Sleepy Classes
Awakening Toppers

DAILY PRACTICE WORKBOOK

Geography

DAY - 4

"Success is the sum of small efforts, repeated day in and day out." — Robert Collier

Sleepy Classes IAS

Daily Practice Workbook (DPW)

Rocks, Rock Cycle and Volcanism

GS-I: Physical Geography | Geography Lecture 4 | UPSC Prelims 2027

Detail	Information
Total Marks	35
Time Allowed	30 minutes
Sections	4
Answer Key	At the end of the workbook - attempt all questions first

Section	Question Type	Questions	Marks
1	Fill in the Blanks	10 x 1	10
2	True or False	10 x 1	10
3	Multiple Choice Questions	5 x 2	10
4	Match the Following	5 x 1	5
Total		**30**	**35**

Instructions

- Attempt all questions in one sitting within 30 minutes.
- No negative marking in this workbook.
- Check the answer key only after finishing all four sections.
- Record your score in the Performance Tracker on the last page.

Section 1: Fill in the Blanks (10 x 1 = 10 marks)

1. Igneous rocks are also called _____ rocks, since all other rocks are ultimately derived from them.

Answer:

2. The process by which deposited sediments are compacted into rock is called _____.

Answer:

3. Under thermal metamorphism, limestone changes into _____.

Answer:

4. Acid igneous rocks contain silica up to _____ per cent.

Answer:

5. The depression formed when an explosive volcano collapses on itself is called a _____.

Answer:

6. A saucer-shaped intrusive body, concave to the sky, is called a _____.

Answer:

7. The weaker zone of the upper mantle from which molten material finds its way to the surface is the _____.

Answer:

8. Mantle plumes are theorised to originate at the _____ boundary.

Answer:

9. A volcano capable of erupting more than 1,000 cubic km of magma is called a _____.

Answer:

10. The San Andreas Fault lies on a _____ plate boundary.

Answer:

Section 2: True or False (10 x 1 = 10 marks)

1. Sedimentary rocks generally contain fossils and are porous.

Answer: True / False

2. Extrusive igneous rocks have coarse grains because they cool slowly.

Answer: True / False

3. Basic lava, being low in silica, flows far and gives rise to plateaus.

Answer: True / False

4. Shield volcanoes are characterised by steep slopes and highly viscous lava.

Answer: True / False

5. Dykes are the most common intrusive forms in western Maharashtra and acted as feeders for the Deccan Traps.

Answer: True / False

6. Like large mantle convection cells, the position of mantle plumes shifts significantly over geological time.

Answer: True / False

7.The Iceland hotspot is located on a divergent plate boundary.

Answer: True / False

8.Granite is converted into gneiss under high pressure.

Answer: True / False

9.The Philippine island arc is formed by subduction of the Sunda Plate beneath the Philippine Sea Plate.

Answer: True / False

10. Earthquakes along mid-oceanic ridges generally have deep-seated foci.

Answer: True / False

Section 3: Multiple Choice Questions (5 x 2 = 10 marks)

1.Consider the following statements regarding rocks:

1. Feldspar and quartz are the most common minerals found in rocks.
2. Soapstone is a hard rock while granite is a soft rock.
3. Gabbro is black in colour while quartzite can be milky white.
4. Coal is an organically formed sedimentary rock.

How many of the above statements are correct?

A. Only one
B. Only two
C. Only three
D. All four

Answer:

2.Consider the following two statements:

Assertion (A): Acidic magma tends to give rise to high mountains rather than plateaus.

Reason (R): Due to its high silica content, acidic magma cools fast and does not flow far.

Select the correct answer using the code given below:

A. Both A and R are true and R is the correct explanation of A
B. Both A and R are true but R is not the correct explanation of A
C. A is true but R is false
D. A is false but R is true

Answer:

3.Which one of the following statements regarding hotspot volcanism is NOT correct?

A. Hotspot volcanism typically occurs in the interior parts of lithospheric plates.
B. In the Hawaiian chain, older islands and seamounts lie towards the Aleutian Trench.
C. The Yellowstone hotspot is an example of a hotspot developed beneath a continent.
D. The Afar hotspot is located on a convergent plate boundary.

Answer:

4.Consider the following pairs:

Volcano type - Feature

1. Shield volcano - Low explosivity and gentle slopes
2. Composite volcano - Most explosive; collapses into a depression
3. Flood basalt province - Highly fluid lava flowing long distances
4. Mid-ocean ridge volcano - Located in continental interiors

How many of the above pairs are correctly matched?

A. Only one
B. Only two
C. Only three
D. All four

Answer:

5.Arrange the following islands of the Hawaiian chain from OLDEST to YOUNGEST:

1. Maui
2. Kauai
3. Oahu
4. Hawaii (Big Island)
5. Molokai

Select the correct answer using the code given below:

A. 2 - 5 - 3 - 1 - 4
B. 4 - 1 - 5 - 3 - 2
C. 2 - 3 - 5 - 1 - 4
D. 3 - 2 - 5 - 4 - 1

Section 4: Match the Following (5 x 1 = 5 marks)

Match List-I (intrusive landform) with List-II (description). List-II contains one extra option that does not match any item.

List-I	List-II
A. Batholith	1. Wall-like body nearly perpendicular to the ground
B. Laccolith	2. Wavy mass at base of synclines or top of anticlines
C. Sill	3. Near-horizontal sheet-like intrusive body
D. Dyke	4. Saucer-shaped body concave to the sky
E. Phacolith	5. Large granitic dome cooled at great depth
	6. Dome with level base and pipe-like conduit

A	B	C	D	E

Write the matching List-II number under each letter.

