

# NCERT MOST IMPORTANT QUESTIONS CLASS – 11

## GEOGRAPHY CHAPTER- 5 GEOMORPHIC PROCESSES

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### Question 1.

**What factors have caused diastrophism?**

**Answer:**

All processes that move, elevate or build up portions of the earth's crust come under diastrophism. They include:

- **Orogenic processes:** It involves mountain building through severe folding and affecting long and narrow belts of the earth's crust;
- **Epeirogenic processes:** It involves uplift or warping of large parts of the earth's crust;
- **Earthquakes:** It involves local relatively minor movements;
- **Plate tectonics:** It involves horizontal movements of crustal plates. All these processes-cause pressure, volume and temperature (PVT) changes which in turn induce metamorphism of rocks.

### Question 2.

**Why is the surface of the earth uneven?**

**Answer:**

The difference in the internal forces operation from within the earth which built up the crust have been responsible for the variations in the outer surface of the crust. Due to variations in geothermal gradients and strength, the actions of endogenic forces are not uniform and hence the tectonically controlled original crystal surface is uneven.

### Question 3.

**What factors activate the process of mass movement?**

**Answer:**

Following factors activate the process of mass movement.

- Removal of support from below to materials above through natural or artificial means;
- Increase in gradient and height of slopes;
- Overloading through addition of materials naturally or by artificial filling;
- Overloading due to heavy rainfall, saturation and lubrication of slope materials;
- Removal of material or load from over the original slope surfaces;
- Occurrence of earthquakes, explosions or machinery;
- Excessive natural seepage;
- Heavy drawdown of water from lakes, reservoirs and rivers leading to slow outflow of water from under the slopes or river banks;

- Indiscriminate removal of natural vegetation.

#### Question 4.

**How does biological weathering take place?**

**Answer:**

Biological weathering takes place by:

- **Animals:** Animals like rabbits, rats, termites, etc. make burrows and holes in the rocks. They consume large quantity of soils and rocks for making their habitat and destruction of food. This loosens the rock strata and disintegration occurs.
- **Vegetation:** Long and tenacious roots of plants work down into cracks of rocks. The roots of shrubs and trees reach deep into them and this lodge large blocks.
- **Human Activities:** Mining, deforestation, indiscriminate cultivation of land and construction activities contribute to weather.

#### Question 5.

**Write the difference between:**

**(i) Exogenic and endogenic forces**

**(ii) Orogenic movements and epeirogenic movements**

**(iii) Physical weathering and chemical weathering.**

**Answer:**

(i)

S.no.	Exogenic Forces	Endogenic Forces
1.	The external forces are known as Exogenic forces.	The internal forces are known as Endogenic forces.
2.	Solar energy is the sole driving force behind all the Exogenic processes. E.g. Erosion, Flood, Mining, etc.	Gravity is the sole driving force behind all the Endogenic process. E.g. Earthquake, Volcanic Eruption, etc.

(ii)

S.no.	Orogenic Movements	Epeirogenic Movements
1.	In the process of Orogenic the crust is severely deformed into folds.	Due to Epeirogenic they may be single deformation.
2.	It is mountain building process.	It is continental building process.
3.	It affects long and narrow belt of earth's crust.	It involves uplift or warping of large parts of earth's crust.

(iii)

S.no.	Physical Weathering	Chemical Weathering
1.	Physical force disintegrates the rocks.	Rocks are decomposed by chemical changes.
2.	No chemical change occurs.	Not much physical change occurs but chemical change occurs due to air and water.
3.	More effective in dry and cold areas.	Effective in hot and humid areas.
4.	Insulation, frost and pressure are the agents.	Oxidation and reduction, carbonation, hydration and soil are the agents.
5.	Rocks are affected at the greater depth.	Rocks are affected on the surface only.
6.	Even the strong minerals are affected by physical weathering.	Chemical resistance minerals are not affected.

### Question 6.

#### What are different types of mass movements?

##### Answer:

There are three types of mass movements: **Slow Movements:** Creep is one type under this category which can occur on moderately steep, soil covered slopes. Movement of materials is extremely slow and imperceptible except through extended observation. Materials involved can be soil or rock debris. Soil creep, talus creep, rock creep, rock- glacier creep etc can be identified. It also includes solifluction which involves slow downslope flowing soil mass or fine grained rock debris saturated or lubricated with water. This process is quite common in moist temperate areas where surface melting of deeply frozen ground and long continued rain respectively, occur frequently. When the upper portions get saturated and when the lower parts are impervious to water percolation, flowing occurs in the upper parts.

