

## Geomorphology (Landforms): Advanced MCQs for NDA

### 1. Consider the following statements about earthquakes:

1. The point on the Earth's surface directly above the focus is called the epicenter.
2. 'S-waves' or secondary waves are the fastest seismic waves and arrive first.
3. The Richter Scale measures the energy released by an earthquake.

### Which of the statements given above is/are correct?

- (a) 1 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

### 2. The 'Pacific Ring of Fire' is associated with which of the following?

1. Deep ocean trenches
2. Volcanic eruptions
3. Divergent plate boundaries

### Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

### 3. With reference to volcanic landforms, which of the following is/are correctly matched?

1. **Composite Volcano:** Formed by alternating layers of lava and ash
2. **Shield Volcano:** Characterized by gentle slopes formed by basaltic lava
3. **Caldera:** A large depression formed by the collapse of a volcano's summit

### Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

### 4. The process of 'salt weathering', common in deserts, is primarily a type of:

- (a) Chemical Weathering
- (b) Biological Weathering
- (c) Physical Weathering
- (d) Erosional Process

### 5. Consider the following landforms and the agents responsible for their creation:

1. **V-shaped valleys:** River
2. **U-shaped valleys:** Glacier
3. **Inselbergs:** Wind

### Which of the pairs given above is/are correctly matched?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

### 6. A 'river capture' or 'stream piracy' occurs when:

- (a) A river overflows its banks during a flood.
- (b) The headwaters of one river are captured by another, more energetic river.
- (c) A river deposits its entire load, forming a delta.
- (d) A river disappears underground in a limestone region.

### 7. Which of the following sequences correctly represents the stages of river development according to the Geographical Cycle of Davis?

- (a) Youth -> Maturity -> Old Age
- (b) Erosion -> Transportation -> Deposition

(c) Mountain -> Plateau -> Plain

(d) Valley -> Floodplain -> Delta

**8. The 'Barchan' dunes are characterized by their:**

(a) Crescent shape with horns pointing downwind

(b) Linear shape parallel to the wind direction

(c) Star shape with multiple arms

(d) Ridge shape transverse to the wind

**9. Consider the following statements about glaciers:**

1. A 'Cirque' is an armchair-shaped hollow formed at the head of a glacier.

2. 'Moraines' are deposits of unconsolidated material carried by a glacier.

3. 'Drumlins' are elongated hills formed by glacial deposition.

**Which of the statements given above are correct?**

(a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

**10. Which of the following coastal features is a result of deposition rather than erosion?**

(a) Sea Cliff

(b) Sea Stack

(c) Beach

(d) Wave-Cut Platform

**11. The 'Mercalli Scale' is used to measure the:**

(a) Magnitude of an earthquake

(b) Intensity of an earthquake based on observed effects

(c) Depth of the earthquake's focus

(d) Duration of an earthquake

**12. The 'Lava Plateaus' like the Deccan Traps are formed due to:**

(a) Highly explosive volcanic eruptions

(b) Fissure eruptions of highly fluid basaltic lava

(c) Collapse of composite volcanoes

(d) Submarine volcanic activity

**13. 'Exfoliation', a process where rock peels off in concentric shells, is primarily caused by:**

(a) Chemical action of water

(b) Repeated heating and cooling

(c) Root penetration of plants

(d) Abrasion by wind-blown sand

**14. A 'waterfall' is primarily formed when a river flows over:**

(a) A layer of hard rock overlying a softer rock

(b) A uniformly soft rock bed

(c) A wide and flat floodplain

(d) A region of high tidal activity

**15. The 'Loess' deposits, such as those found in China, are composed of:**

(a) Coarse sand grains

(b) Fine, wind-blown silt

(c) Glacial till

(d) Volcanic ash

**16. Which of the following is a landform created by wave erosion?**

(a) Spit

(b) Tombolo

(c) Barrier Island

(d) Sea Arch

**17. The 'Shield' regions of the earth, like the Canadian Shield, are characterized by:**

- (a) Young fold mountains
- (b) Old, stable, and crystalline rocks
- (c) Recent volcanic deposits
- (d) Thick layers of sedimentary rocks

**18. Consider the following pairs:**

1. **Stalactite:** Dripstone hanging from a cave's roof
2. **Stalagmite:** Dripstone rising from a cave's floor
3. **Sinkhole:** A surface depression in a limestone region

**Which of the pairs given above is/are correctly matched?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**19. The 'Focus' of an earthquake is:**

- (a) The first place where the seismic waves are recorded
- (b) The point on the surface where the damage is maximum
- (c) The point of origin of the earthquake within the Earth's crust
- (d) The instrument used to measure earthquake waves

**20. Which of the following agents of erosion is responsible for the formation of 'Mushroom Rocks'?**

- (a) River
- (b) Glacier
- (c) Wind
- (d) Sea Waves

**21. A 'Delta' is formed at the mouth of a river when:**

- (a) The river's velocity and transporting power suddenly increase.
- (b) The river deposits its load faster than it can be removed by tides or currents.
- (c) The river flows through a region of high relief.
- (d) The river is in its youthful stage.

**22. The 'Hanging Valley' is a distinctive feature associated with:**

- (a) Arid topography
- (b) Glacial topography
- (c) Karst topography
- (d) Coastal topography

**23. 'Laterite' soil, which is rich in iron and aluminum oxides, is a result of:**

- (a) Glacial deposition
- (b) Intensive leaching in humid tropical regions
- (c) Wind deposition in arid regions
- (d) River deposition in floodplains

**24. Consider the following statements about weathering:**

1. **Carbonation** is a chemical process that affects limestone.
2. **Hydration** involves the absorption of water by minerals, causing them to expand.
3. **Oxidation** gives a reddish-brown color to rocks.

