

Class- VII

Sub- Geography

Ch- Air

Read the following passage and answer the question-

The jet stream is a fast-flowing, narrow air current found in the atmosphere, typically at altitudes of 9 to 16 kilometers above the Earth's surface. It is primarily driven by the temperature differences between polar and tropical regions, which create pressure gradients. The most well-known jet streams are the polar jet streams, found at the boundary of the polar cell and the Ferrel cell, and the subtropical jet streams, situated between the Hadley and Ferrel cells. Jet streams play a significant role in weather patterns, influencing storm tracks and the development of weather systems. They are stronger in winter due to the greater temperature contrast between the equator and the poles. The speed of jet streams can reach up to 400 km/h, making them crucial for aviation, as they can significantly reduce flight times when flying with the current. However, their variability can also lead to turbulence and complicate flight planning.

1. What primarily drives the formation of jet streams?

- A) Ocean currents
- b) Temperature differences
- c) Earth's rotation
- d) Humidity levels

2. At what altitudes are jet streams typically found? A) 5-8 km

- b) 9-16 km
- c) 17-22 km
- d) 1-3 km

3. Which jet stream is found at the boundary of the polar cell and the Ferrel cell?

- A) Tropical jet stream
- b) Polar jet stream
- c) Subtropical jet stream
- d) Equatorial jet stream

4. Why are jet streams stronger in winter?

- A) Increased humidity
- b) Greater temperature contrast between equator and poles
- c) Higher air pressure
- d) Reduced solar radiation

5. How can jet streams affect aviation?

- A) By reducing flight speeds
- b) By decreasing turbulence
- c) By shortening flight times when flying with the current
- d) By stabilizing weather patterns

Two-Mark Questions:

6. Explain the role of pressure gradients in the formation of jet streams.

7. Differentiate between polar and subtropical jet streams in terms of location and impact on weather.

8. How does the seasonal variation in temperature affect the strength of jet streams?

9. Discuss the implications of jet stream variability on aviation safety and planning.

10. Describe how jet streams influence the development of weather systems and storm tracks.