UGC NET Geography Memory Based Question paper- 3 JAN 2026 SHIFT -2

Q1. Match the following List-I (Arab Scholar) and List-II (Major Work)

List I (Arab Scholar)	List II (Major Work)
A. Al-Biruni	I. *Muqaddimah*
B. Al-Idrisi	II. *Kitab-ul-Hind*
C. Ibn Khaldun	III. *Rihla* (Travels)
D. Ibn Battuta	IV. *Kitab-i-Rujar* (The Book of Roger)

(A). A-II, B-IV, C-I, D-III
(B). A-IV, B-III, C-I, D-II
(C). A-III, B-I, C-II, D-IV
(D). A-II, B-IV, C-III, D-I
Answer: a
Solution:
Introduction
Arab scholars of the medieval period were crucial in preserving and advancing geographical knowledge, producing detailed regional studies and systematic works on astronomical and social geography.
Information Booster
• **Al-Biruni:** Wrote ***Kitab-ul-Hind*** (Book of India), a detailed and impartial description of the geography, culture, and science of the Indian subcontinent.
• **Al-Idrisi:** Compiled ***Kitab-i-Rujar***, an expansive descriptive geography and world map created for King Roger II of Sicily.
• **Ibn Khaldun:** Authored the ***Muqaddimah*** (Prolegomena), a foundational text in sociology, history, and early geographical thought, containing critical insights into the influence of environment on civilization.
• **Ibn Battuta:** Wrote the ***Rihla*** (Travels), a travelogue based on his extensive journeys across vast parts of Africa, Asia, and Europe.
Additional Knowledge
• Al-Biruni is also renowned for his highly accurate **calculation of the Earth's circumference**, demonstrating advanced mathematical and astronomical skills.

Q2. In Thornthwaite's 1948 Climatic Classification, Potential Evapotranspiration (PET) is calculated from -
(A). Mean annual temperature
(B). Mean maximum monthly temperature
(C). Mean monthly temperature
(D). Mean monthly precipitation
(E). Question not attempted
Answer: c

Q3. Who coined the term *Lebensraum* (Living Space) as central to the Organic State Theory?
(A). Halford Mackinder
(B). Nicholas J. Spykman
(C). Friedrich Ratzel
(D). Karl Haushofer

Answer: c
Solution:
Information Booster
The German geographer and ethnographer **Friedrich Ratzel** (theorist of the Organic State Theory) coined the term ***Lebensraum***, which translates to **"living space,"** referring to the physical territory a state needs to gain political power and survive.
Additional Knowledge
• **Karl Haushofer** was a German professor who established the Institute for Geopolitics in Munich and used the *Geopolitik* theory to support expansionist views.
• Ratzel's theory influenced **Adolf Hitler** to justify his conquests during World War II.

Q4. Instruction:
In Mackinder's geopolitical model, what does the "Inner Crescent" represent?
(A). The Heartland itself
(B). Coastal areas surrounding the Heartland
(C). Isolated regions like Australia and North America
(D). Outer regions of Eurasia not connected to the Heartland
(E). Question not Attempted
Answer: b
Solution:
The "Inner Crescent" in Mackinder's geopolitical model refers to the coastal areas surrounding the Heartland. These regions act as intermediaries between the Heartland and the outer regions. Mackinder emphasized that the Inner Crescent held strategic importance for controlling the Heartland and, by extension, the world.
Information Booster
• The Heartland: The central part of Eurasia, crucial for global domination in Mackinder's model.
• Inner Crescent: Coastal areas around the Heartland, including regions like Western Europe, the Middle East, and East Asia.
• Outer Crescent: Regions disconnected from the Heartland, such as the Americas, Africa, and Oceania.
• Mackinder's theory highlighted that whoever controlled the Heartland could dominate global politics.
• Inner Crescent is also known as the Rimland in some interpretations.

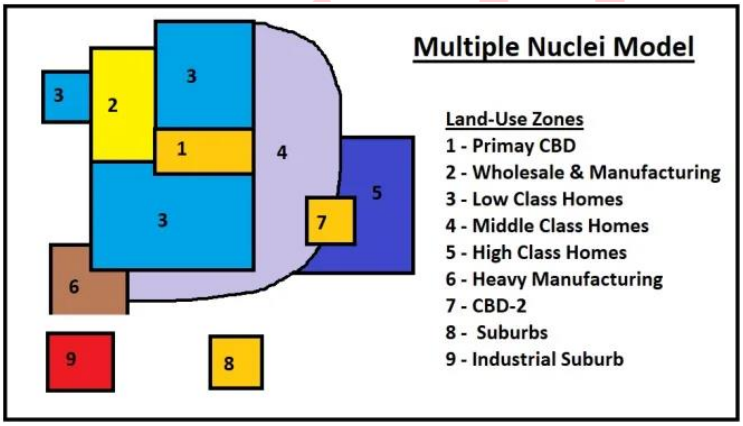
Q5. Which among the following are warm currents:
A. Kuroshio and East Australian current
B. Canary and Benguela current
C. Brazil current and gulf stream
D. Agulhas and Falkland current
(A). A and B
(B). B and C
(C). A and C
(D). A and D
Answer: C
Solution:
The correct answer is: (c), **A and C**

Warm currents – Kuroshio
East Australian current
Gulf stream
Brazil current
Agulhas current
Mozambique current
Cold currents- oyashio current
Okhostk current
Benguela current
Labrador current
West Australian current
Information booster
Ocean currents can also be classified based on temperature:
Cold currents: It brings cold water into warm water areas. These currents are usually found on the west coast of the continents in the low and middle latitudes (true in both hemispheres) and on the east coast in the higher latitudes in the Northern Hemisphere.
Warm currents: It brings warm water into cold water areas and is usually observed on the east coast of continents in the low and middle latitudes (true in both hemispheres).
In the northern hemisphere they are found on the west coasts of continents in high latitudes.
Features
Major ocean currents are greatly influenced by the stresses exerted by the prevailing winds and coriolis force. The oceanic circulation pattern roughly corresponds to the earth's atmospheric circulation pattern.
The air circulation over the oceans in the middle latitudes is mainly anticyclonic (more pronounced in the southern hemisphere than in the northern hemisphere). The oceanic circulation pattern also corresponds with the same.
At higher latitudes, where the wind flow is mostly cyclonic, the oceanic circulation follows this pattern.

