

Entry, Descent, and Landing Aerothermodynamics at NASA Langley

Aerospace Engineering · Practice Test · 8 Questions

1. What is the primary focus of the research conducted at NASA Langley regarding EDL vehicle geometries?

- A) High lift-to-drag ratios
- B) Mid to low lift-to-drag ratios
- C) Winged craft only
- D) Propulsion-only systems

2. Which of the following is NOT listed as a key area of the aerothermodynamic environment?

- A) Fluid mechanics
- B) High-temperature thermodynamics
- C) Astrophysics
- D) Heat-transfer

3. According to the text, what has become the primary tool for the design and development of EDL missions due to its lower cost compared to flight-testing?

- A) Wind tunnel testing
- B) Computational Fluid Dynamics (CFD)
- C) Scale modeling
- D) Manual calculations

4. Why is wind tunnel testing still considered critical despite the advancement of CFD?

- A) It is cheaper than CFD
- B) It provides data for complex phenomena that CFD cannot accurately model
- C) CFD is no longer used by NASA
- D) Wind tunnels are required by international law

5. Which of these is a complex phenomenon that requires wind tunnel testing for accurate definition?

- A) Simple atmospheric density
- B) Boundary-layer transition
- C) Constant velocity flight
- D) Standard orbital mechanics

6. NASA Langley provided aerothermodynamic support for which of these historical programs?

- A) Gemini-Mercury-Apollo
- B) The Wright Brothers' flights
- C) Sputnik
- D) The International Space Station interior design

7. Which recent programs are mentioned as having benefited from LaRC experimental capabilities?

- A) Mars Science Laboratory and Orion
- B) Voyager and Pioneer
- C) Hubble Space Telescope
- D) James Webb Space Telescope

8. What is a secondary role of wind tunnel testing mentioned in the text?

- A) Replacing all human engineers
- B) Producing high-fidelity data for computational model validation
- C) Creating marketing materials for NASA
- D) Replacing flight-testing entirely