**Which of the statements given above are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**25. The 'Potholes' in a river bed are formed by the process of:**

- (a) Deposition

- (b) Abrasion
- (c) Saltation
- (d) Solution

**26. Which of the following is a depositional landform created by a river in its old stage?**

- (a) Ox-bow Lake
- (b) Gorge
- (c) Rapids
- (d) Plunge Pool

**27. The 'Ria' coasts are formed by:**

- (a) Submergence of a river valley
- (b) Emergence of a river valley
- (c) Deposition by longshore drift
- (d) Volcanic activity along the coast

**28. 'Fiords', which are deep, steep-walled inlets, are found in countries like Norway and are formed by:**

- (a) River erosion
- (b) Glacial erosion followed by submergence
- (c) Wind erosion
- (d) Wave erosion

**29. The 'Barchan' dunes move in the direction:**

- (a) Of their convex side
- (b) Of their concave side
- (c) Perpendicular to the wind
- (d) Opposite to the wind direction

**30. Which of the following is NOT a type of moraine?**

- (a) Lateral
- (b) Medial
- (c) Terminal
- (d) Arete

**31. The 'Continental Drift' theory was primarily proposed by:**

- (a) Alfred Wegener
- (b) Harry Hess
- (c) Arthur Holmes
- (d) J. Tuzo Wilson

**32. The 'Pangaea' was a supercontinent that existed during the:**

- (a) Cenozoic era
- (b) Mesozoic era
- (c) Paleozoic era
- (d) Precambrian era

**33. The 'Tethys Sea' was located between:**

- (a) Laurasia and Gondwanaland
- (b) North America and South America
- (c) Africa and Europe
- (d) Asia and Australia

**34. The 'Sea-floor Spreading' hypothesis was put forward by:**

- (a) Alfred Wegener
- (b) Harry Hess
- (c) Arthur Holmes
- (d) J. Tuzo Wilson

**35. The 'Mid-Atlantic Ridge' is an example of a:**

- (a) Convergent plate boundary

- (b) Divergent plate boundary
- (c) Transform plate boundary
- (d) Subduction zone

**36. The 'San Andreas Fault' in California is associated with a:**

- (a) Convergent plate boundary
- (b) Divergent plate boundary
- (c) Transform plate boundary
- (d) Hotspot

**37. The 'Himalayas' were formed by the collision of the Indian plate with the:**

- (a) Eurasian plate
- (b) Pacific plate
- (c) African plate
- (d) Australian plate

**38. The 'Ring of Fire' is associated with:**

- (a) Earthquakes and volcanoes
- (b) Hurricanes and tornadoes
- (c) Tsunamis and landslides
- (d) Floods and droughts

**39. The 'Benioff Zone' is a plane of earthquake foci dipping from a deep-sea trench under a continent or island arc, and is associated with:**

- (a) Divergent plate boundaries
- (b) Transform plate boundaries
- (c) Convergent plate boundaries
- (d) Intraplate boundaries

**40. The 'Wilson Cycle' describes the:**

- (a) Process of rock formation
- (b) Process of mountain building
- (c) Process of ocean basin formation and destruction
- (d) Process of climate change

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#### Answer Key

1. (b) 1 and 3 only (S-waves are slower than P-waves)
2. (a) 1 and 2 only (The Ring of Fire is primarily convergent boundaries)
3. (d) 1, 2 and 3
4. (c) Physical Weathering (Crystal growth exerts pressure)
5. (a) 1 and 2 only (Inselbergs are created by differential weathering in arid regions, not solely by wind)
6. (b) The headwaters of one river are captured by another, more energetic river.
7. (a) Youth -> Maturity -> Old Age
8. (a) Crescent shape with horns pointing downwind
9. (d) 1, 2 and 3
10. (c) Beach (All others are erosional features)
11. (b) Intensity of an earthquake based on observed effects
12. (b) Fissure eruptions of highly fluid basaltic lava
13. (b) Repeated heating and cooling
14. (a) A layer of hard rock overlying a softer rock
15. (b) Fine, wind-blown silt
16. (d) Sea Arch (All others are depositional features)
17. (b) Old, stable, and crystalline rocks
18. (d) 1, 2 and 3
19. (c) The point of origin of the earthquake within the Earth's crust

20. (c) Wind (Abrasion is most effective near the base)
21. (b) The river deposits its load faster than it can be removed by tides or currents.
22. (b) Glacial topography
23. (b) Intensive leaching in humid tropical regions
24. (d) 1, 2 and 3
25. (b) Abrasion (by swirling water and sediment)
26. (a) Ox-bow Lake (Others are youthful/erosional features)
27. (a) Submergence of a river valley
28. (b) Glacial erosion followed by submergence
29. (a) Of their convex side
30. (d) Arete (Arete is an erosional feature - a sharp ridge)
31. (a) Alfred Wegener
32. (c) Paleozoic era
33. (a) Laurasia and Gondwanaland
34. (b) Harry Hess
35. (b) Divergent plate boundary
36. (c) Transform plate boundary
37. (a) Eurasian plate
38. (a) Earthquakes and volcanoes
39. (c) Convergent plate boundaries
40. (c) Process of ocean basin formation and destruction