DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO

T.B.C. : STS-K-TPT
Serial No.:

Test Booklet Series

B

TEST BOOKLET

Subject : Test 18 – GEOGRAPHY
Answer Key

Time Allowed : Two Hours **Maximum Marks : 200**

INSTRUCTIONS

1.IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GOT IT REPLACED BY A COMPLETE TEST BOOKLET.

2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer Sheet. Any omission/discrepancy will render the Answer Sheet liable for rejection.

3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. DO NOT write anything else on the Test Booklet.

4. This Test Booklet contains 100/80 items (questions). Each item is printed in English. Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each item.

5. You have to mark all your responses ONLY on the separate Answer Sheet provided. See directions in the Answer Sheet.

6. All items carry equal marks

7. Before you proceed to mark in the Answer Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions sent to you with your Admission Certificate.

8. After you have completed filling in all your responses on the Answer Sheet and the examination has concluded, you should hand over to the Invigilator only the Answer Sheet. You are permitted to take away with you the Test Booklet.

9. Sheets for rough work are appended in the Test Booklet at the end.

10. **Penalty for wrong answers:**

THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS

(i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one third** if the marks assigned to that question will be deducted as penalty.

(ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to that question.

(iii) If a question is left blank, i.e., no answer is given by the candidate, there will be no penalty for that question.

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1. **Match the following types of precipitation with their formation and examples:**

Type of Precipitation	Formation Process	Example
A. Convectional Rain	1. Heating causes warm air to rise, condense, and form heavy rainfall	a. Equatorial regions (Amazon)
B. Orographic Rain	2. Moist air is forced to rise over mountains, cooling and condensing	b. Western Ghats of India
C. Cyclonic Rain	3. Air masses of different temperatures meet, causing rainfall	c. Temperate cyclone regions

Options:

(a) A-3-c, B-1-a, C-2-b
(b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c

Answer: (b) A-1-a, B-2-b, C-3-c

Explanation:

- **Convectional Rain** (A) occurs in **equatorial regions** due to **intense heating**, causing **rapid upward movement of warm air** (Example: **Amazon Rainforest**).
- **Orographic Rain** (B) happens when **moist air rises over mountains**, leading to **cooling and precipitation** (Example: **Western Ghats, India**).
- **Cyclonic Rain** (C) occurs in **temperate cyclone regions** where **warm and cold air masses meet** (Example: **Mid-latitude storms**).

2. You can see tropical evergreen forest in which of the following places

1. Western Ghats (Windward side)
2. Western Ghats (Leeward side)
3. Coastal Tamilnadu and Andaman
4. North Eastern States

Select the answer from the below codes

a) 1, 2 and 3 only
b) 2, 3 and 4 only
c) 1, 3 and 4 only
d) 1, 2, 3 and 4 only

✔ **Correct Answer:**

👉 **(c) 1, 3 and 4 only**

🧠 **Quick Explanation (Brief)**

- **1. Western Ghats (Windward side)** → ✅ Heavy rainfall → Evergreen forests
- **2. Western Ghats (Leeward side)** → ❌ Rain shadow → Dry deciduous
- **3. Coastal Tamil Nadu & Andaman** → ✅ Andaman = Evergreen (TN coast partly supports patches)
- **4. North Eastern States** → ✅ High rainfall → Evergreen forests

3. **Consider the following statements regarding the separation of the African Plate and the associated geological features:**

1.The **African Plate** is slowly splitting into two tectonic plates — the **Nubian Plate** (to the west) and the **Somali Plate** (to the east), along the **East African Rift System**.
2. The rifting process has given rise to several elongated lakes such as **Lake Tanganyika, Lake Malawi, and Lake Victoria**, all of which lie within tectonic depressions.
3. This continental rifting is an example of a **convergent plate boundary**, where two continental plates collide, creating mountain ranges.

Which of the statements given above are correct?

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

Answer : a) 1 and 2 only
Explanation:

Statement 1 is correct: The **African Plate is breaking into two — the Nubian Plate and Somali Plate — along the East African Rift**, a classic example of **continental rifting**.
Statement 2 is correct: Lakes like **Tanganyika, Malawi, and Victoria** were formed in **tectonic grabens** due to crustal thinning and subsidence from rifting.
Statement 3 is incorrect: The East African Rift is a **divergent plate boundary**, not a convergent one. Plates are **moving away** from each other, not colliding.

4. **Consider the following terms:**
Frost Wedging
Thermal Expansion
Exfoliation
Spalling
Sheeting
Above mentioned are terms associated with:
a) Erosion
b) Volcanic Eruption
c) Mass Wasting
d) Weathering

✅ **Answer Key**
👉 **(d) Weathering**

Explanation

- All listed processes are types of **mechanical (physical) weathering**:
  - Frost wedging → Freeze-thaw
  - Thermal expansion → Heating/cooling
  - Exfoliation / Sheeting / Spalling → Rock peeling

5. **Match the following commercial crops with their primary cultivation regions and optimal growing conditions:**

Crop	**Major State**	**Optimal Condition**
A. Tea	1. Assam	a. Shadeloving, welldrained soil, elevation 1000–1500 m
B. Coffee	2. Karnataka	b. Moist and warm conditions, 200–300 cm rainfall, laterite soils
C. Spices (Cardamom, Pepper)	3. Kerala	c. High humidity, acidic soil, 100–200 cm rainfall
D. Rubber	4. Tamil Nadu	d. Humid tropical climate with heavy rainfall and shade

Options:
(a) A-1-c, B-2-a, C-3-d, D-4-b **(b)** A-1-a, B-3-c, C-2-b, D-4-d **(c)** A-3-d, B-2-c, C-1-a, D-4-b
(d) A-2-a, B-1-c, C-4-d, D-3-b

Correct Answer:
(a) A-1-c, B-2-a, C-3-d, D-4-b

Explanation:

- **A. Tea → Assam → High humidity, acidic soil, 100–200 cm rainfall → 1-c**
- **B. Coffee → Karnataka → Shadeloving, well-drained soil, elevation 1000–1500 m → 2-a**
- **C. Spices → Kerala → Humid tropical climate with heavy rainfall and shade → 3-d**

- **D. Rubber → Tamil Nadu → Moist and warm conditions, 200–300 cm rainfall, laterite soils → 4-b**

6. Which one of the following rivers thrice forks into two streams and reunites a few miles farther on, thus forming the islands of Srirangapatanam, Sivasamudram and Srirangam?

a) Cauvery
b) Tungabhadra
c) Krishna
d) Godavari

✅ **Answer Key**

👉 **(a) Cauvery**

Explanation

- Cauvery River splits and reunites multiple times, forming:
  - **Srirangapatna** (Karnataka)
  - **Shivanasamudra** (Karnataka)
  - **Srirangam** (Tamil Nadu)

👉 Hence, the river is **Cauvery** ✔

7. With respect to the chemical composition of earth's layers consider the following statements:

1. The continental crust is thicker in the areas of major mountain systems.
2. Oceanic crust is thinner as compared to the continental crust.
3. The lower mantle extends beyond the asthenosphere. It is in solid state.
4. Core has the heaviest mineral materials of highest density.
5. Gutenberg Discontinuity – lies between the mantle and the outer core.

Which of the above statements are correct?

a) 1, 2, 3, 4
b) 1, 3, 4, 5
c) 2, 3, 4, 5
d) All the above

✅ **Answer Key**

👉 **(d) All the above**

🧠 **Brief Explanation**

- **1. Continental crust thicker in mountains** → ✅ Correct
  👉 E.g., Himalayas (~70 km)
- **2. Oceanic crust thinner** → ✅ Correct
  👉 ~5–10 km vs continental ~30–70 km
- **3. Lower mantle is solid & below asthenosphere** → ✅ Correct
  👉 Asthenosphere = semi-fluid; below it → solid mantle
- **4. Core has highest density materials** → ✅ Correct
  👉 Mainly iron & nickel
- **5. Gutenberg Discontinuity** → ✅ Correct
  👉 Boundary between **mantle and outer core**

8. **Match the following erosional landforms with their formation process and locations:**

Landform	**Formation Process**	**Location**
A. Cirque	1. U-shaped valley created by glacial movement	a. Himalayas
B. Fjord	2. Deep coastal inlets formed by submergence of glacial valleys	b. Norway
C. UShaped Valley	3. Bowl-shaped depression at the head of a glacier	c. Rocky Mountains

Options:

(a) A-1-c, B-2-b, C-3-a (b) A-3-a, B-2-b, C-1-c
(c) A-2-b, B-3-a, C-1-c
(d) A-3-b, B-1-c, C-2-a

Answer: (b) A-3-a, B-2-b, C-1-c

Explanation:

- **Cirques** (A) are **bowl-shaped depressions** formed at the head of glaciers (Example: **Himalayas**).
- **Fjords** (B) are **deep coastal inlets** formed by **glacial submergence** (Example: **Norway**).
- **U-Shaped Valleys** (C) are formed by **glacial erosion** (Example: **Rocky Mountains**).

9. **Match the following soil horizons with their composition and function:**

Soil Horizon	**Composition**	**Function**
A. O-Horizon	1. Organic matter, decomposed leaves	a. Nutrientrich, supports plant growth
B. A-Horizon	2. Topsoil with minerals and humus	b. Acts as a transition zone
C. B-Horizon	3. Accumulates leached minerals	c. Stores nutrients, less organic content

Options:

(a) A-3-b, B-1-c, C-2-a (b) A-2-a, B-3-c, C-1-b

(c) A-1-a, B-2-b, C-3-c

(d) A-1-b, B-3-a, C-2-c

Answer: (c) A-1-a, B-2-b, C-3-c

Explanation:

- **O-Horizon** (A) consists of **organic material like decomposed leaves**, making it **nutrient-rich**.
- **A-Horizon** (B) is the **topsoil, rich in minerals and humus**, crucial for **plant growth**.
- **B-Horizon** (C) **stores leached minerals** from upper layers and has **less organic matter**.

10. **Match the following rock types with their formation process and example:**

Rock Type	**Formation Process**	**Example**
A. Igneous	1. Formed from cooling magma	a. Granite
B. Sedimentary	2. Formed from lithified sediments	b. Sandstone
C. Metamorphic	3. Formed under heat and pressure	c. Marble

Options:

(a) A-1-a, B-2-b, C-3-c

(b) A-3-c, B-1-a, C-2-b

(c) A-2-b, B-3-a, C-1-c

(d) A-1-b, B-3-c, C-2-a

Answer: (a) A-1-a, B-2-b, C-3-c

Explanation:

- **Igneous rocks** (A) form from **cooling magma/lava** (Granite).
- **Sedimentary rocks** (B) form from **lithification of sediments** (Sandstone).
- **Metamorphic rocks** (C) form under **heat & pressure** (Marble).

11. **Match the following soil types with their formation process and regions:**

Soil Type	**Formation Process**	**Region Found**
A. Alluvial Soil	1. Formed by river deposition	a. IndoGangetic Plains
B. Black Soil	2. Formed from volcanic basaltic rock	b. Deccan Plateau
C. Laterite Soil	3. Formed due to heavy rainfall and leaching	c. Western Ghats

Options:

(a) A-1-a, B-2-b, C-3-c (b) A-2-b, B-3-c, C-1-a

(c) A-3-c, B-1-a, C-2-b

(d) A-1-b, B-2-c, C-3-a

Answer: (a) A-1-a, B-2-b, C-3-c

Explanation:

- **Alluvial Soil** (A) is formed by **river deposition** and found in **IndoGangetic Plains**.
- **Black Soil** (B) originates from **volcanic basaltic rock** and is **prominent in the Deccan Plateau**.
- **Laterite Soil** (C) forms due to **heavy rainfall and intense leaching**, common in **Western Ghats**.

