

Assertion–Reason Questions

Class- IX

Q1. Assertion (A): The theory of plate tectonics, given by W.J. Morgan, explains that the Earth's crust is broken into large and small tectonic plates.

Reason (R): Tectonic plates move slowly over the semi-molten asthenosphere due to convection currents in the mantle.

Q2. Assertion (A): Continental crust is thicker than oceanic crust.

Reason (R): Continental crust ranges from 30–40 km thick, while oceanic crust is only 5–7 km thick.

Q3. Assertion (A): A divergent plate boundary creates new crust as magma rises to fill the gap between separating plates.

Reason (R): The San Andreas Fault in the USA is a classic example of a divergent boundary.

Q4. Assertion (A): Collision of two continental plates at a convergent boundary produces fold mountains such as the Himalaya.

Reason (R): When an oceanic plate meets a continental plate, the oceanic plate rises above the continental plate.

Q5. Assertion (A): Weathering breaks down rock in place, while erosion also transports the broken material to another location.

Reason (R): Biological weathering occurs when plant roots grow into rock cracks and split them apart.

Q6. Assertion (A): A waterfall forms where a layer of hard rock overlies a softer rock layer that erodes faster.

Reason (R): Waterfalls are found only in the lower course of rivers, where the river deposits sediments.

Q7. Assertion (A): In a meander, erosion dominates the outer bank of the bend while deposition dominates the inner bank.

Reason (R): This differential erosion and deposition gradually creates large loops in the river's course.

Q8. Assertion (A): A delta is a triangular or fan-shaped landform formed where a river deposits sediment at its mouth.

Reason (R): The soil found at deltas is generally infertile because it lacks alluvium.

Q9. Assertion (A): Cirques, aretes, and hanging valleys are landforms shaped by glacial erosion rather than by wind.

Reason (R): Fjords are deep, narrow inlets created when the sea floods a glacial valley.

Q10. Assertion (A): A barchan dune is crescent-shaped and forms where sand supply is limited and wind blows from a single direction.

Reason (R): Longitudinal dunes are long ridges that form parallel to the prevailing wind direction.

Q11. Assertion (A): Stalagmites hang downward from a cave's ceiling, while stalactites rise upward from its floor.

Reason (R): Underground water dissolves soluble rocks like limestone to create Karst topography features such as caves.

Q12. Assertion (A): A Glacial Lake Outburst Flood (GLOF) results from the sudden collapse of a natural dam holding back a glacial lake.

Reason (R): Earthquakes, avalanches, or landslides can weaken such dams and trigger their collapse.

Q13. Assertion (A): Landslides occur exclusively due to natural causes such as heavy rainfall and earthquakes.

Reason (R): Deforestation, mining, and unplanned construction on hillsides can also destabilise slopes.

Q14. Assertion (A): Dust storms are most frequent in areas with dense vegetation and high rainfall.

Reason (R): Sparse vegetation due to overgrazing or poor farming practices leaves soil exposed to wind erosion.

Q15. Assertion (A): Moraines are landforms formed only by rivers depositing sediment at their mouths.

Reason (R): Lateral, terminal, and medial moraines are all types of debris deposited by melting glaciers.

Q16. Assertion (A): Nitrogen and oxygen together make up about 99 per cent of the Earth's atmosphere by volume.

Reason (R): Carbon dioxide is the most abundant gas in the atmosphere after nitrogen and oxygen.

Q17. Assertion (A): The troposphere is the layer where temperature decreases continuously with increasing altitude, right up to the thermosphere.

Reason (R): Most weather phenomena such as rainfall, fog, and hail occur in the troposphere.

Q18. Assertion (A): The stratosphere is ideal for flying aeroplanes because its ozone layer absorbs air turbulence.

Reason (R): The stratosphere is free of clouds and other weather disturbances.

Q19. Assertion (A): Meteorites entering the atmosphere from space typically burn up in the mesosphere.

Reason (R): Temperature decreases with increasing altitude in the mesosphere, just as it does in the troposphere.

Q20. Assertion (A): The thermosphere shows a rapid rise in temperature with increasing altitude.

Reason (R): Gas molecules in the thermosphere absorb X-rays and short-wave ultraviolet radiation from the Sun.

Q21. Assertion (A): The exosphere is the uppermost layer of the atmosphere, characterised by very thin air.

Reason (R): Heavy gases such as nitrogen and oxygen escape into space from the exosphere due to weak gravity.

Q22. Assertion (A): Weather refers to the hour-to-hour and day-to-day conditions of the atmosphere at a place.

Reason (R): Climate refers to the sum total of weather conditions over a large area for an extended period, usually thirty years or more.

Q23. Assertion (A): Insolation decreases from the equator towards the poles.

Reason (R): Consequently, temperature also decreases from the equator towards the poles.

Q24. Assertion (A): On a humid day, sweat evaporates more quickly, making a person feel cooler.

Reason (R): Warmer air can hold more water vapour, which increases humidity levels.

Q25. Assertion (A): Precipitation occurs only in the form of rain, since snow, sleet, and hail are not classified as precipitation.

Reason (R): Rain is described as the most common form of precipitation, and it lowers the temperature of a place.

Q26. Assertion (A): High atmospheric pressure is generally associated with clear and sunny skies.

Reason (R): Cold, heavy air sinks in high-pressure areas, suppressing cloud formation.

Q27. Assertion (A): A land breeze blows from land to sea at night because the sea remains relatively warmer than the land after sunset.

Reason (R): Since the temperature difference between land and sea is small at night, the land breeze generally has low wind speed.

Q28. Assertion (A): According to convention, a wind is named after the direction from which it blows.

Reason (R): A wind blowing from the west is called a westerly.

Q29. Assertion (A): The Indian Meteorological Department (IMD) recognises four distinct seasons in India: winter, summer, monsoon, and post-monsoon.

Reason (R): Himalayan states experience only these same four seasons, without any additional seasonal variation.

Q30. Assertion (A): The traditional Indian calendar divides the year into six seasons of about two months each, based on an astronomical division.

Reason (R): According to this classification, Grishma (Jyeshtha–Ashadha) corresponds to the winter months of December–January.