

(209-M13)航空器之空氣動力、結構及系統：

題號	答案	題目
1(0037481)	B	<p>In fully fly by wire aircraft, wing root bending moments are reduced by (A) transfer of fuel from one wing tank to another. (B) symmetrical application of ailerons. (C) operation of the elevator.</p> <p>在全線控系統中，翼根彎曲減少的原因為何? (A) 從一個機翼油箱燃料轉移到另一邊 (B) 副翼之對稱使用 (C) 水平面之操作</p>
2(0023485)	B	<p>In a fly by wire system, elevator for pitch control and aileron for roll control positions are known by using (A) LVDTs for roll control surfaces and RVDTs for pitch control surfaces. (B) LVDTs for roll and pitch control surfaces. (C) RVDTs for roll and pitch control surfaces.</p> <p>如何得知線控飛機之升降舵俯仰控制面及副翼側滾控制面的位置? (A) 側滾控制面是使用 LVDTs，俯仰控制面是使用 RVDTs. (B) 俯仰和側滾控制面都是使用 LVDTs. (C) 俯仰和側滾控制面都是使用 RVDTs.</p>
3(0035184)	B	<p>On a full time fly-by-wire system, a nose up command causes (A) the Ailerons on each wing to move up. (B) the elevator surfaces on each side of the horizontal stabilizer to move up. (C) all the elevators on each wing to move down.</p> <p>全線傳飛控系統，抬機頭指令造成 (A) 各機翼副翼向上移動 (B) 各邊水平安定面上的升降舵向上移動 (C) 各機翼所有升降舵向下移動</p>
4(0039669)	B	<p>A spar is tapered from root to tip because (A) shear forces are greatest at the root. (B) bending moment is greatest at the root. (C) centre of lift occurs close to the root.</p> <p>翼樑從翼根到翼尖漸縮是因為 (A) 在翼根的剪力最大 (B) 在翼根的彎曲力矩最大 (C) 升力中心在靠近翼根處</p>
5(0035130)	B	<p>If the aircraft is to be rolled to the right, where does the pilot feed in this command? (A) Rudder Pedals. (B) Control Wheel. (C) Flap Control Lever.</p> <p>飛機要向右滾轉，駕駛員向何者輸入動作? (A) 方向舵踏板 (B) 方向盤 (C) 襟翼操縱桿</p>
6(0038839)	C	<p>The stick shaker is a device which (A) helps extricate an aircraft from soft ground. (B) gives a short period of extra lift to assist take off. (C) vibrates the control column near stalling speed.</p>

		駕駛桿震盪器 (A) 用來幫助飛機自軟地脫離 (B) 用來給予一短期額外升力以協助起飛 (C) 當飛機快近失速時會震動駕駛桿
7(0034205)	B	What are buttock lines(BL)? (A) Horizontal measurement lines. (B) Measurements from the centre line. (C) Vertical measurement lines.  什麼是縱剖線 ? (A) 水平量測線 (B) 從中心線所得到的測量值 (C) 垂直量測線
8(0037450)	B	ATA Zone 100 is (A) left-hand wing. (B) lower fuselage. (C) upper fuselage.  ATA 100區域是指何處? (A) 左機翼 (B) 下機身 (C) 上機身
9(0037448)	A	When all three leads of a bonding tester are connected together the output reading is (A) zero. (B) full scale deflection. (C) centre scale.  當搭地測試器的三根導線連接在一起時，它所輸出讀數為何? (A) 零 (B) 滿刻度偏轉 (C) 中心刻度
10(0034178)	B	A redundant structure is (A) a safe-life structure. (B) a fail-safe structure. (C) an on-condition structure.  備份結構是(redundant structure) (A) 安全壽限結構 (B) 失效安全結構 (C) 視狀況更換結構
11(0034154)	B	Stringers are used in which of the following types of aircraft fuselage construction? (A) Truss type. (B) Semi-monocoque. (C) Monocoque.  縱樑加強條使用在哪一種型式的飛機機身結構? (A) 桁架式 (B) 半硬殼式結構 (C) 硬殼式
12(0034161)	C	Structure with built-in redundancy is called (A) double safe. (B) safe life. (C) fail safe.  結構內含有備份結構，稱為 (A) 雙重安全 (B) 安全壽限 (C) 失效安全
13(0037435)	B	Damage tolerant design (A) allows for damage to structure by distributing loads to other structure. (B) allows for certain damage to the structure to go un-repaired between scheduled maintenance. (C) is applied only to secondary structure.  損傷容許設計之目的是? (A) 允許結構損壞可以通過負載分散到其他結構中 (B) 允許一定程度的結構損傷，能在定期保養之間不作修復工作 (C) 僅適用於次要結構
14(0037403)	C	What damps vibrations on a helicopter? (A) Swashplate. (B) Scissor levers. (C) Bifilar damper.  下列何者是直昇機用來減震的組件? (A) 旋轉盤 (B) 剪力桿 (C) 雙股減震器
15(0037472)	C	If a fly-by-wire system fails, the rudder (A) remains in the previous position. (B) controls the aircraft in trim. (C) remains at the neutral position.