12. **Match the following types of soil erosion with their characteristics and examples:**

Soil Erosion Type	**Characteristic**	**Example**
A. Sheet Erosion	1. Uniform removal of topsoil over a large area	a. Himalayan slopes
B. Gully Erosion	2. Deep channels formed by running water	b. Chambal Ravines
C. Wind Erosion	3. Removal of fine soil particles by wind action	c. Thar Desert

Options:

(a) A-3-b, B-1-c, C-2-a (b) A-1-a, B-2-b, C-3-c

(c) A-2-c, B-3-a, C-1-b

(d) A-1-b, B-3-c, C-2-a **Answer: (b) A-1-a, B-2-b, C-3-c Explanation:**

- **Sheet Erosion** (A) is **uniform topsoil removal over a large area**, common in **Himalayan slopes**.
- **Gully Erosion** (B) creates **deep channels in soil**, evident in **Chambal Ravines**.
- **Wind Erosion** (C) occurs in **arid regions**, such as the **Thar Desert**.

13. **Match the following fertilizers with their nutrient content and impact:**

Fertilizer Type	**Nutrient Content**	**Impact**
A. Urea	1. High nitrogen content	a. Boosts leaf growth
B. Superphosphate	2. Rich in phosphorus	b. Promotes root and flower growth
C. Potash Fertilizer	3. Contains potassium	c. Improves disease resistance

Options:

(a) A-2-b, B-3-c, C-1-a

(b) A-3-c, B-1-a, C-2-b

(c) A-1-a, B-2-b, C-3-c

(d) A-1-b, B-3-a, C-2-c

Answer: (c) A-1-a, B-2-b, C-3-c

Explanation:

- **Urea** (A) is **high in nitrogen**, essential for **leaf growth**.
- **Superphosphate** (B) is **rich in phosphorus**, necessary for **root and flower development**.
- **Potash Fertilizer** (C) contains **potassium**, aiding in **disease resistance and stress tolerance**.

14. Match the following atmospheric layers with their characteristics and significance:

Atmospheric Layer	**Characteristics**	**Significance**
A. Troposphere	1. Contains 75% of atmospheric mass, weather phenomena occur here	a. Supports life, houses clouds and rain
B. Stratosphere	2. Contains the ozone layer,	b. Absorbs UV radiation,
	temperature increases with altitude	ideal for aviation
C. Mesosphere	3. Temperature decreases with altitude, meteorites burn up	c. Coldest layer, protects Earth from space debris

Options:

(a) A-3-c, B-1-a, C-2-b

(b) A-1-a, B-2-b, C-3-c

(c) A-2-b, B-3-c, C-1-a

(d) A-1-b, B-3-a, C-2-c

Answer: (b) A-1-a, B-2-b, C-3-c

Explanation:

- **Troposphere** (A) contains **75% of atmospheric mass** and is responsible for **weather phenomena** (Example: **Clouds, rain**).
- **Stratosphere** (B) houses the **ozone layer**, which **absorbs UV**

radiation, making it **ideal for aviation**.

- **Mesosphere** (C) has the **coldest temperatures** and **burns up meteorites**, preventing them from reaching Earth's surface.

15. Which of the following statements are true

1. Port commanding the largest hinterland in India is Mumbai Port

2. Deepest land locked and protected port is located in West Bengal.

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

✅ **Answer Key**
👉 **(d) Neither 1 nor 2**

🧠 **Brief Explanation**

- **1. Mumbai Port has the largest hinterland** → ❌ Incorrect
  👉 Mumbai Port is important, but
  👉 **Kolkata–Haldia port system** serves a **larger hinterland** (Ganga basin, Nepal, Bhutan, NE India)

- **2. Deepest landlocked protected port in West Bengal** → ❌ Incorrect
  👉 Kolkata Port is **riverine and not the deepest**
  👉 The **deepest landlocked natural port** is
  👉 Visakhapatnam Port

16. Consider the following statements about Critical Minerals declared by India in 2023:

1. The Government of India has identified a list of 30 critical minerals essential for economic development and strategic technologies.

2. Critical minerals such as lithium, cobalt, and rare earth elements are key inputs in renewable energy, EV batteries, and electronics.

3. The list excludes graphite and nickel, as these are abundantly available domestically.

4. The Ministry of Mines has set up a dedicated body, KABIL (Khanij Bidesh India Ltd.), to ensure overseas sourcing of critical minerals.

Which of the statements given above are correct?

(a) 1, 2, and 4 only
(b) 1, 3, and 4 only
(c) 2 and 3 only
(d) 1, 2, 3, and 4

Answer: (a) 1, 2, and 4 only

Explanation:

•Statement 1 is correct: In 2023, the Ministry of Mines identified 30 minerals as 'critical', including lithium, cobalt, graphite, nickel, REEs, etc.

•Statement 2 is correct: These minerals are vital for clean energy, EVs, aerospace, and semiconductors.

•Statement 3 is incorrect: Graphite and nickel are included in the critical mineral list, as India lacks sufficient reserves.

•Statement 4 is correct: KABIL (a JV of NALCO, HCL, and MECL) has been established to secure critical minerals through international partnerships and mining investments abroad.

17. **Match the following types of drainage patterns with their characteristics and examples:**

Drainage Pattern	**Characteristics**	**Example**
A. Dendritic	1. Resembles tree branches, develops on uniform rock structure	a. Ganga River System
B. Radial	2. Streams radiate from a central highland	b. Amarkantak Plateau
C. Trellis	3. Tributaries join the main river at right angles	c. Folded Mountains like the Appalachian Mountains

Options:

(a) A-3-c, B-1-a, C-2-b
(b) A-2-b, B-3-c, C-1-a
(c) A-1-a, B-2-b, C-3-c
(d) A-3-b, B-1-c, C-2-a

Answer: (c) A-1-a, B-2-b, C-3-c

Explanation:

- **Dendritic Drainage** (A) looks like **tree branches**, occurring in areas with **uniform rock structure** (Example: **Ganga River System**).
- **Radial Drainage** (B) occurs when **streams radiate outward from a central point** (Example: **Amarkantak Plateau**).
- **Trellis Drainage** (C) has **tributaries joining at right angles**, typical in **folded mountain regions** (Example: **Appalachian Mountains**).

18. **Match the following volcanic landforms with their formation and examples:**

Volcanic Landform	**Formation Process**	**Example**
A. Shield Volcano	1. Formed by fluid lava flows, gentle slopes	a. Mauna Loa, Hawaii
B. Cinder Cone	2. Built from explosive eruptions of volcanic ash and cinders	b. Parícutin, Mexico
C. Caldera	3. Large volcanic depression formed by collapse after a major eruption	c. Yellowstone, USA

Options:

(a) A-1-a, B-2-b, C-3-c
(b) A-3-b, B-1-c, C-2-a
(c) A-2-c, B-3-a, C-1-b
(d) A-1-c, B-3-b, C-2-a

Answer: (a) A-1-a, B-2-b, C-3-c

Explanation:

- **Shield Volcanoes** (A) have **gentle slopes, formed by fluid lava flows** (Example: **Mauna Loa, Hawaii**).
- **Cinder Cones** (B) are **built from explosive eruptions of ash and cinders** (Example: **Parícutin, Mexico**).
- **Calderas** (C) are **large depressions formed by the collapse of a volcano after an eruption** (Example: **Yellowstone, USA**).

19. **Match the following types of humidity with their definitions and measurement units:**

Type of Humidity	**Definition**	**Measurement Unit**
A. Absolute Humidity	1. Amount of water vapor in a given volume of air	a. g/m³
B. Relative Humidity	2. Ratio of actual water vapor content to maximum possible at a given temperature	b. Percentage (%)
C. Specific Humidity	3. Mass of water vapor per unit mass of air	c. g/kg

Options:
(a) A-2-b, B-3-c, C-1-a (b) A-1-a, B-2-b, C-3-c
(c) A-3-c, B-1-a, C-2-b
(d) A-1-b, B-3-a, C-2-c
Answer: (b) A-1-a, B-2-b, C-3-c
Explanation:

- **Absolute Humidity** (A) is the **amount of water vapor per volume of air**, measured in **g/m³**.
- **Relative Humidity** (B) is the **percentage of actual water vapor content relative to its maximum capacity**.

Specific Humidity (C) is the **mass of water vapor per unit mass of air**, measured in **g/kg**.

20. Consider the following statements with respect to 'Eco-Sensitive Zones'
1.They are declared under the Wildlife (Protection) Act, 1972
2. All kinds of human activities are prohibited in the Eco-Sensitive Zones
3. Eco-Sensitive Zones can be notified only near National Parks
Select the correct statements
a) 1 only
b) 1 and 2 only
c) 1 and 3 only
d) None of the above

✅ **Answer Key**
👉 **(d) None of the above**

🧠 **Brief Explanation**

- **1. Declared under Wildlife Protection Act, 1972** → ❌ Incorrect
  👉 Notified under **Environment (Protection) Act, 1986**
- **2. All human activities prohibited** → ❌ Incorrect
  👉 Activities are **regulated**, not completely banned
- **3. Only near National Parks** → ❌ Incorrect
  👉 Also declared around **Wildlife Sanctuaries**

21. **Consider the following statements regarding Potash mining in India:**
1. India is heavily dependent on potash imports, with more than 90% of its requirement met from countries like Canada, Russia, and Belarus.
2. The first commercial potash mine in India is being developed in Rajasthan, particularly in the **NagaurGanganagar basin**.
3. Potash is an essential component of **NPK fertilizers** and plays a critical role in **enhancing crop resistance to drought and disease**.
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
Answer: (d) 1, 2, and 3
Explanation:

- India **imports over 90%** of its potash, making it vulnerable to **global price fluctuations and geopolitical issues**.
- The **Geological Survey of India (GSI)** has confirmed **significant potash reserves in Rajasthan**, especially in the **Nagaur-Ganganagar basin**, where mining has begun to be explored.

- Potash is a **key component of fertilizers**, contributing to **plant vigor, stress resistance, and yield improvement**.

22. Consider the following pairs of critical minerals and their primary industrial applications:

Mineral	Application
1. Lithium	Aerospace alloys
2. Cobalt	Lithium-ion battery cathodes
3. Rare Earth Elements (REEs)	Wind turbines and permanent magnets
4. Graphite	Anode material in rechargeable batteries

Which of the pairs given above are correctly matched?
(a) 2, 3, and 4 only
(b) 1, 2, and 3 only
(c) 1 and 3 only
(d) 1, 2, 3, and 4

Answer: (a) 2, 3, and 4 only
Explanation:

- **Pair 1 is incorrect**: **Lithium** is primarily used in **battery technology**, especially for **EVs and portable electronics**, not aerospace alloys.
- **Pair 2 is correct**: **Cobalt** is crucial for **lithium-ion battery cathodes**, enhancing energy density and lifespan.
- **Pair 3 is correct**: **Rare Earth Elements (like neodymium and dysprosium)** are used in **permanent magnets** for **wind turbines and EV motors**.
- **Pair 4 is correct**: **Graphite** is the **standard anode material** in most rechargeable batteries, including lithium-ion cells.

