢? (A)機鼻仰角向下並且向右偏轉 (B)機鼻仰角向下並且向左偏轉 (C)由主旋翼的旋轉方向決定</p>
49(0056973)	B	<p>Which anti-corrosive treatment is found on alloy steels? (A) Zinc plating. (B) Cadmium plating. (C) Nickel plating.</p> <p>在合金鋼上會發現何種防蝕處理? (A)鍍鋅 (B)鍍鎘 (C)鍍鎳</p>
50(0057083)	A	<p>The purpose of the pylon supporting the tail rotor is to (A) overcome the tendency for the helicopter to rotate. (B) overcome the tendency for the helicopter to drift laterally. (C) assist the tail rotor in forward flight.</p> <p>派龍支撐尾旋翼的目的為 (A)克服直昇機打轉傾向 (B)克服直昇機橫向漂移傾向 (C)在往前飛時支援尾旋翼</p>
51(0023075)	A	<p>Motion about the lateral axis is called (A) pitch. (B) roll. (C) yaw.</p> <p>以橫軸為轉軸的運動稱為 (A)俯仰 (B)滾轉 (C)偏航</p>
52(0056988)	A	<p>Sealant or levelling compound is installed during structure repair (A) according to AMM and SRM chapter 51. (B) according to SB (Service Bulletin) instructions. (C) according to separate manufacturer's MEL(Minimum Equipment List).</p>

		結構修補時安裝之密封物或補平混合物應 (A)依照AMM和 SRM 51 章 (B)依照SB(Service Bulletin)指示 (C)依照個別製造廠之最低裝備需求手冊(MEL)
53(0057077)	A	Lateral stations have station zero at the (A) centre line. (B) nose. (C) tail end. 橫向站位之零站位在 (A)中心線 (B)機鼻 (C)機尾
54(0023076)	A	In straight and level unaccelerated flight, which of the following is correct? (A) Lift equals weight. (B) Lift is greater than weight. (C) Thrust is greater than drag. 在直線且高度、速度不變的飛行狀態時，下列何者正確？ (A)升力等於重量 (B)升力比重量大 (C)推力大於阻力
55(0056910)	C	Translational drift is (A) the tendency for the aircraft to pitch nose up. (B) the tendency for the aircraft to turn to port. (C) the tendency for the aircraft to drift laterally. 傳導偏移(Translation drift)是指 (A)飛機機鼻朝上的傾向 (B)飛機向左轉向的傾向 (C)飛機橫向偏移的傾向
56(0056898)	C	The blade stalling speed will (A) only change if the MTOW(Maximum Take Off Weight) were changed. (B) be unaffected by helicopter weight changes since it is dependent upon the angle of attack. (C) increase with an increase in helicopter weight. 旋翼失速速度：(A)僅於最大起飛重量改變時改變 (B)僅受攻角影響，不受直昇機重量改變的影響 (C)隨直昇機重量增加而增加
57(0056900)	A	When entering into a stable autorotative state, the main rotor RPM will initially (A) decrease. (B) increase. (C) be unaffected. 一旦進入穩定的自轉狀態,主旋翼轉速將 (A)減少 (B)增加 (C)不影響