# Question Paper Preview

**Notations :**

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

| | |
|---|---|
| **Question Paper Name:** | Aerospace Engineering 30th May 2018 Shift2 |
| **Subject Name:** | Aerospace Engineering |
| **Creation Date:** | 2018-05-30 17:02:00 |
| **Duration:** | 120 |
| **Total Marks:** | 120 |
| **Display Marks:** | No |
| **Calculator:** | None |
| **Magnifying Glass Required?:** | No |
| **Ruler Required?:** | No |
| **Eraser Required?:** | No |
| **Scratch Pad Required?:** | No |
| **Rough Sketch/Notepad Required?:** | No |
| **Protractor Required?:** | No |

| | |
|---|---|
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

**Question Number : 1 Question Id : 5113468401 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The eigen values of the matrix $A = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$ are

**Options :**

1. ✖ $1, 1, 2$

2. ✖ $-1, 1, 2$

3. ✔ $-1, -1, 2$

4. ✖ $-1, -2, 1$

**Question Number : 2 Question Id : 5113468402 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The solution of the differential equaton $xdy - ydx = xy^2dx$ is

**Options :**

1. ✖ $\frac{x^2}{2} - \frac{x}{y} = c$

2. ✔ $\frac{x^2}{2} + \frac{x}{y} = c$

3. ✖ $\frac{x^2}{2} + \frac{y}{x} = c$

4. ✖ $\frac{x^2}{2} + xy = c$

**Question Number : 3 Question Id : 5113468403 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If $f(x) = 2x^2 - 7x + 10$ satisfies all the conditions of Lagrange's mean value theorem in [2,5], then c of the mean value theorem is

**Options :**

1. ✔ $\frac{7}{2}$

2. ✖ $\frac{2}{7}$

3. ✖ $\frac{7}{3}$

4. ✖ 7

**Question Number : 4 Question Id : 5113468404 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The particular integral of $(D^2 - 5D + 6)y = e^{4x}$ is

**Options :**

1. ✖ $e^{4x}$

2. ✖ $-e^{4x}$

3. ✔ $\frac{1}{2}e^{4x}$

4. ✖ $\frac{1}{4}e^{4x}$

**Question Number : 5 Question Id : 5113468405 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The integrating factor of the equation $x\log x\frac{dy}{dx}+y=\frac{2}{x}\log x$ is

**Options :**

1. ✖ x

2. ✖ $\frac{1}{x}$

3. ✔ log x

4. ✖ log(log x)

**Question Number : 6 Question Id : 5113468406 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If $\phi(x, y, z)=x^3+y-z$ then grad $\phi$ at the point (1, 0, 0) is

**Options :**

1. ✔ 3i+ j− k

2. ✖ 2i+j + k

3. ✖ $\frac{3i-j+2k}{3}$

4. ✖ $\frac{i+j+2k}{3}$

**Question Number : 7 Question Id : 5113468407 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The directional derivative of f(x, y, z ) = xy+yz+zx at (1, 2, 0) in the direction of i +2j +2k is

**Options :**

1. ✔ $\frac{10}{3}$

2. ✖ $\frac{2}{3}$

3. ✖ $\frac{1}{\sqrt{3}}$

4. ✖ $\frac{1}{3}$

**Question Number : 8 Question Id : 5113468408 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The value of $\lim_{x\to 0}\frac{6^x-3^x-2^x+1}{x^2}=$

**Options :**

1. ✖ $log_e\frac{3}{2}$

2. ✖ $log_e 6$

3. ✖ $log_e\frac{2}{3}$

4. ✔ $log_e 2\, log_e 3$

**Question Number : 9 Question Id : 5113468409 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The partial differential equation that can be formed by eliminating arbitrary constants a and b from $z=(x-a)^2+(y-b)^2+5$ is

**Options :**

1. ✖ $4z=p^2+q^2+5$

2. ✔ $4z=p^2+q^2+20$

3. ✖ $z=p^2+q^2+5$

4. ✖ $4z=p^2+q^2-20$

**Question Number : 10 Question Id : 5113468410 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If L[f(t)] denotes the Laplace Transform of f(t), then $L[t^2e^{-2t}]=$

**Options :**

1. ✔ $\frac{2}{(s+2)^3}$

2. ✖ $\frac{3}{(s+2)^3}$

3. ✖ $\frac{1}{(s+2)^2}$

4. ✖ $\frac{2}{(s+2)^2}$

**Display Number Panel:** Yes
**Group All Questions:** No

**Question Number : 11 Question Id : 5113468411 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

For a two-dimensional incompressible and irrotational flows

**Options :**

1. ✖ Potential function must satisfy the Laplace equation, whereas stream function need not.

2. ✖ Stream function must satisfy the Laplace equation, whereas potential function need not.

3. ✔ Both stream function and potential functions satisfy the Laplace equation.

4. ✖ Neither the stream function nor the potential function needs to satisfy the Laplace equation.