23. Which one of the following statements is not correct?
a) Gulf with narrow fronts and wider rears experience high tides.
b) Tidal currents take place when a gulf is connected with the open sea by a narrow channel.
c) Tidal bore occurs when a tide enters the narrow and shallow estuary of a river.
d) The tidal nature of the mouth of the river Hooghly is of crucial importance to Kolkata as port

✅ **Answer Key**
👉 **(b) Tidal currents take place when a gulf is connected with the open sea by a narrow channel** ❌

🧠 **Brief Explanation**

- **(a)** Narrow mouth + wide rear → **amplifies tides** → ✅ Correct
- **(b)** Tidal currents are a **general phenomenon due to tidal movement**, not specifically because of a narrow channel → ❌ Incorrect
- **(c)** Tidal bore in narrow, shallow estuaries → ✅ Correct
- **(d)** Hooghly's tidal nature helps navigation to Kolkata → ✅ Correct

24. What are the factors that affect Insolation?
1. Distance between Earth and Sun
2. Angle of Ray incidence
3. Temperature of Ocean
4. Duration of Sunshine
Select the answer from the below codes

a) 1, 2 and 3 only
b) 2, 3 and 4 only
c) 1, 2 and 4 only
d) 1, 2, 3 and 4 only

✅ **Answer Key**
👉 **(c) 1, 2 and 4 only**

🧠 **Brief Explanation**

- **1. Distance Earth–Sun** → ✅ Affects intensity (perihelion/aphelion)
- **2. Angle of incidence** → ✅ Major factor (vertical rays = more insolation)

- **3. Temperature of ocean** → ❌ Result of insolation, not a factor
- **4. Duration of sunshine** → ✅ Longer duration = more insolation

25. **Match the following types of seismic waves with their properties:**

Seismic Waves	**Nature**	**Movement**
A. P-Waves	1. Travel only through solids	a. Parallel to propagation
B. S-Waves	2. Slowest, most destructive	b. Perpendicular to propagation
C. Surface Waves	3. Travel through solids, liquids & gases	c. Longitudinal motion

Options:
(a) A-3-a, B-1-b, C-2-c (b) A-2-b, B-3-c, C-1-a
(c) A-1-c, B-2-a, C-3-b
(d) A-3-b, B-2-a, C-1-c
Answer: (a) A-3-a, B-1-b, C-2-c
Explanation:

- **P-Waves** (A) travel **through solids, liquids, and gases**, moving **parallel** (a) to wave propagation.
- **S-Waves** (B) travel **only through solids**, moving **perpendicular** (b) to propagation.
- **Surface Waves** (C) are the **slowest and most destructive**, moving in a **longitudinal motion** (c).

26. **Match the following types of volcanic eruptions with their characteristics:**

Type of Eruption	**Characteristics**	**Example**
A. Explosive	1. Highly viscous lava, steep slopes	a. Mount St. Helens
B. Effusive	2. Fluid lava, broad slopes	b. Mauna Loa
C. Fissure	3. Lava oozes from long cracks	c. Deccan Traps

Options:
(a) A-1-a, B-2-b, C-3-c (b) A-3-c, B-1-a, C-2-b
(c) A-2-b, B-3-a, C-1-c
(d) A-1-b, B-2-c, C-3-a
Answer: (a) A-1-a, B-2-b, C-3-c
Explanation:

- **Explosive eruptions** (A) produce **steep slopes** with **highly viscous lava** (Mount St. Helens).
- **Effusive eruptions** (B) produce **broad, gentle slopes** with **fluid lava** (Mauna Loa).
- **Fissure eruptions** (C) involve **lava oozing from long cracks**, forming **plateaus like Deccan Traps**.

27. **Match the following Karst topography features with their characteristics and examples:**

Karst Feature	**Characteristics**	**Example**
A. Stalactite	1. Cone-shaped deposit rising from the cave floor	a. Ajanta Caves, India
B. Stalagmite	2. Icicle-shaped deposit hanging from the ceiling	b. Mammoth Cave, USA
C. Sinkhole	3. Depression formed by collapse of underground cave	c. Florida, USA

Options:
(a) A-2-a, B-1-b, C-3-c
(b) A-1-b, B-3-c, C-2-a
(c) A-3-c, B-1-a, C-2-b
(d) A-2-c, B-3-a, C-1-b

Answer: (a) A-2-a, B-1-b, C-3-c
Explanation:

- **Stalactites** (A) are **icicle-shaped calcium carbonate formations hanging from the cave ceiling** (Example: **Ajanta Caves, India**).
- **Stalagmites** (B) are **cone-shaped formations growing from the**

cave floor (Example: **Mammoth Cave, USA**).

- **Sinkholes** (C) are **depressions formed by the collapse of underground caverns** (Example: **Florida, USA**).

28. Consider the following statements regarding the measurement of Earthquakes:

1. While the Mercalli scale measures the intensity of an earthquake based on its actual impacts, the Richter scale measures the magnitude of energy released during the earthquake.
2. The Mercalli scale is linear whereas the Richter scale is logarithmic in nature. Which of the above statements is/are correct?

(a) 1 only (b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

✅ **Answer Key**
👉 **(c) Both 1 and 2**

🧠 **Brief Explanation**

- **1. Mercalli vs Richter** → ✅ Correct
  - **Mercalli** → Measures *intensity* (damage & effects)
  - **Richter** → Measures *magnitude* (energy released)
- **2. Nature of scales** → ✅ Correct
  - **Mercalli** → Qualitative/linear scale
  - **Richter** → Logarithmic scale

29. Which of the following statements are correct

1. Self ploughing is a characteristics of Black soil
2. Black soil is black due to presence of Titanferrous Magnetite.
3. Red colour of the red soil is due to presence of Ferric Oxide.
4. Kankar layer is a characteristics of Peaty Soil

Select the answer from the below codes
a) 1, 2 and 3
b) 2 and 3 only
c) 2, 3 and 4 only
d) 1, 2, 3 and 4

✅ **Answer Key**
👉 **(a) 1, 2 and 3**

🧠 **Brief Explanation**

- **1. Self-ploughing (cracking)** → ✅ Correct
  👉 Black soil develops cracks → natural aeration
- **2. Black colour (titaniferous magnetite)** → ✅ Correct
  👉 Presence of iron compounds
- **3. Red soil colour (ferric oxide)** → ✅ Correct
- **4. Kankar layer in Peaty soil** → ❌ Incorrect
  👉 Kankar (calcareous nodules) → **Arid/Desert soils**, not peaty

30. Consider the following statements:

1. Crust is the thickest layer of the earth.
2. The rocks forming the crust of the Earth are rich in lighter minerals like silica and aluminium.

Which of the above statements is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

✅ **Answer Key**
👉 **(b) 2 only**

🧠 **Brief Explanation**

- **1. Crust is the thickest layer** → ❌ Incorrect
  👉 **Mantle** is the thickest layer (~2900 km)
- **2. Crust rich in lighter minerals (Si + Al)** → ✅ Correct
  👉 Known as **SIAL**

31. Knob and Kettle topography is associated with
(a) Aeolian topography
(b) Glacial topography
(c) Desert topography
(d) Fluvial topography

✅ **Answer Key**
👉 **(b) Glacial topography**

🧠 **Brief Explanation**

- **Knob and Kettle topography**:
  - **Knobs** → Small mounds of till
  - **Kettles** → Depressions formed by melting of buried ice blocks

👉 Both are formed due to **glacial deposition and melting**

32. Which one of the following is the other term used for 'Focus' in relation with an earthquake ?
a) Hypocentre
b) Epicentre
c) Isocentre
d) Principal Point

✅ **Answer Key**
👉 **(a) Hypocentre**

🧠 **Brief Explanation**

- **Focus** = Point inside the Earth where earthquake originates
  👉 Also called **Hypocentre** ✅
- **Epicentre** → Point on surface directly above focus ❌

33. Consider the following statements with reference to crop seasons in India:
1. India has three major cropping seasons called Kharif, Rabi and Zaid.
2. Watermelon, Toris, Cucumb er are some example of Zaid Kharif crop.
3. The agricultural crop year in India is from July to June.
Which of the above statements is/are correct ?
(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 only
(d) 1,2 and 3

✅ **Answer Key**
👉 **(b) 1 and 3 only**

🧠 **Brief Explanation**

- **1. Three cropping seasons (Kharif, Rabi, Zaid)** → ✅ Correct
- **2. Zaid "Kharif" crops** → ❌ Incorrect
  👉 Zaid is a **separate season**, not "Zaid Kharif"
  (Though crops like watermelon, cucumber are Zaid crops)
- **3. Crop year (July–June)** → ✅ Correct

34. Match the following steel plants with their corresponding location

Steel Plant	Location
A. Bhilai Steel Plant	1. Jharkhand
B. Durgapur Steel Plant	2. Odisha
C. Bokaro Steel Plant	3.West Bengal
D. Rourkela Steel Plant	4. Chhattisgarh

Select the answer from the below codes

	A	B	C	D
a)	**4**	**3**	**1**	**2**
b)	4	2	1	3
c)	3	1	4	2
d)	2	3	4	1

Answer : **a) 4 3 1 2**

35. Which of the following is Endogenetic Force part of Earth Movements
1. Earth Quake
2. Glacial Outburst
3. Mountain Building
4. Volcanic Eruption
Select the answer from the below codes
a) 1, 2 and 3 only
b) 2, 3 and 4 only
c) 1, 3 and 4 only
d) 1, 2, 3 and 4 only

✅ **Answer Key**
👉 **(c) 1, 3 and 4 only**

🧠 **Brief Explanation**

- **1. Earthquake** → ✅ Endogenic (internal forces)
- **2. Glacial Outburst** → ❌ Exogenic (surface process)

- **3. Mountain Building (Orogeny)** → ✅ Endogenic
- **4. Volcanic Eruption** → ✅ Endogenic

36. What is the correct order of Rock Formation?

1. Sedimentary Rock
2. Metamorphic Rock
3. Igneous Rock
4. Hot Magma

Select the answer from the below codes

a) 4 – 3 – 1 – 2
b) 4 – 1 – 3 – 2
c) 2 – 3 – 1 – 4
d) 2 – 1 – 3 – 4

Answer: a) 4 – 3 – 1 – 2

37. Tides are based on the position of Sun, Moon and Earth. In which of the following phenomena the Tides are unusually high as well as low

1. Perigee
2. Apogee
3. Perihelion
4. Aphelion

Select the answer from the codes given below

a) 1 and 2 only
b) 2 and 3 only
c) 1 and 3 only
d) There will be no change on tide range

✅ **Answer Key**

👉 **(a) 1 and 2 only**

🧠 **Brief Explanation**

- **1. Perigee (Moon closest to Earth)** → ✅ Increases tidal range (higher highs & lower lows)
- **2. Apogee (Moon farthest)** → ✅ Decreases tidal force → still affects range (lower highs, less variation)
- **3. Perihelion (Earth closest to Sun)** → ❌ Minor effect (not primary factor)
- **4. Aphelion (Earth farthest from Sun)** → ❌ Minor effect

38. Which of the following statement is true about South West Monsoon in India

1. The maximum rainfall of this season is received in the north-eastern part of the country, specifically Meghalaya
2. Rainfall in the Ganga valley decreases from the east to the west.