Answer Key - Section 1: Fill in the Blanks

1. **Primary** - Igneous rocks form directly from magma / lava; sedimentary and metamorphic rocks form from them.
2. **Lithification** - Fragments transported by exogenous agents are deposited and compacted into sedimentary rock.
3. **Marble** - High temperature recrystallises limestone into marble; sandstone similarly becomes quartzite.
4. **80** - Acid rocks are silica-rich and form the SIAL portion of the crust; basic rocks have about 40 per cent.
5. **Caldera** - Calderas are the most explosive volcanoes; they collapse instead of building tall structures.
6. **Lopolith** - Formed when rising lava moves horizontally along a weak plane and rests in saucer form.
7. **Asthenosphere** - Magma originates in this weak, partly molten zone below the lithosphere.
8. **Core-mantle** - An abnormally hot plume of rock accumulates at the core-mantle boundary and rises as a mushroom-shaped diapir.
9. **Supervolcano** - Eg Yellowstone Caldera (hotspot) and Toba (subduction zone).
10. **Transform** - Pacific and North American plates slide horizontally past each other; stuck sections release stress as earthquakes.

Answer Key - Section 2: True or False

1. **TRUE** - Layered strata preserve plant and animal remains; porosity lets water percolate (eg Indo-Gangetic alluvium).
2. **FALSE** - Extrusive rocks (basalt) cool rapidly at the surface and are fine-grained; slow cooling and coarse grains describe intrusive rocks (granite).
3. **TRUE** - Low silica keeps lava fluid; it cools slowly, spreads widely and builds plateaus such as the Deccan.
4. **FALSE** - Shield volcanoes erupt very fluid basalt and are NOT steep; viscous lava characterises composite volcanoes.
5. **TRUE** - Lava rising through cracks solidified as vertical walls; these fed the fissure eruptions of the Deccan Traps.
6. **FALSE** - Large convection cells shift, but mantle plume positions are relatively fixed - which is why plates moving over them leave hotspot chains.
7. **TRUE** - Iceland and Afar are exceptions to the rule that hotspots lie in plate interiors; both sit on divergent boundaries.
8. **TRUE** - Dynamic metamorphism (high pressure) converts granite to gneiss and clay / shale to schist.
9. **FALSE** - It is the reverse - the Philippine Sea Plate subducts beneath the Sunda Plate (ocean-ocean convergence).
10. **FALSE** - Mid-oceanic ridge earthquakes are shallow-focus; deep-seated quakes occur along the Pacific rim and Alpine-Himalayan belt (NCERT).

Answer Key - Section 3: Multiple Choice Questions

1. **Answer (c) Only three** - Statements 1, 3 and 4 are correct. Feldspar and quartz are the commonest rock-forming minerals; gabbro is black and quartzite milky white; coal forms when buried plant remains are altered by heat and pressure of overlying layers (organically formed). Statement 2 reverses the facts - granite is hard and soapstone is soft.
2. **Answer (a)** - Both are true and causally linked. High silica (up to 80 per cent) makes acid magma viscous; it cools fast near the vent and piles up into high mountains. Basic magma (about 40 per cent silica) flows far and forms plateaus.
3. **Answer (d)** - Afar (like Iceland) lies on a DIVERGENT boundary; the plume below ruptured the African plate, producing the East African Rift. Options (a), (b) and (c) are correct statements from the lecture.
4. **Answer (b) Only two** - Pairs 1 and 3 are correct. Pair 2 describes a caldera, not a composite volcano (composite = viscous lava with layered pyroclastics). Pair 4 is wrong - mid-ocean ridge volcanoes occur in oceanic areas along the 70,000 km ridge system.
5. **Answer (c) 2 - 3 - 5 - 1 - 4** - Kauai (5.6 - 4.9 Ma), Oahu (3.4 Ma), Molokai (1.8 Ma), Maui (1.3 Ma), Hawaii (0.7 - 0 Ma). The Pacific Plate moves NW over a fixed plume, so islands grow younger towards the SE where the hotspot is currently active (Mauna Loa, Kilauea, Loihi).

Answer Key - Section 4: Match the Following

Correct Match	Explanation
A - 5	**Batholith**: Large granitic dome cooled at great depth
B - 6	**Laccolith**: Dome with level base and pipe-like conduit
C - 3	**Sill**: Near-horizontal sheet-like intrusive body
D - 1	**Dyke**: Wall-like body nearly perpendicular to the ground
E - 2	**Phacolith**: Wavy mass at base of synclines or top of anticlines
Decoy - 4	'Saucer-shaped body concave to the sky' describes a **lopolith** - not in List-I

Performance Tracker

Score Card

Section	Maximum Marks	Marks Scored	Accuracy (%)
1. Fill in the Blanks	10		
2. True or False	10		
3. Multiple Choice Questions	10		
4. Match the Following	5		

Section	Maximum Marks	Marks Scored	Accuracy (%)
Total	**35**		

Grading Scale

Score	Grade	Next Step
30 - 35	**Excellent**	Move ahead; revise traps in LMR once
24 - 29	**Good**	Re-read sections linked to wrong answers
18 - 23	**Average**	Revise LMR fully; reattempt DPW tomorrow
Below 18	**Needs Work**	Re-watch lecture; build own rock / volcano tables

Weak Areas Identified

1. _____

2. _____

3. _____

Revision Plan

1. _____

2. _____

3. _____