Q6. Instruction:
The formation of the Himalayas occurred during which geological era?
(A). Mesozoic Era
(B). Paleozoic Era
(C). Cenozoic Era
(D). Archaean Era
Answer: c
Solution:
The Himalayas were formed during the Cenozoic Era, specifically starting around 50 million years ago, when the Indian Plate collided with the Eurasian Plate. This collision began after the Indian subcontinent broke away from the Gondwana supercontinent and started moving northward. The continuous collision and tectonic pressure between the two plates caused the Earth's crust to fold and rise, giving birth to the towering Himalayan mountain range, which is still growing due to ongoing tectonic activity.
Information booster
The Mesozoic Era is known as the age of dinosaurs but predates the Himalayan formation.

The Paleozoic Era saw the formation of older mountain systems, like the Appalachians, but not the Himalayas.
The Archaean Era is the oldest geological era and predates the existence of any modern mountain ranges.

Q7. From the given diagram of Multiple Nuclei model of urban structure devised by C.D. Harris and E.L. Ullman, identify the urban land use pattern of nuclei centres of 3 and 6.
(A). CBD and Residential suburb
(B). Low-class residential and heavy manufacturing
(C). Wholesale and light manufacturing and residential suburb
(D). High-class residential and outlying business district
Answer: b
Solution:
The Multiple Nuclei Model proposed by Harris and Ullman (1945) explains that cities develop around multiple centers of activity (nuclei) rather than a single CBD (Central Business District).
 Nucleus 3 represents Low-Class Residential Areas, which are often found near heavy manufacturing zones because they provide housing for industrial workers.
 Nucleus 6 represents Heavy Manufacturing, which is typically located near transport routes (railroads, highways, and ports) to facilitate easy movement of raw materials and finished goods.
Information Booster
 Multiple Nuclei Model (1945):
o Cities do not have a single core but multiple centers of activity.
o Heavy manufacturing is located away from high-income residential areas due to pollution, noise, and land costs.
o Low-class residential areas are located close to industries to minimize commuting costs for workers.
o Examples: Detroit (USA), Kolkata (India), and Manchester (UK).



Q8. Match List I with List II:

List I (Type of Volcanic Eruption)		List II (Characteristics)	
(A)	Pelean type	(I)	More fluid basaltic lava effusive and quite in nature
(B)	Hawaiian type	(II)	Less fluid basaltic lava andhaving explosive nature
(C)	Strombolian type	(III)	Viscous lava, which does not remain liquid after contact with air
(D)	Vulcanian type	(IV)	Extremely viscous lava with violent character

Choose the correct answer from the options given below:
(A). A-IV, B-I, C-II, D-III
(B). A-IV, B-II, C-I, D-III
(C). A-IV, B-II, C-III, D-I
(D). A-II, B-I, C-IV, D-III
Answer: a
Solution:
 A. Pelean type: The Pelean type eruptions are characterized by **extremely viscous lava** with a **violent eruption** (IV). This type of eruption typically produces pyroclastic flows.
 B. Hawaiian type: Hawaiian eruptions are known for **more fluid basaltic lava** which is **effusive and quiet in nature** (I). This type of eruption generally involves lava fountains and lava flows.
 C. Strombolian type: Strombolian eruptions have **less fluid basaltic lava** and are known for their **explosive nature** (II), with short bursts of gas and lava.
 D. Vulcanian type: Vulcanian eruptions are characterized by **viscous lava** that does not remain liquid after contact with air, making the eruptions more explosive and violent (III).
Information Booster:
1. Pelean eruptions are known for pyroclastic flows and are very explosive due to the high viscosity of the lava.
2. Hawaiian eruptions, which are typically the least violent, involve more fluid lava that travels easily, creating lava flows.
3. Strombolian eruptions are moderate and explosive, often producing lava bombs and short-lived eruptions.
4. Vulcanian eruptions have very viscous lava that leads to explosive eruptions, often involving pyroclastic material.
5. Different types of volcanic eruptions are influenced by the lava's viscosity, which determines the eruption's intensity and behavior.

Q9. Arrange the following levels of organization in ecology from smallest to largest scale:
1. Community
2. Biosphere
3. Organism
4. Population
5. Ecosystem
Choose the correct option:
(A). 3, 4, 1, 5, 2
(B). 3, 4, 5, 1, 2
(C). 4, 3, 1, 5, 2
(D). 1, 4, 3, 5, 2
Answer: a
Solution:
Introduction
The levels of organization in ecology illustrate how life is structured, starting from the individual organism and building up to the largest ecological unit, the biosphere.

Information Booster

The correct order from smallest to largest is:

1. **Organism** (Individual living being)
2. **Population** (Group of organisms of the same species in a defined area)
3. **Community** (Populations of plants and animals that actively interact)
4. **Ecosystem** (Structural and functional unit of biosphere, comprising community and physical environment)
5. **Biome** (A large, naturally occurring community of flora and fauna occupying a major habitat)
6. **Biosphere** (The biological component of Earth, including the lithosphere, hydrosphere, and atmosphere)

Based on the options given:

Organism (3) → Population (4) → Community (1) → Ecosystem (5) → Biosphere (2).

Q10. Consider the following statements regarding Gunnar Myrdal's concepts as listed above:

Statement I: The Spread Effect is conceptually similar to A.O. Hirschman's Trickle-Down Effect, representing positive impulses from the economic core to the periphery.

Statement II: The Cumulative Causation Theory explains that regional disparities are naturally overcome by market forces, leading automatically to spatial equilibrium without the need for Institutional Reforms.

(A). Both Statement I and Statement II are correct.
(B). Statement I is correct but Statement II is incorrect.
(C). Statement I is incorrect but Statement II is correct.
(D). Both Statement I and Statement II are incorrect.

Answer: b

Solution:

Introduction

Gunnar Myrdal's work in Regional Development, particularly his **Cumulative Causation Theory**, challenged the idea that free markets would naturally lead to spatial equity. His analysis identified the core mechanisms responsible for perpetuating regional economic disparities.

Information Booster • Myrdal's **Spread Effect** and Hirschman's **Trickle-Down Effect** are conceptually equivalent terms, both describing the positive economic impulses (e.g., increased demand, technology diffusion) flowing from a developed Core region to its surrounding Periphery. These counters the negative "Backwash" or "Polarization" effects.

• The **Cumulative Causation Theory** argues the opposite: initial advantages in a core area accumulate and become self-reinforcing, meaning market forces naturally lead to greater **disparity**, not equilibrium. Myrdal's theory suggests that to counteract the strong negative "Backwash Effects," deliberate interventions and **Institutional Reforms** are necessary, hence his third major concept.