Select the answer from the codes given below

a) 1 only correct
b) 2 only correct
c) Both 1 and 2
d) Neither 1 nor 2

✅ **Answer Key**

👉 **(c) Both 1 and 2**

🧠 **Brief Explanation**

- **1. Maximum rainfall in Meghalaya (NE India)** → ✅ Correct
  👉 Places like Mawsynram/Cherrapunji receive highest SW monsoon rainfall
- **2. Rainfall decreases east → west in Ganga plains** → ✅ Correct
  👉 Due to **decreasing moisture of monsoon winds inland**

39. Which of the following statements are correct about Regur Soil?

1. Regur soil is also known as Red Soil
2. Regur soil is best suitable for cultivating cotton
3. Regur soil is found in Deccan region

Select the answer from the below codes

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

✅ **Answer Key**

👉 **(b) 2 and 3 only**

🧠 **Brief Explanation**

- **1. Regur = Red Soil** → ❌ Incorrect
  👉 Regur = **Black Cotton Soil**
- **2. Suitable for cotton** → ✅ Correct
  👉 High moisture retention
- **3. Found in Deccan region** → ✅ Correct
  👉 Maharashtra, MP, Gujarat, Telangana

40. Black cotton soil of the Deccan region of India is associated with _____ rocks.
a) Volcanic rocks
b) Plutonic rocks
c) Sedimentary rocks
d) Hypabysal rocks

✅ **Answer Key**
👉 **(a) Volcanic rocks**

🧠 **Brief Explanation**

- Black cotton (Regur) soil forms from **weathering of basalt**
- Basalt is an **igneous volcanic rock** (Deccan Traps)

41. The alpine vegetation in the Western Himalayas is found only up to a height of 3000 metres while in the Eastern Himalayas it is found up to a height of 4000 metres. The reason for this variation in the same mountain range is that
a) Eastern Himalayas are higher than Western Himalayas
b) Eastern Himalayas as are nearer to the equator and sea coast than the Western Himalayas
c) Eastern Himalayas get more monsoon rainfall than the Western Himalayas
d) Eastern Himalayan rocks are more fertile than the Western Himalayan rocks

✅ **Answer Key**
👉 **(b) Eastern Himalayas are nearer to the equator and sea coast than the Western Himalayas**

🧠 **Brief Explanation**

- Eastern Himalayas are:
  - **Closer to equator** → warmer temperatures
  - **Closer to Bay of Bengal** → more moisture

👉 Hence, vegetation zones shift **to higher altitudes**

- Western Himalayas:
  - Cooler & drier → vegetation appears at **lower altitude**

42. Which of the following scales are used to measure earthquakes?
1. Beaufort Scale
2. Hygrometer
3. Richter Scale
4. Mercalli Scale

Select the answer from the codes given below
a) 1 and 2 only
b) 2 and 3 only
c) 3 and 4 only
d) 1, 2, 3 and 4

✅ **Answer Key**
👉 **(c) 3 and 4 only**

🧠 **Brief Explanation**

- **1. Beaufort Scale** → ❌ Measures wind speed
- **2. Hygrometer** → ❌ Measures humidity
- **3. Richter Scale** → ✅ Measures magnitude of earthquakes
- **4. Mercalli Scale** → ✅ Measures intensity (effects)

43. **Match the following components of Earth's heat budget with their function and impact:**

Heat Budget Component	**Function**	**Impact**
A. Incoming Solar Radiation (Insolation)	1. Energy received from the Sun	a. Drives global climate patterns
B. Terrestrial Radiation	2. Longwave radiation emitted by Earth	b. Affects greenhouse warming
C. Latent Heat Transfer	3. Energy released during condensation	c. Drives monsoon rainfall formation

Options:
(a) A-3-c, B-1-a, C-2-b
(b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c

Answer: (b) A-1-a, B-2-b, C-3-c
Explanation:

- **Insolation** (A) is the **energy received from the Sun**, driving **global climate**.
- **Terrestrial Radiation** (B) **emits longwave heat from Earth**, influencing **greenhouse warming**.
- **Latent Heat Transfer** (C) occurs **during condensation**, crucial for **monsoon rains**.

44. **Match the following advancements in GPS technology with their descriptions and benefits:**

Advancement	Description	Benefits
A. GPS L5 Signal	1. New civilian-use signal on 1176.45 MHz frequency	a. Enhances aviation safety and vehicle fuel efficiency
B. GPS Block IIIF Satellites	2. Nextgeneration satellites with improved capabilities	b. Introduces fully digital navigation payloads
C. Resilient GPS Initiative	3. Development of alternative GPS networks for military use	c. Ensures secure and efficient military operations

Options:
(a) A-2-b, B-3-c, C-1-a
(b) A-1-a, B-2-b, C-3-c
(c) A-3-c, B-1-a, C-2-b
(d) A-1-b, B-3-a, C-2-c
Answer: (b) A-1-a, B-2-b, C-3-c Explanation:
- GPS L5 Signal (A) is a **new civilianuse signal on the 1176.45 MHz frequency**, aimed at **enhancing aviation safety and vehicle fuel efficiency**.
- GPS Block IIIF Satellites (B) are **next-generation satellites with improved capabilities**, including **fully digital navigation payloads**.
- Resilient GPS Initiative (C) involves the **development of alternative GPS networks for military use**, ensuring **secure and efficient military operations**.

45. Which of the following statements are correct about Laterite Soil ?
1. Laterite soil develops in Wet tropical Climate or monsoonal condition
2. Laterite is typically a soil of tropical regions which receive heavy seasonal rainfall
3. Laterite soil is most suited for cultivation of tea, coffee, rubber, coconut and cinchona cultivation
4. Laterite soil is formed by leaching leaving only oxides of iron and aluminum
Select the answer from the codes given below
a) 1 and 2 only
b) 2 and 3 only
c) 2, 3 and 4 only
d) 1, 2, 3 and 4

✅ **Answer Key**
👉 **(d) 1, 2, 3 and 4**

🧠 **Brief Explanation**

- **1. Wet tropical/monsoonal climate** → ✅ Correct
- **2. Heavy seasonal rainfall regions** → ✅ Correct
- **3. Suitable for tea, coffee, rubber, coconut, cinchona** → ✅ Correct (with manuring)
- **4. Formed by intense leaching (Fe & Al oxides left)** → ✅ Correct

46. **Match the following layers of Earth's interior with their characteristics:**

Layers of Earth	**Characteristics**	**Separated by**
A. Crust	1. Made of silicate minerals,	a. Mohorovic Discontinuity
	extends to 2,900 km	
B. Mantle	2. Outer layer, made of SIAL & SIMA	b. GutenbergWiechert Discontinuity
C. Core	3. Composed of Nickel & Iron, responsible for Earth's magnetism	c. Conrad Discontinuity

Options:

(a) A-2-c, B-1-a, C-3-b (b) A-1-b, B-3-a, C-2-c

(c) A-3-c, B-2-a, C-1-b

(d) A-2-a, B-1-b, C-3-c **Answer: (a) A-2-c, B-1-a, C-3-b Explanation:**

- The **Crust** (A) is the **outermost layer** made of **SIAL & SIMA**, separated by the **Conrad Discontinuity** (c).
- The **Mantle** (B) extends to **2,900 km** and is separated from the Crust by the **Mohorovic Discontinuity** (a).
- The **Core** (C) is made of **Nickel & Iron (NIFE)** and separated from the Mantle by the **Gutenberg-Wiechert Discontinuity** (b).

47. **Match the following geosynclines with their characteristics and associated mountain systems:**

Geosyncline	**Characteristi c**	**Mountain System**
A. Tethys	1. Ancient ocean basin, folded to form the Himalayas	a. Himalayas
B. Appalachian	2. Prehistoric geosyncline that led to the formation of fold mountains in North America	b. Appalachian Mountains
C. Uralian	3. Collision zone between European and Siberian plates	c. Ural Mountains

Options:

(a) A-1-a, B-2-b, C-3-c

(b) A-3-c, B-1-a, C-2-b

(c) A-2-b, B-3-c, C-1-a

(d) A-1-b, B-3-a, C-2-c

Answer: (a) A-1-a, B-2-b, C-3-c

Explanation:

-Tethys Geosyncline (A) was an **ancient ocean basin that folded to form the Himalayas** (Example: **Himalayas**).

-Appalachian Geosyncline (B) led to the formation of **fold mountains in North America** (Example: **Appalachian Mountains**).

-Uralian Geosyncline (C) formed due to the **collision of European and Siberian plates** (Example: **Ural Mountains**).

48. **Match the following glacial landforms with their formation and examples:**

Glacial Landform	**Formation Process**	**Example**
A. Cirque	1. Bowl-shaped depression formed by glacial erosion	a. Alps, Europe
B. Moraine	2. Accumulation of glacial debris	b. Himalayas, India
C. Drumlin	3. Smooth, ovalshaped hill formed under glacier	c. Canada

Options:

(a) A-3-b, B-2-c, C-1-a
(b) A-1-a, B-2-b, C-3-c
(c) A-2-c, B-1-a, C-3-b
(d) A-1-c, B-3-a, C-2-b

Answer: (b) A-1-a, B-2-b, C-3-c Explanation:

- **Cirques** (A) are **bowl-shaped depressions created by glacial erosion** (Example: **Alps, Europe**).
- **Moraines** (B) are **accumulations of glacial debris** (Example: **Himalayas, India**).

Drumlins (C) are **smooth, ovalshaped hills formed under glaciers** (Example: **Canada**).

49. **Match the following climate change impacts with their consequences and mitigation strategies:**

Climate Change Impact	**Consequence**	**Mitigation Strategy**
A. Rising Global Temperatures	1. Increased heatwaves, ice cap melting	a. Shift to renewable energy sources
B. Ocean Acidification	2. Coral bleaching, marine biodiversity loss	b. Reduce carbon emissions
C. Extreme Weather Events	3. More frequent cyclones, floods, droughts	c. Strengthen disaster preparedness

Options:
(a) A-3-c, B-1-a, C-2-b (b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c

Answer: (b) A-1-a, B-2-b, C-3-c
Explanation:

- **Rising Temperatures** (A) cause **heatwaves and ice melting**, mitigated by **shifting to renewable energy**.
- **Ocean Acidification** (B) leads to **coral reef loss**, requiring **carbon emission reductions**.
- **Extreme Weather Events** (C) increase **floods and cyclones**, needing **disaster preparedness**.

50. **Match the following types of jet streams with their characteristics and impact:**

Jet Stream Type	**Characteristics**	**Impact**
A. Subtropical Jet Stream	1. Found at 27°30° N latitude, strong west to east flow	a. Affects Indian monsoon patterns
B. Polar Front Jet Stream	2. Located between 40°-60° latitude, stronger in winter	b. Guides temperate cyclones
C. Arctic Jet Stream	3. Found near polar regions, weakest among all jet streams	c. Influences polar vortex movement

Options:
(a) A-3-c, B-1-a, C-2-b (b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c

Answer: (b) A-1-a, B-2-b, C-3-c
Explanation:

- **Subtropical Jet Stream** (A) is found at **27°-30° N latitude**, affecting **Indian monsoons**.
- **Polar Front Jet Stream** (B) occurs between **40°-60° latitude**, guiding **temperate cyclones**.
- **Arctic Jet Stream** (C) influences **polar vortex movement** and is weakest among jet streams.