**Question Number : 12 Question Id : 5113468412 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In thin airfoil theory, the lift curve slope $\left(\frac{dC_L}{d\alpha} = 2\pi\right)$ is valid for

**Options :**

1. ✖ cambered airfoil.

2. ✖ symmetric airfoil.

3. ✖ Joukowski airfoil.

4. ✔ any airfoil shape.

**Question Number : 13 Question Id : 5113468413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which of the following stays constant for the flow through Prandtl-Meyer expansion wave

**Options :**

1. ✖ Density

2. ✖ Temperature

3. ✖ Mach Number

4. ✔ Entropy

**Question Number : 14 Question Id : 5113468414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Downward deflection of the flap increases the lift coefficient of an airfoil by

**Options :**

1. ✖ increasing the local airspeed near the trailing edge.

2. ✔ increasing the effective camber of the airfoil.

3. ✖ delaying the flow separation.

4. ✖ controlling the boundary layer growth.

**Question Number : 15 Question Id : 5113468415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The maximum thickness to chord ratio for NACA 24012 airfoil is

**Options :**

1. ✔ 0.12

2. ✖ 0.24

3. ✖ 0.40

4. ✖ 0.01

**Question Number : 16 Question Id : 5113468416 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The maximum possible value of the pressure coefficient in an incompressible flow is

**Options :**

1. ✖ 0.25

2. ✖ 0.5

3. ✖ 0.75

4. ✔ 1

**Question Number : 17 Question Id : 5113468417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

An inviscid and irrotational flow becomes rotational on passing through

**Options :**

1. ✖ an oblique shock wave.

2. ✖ a normal shock wave.

3. ✖ a Mach wave.

4. ✔ a curved shock wave.

**Question Number : 18 Question Id : 5113468418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Laminar flow airfoils are used to reduce the

**Options :**

1. ✖ pressure drag.

2. ✖ induced drag.

3. ✔ skin friction drag.

4. ✖ wave drag.

**Question Number : 19 Question Id : 5113468419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Consider a steady inviscid flow in a convergent-divergent nozzle with a normal shock in the divergent section. The static pressure downstream of the normal shock will

**Options :**

1. ✖ decrease isentropically to the static pressure at the nozzle exit.

2. ✔ increase isentropically to the static pressure at the nozzle exit.

3. ✖ either increase or decrease depending on the magnitude of the static pressure at the nozzle exit.

4. ✖ remain constant.

**Question Number : 20 Question Id : 5113468420 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If the Mach number in a turbulent boundary layer over a flat plate is increased by keeping the Reynolds number unchanged, then the skin friction coefficient will

**Options :**

1. ✖ increase

2. ✔ decrease

3. ✖ remain constant

4. ✖ becomes infinity

**Question Number : 21 Question Id : 5113468421 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In supersonic wind tunnel design, an oblique shock diffuser is preferred over a normal shock diffuser because

**Options :**

1. ✖ it increases the total pressure loss.

2. ✔ it reduces the total pressure loss.

3. ✖ it rapidly accelerates the flow.

4. ✖ it rapidly decelerates the flow.

**Question Number : 22 Question Id : 5113468422 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The variation of downwash along the span of an untwisted wing of elliptic planform is

**Options :**

1. ✔ constant.

2. ✖ parabolic.

3. ✖ sinusoidal.

4. ✖ elliptic.

**Question Number : 23 Question Id : 5113468423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The flow past an airfoil is modeled using the vortex sheet. The strength of vortex sheet at the trailing edge will be

**Options :**

1. ✖ 0:5

2. ✖ 1

3. ✔ 0

4. ✖ $\infty$

**Question Number : 24 Question Id : 5113468424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The geometrical features of a supercritical airfoil are

**Options :**

1. ✖ sharp leading edge, flat suction surface and no camber at the rear.

2. ✖ rounded leading edge, curved suction surface and no camber at the rear.

3. ✖ sharp leading edge, curved suction surface and high camber at the rear.

4. ✔ rounded leading edge, flat suction surface and high camber at the rear.

**Question Number : 25 Question Id : 5113468425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which one of the following high lift-devices results in higher stalling angle?

**Options :**

1. ✖ Plain flap

2. ✖ Fowler flap

3. ✔ Split flap

4. ✖ Leading edge flap

**Question Number : 26 Question Id : 5113468426 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The total pressure at a point is defined as the pressure when the flow is brought to rest

**Options :**

1. ✔ isentropically.

2. ✖ adiabatically.

3. ✖ isobarically.

4. ✖ isothermally

**Question Number : 27 Question Id : 5113468427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The drag divergence Mach number of an airfoil is

**Options :**

1. ✔ always higher than the critical Mach number.

2. ✖ equal to the critical Mach number at zero angle of attack.

3. ✖ a fixed value for a given airfoil.

4. ✖ the Mach number at which a shock wave first appears on the airfoil.

**Question Number : 28 Question Id : 5113468428 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The Joukowski airfoil is studied because

**Options :**

1. ✖ it is used in many aircrafts.