		如果線傳飛控系統失效，方向舵會如何? (A) 維持在之前的位置 (B) 由配平控制飛機 (C) 維持在中間的位置
16(0035201)	C	<p>If electrical power is removed from a fly by wire spoiler system, the spoiler panels (A) go to full up. (B) remain where they are. (C) go to down if any are not already down.</p> <p>當電力自線傳飛控擾流系統移除，擾流板將 (A) 全立起 (B) 維持原狀 (C) 如未收起時會收起</p>
17(0040075)	C	<p>Caustic cleaning products used on aluminum structures have the effect of producing (A) passive oxidation. (B) improved corrosion resistance. (C) corrosion.</p> <p>腐蝕性的清潔產品用在鋁金屬結構上會產生什麼效果? (A) 非活性的氧化 (B) 提升防止腐蝕功能 (C) 腐蝕</p>
18(0034201)	C	<p>The various parts of the aircraft airframe are maintained at the same electric potential by (A) static wicks. (B) earthing. (C) bonding.</p> <p>飛機機身的多處零件以什麼來保持相同電位? (A) 靜電刷 (B) 接地 (C) 跨接線</p>
19(0034192)	B	<p>Which is the most important part of preventative maintenance on H.I.R.F.(High Intensity Radiated Field)installations? (A) Visual inspections. (B) Insulation testing. (C) CMC fault indications.</p> <p>HIRF(High Intensity Radiated Field)安裝的預防性維護，最重要的項目是 (A) 目視檢查 (B) 絕緣測試 (C) 中央維修電腦故障指示</p>
20(0034008)	A	<p>To overcome ineffective control surface problems in the transonic region, (A) an all moving tailplane may be used. (B) hydraulic powered elevators may be used. (C) frise ailerons may be used.</p> <p>為克服穿音速區域，飛機操縱面的無效控制問題 (A) 可以使用全動式尾翼 (B) 可以使用液壓動力升降舵 (C) 可以使用frise式副翼</p>
21(0038093)	B	<p>The aircraft is North of VOR beacon on a course of 090 R.M.I.(Radio Magnetic Indicator). The pointer points to (A) 0. (B) 180. (C) 90.</p> <p>飛機位於VOR電台北面，RMI航線90度，指針將指向 (A) 0度 (B) 180度 (C) 90度</p>
22(0038585)	A	<p>In an AC generation system, the frequency and phase rotation (A) must be synchronised prior to paralleling. (B) must be out of phase prior to paralleling. (C) is of no consequence after paralleling.</p> <p>在AC發電系統，頻率與相位轉動應 (A) 在並聯之前必須同步 (B) 並聯之前必須不同相位 (C) 並聯後沒有影響</p>
23(0035133)	B	<p>What would happen to an aircraft at low speed, at high angle of attack, if it had an aileron going down (aileron droop)? (A) Have no effect on the stall speed. (B) Increase stall speed. (C) Decrease stall speed.</p> <p>飛機在低速高攻角時，如副翼向下移動將會如何? (A) 不影響失速速度 (B) 增加失速速度 (C) 減少失速速度</p>

24(0040142)	C	<p>The total aircraft drag is (A) constant at all aircraft speeds. (B) low at low aircraft speeds. (C) high at low aircraft speeds, decreases to a minimum and then increases again at high speeds.</p> <p>飛機的總阻力是 (A) 在所有飛機速度中都是恆定不變 (B) 低速時較低 (C) 低速時較高,但慢慢降低到最小然後在高速時再次增加</p>
25(0037383)	C	<p>The stalling speed of a helicopter blade... (A) is independent with the helicopter's weight. (B) is increased when the helicopter is lighter. (C) is increased when the helicopter is heavier.</p> <p>旋翼之失速速度 (A) 與直升機重量無關 (B) 隨直升機重量減少而增加 (C) 隨直升機重量增加而增加</p>