51. **Match the following types of mass wasting with their characteristics and examples:**

Type of Mass Wasting	**Characteristics**	**Example**
A. Creep	1. Slow, imperceptible downward movement of soil	a. Slanting fences in hilly regions
B. Landslide	2. Sudden movement of rock and debris downhill	b. Himalayan slopes
C. Avalanche	3. Rapid downslope movement of snow and ice	c. Alps Mountains

Options:
(a) A-2-b, B-3-c, C-1-a (b) A-3-c, B-1-a, C-2-b
(c) A-1-a, B-2-b, C-3-c
(d) A-1-b, B-3-a, C-2-c
Answer: (c) A-1-a, B-2-b, C-3-c
Explanation:

- **Creep** (A) is a **slow movement** of soil, leading to **tilted trees and fences** (Example: **Slanting fences in hilly regions**).
- **Landslides** (B) are **sudden movements** of rock/debris, common in **mountainous terrain** (Example: **Himalayan slopes**).
- **Avalanches** (C) are **rapid snow/ice movements** (Example: **Alps Mountains**).

52. **Match the following challenges in GPS technology with the emerging solutions addressing them:**

Challenge	**Emerging Solution**	**Description**
A. GPS Spoofing	1. AQNav by SandboxAQ	a. Protects navigation systems from malicious interference
B. GPS Signal Degradation	2. GPSMirror system	b. Utilizes quantum magnetometers for unspoofable navigation
C. Cyberattacks on GNSS	3. Enhanced cybersecurity measures	c. Expands accurate positioning to shadowed and indoor regions

Options:
(a) A-1-b, B-2-c, C-3-a (b) A-2-c, B-3-a, C-1-b
(c) A-3-a, B-1-b, C-2-c
(d) A-1-c, B-2-b, C-3-a
Answer: (a) A-1-b, B-2-c, C-3-a Explanation:

- **GPS Spoofing** (A) is countered by **AQNav by SandboxAQ** (1), which uses **quantum magnetometers** for **unspoofable navigation** (**b**).
- **GPS Signal Degradation** (B) is addressed by the **GPSMirror system** (2), which **expands signal reach** into **shadowed/indoor zones** (**c**).
- **Cyberattacks on GNSS** (C) are mitigated with **enhanced cybersecurity** (3), **protecting systems** from interference (**a**).

53. The weather office predicts "*depression*" over a certain area. It means a) cloudy skies **b) atmospheric pressure in that area is lower than that in the surrounding areas** c) heavy weather causing a feeling of depression d) low atmospheric pressure over a large area

✅ **Answer Key**
👉 **(b) Atmospheric pressure in that area is lower than that in the surrounding areas**

🧠 **Brief Explanation**

- **Depression (meteorology)** = **low pressure system**
- Defined as:
  👉 Pressure **lower than surrounding region**

- **(d)** is close but vague (doesn't capture comparison aspect) ❌

54. **Match the following types of earthquakes with their causes and examples:**

Type of Earthquake	**Cause**	**Example**
A. Tectonic	1. Caused by fault movement and crustal deformation	a. San Andreas Fault, USA
B. Volcanic	2. Triggered by volcanic eruptions and magma movement	b. Mount St. Helens, USA
C. Collapse	3. Induced by mining or cavern collapses	c. Jharia Coal Mines, India

Options:

(a) A-1-a, B-2-b, C-3-c
(b) A-2-b, B-3-c, C-1-a
(c) A-3-c, B-1-a, C-2-b
(d) A-1-c, B-3-a, C-2-b

Answer: (a) A-1-a, B-2-b, C-3-c

Explanation:

- **Tectonic Earthquakes** (A) result from **fault movements and crustal deformation** (Example: **San Andreas Fault, USA**).
- **Volcanic Earthquakes** (B) are triggered by **magma movement and eruptions** (Example: **Mount St. Helens, USA**).
- **Collapse Earthquakes** (C) occur due to **mine collapses or cave-ins** (Example: **Jharia Coal Mines, India**).

55. **Match the following soil conservation techniques with their descriptions and benefits:**

Soil Conservation Technique	**Description**	**Benefit**
A. Contour Ploughing	1. Ploughing along natural slopes	a. Reduces water runoff and soil erosion
B. Terracing	2. Creating step-like fields on slopes	b. Prevents landslides and water loss
C. Crop Rotation	3. Alternating different crops in a field	c. Maintains soil fertility and reduces pests

Options:

(a) A-3-c, B-1-a, C-2-b (b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c **Answer: (b) A-1-a, B-2-b, C-3-c Explanation:**

- **Contour Ploughing** (A) follows **natural slopes**, reducing **water runoff and erosion**.
- **Terracing** (B) involves **step-like fields**, preventing **landslides and excessive water loss**.
- **Crop Rotation** (C) alternates **different crops to maintain soil nutrients and reduce pests**.

56. The horizontal motion in water refers to ocean currents and waves. The vertical motion of water refers to tide. Which of the following statements are correct ?

1. Tides are caused due to movement of energy in water
2. Ocean currents are due to attraction of sun and moon
3. Waves are Due to alternate heating and cooling

Select the answer from the below codes

a) 1 and 2 only correct
b) 2 and 3 only correct
c) All of the above
d) None of the above

✅ **Answer Key**

👉 **(d) None of the above**

🧠 **Brief Explanation**

- **1. Tides due to movement of energy in water** → ❌ Incorrect
  👉 Caused by **gravitational pull of Moon & Sun**
- **2. Ocean currents due to Sun & Moon attraction** → ❌ Incorrect
  👉 Caused by **winds, temperature, salinity, Coriolis force**
- **3. Waves due to alternate heating & cooling** → ❌ Incorrect
  👉 Mainly caused by **wind action**

57. **Match the following atmospheric pressure belts with their locations and impact:**

Pressure Belt	**Location**	**Impact**
A. Equatorial Low	1. Near the equator (0° latitude)	a. Leads to rising air and heavy rainfall
B. Subtropical High	2. Around 30° latitude in both hemispheres	b. Associated with desert formation
C. Subpolar Low	3. Around 60° latitude in both hemispheres	c. Leads to storm formation and strong westerlies

Options:

(a) A-3-c, B-1-a, C-2-b (b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c **Answer: (b) A-1-a, B-2-b, C-3-c Explanation:**

- **Equatorial Low** (A) is found **near the equator (0° latitude)**, causing **rising air and heavy rainfall**.
- **Subtropical High** (B) exists around **30° latitude**, leading to **desert formation** due to **subsiding dry air**.

Subpolar Low (C) is located near **60° latitude**, resulting in **storm formation and strong westerly winds**.

58. **Match the following types of winds with their characteristics and examples:**

Type of Wind	**Characteristic**	**Example**
A. Trade Winds	1. Blow from subtropical highs to equatorial lows, steady direction	a. Sahara Desert winds
B. Westerlies	2. Blow from subtropical highs to subpolar lows, variable nature	b. Winds affecting Europe and North America
C. Polar Easterlies	3. Blow from polar highs towards subpolar lows, extremely cold	c. Winds affecting Siberia and Canada

Options:

(a) A-3-c, B-1-a, C-2-b (b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c
Answer: (b) A-1-a, B-2-b, C-3-c
Explanation:

- **Trade Winds** (A) are **consistent and blow from subtropical highs to**

equatorial lows (Example: **Sahara Desert winds**).

- **Westerlies** (B) blow from **subtropical highs to subpolar lows**, influencing **Europe and North America's weather**.
- **Polar Easterlies** (C) originate from **polar highs and move towards subpolar regions**, affecting **Siberia and Canada**.

59. New tectonic microplate discovered off the coast of Ecuador recently

a) Nazca plate
b) Cocos plate
c) Malpelo Plate
d) Inca plate

✅ **Answer Key**
👉 **(c) Malpelo Plate**

🧠 **Brief Explanation**

- **Malpelo Plate** → Recently identified **microplate off Ecuador coast** ✅
- **Nazca & Cocos** → Already known major plates ❌
- **Inca Plate** → Not a recognized tectonic plate ❌

60. Which one of the following cities never experiences vertical rays of the sun during noon?

a) Chennai
b) Mangalore
c) Mumbai
d) New Delhi

✅ **Answer Key**
👉 **(d) New Delhi**

🧠 **Brief Explanation**

- Vertical (overhead) sun occurs only **between Tropic of Cancer (23.5°N) & Tropic of Capricorn**
- Cities **within tropics** → experience vertical rays
  - Chennai, Mangalore, Mumbai → ✅ within tropics
- **New Delhi (~28.6°N)** → ❌ outside tropics → never gets overhead sun

61. Large boulders scattered in and on the surface of glacial deposits or on glacially scoured bedrock are called

a) Kames
b) Drumlin
(c) Erratics
(d) Outwash Plains

✅ **Answer Key**
👉 **(c) Erratics**

🧠 **Brief Explanation**

- **Erratics** → Large boulders transported and deposited by glaciers, often different from local rock
- **Kames** → Mounds of sand/gravel ❌
- **Drumlins** → Streamlined hills ❌
- **Outwash plains** → Deposits of meltwater ❌

62. Consider the following statements:

1. Tornadoes generally occur in high latitudes.
2. A thunderstorm is a well-grown cumulonimbus cloud producing thunder and lightning.
3. The tornado over the sea is called waterspout.
4. Thunderstorms and tornadoes are of short duration.

Which of the statements given above are correct?

a) 1, 2 and 4 only
b) 2, 3 and 4 only
c) 1, 3 and 4 only
d) 1, 2, 3 and 4

✅ **Answer Key**
👉 **(b) 2, 3 and 4 only**

🧠 **Brief Explanation**

- **1. Tornadoes in high latitudes** → ❌ Incorrect
  👉 Mostly occur in **mid-latitudes** (e.g., USA)
- **2. Thunderstorm = cumulonimbus cloud** → ✅ Correct
- **3. Tornado over sea = waterspout** → ✅ Correct
- **4. Short duration phenomena** → ✅ Correct

63. **Match the following weathering processes with their effects and examples:**

Weathering Process	**Effect**	**Example**
A. Oxidation	1. Reaction of minerals with water, leading to decomposition	a. Rusting of iron-rich rocks
B. Carbonation	2. Rainwater reacts with CO_2 to dissolve limestone	b. Formation of Karst Topography
C. Hydrolysis	3. Oxygen combines with minerals to form oxides	c. Feldspar in granite turning into clay

Options:

(a) A-3-a, B-2-b, C-1-c
(b) A-1-c, B-3-a, C-2-b
(c) A-2-b, B-1-a, C-3-c
(d) A-3-b, B-2-c, C-1-a

Answer: (a) A-3-a, B-2-b, C-1-c Explanation:

- **Oxidation** (A) occurs when **oxygen reacts with minerals**, leading to rusting (Example: **Iron-rich rocks**).
- **Carbonation** (B) happens when **CO_2 dissolves in rainwater**, eroding limestone (Example: **Karst Topography**).
- **Hydrolysis** (C) involves **minerals reacting with water**, breaking them down (Example: **Feldspar turning into clay**).

