

Artemis II Re-entry Science

Aerospace Engineering · Answer Key · 12 Questions

1. Who is the Commander of the Artemis II mission?

- A) Dr Chris James
- B) Reid Wiseman**
- C) Hayabusa
- D) Elon Musk

2. What is the approximate speed of the Orion spacecraft during re-entry?

- A) Mach 10
- B) Mach 20
- C) Mach 30**
- D) Mach 50

3. At what temperature must the Orion spacecraft survive during re-entry?

- A) 1,000°C
- B) 2,000°C
- C) 3,000°C**
- D) 5,000°C

4. What state of matter is the gas surrounding the craft during re-entry that blocks communication?

- A) Solid
- B) Liquid
- C) Gas
- D) Plasma**

5. What is the approximate velocity of a spacecraft returning from the Moon?

- A) 5 km/s
- B) 8 km/s
- C) 11 km/s**
- D) 15 km/s

6. How much kinetic energy is involved in a return from the Moon compared to low Earth orbit?

- A) Half as much
- B) The same
- C) Almost double**
- D) Ten times more

7. What is the kinetic energy of a spacecraft returning from the Moon?

- A) 32 MJ/kg
- B) 60 MJ/kg**
- C) 100 MJ/kg
- D) 11 MJ/kg

8. What is the simplest type of planetary entry that uses no aerodynamic techniques?

- A) Skip entry
- B) Gliding entry
- C) Ballistic entry**
- D) Double dip

9. How many g-forces can a ballistic entry produce, making it unsafe for humans?

- A) Up to 5 g
- B) Up to 10 g
- C) Up to 50 g
- D) Up to 100 g**

10. What did the Space Shuttle use to reduce g-forces to around 1 g?

- A) Parachutes
- B) Aerodynamic lift**
- C) Retro-rockets
- D) Airbags

11. What is the term for flying a capsule off-axis to produce lift?

- A) Angle of attack**
- B) Vertical drop
- C) Spin stabilization
- D) Orbiting

12. What is the name of the heat shield material used on the Orion capsule?

- A) PICA-X
- B) AVCOAT**
- C) Carbon-Carbon
- D) Titanium