26(0037661)	B	<p>A Mach Trimmer is a device which (A) prevents the aircraft from exceeding its critical Mach No. (B) Automatically compensates for trim changes in the transonic region. (C) switches out trim control to prevent damage in the transonic speed range.</p> <p>馬赫配平器的用途為何? (A) 防止飛機超過臨界馬赫數 (B) 在穿音速區域,自動補償修正 (C) 關掉配平控制,防止飛機在穿音速區損傷</p>
27(0038096)	C	<p>If radar pulse is reduced, there is (A) reduced relative range. (B) increased relative range. (C) no effect.</p> <p>如果雷達脈衝減少,將會?(A) 減少相對距離 (B) 增加相對距離 (C) 沒影響</p>
28(0037970)	C	<p>Glideslope controls Autopilot in (A) yaw. (B) roll. (C) pitch.</p> <p>下滑角控制飛機自動駕駛的 (A) 偏航 (B) 側滾 (C) 俯仰</p>
29(0035004)	C	<p>When a field relay trips the generator off-line, it can be reset (A) before the fault has been cleared. (B) by cycling the generator switch. (C) on the ground only.</p> <p>當磁場繼電器跳脫使發電機離線,應如何復位? (A) 於故障排除前 (B) 重新循環操作發電機電門 (C) 僅於飛機在地面上時才能復位</p>
30(0035054)	B	<p>In a constant frequency AC system, reactive load sharing is achieved by regulating the (A) generator speed. (B) voltage regulator. (C) generator drive torque.</p> <p>在一恆定頻率AC系統,虛功負載分配是何者調節而得? (A) 發電機速度 (B) 電壓調節器 (C) 發電機傳動扭力</p>
31(0037685)	B	<p>Air on either side of an oblique shockwave is generally (A) sonic. (B) supersonic. (C) subsonic.</p> <p>在斜震波兩側的氣流通常是 (A)音速 (B)超音速 (C)次音速</p>
32(0037665)	B	<p>Critical mach no. may be increased by (A) using a higher thickness/chord ratio wing. (B) sweeping back the wing. (C) using more powerful engines.</p>

		臨界馬赫數可以何種方法來增加？(A)使用較高的機翼厚度與翼弦比例的機翼 (B)機翼後掠 (C)使用更大馬力的引擎
33(0034016)	C	<p>As the airspeed over a cambered wing is increased, a shock wave will appear initially (A) at the leading edge. (B) at the trailing edge. (C) near the point of maximum curvature.</p> <p>流經彎曲翼型(cambered wing)的氣流速度增加，則在何處最先產生震波？(A)在機翼前緣 (B)在機翼後緣 (C)靠近最大彎曲度的點</p>
34(0037672)	A	<p>Wave drag (A) increases in the supersonic region. (B) increases at the low speed stall. (C) increases in the subsonic region.</p> <p>波阻是 (A)在超音速區域增加 (B)在低速失速時增加 (C)在次音速區域增加</p>
35(0040140)	A	<p>What is the supersonic region? (A) In this region, all speeds around the aircraft higher than speed of sound. (B) In this region, all speeds around the aircraft lower than speed of sound. (C) In this region, some speeds around the aircraft below the speed of sound and some speeds around the aircraft higher than the speed of sound.</p> <p>什麼是超音速區域？(A)在這區域內整架飛機的速度都比音速高 (B)在這區域內整架飛機的速度都比音速低 (C)在這區域內部份飛機的速度比音速低,部份飛機的速度比音速高</p>
36(0040097)	B	<p>What does the fuselage center section provide? (A) It provide part of the cabin, stabilizer compartment and maintenance compartment. (B) It provide the cabin and integration structure of wing center box and main landing gear. (C) It provide part of the passenger cabin, APU and cargo compartment.</p> <p>機身中段能提供什麼作用？(A)提供部份客艙,安定面艙及維修艙 (B)提供裝置客艙及機翼中間段結構和起落架 (C)提供部份客艙, APU 艙及貨艙</p>