64. **Match the following coastal landforms with their formation and examples:**

Coastal Landform	**Formation Process**	**Example**
A. Spit	1. Long ridge of sand projecting into the sea, connected at one end	a. Chesil Beach, UK
B. Tombolo	2. Sandbar connecting mainland to an island	b. Palk Strait, India
C. Fjord	3. Drowned Ushaped glacial valley	c. Norway

Options:

(a) A-1-a, B-2-b, C-3-c (b) A-3-c, B-1-a, C-2-b
(c) A-2-b, B-3-a, C-1-c
(d) A-1-b, B-3-c, C-2-a

Answer: (a) A-1-a, B-2-b, C-3-c
Explanation:

- **Spits** (A) are **sand ridges extending into the sea**, connected at one end (Example: **Chesil Beach, UK**).
- **Tombolos** (B) are **sandbars that connect the mainland to an island** (Example: **Palk Strait, India**).
- **Fjords** (C) are **deep, narrow U-shaped glacial valleys flooded by the sea** (Example: **Norway**).

65. **Match the following soil classification with their characteristics and examples:**

Soil Classification	**Characteristics**	**Example**
A. Alluvial Soil	1. Formed by river deposition, rich in potash and lime	a. IndoGangetic Plain
B. Black Soil	2. Clayey, high moisture retention, rich in calcium	b. Deccan Plateau
C. Arid Soil	3. Sandy, low in humus, alkaline in nature	c. Western Rajastha n

Options:

(a) A-3-c, B-1-a, C-2-b
(b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a

(d) A-1-b, B-3-a, C-2-c

Answer: (b) A-1-a, B-2-b, C-3-c

Explanation:

- **Alluvial Soil** (A) is formed by **river deposition, rich in potash and lime** (Example: **Indo-Gangetic Plain**).
- **Black Soil** (B) is **clayey, moisturereretentive, and rich in calcium** (Example: **Deccan Plateau**).

Arid Soil (C) is **sandy, low in humus, and alkaline** (Example: **Western Rajasthan**).

66. **Match the following causes of soil degradation with their effects and solutions:**

Cause of Soil Degradation	**Effect**	**Solution**
A. Overgrazing	1. Soil compaction, loss of vegetation	a. Rotational grazing
B. Deforestation	2. Increased soil erosion, loss of nutrients	b. Afforestation
C. Waterlogging	3. Accumulation of salts, reduced soil fertility	c. Improved drainage system

Options:

(a) A-2-b, B-3-c, C-1-a (b) A-3-c, B-1-a, C-2-b

(c) A-1-a, B-2-b, C-3-c

(d) A-1-b, B-3-a, C-2-c **Answer: (c) A-1-a, B-2-b, C-3-c Explanation:**

- **Overgrazing** (A) **compacts soil and removes vegetation**, preventable by **rotational grazing**.
- **Deforestation** (B) **increases soil erosion**, which can be mitigated through **afforestation**.
- **Waterlogging** (C) **leads to salt accumulation**, countered by **improved drainage systems**.

67. **Match the following climatic phenomena with their effects and associated regions:**

Climatic Phenomenon	**Effect**	**Associated Region**
A. El Niño	1. Warms the eastern Pacific, disrupts normal monsoon patterns	a. South America, Australia, and India
B. La Niña	2. Strengthens trade winds, brings heavy rains to Asia	b. Pacific Ocean and Southeast Asia
C. Indian Ocean Dipole (IOD)	3. Affects monsoon intensity and Indian Ocean circulation	c. Indian Ocean and surrounding nations

Options:

(a) A-3-c, B-1-a, C-2-b

(b) A-1-a, B-2-b, C-3-c

(c) A-2-b, B-3-c, C-1-a

(d) A-1-b, B-3-a, C-2-c **Answer: (b) A-1-a, B-2-b, C-3-c Explanation:**

- **El Niño** (A) **warms the eastern Pacific Ocean**, altering **monsoon patterns** and **causing droughts or floods** in **South America, Australia, and India**.
- **La Niña** (B) **strengthens trade winds**, leading to **increased rainfall in Asia and Southeast Asia**.
- **Indian Ocean Dipole (IOD)** (C) impacts **Indian monsoons and sea surface temperatures** in the **Indian Ocean region**.

68. Diamond deposits occur in three types of geological settings such as kimberlite pipes, conglomerate beds and alluvial gravels. The main diamond bearing areas in India is
1. Panna belt
2. Munimadugu-Banganapalle
3. Wajrakarur Kimberlite pipe
The above diamond deposits are spread across
a) Maharashtra and Karnataka
b) Madhya Pradesh and Andhra Pradesh
c) Tamilnadu and Himachal Pradesh
d) Karnataka and Goa

✅ **Answer Key**

👉 **(b) Madhya Pradesh and Andhra Pradesh**

🧠 **Brief Explanation**

- **Panna belt** → 📍 Madhya Pradesh
- **Munimadugu–Banganapalle** → 📍 Andhra Pradesh
- **Wajrakarur Kimberlite pipes** → 📍 Andhra Pradesh

69. **Match the following weathering processes with their features and examples:**

Weathering Process	Feature	Example
A. Oxidation	1. Formation of iron oxide (rusting)	a. Lateritic soil in India
B. Carbonation	2. Formation of soluble bicarbonates	b. Karst topography, Slovenia
C. Hydrolysis	3. Chemical breakdown of silicates to form clay	c. Feldspar in granite converting to kaolin

Options:
(a) A-2-a, B-3-b, C-1-c (b) A-3-c, B-1-a, C-2-b
(c) A-1-a, B-2-b, C-3-c
(d) A-3-b, B-2-c, C-1-a
Answer: (c) A-1-a, B-2-b, C-3-c
Explanation:

- **Oxidation** (A) leads to **rusting and lateritic soil formation** (Example: **Lateritic soil in India**).
- **Carbonation** (B) dissolves limestone, forming **karst landscapes** (Example: **Slovenia Karst region**).
- **Hydrolysis** (C) breaks down **feldspar into kaolin clay** (Example: **Granite weathering**).

70. **Match the following soil nutrients with their roles and deficiency effects:**

Soil Nutrient	Role	Deficiency Effect
A. Nitrogen	1. Essential for leaf growth and chlorophyll production	a. Yellowing of leaves (chlorosis)
B. Phosphorus	2. Supports root development and flowering	b. Poor root growth and delayed maturity
C. Potassium	3. Regulates water balance and disease resistance	c. Weak plant structure, wilting

Options:
(a) A-1-a, B-2-b, C-3-c (b) A-3-c, B-1-a, C-2-b
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c
Answer: (a) A-1-a, B-2-b, C-3-c
Explanation:

- **Nitrogen** (A) helps in **leaf growth and chlorophyll formation**, and deficiency leads to **chlorosis (yellowing of leaves)**.
- **Phosphorus** (B) supports **root and flower development**, and its deficiency causes **poor root growth and delayed flowering**.

Potassium (C) is key for **water balance and disease resistance**, and deficiency results in **wilting and weak plant structures**.

71. Consider the following statement relating to Sea Salinity:
1. The ocean salinity depends on evaporation and precipitation
2. Any change in temperature or density influences the salinity
3. Major source of sea salinity is terrestrial discharge of rivers
Which of these are correct statements?
a) 1, 2 and 3
b) 1 and 2
c) 1 and 3
d) 2 and 3

✅ **Answer Key**
👉 **(c) 1 and 3**

🧠 **Brief Explanation**

- **1. Evaporation & precipitation** → ✅ Correct
  👉 Control concentration/dilution of salts
- **2. Temperature/density influences salinity** → ❌ Incorrect
  👉 They affect **water properties**, not directly salinity
- **3. Rivers as source of salts** → ✅ Correct
  👉 Major source of dissolved minerals

72. **Match the following geospatial technologies with their recent applications and impacts:**

Technology	**Recent Application**	**Impact**
A. LiDAR	1. Detection of ancient Mayan city in Mexico	a. Revealed hidden archaeological sites
B. AI-Powered Weather Forecasting	2. Development of Aardvark prediction model	b. Democratized access to accurate weather forecasts
C. AR Spectacles with GPS	3. Snap's enhanced AR glasses supporting GPS	c. Enabled locationbased augmented reality experiences

Options:
(a) A-3-c, B-1-a, C-2-b (b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-c, B-3-a, C-2-b **Answer: (b) A-1-a, B-2-b, C-3-c Explanation:**

- **LiDAR** (A) was used in the **detection of an ancient Mayan city in Mexico**, **revealing hidden archaeological sites**.
- **AI-Powered Weather Forecasting** (B) led to the **development of the Aardvark prediction model**, **democratizing access to accurate weather forecasts**.
- **AR Spectacles with GPS** (C) refers to **Snap's enhanced AR glasses supporting GPS**, **enabling locationbased augmented reality experiences**.

73. **Match the following components of the Earth's heat budget with their descriptions and effects:**

Heat Budget Component	**Description**	**Effect**
A. Insolation	1. Incoming solar radiation from the Sun	a. Heats Earth's surface
B. Terrestrial Radiation	2. Long-wave radiation emitted by Earth	b. Heats the lower atmosphere
C. Albedo	3. Reflection of solar radiation by Earth's surface	c. Reduces heat absorption

Options:
(a) A-3-c, B-1-a, C-2-b
(b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c
Answer: (b) A-1-a, B-2-b, C-3-c Explanation:

- **Insolation** (A) is **solar radiation from the Sun**, which **heats Earth's surface**.
- **Terrestrial Radiation** (B) is **longwave radiation emitted by Earth**, **heating the lower atmosphere**.

Albedo (C) is the **reflection of solar radiation**, which **reduces heat absorption**.

74. **Match the following desert landforms with their characteristics and examples:**

Desert Landform	**Characteristics**	**Example**
A. Yardang	1. Isolated remnant of rock, shaped by wind erosion	a. Sahara Desert
B. Inselberg	2. Narrow ridges formed by wind abrasion	b. Thar Desert
C. Erg	3. Vast sand sea formed by wind deposition	c. Arabian Desert

Options:

(a) A-3-a, B-1-b, C-2-c (b) A-2-a, B-1-b, C-3-c

(c) A-1-c, B-3-a, C-2-b

(d) A-2-b, B-3-c, C-1-a

Answer: (b) A-2-a, B-1-b, C-3-c

Explanation:

- **Yardangs** (A) are **narrow ridges created by wind erosion** (Example: **Sahara Desert**).
- **Inselbergs** (B) are **isolated rock remnants formed by erosion** (Example: **Thar Desert**).
- **Ergs** (C) are **vast sand seas formed by wind deposition** (Example: **Arabian Desert**).

75. **Match the following soil types with their characteristics and regions:**

Soil Type	**Characteristic**	**Example**
A. Alluvial	1. Rich in minerals, good for agriculture	a. IndoGangetic Plains, India
B. Laterite	2. High iron and aluminum content, found in wet tropical areas	b. Western Ghats, India
C. Black Soil	3. High clay content, retains moisture, suitable for cotton cultivation	c. Deccan Plateau, India

Options:

(a) A-2-b, B-3-c, C-1-a (b) A-1-a, B-2-b, C-3-c

(c) A-3-c, B-1-a, C-2-b

(d) A-1-b, B-3-a, C-2-c **Answer: (b) A-1-a, B-2-b, C-3-c Explanation:**

- **Alluvial Soil** (A) is **mineral-rich, highly fertile** (Example: **IndoGangetic Plains, India**).
- **Laterite Soil** (B) is **iron- and aluminum-rich, forms in wet tropical regions** (Example: **Western Ghats, India**).
- **Black Soil** (C) is **moisture-retentive, rich in clay, best for cotton** (Example: **Deccan Plateau, India**).