Additional Knowledge

• Myrdal's full theory posits a dynamic imbalance between the two main forces: the negative **Backwash Effects** (draining labor, capital, and resources from the periphery) and the positive **Spread Effects**.

• He argued that in developing countries, the backwash effects typically dominate, necessitating non-market solutions like **Institutional Reforms Theory for The Development of Less Develop Country** to break the cycle of cumulative causation and promote regional equity.

Q11. Instruction:
Identify correct statements about Heartland:
A. The inner crescent includes Japan.
B. Australia and South America were included in the outer crescent.
C. After World War - II, Mackinder visualised the existence of two important centres of power in the World.
D. The outcome of the Second World War turned from a power centre to a power vacuum.
Choose the correct answer from the options given below:
(A). A and B only
(B). A and C only
(C). C and D only
(D). B and C only
Answer: d
Solution:
Australia and South America were included in theouter crescent. This statement is correct. Outside the inner or marginal crescent lay Mackinder's third tier, which he named as the outer or insular crescent. Outer crescent was represented by the North and South America and Australia, Africa south of Sahara, island region of Great Britian and Japan.
After World War - II, Mackinder visualised the existence of two important centres of power in the World. This statement is correct. Following World War II, Mackinder's geopolitical ideas evolved to recognize the United States and the Soviet Union as the two major global powers, marking the beginning of the Cold War era.
Information booster
The inner crescent includes Japan. This statement is false. The inner crescent, according to Mackinder's theory considered the whole of Eurasia outside the Heartland. It included Europe west of the Ural Mountains, south- west Asia outside the Iranian upland, south-east Asia and most of China. Japan is not part of the inner crescent but is part of the outer crescent.
The outcome of the Second World War turned from a power centre to a power vacuum. This statement is false. The outcome of World War II led to the emergence of the United States and the Soviet Union as superpowers, creating a bipolar world order rather than a power vacuum.

Q12. Who is credited with proposing the 'Multiple Nuclei Theory' of urban structure?
(A). Homer Hoyt
(B). E.W. Burgess
(C). Chauncy Harris and Edward Ullman
(D). Walter Christaller
Answer: c
Solution:
Introduction
The Multiple Nuclei Theory is one of the classical models of urban internal structure, following the concentric zone and sector models.
Information Booster
Proposed by **Chauncy Harris and Edward Ullman** in 1945, the theory suggests that a city does not grow around a single center (like the Central Business District or CBD) but around several distinct

functional nodes or nuclei. These separate centers develop due to factors like specialized needs (e.g., port facilities, university campuses, or industrial parks) and the tendency for similar activities to cluster (agglomeration) or dissimilar ones to repel each other.

Additional Knowledge

• **Homer Hoyt** proposed the **Sector Model**.

• **E.W. Burgess** proposed the **Concentric Zone Model**.

• **Walter Christaller** is the main proponent of **Central Place Theory**, which focuses on the distribution and hierarchy of settlements, not the internal structure of a single city.

Q13. Consider the following statements regarding the nature of the Rimland Theory's:

Statement I: Nicholas J. Spykman published the Rimland Theory in the book "The Geography of Peace" in 1943.

Statement II: Spykman's geopolitical ideas were developed in response to Mackinder's theory to advocate for sea power over land power.

(A). Both Statement I and Statement II are correct.

(B). Statement I is correct but Statement II is incorrect.

(C). Statement I is incorrect but Statement II is correct.

(D). Both Statement I and Statement II are incorrect.

Answer: a

Solution:

Information Booster

• Spykman published the Rimland Theory in his book **"The Geography of Peace"** in **1943**.

• Spykman's theory was presented as an **alternative to Mackinder's Heartland theory** and shifted the focus of global power to the coastal fringe (Rimland), criticizing Mackinder for overrating the strategic supremacy of *land power*.

Additional Knowledge

• The theory was instrumental in shaping the US foreign policy doctrine of **Containment** in the post-WWII era.

Q14. Instruction:

Which Mountain range is formed due to the collision of the South American and Nazca Plates?

(A). Rocky Mountains

(B). Andes Mountains

(C). Atlas Mountains

(D). Appalachian Mountains

Answer: b

Solution:

The Andes Mountains were formed due to the collision of the South American and Nazca Plates along a convergent boundary. The other options (Rocky Mountains, Appalachian Mountains, and Atlas Mountains) have different geological origins and are not associated with the collision of these specific plates.

Q15. Arrange the following Indian environmental legislations in the correct sequence of their enactment (Earliest to Latest):

1. The Wildlife Protection Act
2. The Environmental (Protection) Act
3. The Water (Prevention and Control of Pollution) Act
4. The Air (Prevention and Control of Pollution) Act
(A). 1, 3, 4, 2
(B). 3, 1, 4, 2
(C). 1, 4, 3, 2
(D). 3, 4, 1, 2
Answer: a
Solution:
Introduction
The correct chronological order of major Indian environmental legislations (earliest to latest) is **1, 3, 4, 2**, based on their official years of enactment.
Information Booster
 The Wildlife Protection Act (1972) – This was the earliest major environmental law, enacted to protect wildlife, habitats, and biodiversity.
 The Water (Prevention and Control of Pollution) Act (1974) – Introduced to regulate and prevent water pollution, and to establish Pollution Control Boards.
 The Air (Prevention and Control of Pollution) Act (1981) – Enacted to control and reduce rising air pollution levels in industrial and urban areas.
 The Environmental (Protection) Act (1986) – This was passed after the Bhopal disaster, giving the central government broad powers for environmental regulation.
Additional Knowledge
 3, 1, 4, 2 –
o This incorrectly places the Water Act before the Wildlife Act, even though the Wildlife Act was enacted earlier in 1972.
 1, 4, 3, 2 –
o This incorrectly places the Air Act (1981) before the Water Act (1974), which is historically inaccurate.
 3, 4, 1, 2 –
o This order is incorrect because it moves the Wildlife Act (1972), the earliest among all, to a later position.

Q16. Consider the following statements regarding the arrangement of the Von Thunen Rings:
Statement I: The first ring (closest to the market) is reserved for perishable and high-value products like milk and market garden crops, due to the high costs of transport and quick spoilage.
Statement II: Timber and firewood are located far from the city (outer rings) because wood is a self-transporting, low-value commodity that is not sensitive to transport cost or distance.
(A). Both Statement I and Statement II are correct.
(B). Both Statement I and Statement II are incorrect.
(C). Statement I is correct but Statement II is incorrect.
(D). Statement I is incorrect but Statement II is correct.
Answer: c

Solution:

Introduction

The spatial ordering of Von Thünen's rings is determined by the cost a farmer must pay to ship a commodity one unit of distance, which is heavily influenced by the product's perishability and bulkiness.