**Rapid Movements:** These movements are mostly prevalent in humid climate regions and occur over gentle to steep slopes. Movements of water- saturated clayey or silty earth materials down low angle terraces or hill slides is known as earth flow. When slopes are steeper even the bedrock especially of soft sedimentary rocks like shale or deeply weathering igneous rock may slide downslope. With heavy rainfall, thick layers of weathered materials get saturated with water and either slowly or rapidly flow down along definite channels. It looks like a stream of mud within a valley.

**Landslides:** The types of landslides.

- **Slumps:** The slipping of one or several units of rock debris with a backward rotation with respect to the slope over which the movement takes place.

- Debris slide: rapid rolling or sliding of earth debris without backward rotation of mass is known as Debris slide.
- Rockslide: Sliding of individual rock masses down bedding, joint or fault surface is rockslide.
- Rock fall: Rock fall is free falling of rock blocks over any steep slope keeping itself away from the slope. Rock falls occurs from the superficial layers of the rock face.

### **Question 7.**

**Explain different types of chemical weathering.**

**Answer:**

Different types of chemical weathering includes:

1. Oxidation and Reduction: Oxidation is the effect of oxygen in air and water on the rocks. The atmospheric oxygen in rainwater unites with minerals in rocks specially with iron compounds. When oxidised minerals are placed in an environment where oxygen is absent, reduction takes place. It exists normally below water table, in area of stagnant water in more hot and humid climates.
2. Carbonation: When the carbon dioxide in atmosphere dissolves in water it form carbonic acid that affects the rocks, it is carbonation. It has acidic affect and dissolves calcium carbonates and magnesium carbonates such as gypsum, marble, limestone.
3. Hydration: When the hydrogen of water dissolves in rocks hydration occurs. Certain minerals in rocks increase their volume and become heavy when observe water contains hydrogen. They break due to its increased pressure and the colour also changes.
4. Solution: Rainwater is able to dissolve certain minerals and leaching of the soil occurs. Normally solids are also removed during leaching. For e.g.: gypsum, rock salt, etc. undergo solution.

### **Question 8.**

**Explain different types of physical weathering.**

**Answer:**

Different types of physical weathering includes:

- Exfoliation: Due to differential heating and resulting expansion and contraction of surface layers and their subsequent exfoliation from the surface results in smooth rounded surfaces in rocks. In rocks like granites, smooth surfaced and rounded small to big boulders called tors form due to such exfoliation.
- Frost: It is an active agent in cold climatic regions in high altitudes and the cracks are filled with water during the day time, this water is frozen at night when temperature falls below freezing point.
- Pressure: Many igneous and metamorphic rocks crystallize deep in the interior under the combine influence of high pressure and temperature. The salt near surface pores cause splitting of the grains within the rocks which eventually falls off, this result into granules disintegration.

**Question 9.**

**Explain about erosion and deposition.**

**Answer:**

Erosion involves acquisition and transportation of rock debris. When massive rocks break into smaller fragments through weathering and any other process, erosional geomorphic agents like running water, groundwater, glaciers, wind and waves remove and transport it to other places depending upon the dynamics of each of these agents. Abrasion by rock debris carried by these geomorphic agents also aids greatly in erosion. By erosion, relief degrades, i.e., the landscape is worn down. Weathering aids erosion it is not a pre-condition for erosion to take place. Weathering, mass-wasting and erosion are degradational processes. It is erosion that is largely responsible for continuous changes that the earth's surface is undergoing. The erosion and transportation of earth materials is brought about by wind, running water, glaciers, waves and ground water.

Deposition is a consequence of erosion. The erosional agents lose their velocity and hence energy on gentler slopes and the materials carried by them start to settle themselves. In other words, deposition is not actually the work of any agent. The coarser materials get deposited first and finer ones later. By deposition depressions get filled up. The same erosional agents viz., running water, glaciers, wind, waves and groundwater act as aggradational or depositional agents also. What happens to the surface of the earth due to erosion and deposition is elaborated in the next chapter on landforms and their evolution. There is a shift of materials in mass movements as well as in erosion from one place to the other.

**Question 10.**

**Is it essential to distinguish between geomorphic agents and geomorphic processes? If yes, explain the difference.**

**Answer:**

Yes, it is essential to distinguish between geomorphic agents and geomorphic processes because former is the cause and latter is the stepwise process.

- **Geomorphic agent:** An agent is a mobile medium (like running water, moving ice masses, wind, waves and currents, etc.) which removes, transports and deposits earth materials. Running water, groundwater, glaciers, wind, waves and currents, etc., can be called geomorphic agents.
- **Geomorphic Processes:** The Endogenic and Exogenic forces causing physical stresses and chemical actions on earth material and bringing about changes in the configuration of the surface of the earth is known as Geomorphic Process.