76. **Match the following local names of the Indian Monsoon with the respective states/regions and their characteristics:**

Local Name	**State/Region**	**Characteristic Description**
A. Kalbaishakhi	1. Kerala	a. Pre-monsoon rainfall aiding coffee blossom in hilly areas
B. Mango Showers	2. West Bengal	b. Local squalls, dust storms with rain during summer
C. Blossom Showers	3. Karnataka	c. Pre-monsoon violent thunderstorms during April–May
D. Kaalbaisakhi	4. Assam	d. Pre-monsoon showers that help in early mango ripening

Options:
(a) A-2-c, B-1-d, C-3-a, D-4-b **(b)** A-2-a, B-1-c, C-3-d, D-4-b **(c)** A-3-c, B-4-a, C-1-b, D-2-d
(d) A-1-d, B-2-b, C-3-c, D-4-a

Correct Answer:
(a) A-2-c, B-1-d, C-3-a, D-4-b

Explanation:

- **A. Kalbaishakhi → 2. West Bengal → c. Pre-monsoon violent thunderstorms** (locally known as Nor'westers)
- **B. Mango Showers → 1. Kerala → d. Pre-monsoon showers that help in early mango ripening**
- **C. Blossom Showers → 3. Karnataka → a. Rainfall helping coffee blossom**
- **D. Kaalbaisakhi → 4. Assam → b. Local squalls and rainstorms in summer**

77. **Match the following Köppen climate classifications with their characteristics and examples:**

Köppen Climate Type	**Characteristics**	**Example**
A. Af (Tropical Rainforest)	1. High temperature, heavy yearround rainfall	a. Amazon Basin, Congo Basin
B. Cfa (Humid Subtropical)	2. Hot summers, mild winters, moderate rainfall	b. Southeastern USA, China
C. Dfc (Subarctic)	3. Long, cold winters, short cool summers	c. Siberia, Canada

Options:
(a) A-3-c, B-1-a, C-2-b (b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c
Answer: (b) A-1-a, B-2-b, C-3-c
Explanation:

- **Af (Tropical Rainforest)** (A) has **high temperatures and heavy rain throughout the year** (Example: **Amazon, Congo**).
- **Cfa (Humid Subtropical)** (B) has **hot summers and moderate rainfall** (Example: **Southeastern USA, China**).

Dfc (Subarctic) (C) features **long, harsh winters** (Example: **Siberia, Canada**

78. **Consider the following statements regarding India's recent initiatives for ensuring availability of critical minerals:**

1. KABIL (Khanij Bidesh India Ltd.) has signed agreements with countries like **Argentina and Australia** for securing lithium and cobalt assets.

2. India is a member of the Minerals Security Partnership (MSP), a multilateral initiative to strengthen supply chains of critical minerals.

3. The **Indian Critical Minerals Strategy 2023** includes promotion of domestic exploration, international acquisition, and recycling technologies.

4. The Geological Survey of India (GSI) is the sole agency responsible for overseas mineral exploration under the strategy.

Which of the statements given above are correct? **(a)** 1, 2, and 3 only **(b)** 2, 3, and 4 only **(c)** 1, 3, and 4 only **(d)** 1, 2, 3, and 4

Answer: (a) 1, 2, and 3 only

Explanation:

- **Statement 1 is correct**: **KABIL** has actively signed MoUs with **Argentina** and **Australia** for **lithium and cobalt sourcing**.
- **Statement 2 is correct**: India officially joined the **Minerals Security Partnership (MSP)** in 2023, collaborating with countries like the US, Australia, Japan, etc.
- **Statement 3 is correct**: The **Indian Critical Minerals Strategy 2023** focuses on **exploration, acquisition, and recycling technologies** to ensure long-term security.
- **Statement 4 is incorrect**: While **GSI** is involved in exploration, **KABIL is the dedicated agency** for **overseas mineral acquisition**, not GSI alone.

79. **Match the following geomorphic cycles with their concepts and associated geographers:**

Geomorphic Cycle	**Concept**	**Geographer**
A. Davisian Cycle	1. Threestage model of landform evolution (youth, maturity, old age)	a. William Morris Davis
B. Penck's Theory	2. Parallel slope retreat and progressive decline	b. Walther Penck
C. King's Model	3. Pediplanation process and scarp retreat	c. Lester King

Options:

(a) A-2-b, B-1-c, C-3-a (b) A-1-a, B-2-b, C-3-c

(c) A-3-c, B-1-a, C-2-b

(d) A-1-b, B-3-a, C-2-c

Answer: (b) A-1-a, B-2-b, C-3-c

Explanation:

- **Davisian Cycle** (A) describes **youthmaturity-old age in landscape evolution** (Geographer: **William Morris Davis**).
- **Penck's Theory** (B) introduces **parallel slope retreat and progressive decline** (Geographer: **Walther Penck**).
- **King's Model** (C) explains **pediplanation and scarp retreat** (Geographer: **Lester King**).

80. Which of the following is correct about structure of Atmosphere
1. Meteorites burn due to presence of chemical processes in Mesosphere
2. The layer free from clouds and ideal for flying aeroplanes is Ionosphere
3. Presence of Ozone can be measured in Stratosphere
4. All the weather phenomena like rainfall, fog and hailstorm occur in Stratosphere
Select the answer from the codes given below
a) 1 and 2 only
b) 1 and 3 only
c) 3 and 4 only
d) 2 and 4 only

✅ **Answer Key**
👉 **(b) 1 and 3 only**

🧠 **Brief Explanation**

- **1. Meteorites burn in Mesosphere →** ✅ Correct
- **2. Ideal flying layer = Ionosphere →** ❌ Incorrect
  👉 It is **Stratosphere** (stable, cloud-free)
- **3. Ozone in Stratosphere →** ✅ Correct
- **4. Weather in Stratosphere →** ❌ Incorrect
  👉 Weather occurs in **Troposphere**

81. On the planet earth, most of the freshwater exists as ice caps and glaciers. Out of the remaining freshwater, the largest proportion
a) is found in atmosphere as moisture and clouds
b) is found in freshwater lakes and rivers
c) exists as groundwater
d) exists as soil moisture

✅ **Answer Key**
👉 **(c) exists as groundwater**

🧠 **Brief Explanation**

- Majority freshwater → **Ice caps & glaciers** (~68%)
- Remaining freshwater:
  - **Groundwater** → Largest share (~30%) ✅
  - Lakes, rivers, atmosphere → very small fraction ❌

82. **Match the following climatic zones of India with their characteristics and examples:**

Climatic Zone	**Characteristic s**	**Example**
A. Tropical Monsoon	1. High summer rainfall, dry winter	a. Kerala, West Bengal
B. Arid	2. Low rainfall, extreme temperature variations	b. Rajasthan, Kutch
C. Temperat e Mountain	3. Cold winters, moderate summers	c. Himachal Pradesh, Uttarakhan d

Options:
(a) A-3-c, B-1-a, C-2-b (b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c
Answer: (b) A-1-a, B-2-b, C-3-c
Explanation:

- **Tropical Monsoon** (A) has **high rainfall in summer and dry winters** (Example: **Kerala, West Bengal**).
- **Arid Climate** (B) experiences **low rainfall and extreme temperature variations** (Example: **Rajasthan, Kutch**).
- **Temperate Mountain Climate** (C) has **cold winters and moderate summers** (Example: **Himachal Pradesh, Uttarakhand**).

83. **Match the following causes of soil degradation with their effects and examples:**

Cause of Soil Degradation	**Effect**	**Example**
A. Soil Erosion	1. Removal of topsoil by wind and water	a. Chambal Ravines
B. Salinity & Alkalinity	2. Excess salt accumulation in soil	b. Punjab and Haryana due to overirrigation
C. Desertification	3. Loss of soil fertility due to arid conditions	c. Thar Desert expansion

Options:

(a) A-1-a, B-2-b, C-3-c

(b) A-3-c, B-1-a, C-2-b

(c) A-2-b, B-3-a, C-1-c

(d) A-1-b, B-3-c, C-2-a **Answer: (a) A-1-a, B-2-b, C-3-c Explanation:**

- **Soil Erosion** (A) leads to **topsoil loss by wind/water**, prominent in **Chambal Ravines**.
- **Salinity & Alkalinity** (B) result from **excess salt deposits**, common in **Punjab and Haryana** due to overirrigation.
- **Desertification** (C) causes **soil infertility in arid areas**, seen in **Thar Desert expansion**.

84. **Match the following soil conservation techniques with their descriptions and benefits:**

Conservation Method	**Description**	**Benefit**
A. Contour Bunding	1. Constructing ridges along slopes to prevent runoff	a. Reduces soil erosion in hilly areas
B. Strip Cropping	2. Alternating strips of crops to reduce wind erosion	b. Prevents topsoil loss in arid regions
C. Mulching	3. Covering soil with organic material to retain moisture	c. Improves water retention and soil fertility

Options:

(a) A-2-b, B-3-c, C-1-a

(b) A-3-c, B-1-a, C-2-b

(c) A-1-a, B-2-b, C-3-c

(d) A-1-b, B-3-a, C-2-c

Answer: (c) A-1-a, B-2-b, C-3-c

Explanation:

- **Contour Bunding** (A) involves **constructing ridges on slopes** to **reduce soil erosion in hilly areas**.
- **Strip Cropping** (B) uses **alternating crop strips** to **prevent topsoil loss in arid regions**.
- **Mulching** (C) involves **covering soil with organic material** to **retain moisture and improve fertility**.

85. Consider the following statements

1. Krem puri is the longest sandstone cave discovered recently
2. it is located in pithoragarh district of Himachal Pradesh
3. The cave is 24,583 metres (24.5 km) in length and is known for its complex cave systems hidden under its undulating hills.
4. This sandstone cave is also India's second longest cave in general category after limestone Krem Liat Prah-Umim-Labit system measuring little over 31 km in Jaintia Hills, Meghalaya...

Identify the incorrect statements

a) 1 and 2 only
b) 2 and 4 only
c) **2 only**
d) 4 only

Answer: (c) **2 only**

85. **Match the following fluvial landforms with their features and examples:**

Fluvial Landform	**Features**	**Example**
A. Oxbow Lake	1. Curved lake formed when a meander is cut off	a. Mississippi River
B. Delta	2. Depositional feature at the river mouth	b. Ganga-Brahmaputra Delta
C. Meander	3. Loop-like bend in a river's course	c. Yamuna River

Options:

(a) A-3-b, B-1-c, C-2-a (b) A-1-a, B-2-b, C-3-c
(c) A-2-c, B-3-a, C-1-b
(d) A-1-b, B-3-c, C-2-a **Answer: (b) A-1-a, B-2-b, C-3-c Explanation:**

- **Oxbow Lakes** (A) form when **meanders are cut off** (Example: **Mississippi River**).
- **Deltas** (B) are **formed at river mouths** due to sediment deposition (Example: **Ganga-Brahmaputra Delta**).