Information Booster

• The first ring is dedicated to **highly perishable goods** (dairy, produce). Proximity minimizes the cost of spoilage and transport time.

• **Timber and firewood** were essential, bulky, and **heavy fuels** in the pre-industrial era, making transport difficult and expensive. They were, therefore, located in the **second ring** (close to the market) to reduce high transport costs. **Livestock** were the self-transporting commodity, located in the farthest ring.

Additional Knowledge

• The third ring is typically reserved for less perishable, lighter **field crops** (grains).

Q17. Match List I (Volcanic Eruption Style) with List II (Dominant Lava Type) and select the correct answer using the codes given below:

List I (Volcanic Eruption Style)	List II (Dominant Lava Type)
(A) Hawaiian	(I) Rhyolitic Lava
(B) Plinian	(II) Andesitic Lava
(C) Strombolian	(III) Low Viscosity Basaltic Lava
(D) Pelean	(IV) Moderate Viscosity Andesitic Lava

(A). A-III, B-I, C-IV, D-II

(B). A-III, B-I, C-II, D-IV

(C). A-IV, B-II, C-I, D-III

(D). A-I, B-IV, C-III, D-II

Answer: a

Solution:

Introduction

The question links the intensity and style of volcanic eruptions (effusive vs. explosive) directly to the composition and viscosity of the magma/lava, which are major classification criteria.

Information Booster

• **Hawaiian - Low Viscosity Basaltic Lava:Hawaiian eruptions** are typically **effusive** (non-explosive) due to highly fluid, **low-viscosity basaltic lava** which flows freely.

• **Plinian - Rhyolitic Lava:Plinian eruptions** are the **most violent/explosive**, characterized by powerful upward explosions. They are associated with the highest viscosity, gas-rich magma, primarily **Rhyolitic lava**.

• **Strombolian - Moderate Viscosity Andesitic Lava:Strombolian eruptions** are of **moderate intensity** (intermittent explosions) and are typically associated with lavas of intermediate viscosity, commonly **Andesitic**.

• **Pelean - Andesitic Lava:Pelean eruptions** are characterized by lateral blasts (pyroclastic flows) and are highly explosive and dangerous. They involve the high viscosity of **Andesitic** to Rhyolitic lavas.

Q18. Match the List I with List II

List I	List II
1. Challenger Deep	a) South Pacific
2. Aldrich Deep	b) North Atlantic
3. Romanche Deep	c) North Pacific
4. Nares Deep	d) South Atlantic

Choose the correct answer from the options given below:

(A). 1-a, 2-c, 3-d, 4-b

(B). 1-b, 2-d, 3-a, 4-c

(C). 1-c, 2-a, 3-b, 4-d

(D). 1-d, 2-b, 3-c, 4-a

(E). Question not Attempted

Answer: a

Solution:

The correct pairings are:

1. Challenger Deep: Located in the South Pacific, it is the deepest part of the world's oceans, found in the Mariana Trench.
2. Aldrich Deep: This is found in the North Pacific, specifically in the Japan Trench region.
3. Romanche Deep: Located in the South Atlantic, it is part of the Romanche Trench, near the Equator.
4. Nares Deep: Found in the North Atlantic, specifically near the Greenland-Iceland-Norway junction, it is a deep in the Nares Strait.

Information Booster:

Challenger Deep: The Mariana Trench in the South Pacific Ocean is known for containing Challenger Deep, the deepest known point in Earth's oceans, plunging about 36,000 feet (10,994 meters) below sea level.

Aldrich Deep: Located in the North Pacific Ocean, near the Japan Trench, the Aldrich Deep reaches significant depths, contributing to the ocean's profound depths in this region.

Romanche Deep: Located in the South Atlantic, this deep is situated near the Romanche Trench, which runs across the Equator. It is part of the broader Mid-Atlantic Ridge.

Nares Deep: Found in the North Atlantic, in the Nares Strait, near the Arctic regions, this deep is a significant feature of the Arctic Ocean's oceanography.

Q19. Which of the following is the correct descending sequence of the world's largest merchandise importers in 2021 as per the WTO report?

(a) Japan

(b) Germany

(c) China

(d) USA

Choose the correct answer from the options given below:

(A). C, A, B, D

(B). D, C, A, B

(C). C, D, B, A

(D). D, C, B, A

Answer: d

Solution:

The correct descending order of the largest merchandise importers in 2021 as per the WTO report is:

1. **USA** - The United States ranks as the largest merchandise importer in 2021.
2. **China** - China is the second-largest merchandise importer globally.
3. **Germany** - Germany ranks third, remaining a key player in global trade.
4. **Japan** - Japan is in fourth position in terms of merchandise imports.

Information Booster:

1. **USA**: The US remains the top importer of merchandise globally due to its large economy, high consumer demand, and robust trade infrastructure.
2. **China**: As the second-largest importer, China plays a vital role in global supply chains, importing a wide variety of goods to support its manufacturing and industrial sectors.
3. **Germany**: Germany, as Europe's largest economy, ranks third in global merchandise imports, driven by its highly export-oriented industrial base and significant internal demand.
4. **Japan**: Japan imports a wide range of goods, including energy, industrial machinery, and consumer products, making it the fourth-largest importer globally.

Q20. Match List I (Atlantic Ocean Bottom Feature) with List II (Feature Type/Associated Location) and select the correct answer using the codes given below:

List I (Atlantic Ocean Bottom Feature)	List II (Feature Type/Associated Location)
(A) Grand Bank	(I) Deepest point in the Atlantic Ocean (8,385 meters).
(B) Puerto Rico Trench	(II) Extensive continental shelf (off Newfoundland).
(C) Mid-Atlantic Ridge	(III) Transform fracture zone near the Equator (9,370 meters deep).
(D) Romanche Trench	(IV) Divergent plate boundary (S-shaped central feature).

(A). A-II, B-I, C-IV, D-III
(B). A-I, B-II, C-III, D-IV
(C). A-IV, B-III, C-I, D-II
(D). A-II, B-IV, C-I, D-III

Answer: a

Solution:

Introduction

The question tests the identification and location of major physiographic features that comprise the Atlantic Ocean's bottom relief, distinguishing between depositional (shelf), constructional (ridge), and destructive (trench) features.

