Unit 2 - Week 0

Assignment 0

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-09-14, 23:59 IST.

This Assignment 0 is a Non Graded Assignment, just to gauge the depth of understanding the learners are having on the pre-requisites for the course.

The following questions **may have more than one correct answers**. Read and analyse the question carefully before selecting the answer (s).

1) **Wave Drag can be reduced by using :** *1 point*

- Thin Wings
- Wing Sweep
- Supercritical airfoils
- Winglets

No, the answer is incorrect.
Score: 0
Accepted Answers:
Thin Wings
Wing Sweep
Supercritical airfoils

2) **Which of the following statements is/are TRUE as the altitude increases in the Troposphere of International Standard Atmosphere?** *1 point*

- Temperature decreases, and Dynamic Viscosity decreases
- Temperature remains constant, and Pressure increases
- Temperature decreases, and Sonic Speed decreases
- Temperature increases, and Dynamic Viscosity increases

No, the answer is incorrect.
Score: 0
Accepted Answers:
Temperature decreases, and Dynamic Viscosity decreases
Temperature decreases, and Sonic Speed decreases

3) **Which of the following statement(s) is/are TRUE about the Auxiliary Power Unit?** *1 point*

The Auxiliary Power Unit (APU) is utilized to provide power for

- Operating the aircraft from short runways
- Starting up the engine for takeoff
- Air conditioning of the passenger cabin when engine is switched off after landing
- Air conditioning of the passenger cabin when engine is switched off before takeoff

No, the answer is incorrect.
Score: 0
Accepted Answers:
Starting up the engine for takeoff
Air conditioning of the passenger cabin when engine is switched off after landing
Air conditioning of the passenger cabin when engine is switched off before takeoff

4) **Which of the following is favorable for an airplane operation?** *1 point*

- Tailwind during Cruise, but Head wind during Landing
- Tailwind during both Cruise and Landing
- Headwind during both Cruise and Landing
- Headwind during Cruise, but Tail wind during Landing

No, the answer is incorrect.
Score: 0
Accepted Answers:
Tailwind during Cruise, but Head wind during Landing

5) Thrust available from a Turbojet engine *1 point*

- Increases as altitude increases
- Increases up to the tropopause and then decreases
- Remains constant at all altitudes
- Decreases as altitude increases

No, the answer is incorrect.
Score: 0
Accepted Answers:
Decreases as altitude increases

6) The Pitot tube of an aircraft registers a total pressure $P_0 = 54{,}051\ N/m^2$. The static pressure = $45{,}565\ N/m^2$, density = $0.6417\ kg/m^3$ and the ratio of specific heats of the freestream is 1.4. The indicated airspeed (in m/s) is *1 point*

- 157. 6 m/s
- 162.6 m/s
- 172.0 m/s
- 182.3 m/s

No, the answer is incorrect.
Score: 0
Accepted Answers:
162.6 m/s

7) **The absolute ceiling of an aircraft is the altitude above which it** *1 point*

- Can never reach
- Cannot sustain level flight at a constant speed
- Can perform accelerated flight as well as straight and level flight at constant speed
- Can perform straight and level flight at a constant speed only

No, the answer is incorrect.
Score: 0
Accepted Answers:
Cannot sustain level flight at a constant speed

8) **The minimum velocity at the steady level flight of the aircraft corresponding to the load factor n = 1 is termed as** *1 point*

- Cruise Speed
- Takeoff Safety Speed
- Unstick Speed
- Stall Speed

No, the answer is incorrect.
Score: 0
Accepted Answers:
Stall Speed

9) The Drag Divergence Mach (M_{DD}) number of an airfoil is *1 point*

- a fixed number for a given airfoil
- always higher than the Critical Mach number (M_{Crit})
- equal to the critical Mach number (M_{Crit}) at zero angle of attack
- the Mach number at which a shock wave first appears on the airfoil

No, the answer is incorrect.
Score: 0
Accepted Answers:
always higher than the Critical Mach number (M_{Crit})

10) **Which of the following statements is/are TRUE with respect to Supercritical Aerofoils?** *1 point*

- They have a large Leading edge radius
- They have a flat upper surface
- They have a reflex camber at trailing edge
- They delay the onset of wave drag

No, the answer is incorrect.
Score: 0
Accepted Answers:
They have a large Leading edge radius
They have a flat upper surface
They have a reflex camber at trailing edge
They delay the onset of wave drag