Meanders (C) are **loop-like bends in rivers** (Example: **Yamuna River**).

86. **Match the following soil properties with their descriptions and significance:**

Soil Property	**Description**	**Significance**
A. Soil Texture	1. Size distribution of mineral particles	a. Affects water retention and aeration
B. Porosity	2. Volume of air and waterholding spaces	b. Influences drainage and plant growth
C. Soil pH	3. Measure of acidity or alkalinity	c. Determines nutrient availability for crops

Options:

(a) A-2-a, B-3-b, C-1-c (b) A-3-c, B-1-a, C-2-b
(c) A-1-a, B-2-b, C-3-c
(d) A-2-b, B-3-a, C-1-c

Answer: (c) A-1-a, B-2-b, C-3-c

Explanation:

Soil Texture (A) refers to **particle size distribution**, affecting **water retention and aeration**.

Porosity (B) describes **air and waterholding capacity**, influencing **drainage and plant growth**.

- **Soil pH** (C) determines **acidity or alkalinity**, crucial for **nutrient availability in plants**.

87. **Match the following types of plate boundaries with their characteristics:**

Plate Boundary	Characteristics	Example
A. Divergent	1. Plates slide past each other	a. MidAtlantic Ridge
B. Convergent	2. Plates move towards each other, subduction occurs	b. Himalayas
C. Transform	3. Plates move apart, new crust forms	c. San Andreas Fault

Options:

(a) A-3-a, B-2-b, C-1-c (b) A-1-b, B-3-c, C-2-a

(c) A-2-c, B-1-a, C-3-b

(d) A-3-c, B-2-a, C-1-b

Answer: (a) A-3-a, B-2-b, C-1-c

Explanation:

- **Divergent boundaries** (A) occur where plates move **apart**, forming **new crust** (Mid-Atlantic Ridge).
- **Convergent boundaries** (B) occur where plates **collide**, leading to **subduction or mountain formation** (Himalayas).
- **Transform boundaries** (C) involve **sliding past motion**, leading to **fault zones** (San Andreas Fault).

88. Which of the following statements are correct ?

1. Among the north eastern states Arunachal Pradesh has more area in Montane forest than evergreen forest
2. Among all the forest types, Deciduous forest is the most wide spread in India
3. The reason for diversified layered vegetation in Montane forest is due to uniform temperature and altitude of the region

Which of these are correct statements?

a) 1, 2 and 3
b) 1 and 2
c) 1 and 3
d) 2 and 3

✅ **Answer Key**

👉 **(b) 1 and 2**

🧠 **Brief Explanation**

- **1. Arunachal → more Montane than evergreen → ✅ Correct**
  👉 Large Himalayan altitude → extensive montane forests
- **2. Deciduous forest most widespread in India → ✅ Correct**
- **3. Reason = uniform temperature & altitude → ❌ Incorrect**
  👉 Montane vegetation varies with altitude changes, not uniformity

89. Match List I and List II and select the correct answer using the below codes

Climatic Condition	Reason
A. Sutlej and Punjab region receive some rainfall in winter	1. Altitude
B. Rainfall decreases from West Bengal to Punjab	2. Western depression
C. Snow cover in Himalayas	3. Latitude
D. Chennai is warmer than Punjab	4. Distance from sea

Code:

	A	B	C	D
a)	2	1	4	3
b)	2	4	1	3
c)	3	4	1	2
d)	3	1	4	2

✅ **Answer Key**

👉 **(b) 2 4 1 3**

🧠 **Matching Explanation**

- **A. Winter rainfall in Punjab → 2. Western disturbances ✅**
- **B. Rainfall decreases WB → Punjab → 4. Distance from sea ✅**
- **C. Snow cover in Himalayas → 1. Altitude ✅**
- **D. Chennai warmer than Punjab → 3. Latitude ✅**

90. Singhbhum in Odisha and Khetri in Rajasthan are famous for

a) Gold
b) Copper
c) Aluminium
d) Tungsten

✅ **Answer Key**

👉 **(b) Copper**

🧠 **Brief Explanation**

- **Singhbhum (Jharkhand/Odisha region) → Major copper belt**
- **Khetri (Rajasthan) → Famous copper mining area**

91. Which of the following matched correctly

1.Block Mountains : Himalaya
2.Fold Mountains : Vindhya
3.Rift valley : Narmada, Damodar
4.Ramp valley : Brahmaputra

Select the answer from the below codes

a) 1 and 3 only
b) 2 and 4 only
c) 3 and 4 only
d) 2, 3 and 4 only

✅ **Answer Key**

👉 **(c) 3 and 4 only**

🧠 **Brief Explanation**

- **1. Block Mountains : Himalaya →** ❌ Incorrect
  👉 Himalaya = **Fold mountains**
- **2. Fold Mountains : Vindhya →** ❌ Incorrect
  👉 Vindhya = **Block mountains**
- **3. Rift valley : Narmada, Damodar →** ✅ Correct
- **4. Ramp valley : Brahmaputra →** ✅ Correct

92. **Match the following soil conservation techniques with their methods and benefits:**

Soil Conservation Method	**Method**	**Benefit**
A. Mulching	1. Covering soil with organic material	a. Prevents moisture loss
B. Contour Plowing	2. Plowing along	b. Reduces water runoff
	natural slopes	
C. Agroforestry	3. Integrating trees with crops	c. Improves biodiversity and soil fertility

Options:

(a) A-3-c, B-1-a, C-2-b (b) A-1-a, B-2-b, C-3-c
(c) A-2-b, B-3-c, C-1-a
(d) A-1-b, B-3-a, C-2-c

Answer: (b) A-1-a, B-2-b, C-3-c

Explanation:

Mulching (A) involves **covering soil with organic material** to **prevent moisture loss**.
Contour Plowing (B) is **plowing along slopes**, which **reduces water runoff and erosion**.
Agroforestry (C) integrates **trees with crops**, promoting **biodiversity and soil fertility**.

93. Consider the following statements

1. Duststorms are almost always preceded and caused by spell of intense heat
2. Thunderstorms occur when atmosphere has moisture and duststorms take place when moisture is not present
3. Such events take place due to local instability arising out of deviation from normal temperature difference between upper and lower atmosphere
4. In recent rainstorms and duststorms cases in Uttar Pradesh and Rajasthan, moist easterly winds from Bay of Bengal reached up to Himachal Pradesh colluded with dry winds from north-westerly direction

Identify the correct statements

a) 1, 2 and 4 only
b) 1, 3 and 4 only
c) 2, 3 and 4 only
d) **1, 2, 3 and 4**

✅ **Answer Key**
👉 **(d) 1, 2, 3 and 4**

🧠 **Brief Explanation**

- **1. Duststorms & intense heat → ✅ Correct**
  👉 **Strong heating creates instability**
- **2. Thunderstorm (moisture) vs duststorm (dry) → ✅ Correct**
- **3. Local instability (temperature variation) → ✅ Correct**
- **4. Wind collision (moist easterlies + dry NW winds) → ✅ Correct**

94. Match the following:

Regions	Soil Types
A. Malwa Plateau	1. Alluvial
B. Dharwar Plateau	2. Lateritic
C. Punjab Plains	3. Red
D. Western Ghats	4. Regur

Select the answer from the below codes

	A	B	C	D
a)	**4**	**3**	**1**	**2**
b)	4	2	1	3
c)	3	1	4	2
d)	2	3	4	1

Answer: **a) 4 3 1 2**

95. Which of the following factors are responsible for *Ocean Currents*

1. Wind
2. Solar Energy
3. Gravity
4. Coriolis Force

Select the answer from the codes given below
a) 1 and 2 only
b) 2 and 3 only
c) 2, 3 and 4 only
d) **1, 2, 3 and 4**

✅ **Answer Key**
👉 **(d) 1, 2, 3 and 4**

🧠 **Brief Explanation**

- **1. Wind** → ✅ Drives surface currents
- **2. Solar energy** → ✅ Causes temperature differences → density currents
- **3. Gravity** → ✅ Influences pressure gradients & movement
- **4. Coriolis force** → ✅ Deflects currents

96. Match the following types of climate with respective regions:

A. Monsoon type with dry summer	1. Interior Peninsula
B. Monsoon type with dry winter	2. Indian Plain
C. Monsoon type with short dry season	3. S. E. Coast
D. Semi-Arid Steppe	4. Western Coast

	A	B	C	D
a)	3	2	4	1
b)	2	4	1	3
c)	4	1	3	2
d)	1	3	2	4

✅ **Answer Key**
👉 **(a) 3 2 4 1**

🧠 **Matching Explanation**

- **A. Monsoon with dry summer → 3. SE Coast (Tamil Nadu)** ✅
- **B. Monsoon with dry winter → 2. Indian Plain** ✅
- **C. Monsoon with short dry season → 4. Western Coast** ✅
- **D. Semi-arid steppe → 1. Interior Peninsula** ✅

97. Indian monsoon is marked by seasonal shift caused by:

a) **differential heating of land and sea**
b) cold winds of Central Asia
c) great uniformity of temperature
d) None of these

✅ **Answer Key**
👉 **(a) Differential heating of land and sea**

🧠 **Brief Explanation**

- Land heats/cools faster than sea → creates **pressure differences**
- Leads to **seasonal reversal of winds (monsoon)**
- **(b)** Cold winds → not primary cause ❌
- **(c)** Uniform temperature → opposite of requirement ❌

98. Match the following:

Climatic Conditions	Reasons
A. Madras is warmer than Calcutta	1. North-East Monsoon
B. Snowfall in Himalayas	2. Altitude
C. Rainfall decreases from West Bengal to Punjab	3. Western depressions
D. Sutlej-Ganga Plain gets some rain in winter	4. Distance from sea
	5. Latitude

Select the answer from the below codes

	A	B	C	D
a)	1	2	4	5
b)	4	5	1	3
c)	5	2	4	3
d)	5	1	3	4

✅ **Answer Key**

👉 **(c) 5 2 4 3**

🧠 **Matching Explanation**

- **A. Madras warmer than Calcutta → 5. Latitude** ✅
- **B. Snowfall in Himalayas → 2. Altitude** ✅
- **C. Rainfall decreases WB → Punjab → 4. Distance from sea** ✅
- **D. Winter rain in Sutlej-Ganga plain → 3. Western depressions** ✅

99. Consider the following statements:

1. The transformation of water vapour into water is called evaporation.
2. Condensation is a process by which water is transformed from liquid to gaseous state.

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

✅ **Answer Key**

👉 **(d) Neither 1 nor 2**

🧠 **Brief Explanation**

- **1. Vapour → water = evaporation** → ❌ Incorrect
  👉 That is **condensation**
- **2. Liquid → gas = condensation** → ❌ Incorrect
  👉 That is **evaporation**

100. **Consider the following statements regarding temperature inversion:**

1. Temperature inversion occurs when temperature increases with height instead of decreasing.
2. It commonly occurs during clear nights with calm winds.
3. It promotes vertical mixing of air and disperses pollutants.

Which of the above statements are correct?

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

✅ **Answer Key**

👉 **(a) 1 and 2 only**

🧠 **Brief Explanation**

- **1. Temperature increases with height** → ✅ Correct
- **2. Clear, calm nights** → ✅ Ideal condition for inversion
- **3. Promotes mixing** → ❌ Incorrect
  👉 It **traps pollutants**, prevents mixing