Information Booster

• **Grand Bank - Extensive continental shelf (off Newfoundland):** The Grand Bank is one of the most prominent and broad **continental shelves** in the North Atlantic.

• **Puerto Rico Trench - Deepest point in the Atlantic Ocean (8,385 meters):** The Puerto Rico Trench is the deepest point recorded in the Atlantic Ocean.

• **Mid-Atlantic Ridge - Divergent plate boundary (S-shaped central feature):** The Mid-Atlantic Ridge is the longest mountain range on Earth, marking a **divergent plate boundary** and defining the "S" shape of the ocean basin.

• **Romanche Trench - Transform fracture zone near the Equator (9,370 meters deep):** The Romanche is one of the deepest troughs in the Atlantic, functioning as a major **fracture/transform zone** near the equator.

Additional Knowledge

• Trenches like the Puerto Rico Trench and fracture zones like the Romanche are key features that mark the transition zones of oceanic crust near plate boundaries.

Q21. Match the Indian Environmental Law with its primary objective:

List I (Act)	List II (Primary Objective)
A. Water (Prevention and Control of Pollution) Act, 1974	I. Safeguard endangered species and establish protected areas like national parks
B. Air (Prevention and Control of Pollution) Act, 1981	II. Prevent and control water pollution and restore water quality
C. Environment Protection Act, 1986	III. Prevent, control, and abate air pollution and improve air quality
D. Wildlife Protection Act, 1972	IV. Provide the Central Government with wide-ranging powers to protect and improve the environment

(A). A-II, B-III, C-IV, D-I
(B). A-III, B-II, C-I, D-IV
(C). A-II, B-I, C-IV, D-III
(D). A-IV, B-III, C-II, D-I

Answer: a

Solution:

Introduction

This question covers key legislative acts passed by the Government of India to regulate environmental protection.

Information Booster

• **Water (Prevention and Control of Pollution) Act, 1974:** Main purpose is to **prevent and control water pollution** and ensure the purity of water resources.

• **Air (Prevention and Control of Pollution) Act, 1981:** Enacted to **prevent, control, and abate air pollution** and improve air quality in India.

• **Environment Protection Act, 1986:** Passed as an **umbrella law** following the Bhopal Gas Tragedy, giving the Central Government comprehensive powers to **protect and improve the environment**.

• **Wildlife Protection Act, 1972:** Seeks to **safeguard endangered species** of animals, birds, and plants by regulating hunting and establishing **protected areas**.

Additional Knowledge

The Environment Protection Act, 1986, allows any citizen to file complaints about environmental violations, promoting public participation. The Air Act, 1981, empowers State Pollution Control Boards (SPCBs) to regulate industrial emissions.

Q22. Instruction:

The concept of 'Sequent Occupance' was given by:

(A). Brigham
(B). Brookfield
(C). Herbertson
(D). Whittlesey
Answer: d
Solution:
The concept of 'Sequent Occupance was given by Derwent Whittlesey. His concept of 'sequent occupance'- the view of geography as a succession of stages of human occupance which establishes the genetics of each stage in terms of its predecessor- represents anti thesis of environmental determinism, or sharply contradicts the paradigm of determinism.
Information booster
Brigham: Albert Perry Brigham, was another protagonist of the 'Deterministic concept of the division tradition'. His book 'Geographic Influences in history' appeared in 1903, the same year in which Semple's book on the same subject was published.
Brookfield: With a field experience of South Africa, Mauritius, New Guinea and the Pacific Islands, Brookfield took up the concepts of behavioral or perceived environments. Brookfield also surveyed the literature which showed the decision- makers operating on an environment based their decision on the environment as they perceive it, not as it is.
Herbertson: He is believed to have carried forward the tradition of Sir Patrick Geddes. He was an assistant to Geddes- in Dundee, and alter became an assistant to Mackinder at Oxford. He succeeded Mackinder in 1905. He introduced the term 'Natural Regions' in England. He suggested that natural regions should be identified in terms of associations of surface features, climate and vegetation.

Q23. As per the 2011 Census, arrange the following states on the basis of their percentage of urban population in ascending order:
A. Mizoram
B. Goa
C. Kerala
D. Tamil Nadu
Choose the correct answer from the options given below:
(A). C, D, B, A
(B). A, C, D, A
(C). C, D, A, B
(D). D, C, B, A
Answer: c
Solution:
As per Census 2011, the urban population percentage of these states is:
1. Kerala (C) - 47.7%
2. Tamil Nadu (D) - 48.4%
3. Mizoram (A) - 51.5%
4. Goa (B) - 62.2%
Thus, in ascending order of urban population percentage:
Kerala (C) → Tamil Nadu (D) → Mizoram (A) → Goa (B)

Information Booster:

Why Does Goa Have the Highest Urbanization?

 High influence of tourism, infrastructure, and service sector growth.

 Well-developed urban centers like Panaji, Vasco da Gama, and Margao.

Why Is Kerala's Urbanization Lower Than Goa's?

 Kerala has spread-out urban settlements, making it appear less urbanized.

 It follows a rural-urban continuum, meaning many rural areas have urban-like facilities.

Q24. The Hekistotherm concept, as advocated by Köppen and Candolle, is primarily used in climatic classification to identify:

(A). Regions of maximum annual rainfall.

(B). The minimum temperature required for plant growth, particularly in cold climates.

(C). The highest temperature reached in the warmest month.

(D). Regions with a short dry season where monsoonal circulation prevails.

Answer: b

Solution:

Hekistotherm is a bioclimatic concept integral to certain climate classification schemes, linking temperature directly to biological limits.

Information Booster:

• The **Hekistotherm concept** refers to the **minimum temperature required for plant growth** (the minimum warmth necessary for survival).

• Climatologists, including **Köppen and Candolle**, used this concept to delineate regions where temperature conditions are just suitable for plant life, often categorizing the coldest limits of vegetation in high-latitude or high-altitude areas.

Additional Knowledge:

• The 10◦C isotherm of the warmest month is often used to mark the equatorward edge of the Tundra climate.

• Köppen's classification incorporates these bioclimatic levels to link climate types to their potential for supporting different vegetation.

Q25. Which of the following statements about the Inner Crescent in Mackinder's Heartland Theory is/are correct?

(A) The Inner Crescent refers to the regions surrounding the Heartland, includes parts of South-East Asia, and China.