2. ✖ it has a simple geometry.

3. ✖ it has the highest lift curve slope.

4. ✔ it is easily transformed into a circle, mathematically.

**Question Number : 29 Question Id : 5113468429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Two airfoils of the same family are operating at the same angle of attack. The dimensions of one airfoil is thrice as large as the other one. The ratio of the minimum pressure coefficient of the larger airfoil to the minimum pressure coefficient of the smaller airfoil is

**Options :**

1. ✔ 1

2. ✖ 3

3. ✖ 5

4. ✖ 6

**Question Number : 30 Question Id : 5113468430 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Wing A has a constant chord c and span b. Wing B is identical to A, but has a span 4b. When both wings are operating at same geometric angle of attack at subsonic speeds, then

**Options :**

1. ✖ wing A produces a smaller lift coefficient than wing B.

2. ✖ wing A produces a greater lift coefficient than the wing B.

3. ✔ wing A and B produce the same lift coefficients.

4. ✖ freestream Mach number decides, which wing produces the greater lift coefficients.

**Question Number : 31 Question Id : 5113468431 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In comparison to a laminar boundary layer, the turbulent boundary layer remains attached on the upper surface of an airfoil over a longer distance, because

**Options :**

1. ✔ the turbulent boundary layer is more energetic and hence can overcome the adverse pressure gradient better.

2. ✖ the turbulent boundary layer is thicker, hence the velocity gradients in it are smaller, consequently viscous losses are less.

3. ✖ the laminar boundary layer develops more skin friction and hence slows down more rapidly.

4. ✖ turbulence causes the effective coefficient of viscosity to reduce, resulting in lesser loss of momentum in the boundary layer.

**Question Number : 32 Question Id : 5113468432 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In a compressible flow over a _at plate, the boundary layer thickness ($\delta$) is given by

**Options :**

1. ✔ $\frac{5.0x}{\sqrt{Re_x}}$

2. ✖ $\frac{5.0x}{Re_x}$

3. ✖ $\frac{5.0x^2}{Re_x}$

4. ✖ $\frac{5.0x^2}{\sqrt{Re_x}}$

**Question Number : 33 Question Id : 5113468433 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

For a stream tube, the area-velocity relation is given by

**Options :**

1. ✖ $\frac{dA}{A} = (1 - M^2)\frac{dv}{v}$

2. ✖ $\frac{dA}{A} = (M - 1)\frac{dv}{v}$

3. ✔ $\frac{dA}{A} = (M^2 - 1)\frac{dv}{v}$

4. ✖ $\frac{dA}{A} = (1 - M)\frac{dv}{v}$

**Question Number : 34 Question Id : 5113468434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

An increase in the angle of attack has the following effects.

**Options :**

1. ✖ The center of pressure moves backwards.

2. ✔ The center of pressure moves forward.

3. ✖ Center of pressure may more forward or backward

4. ✖ Center of pressure is not affected.

**Question Number : 35 Question Id : 5113468435 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which of the following is not true for a gouge flaps?

**Options :**

1. ✖ It increases the chord length.

2. ✔ It affects the trim.

3. ✖ It increases the wing area.

4. ✖ It increases the chord length and wing area.

**Question Number : 36 Question Id : 5113468436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If the lift coefficient of a wing is increased by two times, then the induced drag

**Options :**

1. ✖ Decrease by two times.

2. ✖ Increase by two times.

3. ✖ Increase by three times.

4. ✔ Increase by four times.

**Question Number : 37 Question Id : 5113468437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The critical Mach number for a thick airfoil will be

**Options :**

1. ✔ lesser than a thin airfoil.

2. ✖ greater than a thin airfoil

3. ✖ equal to a thin airfoil.

4. ✖ cannot be related to thin airfoil.

**Question Number : 38 Question Id : 5113468438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Consider the three-dimensional motion of fluid in the vicinity of a vortex filament. Which one of the following statement is not a Helmholtz's theorem?

**Options :**

1. ✖ The strength of a vortex filament is constant along its length.

2. ✖ A vortex filament cannot end in a fluid. It may extend to the boundaries of the fluid.

3. ✔ A vortex filament cannot form a closed path.

4. ✖ In the absence of rotational external forces, a fluid that is initially irrotational, remains irrotational

**Question Number : 39 Question Id : 5113468439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

An aircraft glides a distance of 5000 $m$, in which the loss of altitude is 1000 $m$. If the freestream velocity is 100 $m/s$, the aircraft's glide ratio is

**Options :**

1. ✖ 0.5

2. ✔ 5

3. ✖ 50

4. ✖ 500

**Question Number : 40 Question Id : 5113468440 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The propulsive efficiency of the aircraft's jet engine is given by

**Options :**

1. ✖ energy input rate / propulsive power

2. ✔ propulsive power / energy input rate

3. ✖ propulsive power / work done by Engine

4. ✖ work done by Engine / propulsive power

**Question Number : 41 Question Id : 5113468441 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Flapper valves are present in the

**Options :**

1. ✔ Pulsejet engine

2. ✖ Ramjet engine

3. ✖ Scramjet engine

4. ✖ Turbojet engine

**Question Number : 42 Question Id : 5113468442 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The engine with afterburner is also called as

**Options :**

1. ✖ augment engine.