37(0040090)	B	<p>An airplane wing is designed to produce lift resulting from (A) positive air pressure below and above the wing's surface along with the downward deflection of air. (B) positive air pressure below the wing's surface and negative air pressure above the wing's surface along with the downward deflection of air. (C) negative air pressure below the wing's surface and positive air pressure above the wing's surface along with the downward deflection of air.</p> <p>飛機機翼設計而產生升力是因為... (A)沿翼表面向後流動的空氣在機翼上下產生正壓力 (B)沿翼表面向後流動的空氣在機翼上表面產生負壓力同時於下表面產生正壓力 (C)沿翼表面向後流動的空氣在機翼上下表面產生負壓力</p>
38(0040144)	C	<p>The horizontal stabilizer (A) produces zero lift for a steady level flight. (B) always produces a downward acting force. (C) sometimes produces a downward acting force and sometimes an upward acting force.</p>

		<p>水平安定面... (A)在穩定的水平飛行時提供零升力 (B)永遠都會提供一向下的作用力 (C)有時候提供一向下的作用力但有時候又提供一向上的作用力</p>
39(0037649)	B	<p>A flying control mass balance weight (A) keeps the control surface C of G as close to the trailing edge as possible. (B) tends to move the control surface C of G close to the hinge line. (C) tends to move the control surface C of G forward of the hinge line.</p> <p>飛行操縱的配重塊將如何運作？ (A)使操縱面的重心儘可能靠近機翼後緣 (B)移動操縱面重心傾向接近絞鍊中心線(hinge line) (C)移動重心傾向往絞鍊中心線(hinge line)前方</p>
40(0023302)	C	<p>Dutch roll, a combination yawing and rolling oscillation that affects many sweptwing aircraft, is counteracted with (A) a flight director system. (B) an aileron damper system. (C) a yaw damper system.</p> <p>荷蘭滾(Dutch roll)係使用什麼系統抵消其效應？ (A)飛行導航系統。 (B)副翼阻尼系統。 (C)偏轉緩衝裝置。</p>
41(0038083)	A	<p>Inner loop servo control of an autopilot will provide (A) stability only. (B) navigation commands only. (C) stability and navigation commands.</p> <p>自動駕駛的內伺服控制迴路將提供 (A)僅提供穩定度 (B)僅提供航行指令 (C)航行指令及穩定度</p>
42(0035140)	C	<p>What is the purpose of roll spoilers? (A) They help with the descent of an aircraft. (B) They help decrease speed during landing. (C) They help to fly an accurate turn.</p> <p>Roll spoilers的功能為何？ (A)幫助航機降落 (B)降落時幫助航機減速 (C)使航機之轉向更為精確</p>
43(0040088)	C	<p>Where is the potable water tank(s) located? (A) In the passenger cabin. (B) In the cockpit. (C) In the cargo compartment.</p> <p>飲用水箱位於何處？ (A)在客艙中 (B)在駕駛艙中 (C)在貨艙中</p>
44(0040148)	A	<p>How are changes in direction of a control cable accomplished ? (A) Pulleys. (B) Ferrules. (C) Bell cranks.</p> <p>操縱鋼繩如何去改變方向？ (A)滑輪 (B)套圈 (C)拐臂</p>