(B) Mackinder described the Inner Crescent as a zone of maritime accessibility, which made it strategically important for controlling the Heartland.

(C) The Inner Crescent includes regions like the United States, Canada, and Australia.

(D) The Inner Crescent is primarily landlocked, making it harder for sea powers to exert control over it.

Choose the correct answer from the options given below:

(A). B and C

(B). B and D

(C). B and A

(D). A, B and C

Answer: c

Solution:

(A) The Inner Crescent refers to the regions surrounding the Heartland, includes parts of South-East Asia, and China: This is correct. The Inner Crescent surrounds the Heartland and includes parts of South-East Asia and China, as stated in Mackinder's theory.

(B) Mackinder described the Inner Crescent as a zone of maritime accessibility, which made it strategically important for controlling the Heartland: This is correct. The Inner Crescent's maritime accessibility is a key feature that made it important in terms of strategic control.

Information Booster:

1. Heartland Theory: Sir Halford Mackinder proposed the Heartland Theory in 1904, stating that Eurasia holds the key to global dominance. The Heartland, located in the center of Eurasia, is the most strategic region in the world.
2. Heartland Definition: The Heartland is defined as the area stretching from the Ural Mountains to the Volga River and from the Arctic Ocean to the Caspian Sea. It is landlocked, making it difficult for sea powers to influence directly.
3. Inner Crescent: Surrounding the Heartland is the Inner Crescent, a region of maritime accessibility, including Western Europe, parts of South-East Asia, and China. This area provides easier access by sea, which is crucial for controlling the Heartland.
4. Strategic Importance: The theory emphasizes that whoever controls the Heartland can control Eurasia, and thus the world. The Inner Crescent plays a key role in this strategy, as it surrounds the Heartland and offers maritime advantages to sea powers.

Additional Information:

(C) The Inner Crescent includes regions like the United States, Canada, and Australia: This is incorrect. These regions are outside the Inner Crescent and are not part of the Heartland zone.

(D) The Inner Crescent is primarily landlocked, making it harder for sea powers to exert control over it: This is incorrect. The Inner Crescent is not landlocked; it has significant maritime accessibility, which increases its strategic value.

Q26. Instruction:

According to the Von Thunen model, which type of agricultural activity is located closest to the city?

(A). Timber and firewood production

(B). Ranching

(C). Dairying and intensive farming

(D). Extensive field crops

(E). Question not Attempted

Answer: c

Solution:

The Von Thünen model is a theoretical framework that explains the spatial arrangement of different agricultural activities around a central market city. According to this model, the type of agricultural activity located closest to the city is dairying and intensive farming. This proximity is due to the perishable nature of products like milk, vegetables, and fruits, which require quick transportation to the market to maintain freshness and prevent spoilage. Being near the city minimizes transportation costs and time, ensuring that these high-value, perishable goods reach consumers promptly.

Information booster

• Isolated State: A single market city is centrally located within an isolated, self-sufficient state.
• Uniform Landscape: The land is flat with consistent soil quality and climate, lacking natural barriers.
• Transportation: Farmers transport goods directly to the market, with costs increasing linearly with distance.
• Rational Behavior: Farmers aim to maximize profits, balancing land rent and transportation costs.

Concentric Rings of Agricultural Activities:

1. First Ring: Dairying and Intensive Farming
• Products: Perishable items like milk and fresh produce.
• Reasoning: Proximity to the market minimizes transportation time and preserves freshness.
2. Second Ring: Forestry
• Products: Timber and firewood.
• Reasoning: These bulky products incur high transportation costs, justifying production near the city.
3. Third Ring: Extensive Field Crops
• Products: Grains and other less perishable crops.
• Reasoning: Lower transportation costs per unit allow cultivation farther from the market.
4. Fourth Ring: Ranching and Animal Grazing
• Products: Livestock.
• Reasoning: Animals can be raised at a distance and transported to the market by walking, reducing transportation costs.

Q27. "Po River Basin" is a well-known industrial region of which of the following countries?
(A). China
(B). Turkey
(C). Italy
(D). Uruguay
Answer: c
Solution:
The Po River Basin, located in northern Italy, is one of the most important industrial regions in Europe. It includes major cities like Milan, Turin, and Venice, which are hubs for industries such as automobiles, textiles, chemicals, and machinery. The Po River provides essential water resources for agriculture and industry, making the region Italy's economic powerhouse.
Information Booster:
1. The Po River is the longest river in Italy, flowing through Turin, Milan, and Venice.
2. The region is highly industrialized, contributing significantly to Italy's GDP.
3. Fiat (automobile), fashion, textile, and mechanical industries are concentrated in this area.
4. The Po Valley is also an important agricultural region, producing rice, wheat, and dairy products.

Q28. Which of the following is NOT an antecedent river in India?
(A). Indus
(B). Kosi
(C). Ganga
(D). Yamuna

Answer: d
Solution:
The correct answer is (d) Yamuna
Explanation:
 An **antecedent river** is a river that **maintains its original course and pattern despite changes in underlying rock topography** due to geological upliftment.
 Indus, Kosi, and Ganga are **antecedent rivers** because they originated before the uplift of the Himalayas and **continued to cut through the rising mountain ranges**.
 Yamuna is NOT an antecedent river because it is a **tributary of the Ganga** and originated **after the formation of the Himalayas**. It is a **consequent river**, meaning it follows the slope of the land.
Information Booster:
Consequent Rivers (Non-Antecedent Rivers):
 Yamuna River – Originates from **Yamunotri Glacier**, following the land slope **after** the Himalayas formed.
 Superimposed Rivers: These rivers **change their course due to geological upliftment** but do not cut through mountains. Example: **Chambal River**.
 Obsequent Rivers: These rivers **flow opposite to the original drainage pattern** due to erosion or tectonic activity.
Additional Knowledge:
Antecedent Rivers in India:
 Indus River – Originates from **Tibet (Mansarovar Lake)** and cuts across the Himalayas.
 Ganga River – Originates from **Gangotri Glacier** and follows an ancient course predating the Himalayas.
 Kosi River – Originates from **Tibet and Nepal** and has maintained its course despite geological changes.