2. ✖ side engine.

3. ✔ reheat engine.

4. ✖ additional engine.

**Question Number : 43 Question Id : 5113468443 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The gas turbine engine was invented by

**Options :**

1. ✖ Brayton

2. ✖ Otto

3. ✖ Atkinson

4. ✔ John Barber

**Question Number : 44 Question Id : 5113468444 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The compressor used in aircrafts must have

**Options :**

1. ✖ low air flow capacity.

2. ✖ high frontal area.

3. ✔ high pressure ratio per stage.

4. ✖ low volume flow rate.

**Question Number : 45 Question Id : 5113468445 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

As the fluid flows in the rotor of an axial flow compressor, the absolute velocity of the fluid will

**Options :**

1. ✖ decreases.

2. ✔ increases.

3. ✖ initially increases and then decreases.

4. ✖ remains constant.

**Question Number : 46 Question Id : 5113468446 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In the combustion chamber of a jet engine, the $CO_2$ emission in the diffusion flame is maximum at the equivalence ratio of

**Options :**

1. ✖ 0.25

2. ✖ 0.5

3. ✔ 0.75

4. ✖ 1

**Question Number : 47 Question Id : 5113468447 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In an engine, the maximum pressure loss occurs across the

**Options :**

1. ✖ inlet.

2. ✔ compressor.

3. ✖ turbine.

4. ✖ nozzle.

**Question Number : 48 Question Id : 5113468448 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Specific impulse will be maximum for

**Options :**

1. ✖ liquid rocket.

2. ✖ solid rocket.

3. ✔ electric rocket.

4. ✖ jet engine.

**Question Number : 49 Question Id : 5113468449 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The combustor efficiency of an aircraft engine

**Options :**

1. ✖ increases slowly with the altitude.

2. ✔ decreases with the altitude.

3. ✖ increases rapidly with the altitude.

4. ✖ remains constant with altitude.

**Question Number : 50 Question Id : 5113468450 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The corner velocity is the minimum velocity at which the aircraft can reach its maximum

**Options :**

1. ✖ fuel economy.

2. ✖ combustion efficiency.

3. ✖ thrust.

4. ✔ load factor.

**Question Number : 51 Question Id : 5113468451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which of the following is not true for a Ramjet engine?

**Options :**

1. ✖ It has a high thrust to weight ratio.

2. ✔ It works well at off-design Mach numbers.

3. ✖ As compared to other jet engines, its fuel consumption at subsonic speeds is very high.

4. ✖ It has zero take-off thrust.

**Question Number : 52 Question Id : 5113468452 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The relation between polytropic efficiency $(\eta_p)$ and the overall efficiency $(\eta_o)$ of a compressor is

**Options :**

1. ✖ $\eta_p = \eta_o$

2. ✔ $\eta_p > \eta_o$

3. ✖ $\eta_p < \eta_o$

4. ✖ no relation exists.

**Question Number : 53 Question Id : 5113468453 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The relation between polytropic efficiency $(\eta_p)$ and the overall efficiency $(\eta_o)$ of a turbine is

**Options :**

1. ✖ $\eta_p = \eta_o$

2. ✖ $\eta_p > \eta_o$

3. ✔ $\eta_p < \eta_o$

4. ✖ no relation exists.

**Question Number : 54 Question Id : 5113468454 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In the constant area section, across the fan

**Options :**

1. ✖ both velocity and the static pressure increase.

2. ✖ velocity and static pressure remain constant.

3. ✔ velocity is constant and the static pressure increases.

4. ✖ velocity increases and the static pressure decreases.

**Question Number : 55 Question Id : 5113468455 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The specific speed of a centrifugal compressor is generally

**Options :**

1. ✖ higher than that of an axial compressor.

2. ✖ less than that of a reciprocating compressor.

3. ✔ independent of the type of the compressor but depends only on the size of the compressor.

4. ✖ more than the specific speed of the reciprocating compressor but less than that of axial compressor.

**Question Number : 56 Question Id : 5113468456 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Consider the following statement.

i. Almost all flow losses takes place in the divergent section of the nozzle.

ii. Normal shocks are likely to occur in the convergent part of the nozzle.

iii. Efficiency of reaction turbines is higher than that of impulse turbines.

**Options :**

1. ✖ All are correct.

2. ✖ ii and iii are correct.

3. ✖ i and ii are correct.

4. ✔ i and iii are correct.

**Question Number : 57 Question Id : 5113468457 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

An impulse turbine stage is characterized by the expansion of the gases in

**Options :**

1. ✔ stator nozzles.

2. ✖ rotor nozzles.

3. ✖ both stator and rotor nozzles.

4. ✖ neither stator nozzle nor rotor nozzle.

