



Day 26

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Physical Geography: Oceanography and Geomorphology

Following topics of physical geography and important geo-physical phenomena have been at the forefront of the news headlines, and as UPSC always attempts to test the basics, a basic awareness is required. Questions from this topic are largely asked from static as well as current affairs portions. According to the trend observed, the facts, their contexts, basic background information can be asked by the UPSC from these topics.

Geomorphology

- **Earth's Mantle and Evolution of Life**
- **'Zealandia' – A Hidden Continent**
- **Massive Mountains Discovered under Earth's Crust**
- **Iron Snow on Earth's Inner Core**
- **A New Study on Earth**
- **Shift in Earth's Magnetic North Pole**
- **Exogenic forces & Endogenic forces**
- **Year End Review: Ministry of Earth Sciences**
- **Two-metre Sea Level Rise 'Plausible' by 2100**
- **Delta**
- **Erosion in Ladakh and Zaskar**
- **India lost One-Third of its Coastline Due to Soil Erosion**
- **Land Degradation**

Previous Year Question

Q. Consider the following statements: (2018)

1. The Earth's magnetic field has reversed every few hundred thousand years.
2. When the Earth was created more than 4000 million years ago, there was 54% oxygen and no carbon dioxide.

3. When living organisms originated, they modified the early atmosphere of the Earth.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

Q. Which of the following phenomena might have influenced the evolution of organisms?
(2014)

1. Continental drift
2. Glacial cycles

Select the correct answer using the code given below:

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Q. Consider the following: (2013)

1. Electromagnetic radiation
2. Geothermal energy
3. Gravitational force
4. Plate movements
5. Rotation of the earth
6. Revolution of the earth

Which of the above are responsible for bringing dynamic changes on the surface of the earth?

(a) 1, 2, 3 and 4 only

(b) 1, 3, 5 and 6 only

(c) 2, 4, 5 and 6 only

(d) 1, 2, 3, 4, 5 and 6

Q. Electrically charged particles from space travelling at speeds of several hundred km/sec can severely harm living beings if they reach the surface of the Earth. What prevents them from reaching the surface of the Earth? (2012)

(a) The Earths' magnetic field diverts them towards its poles

(b) Ozone layer around the Earth reflects them back to outer space.

(c) Moisture in the upper layers of atmosphere prevents them from reaching the surface of the Earth

(d) None of the statements (a), (b) and (c) given above is correct

Q. In the structure of planet Earth, below the mantle, the core is mainly made up of which one of the following? (2009)

(a) Aluminium

(b) Chromium

(c) Iron

(d) Silicon

Earthquake

- **Earthquake**
- **Seismic Noise**
- **Seismicity Study of Arunachal Himalaya**
- **Ionospheric Based Monitoring of Large Earthquakes**
- **Predicting Earthquakes**
- **Hindu-Kush-Himalayan Region**
- **Indonesia Tsunami**
- **Seismometers Defunct in Earthquake-Prone Zones**

Previous Year Questions

Q. The Brahmaputra, Irrawaddy and Mekong rivers originate in Tibet and flow through narrow and parallel mountain ranges in their upper reaches. Of these rivers, Brahmaputra makes a “U” turn in its course to flow into India. This “U” turn is due to (2011)

(a) Uplift of folded Himalayan series

(b) Syntaxial bending of geologically young Himalayas

(c) Geo-tectonic disturbance in the tertiary folded mountain chains

(d) Both (a) and (b) above

Q. Which of the following pairs is/are correctly matched? (2008)

Theory/Law Associated	Scientist
1. Continental Drift	: Edwin Hubble
2. Expansion of Universe	: Alfred Wegener
3. Photoelectric Effect	: Albert Einstein

Select the correct answer using the code given below:

(a) 2 and 3 only

(b) 3 only

(c) 2 only

(d) 1 only

Volcanism

- **Mt. Merapi of Indonesia**
- **Eruption on Mount Etna**
- **Mt. Aconcagua**
- **White Island**
- **Mt Paektu**

Previous Year Questions

Q. Consider the following statements: (2018)

1. The Barren Island volcano is an active volcano located in the Indian territory.
2. Barren Island lies about 140 km east of Great Nicobar.
3. The last time the Barren Island volcano erupted was in 1991 and it has remained inactive since then.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3

(c) 3 only

(d) 1 and 3

Ocean Currents

- Mission to Explore Ocean Deeps
- South Atlantic Anomaly
- El-Nino Threatens Monsoon
- Pacific Decadal Oscillation
- Ocean Mapping: Seabed 2030 Project
- Indian Ocean Dipole and the South-West Monsoon
- Climate Change and Ocean Currents
- Equatorial Indian Ocean Monsoon Oscillation (EQUINOO)
- Madden-Julian Oscillation (MJO)

Previous Year Questions

Q. La Nina is suspected to have caused recent floods in Australia. How is La Nina different from El Nino? (2011)

1. La Nina is characterised by an usually cold ocean temperature in equatorial Indian Ocean whereas El Nino is characterised by unusually warm ocean temperature in the equatorial Pacific Ocean.
2. El Nino has an adverse effect on the south-west monsoon of India but La Nina has no effect on monsoon climate.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Q. A new type of El Nino called El Nino Modoki appeared in the news. In this context, consider the following statements: (2010)

1. Normal El Nino forms in the Central Pacific ocean whereas El Nino Modoki forms in Eastern Pacific ocean.
2. Normal El Nino results in diminished hurricanes in the Atlantic ocean but El Nino Modoki results in a greater number of hurricanes with greater frequency.

Which of the statements given above is/are correct?

- (a) 1 only
 - (b) 2 only**
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2
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Q. Tides occur in the oceans and seas due to which among the following? (2015)

1. Gravitational force of the Sun
2. Gravitational force of the Moon
3. Centrifugal force of the Earth

Select the correct answer using the code given below:

- (a) 1 only
 - (b) 2 and 3 only
 - (c) 1 and 3 only
 - (d) 1, 2 and 3**
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Q. What explains the eastward flow of the equatorial counter-current? (2015)

- (a) The Earth's rotation on its axis
 - (b) Convergence of the two equatorial currents**
 - (c) Difference in salinity of water
 - (d) Occurrence of the belt of calm near the equator
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Q. The most important fishing grounds of the world are found in the regions where (2013)

- (a) warm and cold atmospheric currents meet

(b) rivers drain out large amounts of freshwater into the sea

(c) warm and cold oceanic currents meet

(d) continental shelf is undulating

Q. Consider the following factors: (2012)

1. Rotation of the Earth
2. Air pressure and wind
3. Density of ocean water
4. Revolution of Earth

Which of the above factors influence the ocean currents?

(a) 1 and 2 only

(b) 1, 2 and 3 only

(c) 1 and 4 only

(d) 2, 3 and 4