Q29. In multiple nuclei model which of the following zone is not continuous to the city and develops at outer margin in isolation.
(A). Wholesale trade and light manufacturing
(B). Outlying business district
(C). Low class residential zone
(D). Residential suburbs.
Answer: D
Solution:
The correct answer is: (d), **Residential suburbs**
Multiple nuclei model
Multiple nuclei model of 1945 by C.D.Harris and Edward Ullman are based on the argument that the cities have multiple growth points or nuclei around which growth take place. It serves as an alternative to the concentric zone model and the sector model in explaining urban land use patterns.
This model is based on the structure of Chicago just like the burgess model or concentric zone model of 1925.
Information booster:
Other settlement model

The **Concentric Zone Model**, also known as the Burgess Model, is a theoretical urban land use model developed by sociologist Ernest Burgess in 1925. It describes the spatial arrangement of land use patterns within cities based on concentric rings radiating outward from a central business district (CBD). The model suggests that cities grow in a series of concentric circles, with different land uses occupying each zone.

The **Sector Model**, also known as the Hoyt Model, is another urban land use model proposed as an alternative to the Concentric Zone Model by economist Homer Hoyt in 1939. This model suggests that cities develop in a series of wedges or sectors radiating outward from the central business district (CBD), rather than in concentric rings.

In the **Sector Model**, the city is divided into sectors or wedges based on transportation routes, topography, and land values. Each sector is characterized by different land use patterns and socio-economic activities.

Q30. Instruction:

Arrange the four distinct elements in a standard hill-slope from ridge to valley.

A. Free-face slope

B. Concave slope

C. Convex slope

D. Rectilinear slope

Choose the correct answer from the options given below:

(A). C, A, B, D

(B). C, A, D, B

(C). B, D, A, C

(D). B, D, C, A

Answer: b

Solution:

In a standard hill-slope, the sequence of slope elements from ridge to valley is as follows:

• **C. Convex slope**: This is the uppermost part of the slope, typically near the ridge, where the slope is gentle and convex.

• **A. Free-face slope**: This steep, often near-vertical section follows the convex slope, characterized by exposed bedrock or cliffs.

• **D. Rectilinear slope**: A uniform, straight slope comes after the free-face, where debris may accumulate and transport downslope.

• **B. Concave slope**: This is the lowest section, near the valley, where the slope is gentle and concave, typically marking areas of deposition.

Information Booster:

• **Convex slopes** are found near the ridge and have a gentle, outward-curving profile.

• **Free-face slopes** represent steep, nearly vertical sections often associated with cliff faces or rock outcrops.

• **Rectilinear slopes** are straight slopes that typically transport material from higher elevations to lower sections.

• **Concave slopes** are found at the bottom of the slope, where material is deposited, creating a gentle inward-curving profile.

Q31. Who is often credited with emphasizing the concept of "Areal Differentiation" (Chorology) as the core defining subject matter of Geography?
(A). Alfred Hettner
(B). Richard Hartshorne
(C). William Morris Davis
(D). Hettner and Davis
Answer: d
Solution:
Introduction
The process of formally defining the scope of modern academic geography involved significant debate over which unique aspect of the world phenomena the discipline should rightfully claim as its own.
Information Booster
• The concept of **Areal Differentiation** (the study of how and why one area differs from another) was prominently championed by **Alfred Hettner** (German School) and later vigorously defended and institutionalized in American geography by **Richard Hartshorne**.
• Hartshorne's influential work, *The Nature of Geography* (1939), established the idea of Areal Differentiation as the central concept, effectively endorsing the Chorological approach associated with Hettner.
Additional Knowledge
• **William Morris Davis** is known for the **Geographical Cycle** or Cycle of Erosion (Geomorphology). The emphasis on **Areal Differentiation** strongly favors the **Regional/Idiographic** approach to geography, contrasting with the Nomothetic (law-seeking) approach.

Q32. Match List I with List II:

List I (Work)		List II (Scholar)	
(A)	Crop- combination analysis	(I)	Stouffer
(B)	Isolated state	(II)	Whittlesey, D
(C)	Intervening Opportunities	(III)	Von Thunen
(D)	Sequent occupance	(IV)	Weaver, J.C.

Choose the correct answer from the options given below:
(A). A - IV, B - III, C - II, D - I
(B). A - I, B - III, C - IV, D - II
(C). A - III, B - II, C - I, D - IV
(D). A - IV, B - III, C - I, D - II
Answer: d
Solution:
 (A) Crop-combination analysis → (IV) Weaver, J. C.
o J.C. Weaver developed Crop Combination Analysis, which identifies patterns of crop cultivation in different regions based on statistical methods.
 (B) Isolated state → (III) Von Thunen
o Von Thunen's model of the "Isolated State" (1826) explains the spatial arrangement of agricultural activities around a central market based on transportation cost and land use.

 (C) Intervening opportunities → (I) Stouffer
o Samuel Stouffer introduced the concept of Intervening Opportunities (1940), which states that migration is influenced by opportunities found before reaching the final destination.
 (D) Sequent Occupance → (II) Whittlesey, D.
o D. Whittlesey introduced Sequent Occupance, which explains how human landscapes change over time as different cultural groups occupy the same geographic area.
Thus, the correct answer is : A - IV, B - III, C - I, D - II.

Information Booster:

 Crop-combination analysis helps in determining which crops are grown together in a specific region.
 Von Thunen's Model explains land-use patterns in agricultural economics.
 Intervening opportunities impact migration and settlement patterns.
 Sequent Occupance describes historical changes in landscapes due to cultural and technological shifts.

Q33. Match the following Environmental Movements in India with their Key Features:

List I (Movement)	List II (Characteristic / Objective)
A. Chipko Movement	I. Forest conservation through tree-hugging protest in the Himalayas
B. Narmada Bachao Andolan	II. Opposition to displacement and ecological loss from large dam construction
C. Silent Valley Movement	III. Protest against hydroelectric project threatening tropical rainforest in Kerala
D. Appiko Movement	IV. Inspired by Chipko, aimed at forest preservation in Karnataka

Options:
(A). A–I, B–II, C–III, D–IV
(B). A–II, B–I, C–IV, D–III
(C). A–III, B–IV, C–I, D–II
(D). A–I, B–III, C–IV, D–II

Answer: a

Solution:

Introduction

Environmental movements in India represent powerful instances of **grassroots ecological activism** that emerged in response to resource exploitation, deforestation, and large development projects. These movements are crucial in the history of Indian public policy, blending non-violent protest with a deep commitment to conservation and social justice.

Information Booster

Chipko Movement

 Originating in **1973** in **Uttarakhand**, villagers—led by **Sunderlal Bahuguna and Gaura Devi**—embraced trees (literally meaning 'to hug') to prevent commercial logging.
 It symbolized **non-violent resistance** for forest protection and promoted sustainable development models emphasizing **community rights and ecological balance**.