**Question Number : 58 Question Id : 5113468458 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Multistage reaction turbines are employed to achieve

**Options :**

1. ✔ large pressure drop.

2. ✖ large mass flow rate.

3. ✖ large volume flow rate.

4. ✖ large pressure rise.

**Question Number : 59 Question Id : 5113468459 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The maximum temperature from the combustor is limited in jet engines, because

**Options :**

1. ✖ it is difficult to burn the fuel.

2. ✖ the air-fuel ratio is too lean.

3. ✔ turbine blades cannot sustain very high temperatures.

4. ✖ combustion intensity decreases.

**Question Number : 60 Question Id : 5113468460 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Because of the diffusion in the inlet of a jet engine

**Options :**

1. ✔ air velocity decreases and the pressure increases

2. ✖ both air velocity and the pressure decrease.

3. ✖ both air velocity and the pressure increase.

4. ✖ air velocity increases and the pressure decreases

**Question Number : 61 Question Id : 5113468461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The exhaust nozzle pressure ratio is a strong function of

**Options :**

1. ✖ Reynolds number.

2. ✖ Prandtl number.

3. ✖ Euler number.

4. ✔ Mach number.

**Question Number : 62 Question Id : 5113468462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In a turbojet engine, the pressure thrust as compared to the momentum thrust is

**Options :**

1. ✖ almost equal.

2. ✖ quite high.

3. ✔ quite low.

4. ✖ cannot predict.

**Question Number : 63 Question Id : 5113468463 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which of the following is the lightest and most volatile liquid fuel?

**Options :**

1. ✖ Kerosene

2. ✔ Gasoline

3. ✖ Fuel oil

4. ✖ Vegetable oil

**Question Number : 64 Question Id : 5113468464 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The compression ratio for petrol engines is

**Options :**

1. ✖ 3 to 6

2. ✔ 8 to 10

3. ✖ 10 to 15

4. ✖ 15 to 20

**Question Number : 65 Question Id : 5113468465 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Propellants in the rocket engine should have

**Options :**

1. ✔ high calorific value.

2. ✖ low calorific value.

3. ✖ high viscosity.

4. ✖ lower thermal conductivity.

**Question Number : 66 Question Id : 5113468466 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

In an axial flow compressor, the exit flow angle deviation from the blade angle is a function of

**Options :**

1. ✖ space-chord ratio.

2. ✖ blade camber

3. ✔ blade camber and incidence angle.

4. ✖ blade camber and space-chord ratio.

**Question Number : 67 Question Id : 5113468467 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A double-throw crank-shaft operates at

**Options :**

1. ✖ 90°

2. ✔ 180°

3. ✖ 270°

4. ✖ 360°

**Question Number : 68 Question Id : 5113468468 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Engine specific weight is defined as the weight of the engine per unit

**Options :**

1. ✖ volume.

2. ✖ mass.

3. ✖ density.

4. ✔ power.

**Question Number : 69 Question Id : 5113468469 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The intensity of stress which causes unit strain is termed as

**Options :**

1. ✖ modulus of rigidity.

2. ✖ bulk modulus.

3. ✖ young modulus.

4. ✔ modulus of elasticity.

**Question Number : 70 Question Id : 5113468470 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Capability of the material in absorbing the large amount of energy before the fracture is

**Options :**

1. ✖ Resilience

2. ✖ Ductility

3. ✖ Stiffness

4. ✔ Toughness

**Question Number : 71 Question Id : 5113468471 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Resilience is considered when the material is subjected to

**Options :**

1. ✔ Shock Loading

2. ✖ Creep

3. ✖ Fatigue

4. ✖ Fracture

**Question Number : 72 Question Id : 5113468472 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The highest load, which a spring can carry without getting permanently distorted, is known as

**Options :**

1. ✖ proof stress

2. ✔ proof load

3. ✖ proof stiffness

4. ✖ proof resilience

**Question Number : 73 Question Id : 5113468473 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The relation between the Bulk modulus ($K$), Young modulus ($E$) and Poisson's ratio ($\nu$) of the material is given by

**Options :**

1. ✔ $K = \frac{E}{3(1-2\nu)}$

2. ✖ $K = \frac{E(1+\nu)}{2}$

3. ✖ $K = \frac{3E}{(1-2\nu)}$

4. ✖ $K = \frac{E}{2(1+\nu)}$

**Question Number : 74 Question Id : 5113468474 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If the vertical tail was inverted and put below the horizontal tail of an aircraft, then its contribution to dihedral effect is

**Options :**

1. ✔ positive

2. ✖ negative

3. ✖ zero

4. ✖ constant

**Question Number : 75 Question Id : 5113468475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Consider u is the displacement, x is the coordinate in axial direction, M is the moment and V is shear force. In an elastic beam problem, boundary conditions at free end will be