45(0034207)	A	<p>When attaching more than one jumper or ground lead terminal to structure with a single fastener (A) install the largest terminal nearest the structure, with the others, to a maximum of four, stacked and fanned in decreasing size. (B) connect the largest terminal nearest the structure with the others, to a total of three, stacked symmetrically in any order. (C) place the smallest terminal nearest the structure, covered by a spacer, with the others, to a maximum of six, stacked in increasing size.</p> <p>當使用單獨鎖扣去連接多個接地條時 (A)最大的尺寸連接結構，最多四個，按尺寸遞減，次序以扇形堆疊連接 (B)最大尺寸連接最近的結構，總共三個，次序不拘，對稱堆疊連接 (C)最小的靠近結構以隔環隔離連接，以尺寸遞增堆疊連接，最多6個</p>

46(0034196)	A	<p>Today most of all aircraft structures are made of alloyed aluminum because pure aluminum was found as ... (A) ... too weak and not durable enough. (B) ... too expensive compare to it's alloys. (C) ... too heavy compare to it's alloys.</p> <p>目前大多數航空器結構皆由鋁合金而非由純鋁製作，原因是因為和鋁合金比較起來，純鋁... (A)...太脆弱且耐久度不足 (B)...太貴 (C)...太重</p>
47(0034180)	B	<p>Buckling in a semi-monocoque structure is prevented by (A) longerons. (B) stringers. (C) bulkheads.</p> <p>在半硬殼結構中,防止屈曲是用 (A)縱樑 (B)桁條 (C)隔框</p>
48(0034152)	B	<p>A crack stopper is fitted (A) after a crack starts, to slow its rate of propagation. (B) before a crack starts, to slow its rate of propagation. (C) before a crack starts, to prevent its initiation.</p> <p>止裂孔位於 (A)裂紋起始點之後,以減緩裂紋擴散率 (B)裂紋起始點之前,以減緩裂紋擴散率 (C)裂紋產生之前,防止裂紋發生</p>
49(0034047)	A	<p>The maximum forward speed of a helicopter is limited by... (A) retreating blade stall and the forward speed of the advancing blade. (B) engine power. (C) the shape of the fuselage.</p> <p>直昇機最大前進速度受限於 (A)後退葉片失速及前進葉片向前的速度 (B)引擎馬力 (C)機身的外形</p>
50(0034088)	A	<p>What is a controlling factor of turbulence and skin friction? (A) Countersunk rivets used on skin exterior. (B) Fineness ratio. (C) Aspect ratio.</p> <p>下列者會影響亂流及蒙皮的磨擦因素 (A)蒙皮外表的沉頭鉚釘 (B)長寬比 (C)展弦比</p>
51(0033970)	A	<p>Above the critical Mach number, the drag coefficient (A) increases. (B) remains the same. (C) decreases.</p> <p>當速度剛超過臨界馬赫數,阻力係數將有何變化? (A)增加 (B)相同 (C)減少</p>
52(0033980)	C	<p>Mach trimming is initiated by an input signal from the (A) IRS. (B) vertical gyro. (C) CADC (Central Air-Data Computer).</p> <p>啟動馬赫配平的信號來自何處? (A)IRS (B)垂直陀螺(vertical gyro) (C)CADC (Central Air-Data Computer)</p>
53(0037391)	B	<p>A symmetrical aerofoil is accelerating through Mach 1 with an angle of attack of <math>0^\circ</math>. a shock wave will form (A) on the upper and lower surface and will move aft until the point of maximum camber. (B) on the upper and lower surface and will move aft. (C) on the upper surface only and move aft.</p>

		當一個對稱機翼以0度攻角加速超過1馬赫時，會在何處形成震波 (A)在上下表面都有，而且會往後移一直到曲率最大點 (B)在上下表面都有，而且往後移 (C)只有在上表面，而且往後移
