Fundamentals of Aerospace Engineering

Aerospace Engineering · Practice Test · 25 Questions

1. Which of the following forces acts in direct opposition to the weight of an aircraft during flight?

A) Drag
B) Thrust
C) Lift
D) Sideforce

2. What is the primary function of an airfoil's camber?

A) To increase structural mass
B) To create pressure differential for lift
C) To reduce skin friction drag
D) To stabilize the center of gravity

3. Which layer of the Earth's atmosphere contains the majority of commercial air traffic?

A) Troposphere
B) Stratosphere
C) Mesosphere
D) Thermosphere

4. The 'Mach number' is defined as the ratio of an object's speed to the speed of what?

A) Light in a vacuum
B) Sound in the medium
C) Escape velocity
D) The earth's rotation

5. Which component of a jet engine is responsible for increasing the pressure of incoming air before it reaches the combustion chamber?

A) Turbine
B) Nozzle
C) Compressor
D) Exhaust

Quixly | This material was auto-generated. Quixly is not liable for errors or omissions. Visit quixlylearn.com to report corrections.

6. What is the term for the point in an aircraft where the total weight is considered to be concentrated?

A) Center of Pressure
B) Center of Gravity
C) Neutral Point
D) Aerodynamic Center

7. In orbital mechanics, what is the 'apoapsis'?

A) The point closest to the primary body
B) The point farthest from the primary body
C) The angle of inclination
D) The speed required to exit orbit

8. Which material is most commonly used in modern aircraft structures for its high strength-to-weight ratio?

A) Cast Iron
B) Aluminum-Lithium alloys
C) Lead
D) Copper

9. What does an aircraft's 'yaw' motion describe?

A) Rotation around the longitudinal axis
B) Rotation around the lateral axis
C) Rotation around the vertical axis
D) Pitching the nose up or down

10. Which law of physics is the primary principle behind rocket propulsion?

A) Newton's Third Law of Motion
B) Bernoulli's Principle
C) Kepler's Second Law
D) Ohm's Law

11. What is the primary purpose of winglets on an aircraft?

A) To increase maximum speed
B) To reduce induced drag caused by wingtip vortices
C) To improve pilot visibility
D) To enhance cabin pressurization

Quixly | This material was auto-generated. Quixly is not liable for errors or omissions. Visit quixlylearn.com to report corrections.

12. The 'Kármán line' is the internationally accepted boundary between:

A) The troposphere and stratosphere
B) The atmosphere and space
C) The Earth and the Moon
D) Commercial and military airspace

13. What is the specific impulse (Isp) of a rocket engine a measure of?

A) Total thrust produced
B) Fuel efficiency
C) Maximum altitude reached
D) Structural integrity

14. Which flight control surface is used to manage an aircraft's roll?

A) Elevators
B) Rudder
C) Ailerons
D) Flaps

15. What happens to air density as altitude increases in the troposphere?

A) It remains constant
B) It increases
C) It decreases
D) It fluctuates randomly

16. Which gas is the primary oxidizer used in most liquid-fueled rocket engines?

A) Liquid Oxygen
B) Liquid Nitrogen
C) Liquid Helium
D) Liquid Argon

17. What is the term for the angle between the chord line of a wing and the oncoming airflow?

A) Dihedral angle
B) Angle of attack
C) Sweepback angle
D) Incidence angle

18. Which type of jet engine is most efficient at subsonic speeds?

A) Turbojet
B) Ramjet
C) Turbofan
D) Scramjet

Quixly | This material was auto-generated. Quixly is not liable for errors or omissions. Visit quixlylearn.com to report corrections.

19. The 'stall' of an aircraft wing is typically caused by:

A) Excessive engine thrust
B) Separation of airflow at high angles of attack
C) Too much lift
D) High air temperature

20. What is the function of the 'Empennage' on an aircraft?

A) Providing power to the electronics
B) Landing gear deployment
C) Providing stability and control
D) Storing fuel

21. Which of the following is a reusable spacecraft propulsion system?

A) Solid rocket booster
B) Ion thruster
C) Space shuttle main engine
D) Expendable tank

22. What is the primary function of the 'nozzle' in a rocket engine?

A) To mix fuel and oxidizer
B) To ignite the propellant
C) To accelerate exhaust gases to supersonic speeds
D) To dampen engine vibrations

23. Which aerodynamic force is primarily caused by air viscosity and boundary layer effects?

A) Lift
B) Weight
C) Parasitic drag
D) Thrust

24. What does the acronym 'HUD' stand for in cockpit instrumentation?

A) High Utility Display
B) Heads-Up Display
C) Helicopter Universal Device
D) Horizontal Unit Data

25. Which planet's gravity is most commonly used in 'gravity assist' maneuvers by interplanetary probes?

A) Venus
B) Jupiter
C) Mars
D) Saturn

Quixly | This material was auto-generated. Quixly is not liable for errors or omissions. Visit quixlylearn.com to report corrections.