**Options :**

1. ✔ $M = 0$ and $V = 0$

2. ✖ $u = 0$ and $\frac{\partial u}{\partial x} = 0$

3. ✖ $M = 0$ and $u = 0$

4. ✖ $V = 0$ and $\frac{\partial u}{\partial x} = 0$

**Question Number : 76 Question Id : 5113468476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Critical Buckling load for a fixed-free column of length l will be

**Options :**

1. ✖ $P_{cr} = \frac{\pi^2 EI}{l^2}$

2. ✖ $P_{cr} = \frac{\pi^2 EI}{2l^2}$

3. ✔ $P_{cr} = \frac{\pi^2 EI}{4l^2}$

4. ✖ $P_{cr} = \frac{4\pi^2 EI}{l^2}$

**Question Number : 77 Question Id : 5113468477 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

For a plane stress problem, the state of stress can be represented as Mohr's circle. The equation of Mohr's circle is

**Options :**

1. ✔ $\left(\sigma_n - \frac{\sigma_x+\sigma_y}{2}\right)^2 + \tau^2 = \left(\frac{\sigma_y-\sigma_x}{2}\right)^2$

2. ✖ $\left(\sigma_n + \frac{\sigma_x+\sigma_y}{2}\right)^2 + \tau^2 = \left(\frac{\sigma_y-\sigma_x}{2}\right)^2$

3. ✖ $\left(\sigma_n + \frac{\sigma_x-\sigma_y}{2}\right)^2 + \tau^2 = \left(\frac{\sigma_y+\sigma_x}{2}\right)^2$

4. ✖ $\left(\sigma_n - \frac{\sigma_x+\sigma_y}{2}\right)^2 + \tau^2 = \left(\frac{\sigma_y+\sigma_x}{2}\right)^2$

**Question Number : 78 Question Id : 5113468478 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Due to presence of taper in the structure of an aircraft wing, which of the following remains unchanged when compared to the case with no taper and same applied loads?

**Options :**

1. ✖ axial stress in longitudinal direction.

2. ✔ shear flow due to applied torsional moment.

3. ✖ shear flow due to applied bending moment.

4. ✖ shear flow due to both bending and torsion.

**Question Number : 79 Question Id : 5113468479 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The total number of independent variables in the linear stress-strain relationship of an isotropic material is

**Options :**

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 4

**Question Number : 80 Question Id : 5113468480 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The deformation of a bar under its own weight as compared to that, when subjected to a direct axial load equal to its own weight will be

**Options :**

1. ✖ the same

2. ✖ one-fourth

3. ✔ half

4. ✖ double

**Question Number : 81 Question Id : 5113468481 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A material is said to be perfectly elastic if

**Options :**

1. ✖ it does not regain its original shape at all.

2. ✖ it regains its original shape partially on removal of the load.

3. ✔ it regains its original shape on removal of the load.

4. ✖ it takes the new shape on removal of the load.

**Question Number : 82 Question Id : 5113468482 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A nose up pitching moment to cancel the nose down moment caused by lift and weight vectors, is produced by

**Options :**

1. ✖ positively cambered airfoil.

2. ✔ negatively cambered airfoil.

3. ✖ zero cambered airfoil.

4. ✖ It is not related to the wing.

**Question Number : 83 Question Id : 5113468483 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Total strain energy theory is also called as

**Options :**

1. ✖ Tresca's theory.

2. ✖ Euler's beam theory.

3. ✖ St. Venant's theory.

4. ✔ Haig's theory.

**Question Number : 84 Question Id : 5113468484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A stiffer material will also have a higher

**Options :**

1. ✖ bulk modulus.

2. ✔ elastic modulus.

3. ✖ compressibility.

4. ✖ rigidity modulus.

**Question Number : 85 Question Id : 5113468485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The yield point is the point on a stress-strain curve that indicates the limit of elastic behavior and

**Options :**

1. ✔ beginning of plastic behavior.

2. ✖ ending of plastic behavior.

3. ✖ true elastic limit.

4. ✖ proportionality limit.

**Question Number : 86 Question Id : 5113468486 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The lowest stress at which dislocations move is called

**Options :**

1. ✖ yield point.

2. ✖ minimal stress limit.

3. ✔ true elastic limit.

4. ✖ yield strength.

**Question Number : 87 Question Id : 5113468487 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Maximum distortion energy theory is also called as

**Options :**

1. ✖ maximum principal strain theory.

2. ✖ Tresca yield criterion.

3. ✖ St. Venant's theory.

4. ✔ Von -Mises yield criterion.

**Question Number : 88 Question Id : 5113468488 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The more popular anisotropic yield criteria is

**Options :**

1. ✔ Hosford yield criterion.

2. ✖ Mohr-Coulomb yield criterion.

3. ✖ Drucker-Prager yield criterion.

4. ✖ Bresler-Pister yield criterion.

**Question Number : 89 Question Id : 5113468489 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Euler's formula holds good only for

**Options :**

1. ✔ long columns.

2. ✖ short columns

3. ✖ both short and long columns.

4. ✖ Euler's formula is not applicable for columns.