54(0036163)	C	Adjustment of the idle speed stop screw alters (A) the closed position of the mixture control. (B) the closed position of the butterfly valve. (C) the idle mixture strength.  調整怠速之止擋螺桿可改變 (A)油氣混合控制之關閉位置 (B)蝴蝶瓣之關閉位置 (C)怠速之油氣混合比的強度
55(0035143)	B	When an hydraulic system is unpressurised, the position of flight control surfaces are (A) up. (B) droop. (C) neutral.  液壓系未建壓時，飛行控制面的位置應在何處? (A)向上 (B)下垂 (C)在中間位置
56(0037442)	A	How is damage to the nose cone of an aircraft prevented during a lightning strike? (A) Bonding strip. (B) Special paint. (C) Earthing strap.  在飛機機鼻上，何種組件是用來預防雷擊損壞飛機的? (A)連接條 (B)特殊涂料 (C)搭地條
57(0034188)	C	Fibreglass parts are protected from lightning strikes and dangerous voltages by (A) conductive paint. (B) non conductive paint. (C) earth primary conductors.  玻璃纖維如何防止雷擊或危險電壓 (A)塗導電漆 (B)塗非導電漆 (C)主要導體接地
58(0034162)	B	Stress (A) is the deformation of a material caused by applied load. (B) is the load per unit area acting on a material. (C) is the property of a material to resist fracture.  何謂應力? (A)負荷施加於材料造成的變形量 (B)材料單位面積所受之負載力 (C)材料的抗力係數
59(0034124)	C	The primary purpose of sealant in use in pressurised aircraft is (A) to provide external streamlining. (B) to prevent corrosion. (C) to seal the cabin.  密封劑使用在加壓式飛機的主要目的? (A)提供外表流線 (B)防銹 (C)密封座艙
60(0037664)	B	Mach trim prevents (A) the nose dropping in a low speed turn. (B) the nose dropping at high speed. (C) the nose lifting at high speed.  馬赫配平器的功用是用來防止何種情形? (A)低速轉彎時,機頭向下墜 (B)高速飛行時,機頭向下墜 (C)高速飛行時,機頭向上抬
61(0033996)	B	A wing of low thickness/chord ratio, the critical Mach No. will be (A) lower than a wing of high thickness/chord ratio. (B) higher than a wing of high thickness/chord ratio. (C) the same as a wing of high thickness/chord ratio.



		低厚度/翼弦比例的機翼，其臨界馬赫數將? (A)較高厚度與翼弦比的飛機低 (B)較高厚度與翼弦比的飛機高 (C)與高厚度與翼弦比的飛機相同
62(0037558)	B	What effect does lowering the flaps for take-off have? (A) Increases lift & reduces drag. (B) Increases lift and drag. (C) Increase lift only.  飛機起飛時將襟翼放下會產生甚麼效應? (A)增加升力減少阻力 (B)增加升力及阻力 (C)僅增加升力
63(0037572)	C	Wing tip vortices are strongest when (A) flying high speed straight and level flight. (B) flying into a headwind. (C) flying slowly at high angles of attack.  翼尖渦流在何種情形最為強勁? (A)平直且高速飛行時 (B)在迎風中飛行時 (C)在大攻角且慢速飛行時
64(0033651)	A	One antenna can be used for the radio range and standard broadcast bands in light aircraft because the (A) two ranges are close together. (B) antenna is omnidirectional. (C) antenna length may be electronically adjusted.  輕型飛機中，無線電頻道和廣播頻道可使用同一支天線係因? (A)兩頻率相近 (B)使用萬向天線 (C)可電子調節天線長度
65(0033670)	B	What does a rectifier do? (A) It changes direct current into alternating current. (B) It changes alternating current into direct current. (C) It reduces voltage.  整流器有何作用? (A)將直流整為交流 (B)將交流整為直流 (C)降壓用