

Aerospace Engineering Fundamentals

Aerospace Engineering · Answer Key · 8 Questions

1. What fundamental principle of physics, described by Sir Isaac Newton, is directly applied in the operation of rocket engines to generate thrust?

- A) Principle of Buoyancy
- B) Law of Conservation of Energy
- C) Third Law of Motion (Action-Reaction)**
- D) Law of Universal Gravitation

2. In the context of aircraft design, what is the primary function of a wing's airfoil shape?

- A) To reduce drag by minimizing surface area
- B) To increase lift by creating a pressure difference between the upper and lower surfaces**
- C) To provide structural integrity to the aircraft's fuselage
- D) To house the aircraft's fuel tanks

3. Which of the following is NOT a primary component of a typical jet engine used in modern aircraft?

- A) Compressor
- B) Turbine
- C) Combustion Chamber
- D) Rudder**

4. What is the term for the force that opposes an aircraft's motion through the air?

- A) Lift
- B) Thrust
- C) Drag**
- D) Weight

5. Satellites in Earth orbit are held in place by a balance between two main forces. What are they?

- A) Magnetic fields and atmospheric pressure
- B) Thrust and air resistance
- C) Gravity and orbital velocity**
- D) Solar radiation pressure and atmospheric drag

6. Which type of propulsion system uses combustion to accelerate a working fluid out of a nozzle at high speed, generating thrust?

- A) Electric motor propulsion
- B) Ramjet engine
- C) Rocket engine**
- D) Propeller-driven engine

7. What is the primary material used in the construction of many high-performance aircraft wings due to its high strength-to-weight ratio?

- A) Steel
- B) Aluminum alloys**
- C) Titanium
- D) Wood

8. In orbital mechanics, what is the minimum speed an object must achieve to escape the gravitational pull of a celestial body like Earth?

- A) Orbital velocity
- B) Escape velocity**
- C) Terminal velocity
- D) Mach number