**Question Number : 90 Question Id : 5113468490 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

When a rectangular beam is loaded transversely, the maximum compressive stress is developed on the

**Options :**

1. ✖ top layer of the beam.

2. ✔ bottom layer of the beam.

3. ✖ neutral axis of the beam.

4. ✖ every cross-section of the beam.

**Question Number : 91 Question Id : 5113468491 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The point of contraflexure is a point where

**Options :**

1. ✖ shear force is maximum.

2. ✖ bending moment is maximum.

3. ✔ bending moment changes sign.

4. ✖ shear force changes sign.

**Question Number : 92 Question Id : 5113468492 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If the depth is kept constant for a beam of uniform strength, then its width will vary in proportional to

**Options :**

1. ✔ bending moment.

2. ✖ square root of bending moment.

3. ✖ square of bending moment.

4. ✖ cube root of bending moment.

**Question Number : 93 Question Id : 5113468493 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

When the shear force at a point is zero, then the bending moment at that point is

**Options :**

1. ✖ zero

2. ✖ minimum

3. ✔ maximum

4. ✖ infinity

**Question Number : 94 Question Id : 5113468494 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The von-Mises yield criterion for the plane stress problem with $\sigma_1$ and $\sigma_2$ as the principal stresses in the plane, and $\sigma_y$ as the yield stress, requires

**Options :**

1. ✔ $\sigma_1^2 - \sigma_1\sigma_2 + \sigma_2^2 \leq \sigma_Y^2$

2. ✖ $|\sigma_1 - \sigma_2| \leq \sigma_Y$

3. ✖ $|\sigma_1| \leq \sigma_Y$

4. ✖ $|\sigma_2| \leq \sigma_Y$

**Question Number : 95 Question Id : 5113468495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

At a given point in a structural member, a two-dimensional stress system where $\sigma_x = 60\ Nmm^{-2}$, $\sigma_y = -40\ Nmm^{-2}$ and $\tau_{xy} = 50\ Nmm^{-2}$. If the Young's modulus $E = 2\times 10^5\ Nmm^{-2}$ and Poisson's ratio $\nu = 0.3$, the inclination of the principal strains to the plane on which $\sigma_x$ acts, is

**Options :**

1. ✖ 2.5°

2. ✖ 12.5°

3. ✔ 22.5°

4. ✖ 32.5°

**Question Number : 96 Question Id : 5113468496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Load factor in gliding flight is always

**Options :**

1. ✖ greater than one.

2. ✔ less than one.

3. ✖ equal to one.

4. ✖ between one and ten.

**Question Number : 97 Question Id : 5113468497 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A cantilever beam of rectangular cross-section is subjected to a load P at its free end. If the depth of the beam is doubled and the load is halved, the deflection of the free end as compared to the original deflection will be

**Options :**

1. ✖ half

2. ✖ double

3. ✖ one-eighth

4. ✔ one-sixteenth

**Question Number : 98 Question Id : 5113468498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A thin cylinder contains fluid at a pressure of 500 $Nm^{-2}$, the internal diameter of the shell is 0.6 m and the tensile stress in the material is to be limited to 9000 $Nm^{-2}$. The shell must have a minimum wall thickness of

**Options :**

1. ✖ 5 mm

2. ✖ 7 mm

3. ✖ 13 mm

4. ✔ 17 mm

**Question Number : 99 Question Id : 5113468499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A cantilever beam of length 3 cm carrying a point load of 50 kN at a distance of 2 m from the fixed end. If the moment of Inertia $I = 10^8\ mm^4$ and Young's modulus $E = 2 \times 10^6\ N/mm^2$. What is the deflection of the beam at the free end?

**Options :**

1. ✖ 2.53

2. ✖ 8.36

3. ✔ 11.67

4. ✖ 15.78

**Question Number : 100 Question Id : 5113468500 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The phenomenon of rudder lock in a low speed aircraft is mainly due to

**Options :**

1. ✖ the sidewash due to the wing on the vertical stabilizer.

2. ✔ the tendency of rudder to float rapidly at high side-slip angle.

3. ✖ the large value of directional derivative.

4. ✖ the sidewash due to fuselage on the vertical stabilizer.

**Question Number : 101 Question Id : 5113468501 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A positive tail incidence angle setting, as compared to a negative tail incidence angle setting, yields

**Options :**

1. ✖ more static stability.

2. ✔ less static stability.

3. ✖ same static stability.

4. ✖ cannot be determined.

**Question Number : 102 Question Id : 5113468502 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The static longitudinal stability of an airplane is attained by

**Options :**

1. ✖ the lift from wing and horizontal tail.

2. ✖ product of the tail arm and wing lift.

3. ✔ product of the tail lift and tail arm.

4. ✖ product of tail lift and wing lift.

**Question Number : 103 Question Id : 5113468503 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The vertical tail of an aircraft contributes towards

**Options :**

1. ✖ lateral and longitudinal stability.

2. ✔ directional and lateral stability.

3. ✖ directional and longitudinal stability.

4. ✖ no contribution towards stability.

**Question Number : 104 Question Id : 5113468504 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If an aircraft has its center of gravity on neutral point, then

**Options :**

1. ✖ static stability is minimum.

2. ✔ aircraft is neutrally stable.

3. ✖ aircraft is statically unstable.

4. ✖ aircraft has more lateral stability.

**Question Number : 105 Question Id : 5113468505 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A dutch roll instability of an aircraft is

**Options :**

1. ✖ a highly damped oscillatory motion with low frequency.

2. ✖ a highly damped oscillatory motion with high frequency.

3. ✔ a lightly damped oscillatory motion with low frequency.

4. ✖ a lightly damped oscillatory motion with high frequency.

**Question Number : 106 Question Id : 5113468506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Characteristics of a short-term mode of longitudinal instability are

**Options :**

1. ✔ constant speed, highly damped

2. ✖ constant speed, lightly damped

3. ✖ constant angle of attack, highly damped

4. ✖ constant speed, constant angle of attack

**Question Number : 107 Question Id : 5113468507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The effect of tail on the aircraft's static stability is

**Options :**

1. ✖ de-stabilizing

2. ✖ stabilizing

3. ✔ dependent upon the aft or forward position of the tail.

4. ✖ not dependent on the aft or forward position of the tail.

**Question Number : 108 Question Id : 5113468508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

An aircraft has a L/D ratio of 16. Its damping ratio in phugoid mode ($\xi p$) will be

**Options :**

1. ✖ 0.15

2. ✖ 0.25

3. ✖ 0.35

4. ✔ 0.45

**Question Number : 109 Question Id : 5113468509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Positive dihedral effect can be produced by using

**Options :**

1. ✔ swept back wing.

2. ✖ rectangular wing.

3. ✖ canard wing.

4. ✖ swept forward wing.

**Question Number : 110 Question Id : 5113468510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

High wing aircraft, when compared to a low wing aircraft generates

**Options :**

1. ✖ equal dihedral effect.

2. ✖ lower dihedral effect.

3. ✔ greater dihedral effect.

4. ✖ no dihedral effect.

**Question Number : 111 Question Id : 5113468511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If the center of gravity of the aircraft moves rearwards, then

**Options :**

1. ✔ longitudinal mode becomes non-periodic and eventually becomes unstable.

2. ✖ longitudinal stability increases.

3. ✖ roll stability increases.

4. ✖ both roll and yaw stability increases.

**Question Number : 112 Question Id : 5113468512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The maximum distance that an aircraft can fly non-stop and without in-flight refueling is termed as

**Options :**

1. ✔ ferry range.

2. ✖ average range.

3. ✖ total range.

4. ✖ Nautical range.

**Question Number : 113 Question Id : 5113468513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

During the phugoid mode of an aircraft, which of the following parameters are excited?

**Options :**

1. ✖ air speed and angle of attack.

2. ✖ pitch rate and pith angle.

3. ✖ angle of attack and pitch rate.

4. ✔ air speed and pitch angle.

**Question Number : 114 Question Id : 5113468514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Which of the following tends to impart rolling stability to an aircraft?

**Options :**

1. ✖ Anhedral wing

2. ✔ Dihedral wing

3. ✖ Swept forward wing

4. ✖ Mid-wing with swept forward configuration

**Question Number : 115 Question Id : 5113468515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The maximum altitude, at which an aircraft can keep a steady level flight is known as

**Options :**

1. ✖ absolute servicing.

2. ✔ absolute ceiling.

3. ✖ absolute marking.

4. ✖ absolute attitude.

**Question Number : 116 Question Id : 5113468516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If the center of gravity of an aircraft moves forward, the static longitudinal stability of the aircraft will

**Options :**

1. ✔ always increase.

2. ✖ remain same.

3. ✖ sometimes increase

4. ✖ always decrease.

**Question Number : 117 Question Id : 5113468517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

A tail-less aircraft can be made stable by having its center of gravity located

**Options :**

1. ✖ behind the aerodynamic center of the wing.

2. ✔ ahead of aerodynamic center of the wing.

3. ✖ near the nose.

4. ✖ near the tail.

**Question Number : 118 Question Id : 5113468518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If tail area is increased, while the elevator to tail area ratio is kept the same, then

**Options :**

1. ✔ both static stability and control power will increase.

2. ✖ only static stability will increase.

3. ✖ only control power will increase.

4. ✖ neither stability nor control power changes.

**Question Number : 119 Question Id : 5113468519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The aircraft stall is most commonly due to

**Options :**

1. ✖ slow speed alone.

2. ✖ rate of climb.

3. ✖ gliding.

4. ✔ slow speed and high angle of attack.

**Question Number : 120 Question Id : 5113468520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

Purpose of aircraft wing dihedral angle is to

**Options :**

1. ✔ increase lateral stability.

2. ✖ increase longitudinal stability.

3. ✖ increase lift coefficient of the wing.

4. ✖ increase both lateral and longitudinal stability.