Narmada Bachao Andolan (NBA)

 Launched in the **1980s** under **Medha Patkar**, this movement opposed large dam projects like **Sardar Sarovar** on the Narmada River.

 It cited issues of massive human **displacement, submergence**, and ecological damage, advocating for **rehabilitation and environmental justice**.

Silent Valley Movement

 Initiated in **Kerala (1970s–80s)**, it protested against a hydroelectric project that threatened the **tropical evergreen rainforest** of Silent Valley.

 The forest is home to the endangered **lion-tailed macaque**. The project was **cancelled in 1983**, marking a landmark victory for India's environmental activism.

Appiko Movement

 Began in **1983 in Karnataka**, it was inspired by the Chipko model ('Appiko' also means 'to hug' in Kannada).

 It promoted **forest conservation, afforestation**, and sustainable forest use, also addressing issues of fuelwood collection and rural livelihoods.

Additional Knowledge

 These movements led to significant policy changes, including the national adoption of the **Forest Conservation Act (1980)** and the **National Forest Policy (1988)**.

 They demonstrate the power of **grassroots democracy** and remain an inspiration for modern environmental and social justice campaigns across India.

Q34. In Christaller's Central Place Theory (CPT), the K=7 (Administrative Principle) is designed to ensure:

(A). Maximum overlap of market areas to increase competition among sellers.

(B). Optimal alignment of settlements along transportation routes to minimize travel distance.

(C). Minimum travel cost for consumers by locating lower-order centers at the boundary of three higher-order centers.

(D). Complete territorial control, with one higher-order center governing the market areas of all surrounding lower-order centers.

Answer: d

Solution:

Introduction

Christaller's CPT is based on three ideal organizational principles (K-values: 3, 4, 7), which dictate the spatial pattern and functional hierarchy of settlements. Each principle represents a specific objective for the organization of the settlement system in his abstract, homogeneous plain. The K=7 principle prioritizes political-administrative logic over purely economic or transport efficiency.

Information Booster

Complete territorial control, with one higher-order center governing the market areas of all surrounding lower-order centers.

• **Administrative Principle (K=7):** This principle is based on the logic of **political control** and the need for clear jurisdictional boundaries.

• **Objective:** The arrangement is designed to ensure that **one higher-order center manages all lower-order centers within its area**, eliminating any shared administrative boundaries.

• **Hierarchy Ratio:** This results in a **1:7 ratio** (where K=7), meaning one higher-order center fully controls itself and the market areas of six adjacent lower-order centers. This structure is most relevant for state and provincial governance and administrative services, where complete territorial integrity is paramount.

Additional Knowledge

• **Maximum overlap of market areas:** This would lead to inefficiency and is precisely what the **hexagonal pattern** is designed to avoid; circles would overlap or leave unserved spaces, while hexagons provide efficient coverage.

• Optimal alignment of settlements along transportation routes...: This is the objective of the **K=4 (Transport Principle)**, where lower-order centers are placed along straight routes between higher-order centers to optimize transport efficiency.

• Minimum travel cost for consumers...: This is the core objective of the **K=3 (Marketing Principle)**, which focuses on consumer proximity and market supply. It results in a 1:3 ratio, with each lower-order center located where it can be equally accessed by three higher-order centers.

• **Centrality:** The hierarchy is also based on the **Centrality** of a place, determined by the variety and range of goods and services it offers; high-order centers offer a wider variety (large range and large threshold).

Q35. Consider the following statements in respect of formation of landforms in India:

(A) The Meghalaya plateau is structurally an extended part of the Deccan Plateau

(B) The Himalayan Mountain System originated from a geocyncline called Tethys and it is still rising in places

(C) The Aravalli Range is geologically the oldest mountain of India

Which of the above statements is/are correct?

(A). Only (A) is correct

(B). All (A), (B) and (C) are correct

(C). Only (C) is correct

(D). (B) and (C) are correct

Answer: b

Solution:

Introduction

The major landforms of India are the result of long-term geological processes including plate movements, folding, faulting, and erosion, and all three given statements correctly describe important aspects of India's physical evolution.

Information Booster

Meghalaya Plateau –

o **The Meghalaya Plateau is structurally an eastern extension of the Deccan Plateau**, separated by the faulted Garo–Rajmahal Gap.

o It is composed mainly of ancient crystalline rocks similar to the Deccan Plateau.

o This confirms that it is **not an isolated landform but a tectonic continuation of Peninsular India**.

Himalayan Mountain System –

o **The Himalayas originated from the geosyncline called the Tethys Sea**, which existed between the Indian and Eurasian plates.

o The collision of the Indian Plate with the Eurasian Plate caused **folding, upliftment, and mountain building**.

o The Himalayas are **still rising due to ongoing tectonic activity**, making them geologically young and unstable.

 Aravalli Range –
o **The Aravalli Range is the oldest mountain range in India**, dating back to the Precambrian era.
o It is a highly denuded residual mountain system shaped mainly by **long-term erosion**.
o Its ancient origin explains its **low elevation and worn-out structure** when compared to the Himalayas.

Additional Knowledge

 Peninsular India represents a **stable landmass** formed mainly by ancient igneous and metamorphic rocks.
 The Himalayas represent a **young fold mountain system**, formed during the Tertiary period.
 The contrast between the **young Himalayas and the ancient Aravallis** highlights different phases of Earth's geological history.

Q36. In Thornthwaite's classification, which climate type has a Potential Evapotranspiration (PET) index > 114?
(A). Meso thermal
(B). Micro thermal
(C). Mega thermal
(D). Tundra
Answer: c
Solution:
In Thornthwaite's climate classification, the Potential Evapotranspiration (PET) index is used to determine the amount of water that could potentially be evaporated and transpired by plants, depending on temperature and moisture availability. The PET index is a critical factor in understanding the moisture balance of a region and classifying it into specific climate types.

Mega thermal climates are characterized by having a PET index greater than 114. These climates experience extremely high potential evapotranspiration due to very high temperatures year-round. As a result, they are typically associated with tropical climates that have consistent warmth and high moisture loss, such as in the tropical rainforests (Af) or savannas (Aw).

Information booster
Thornthwaite's classification is designed to categorize climates based on moisture availability and potential evapotranspiration (PET). It is a water-based system that focuses on the balance between precipitation and the evaporation potential of a region, rather than relying solely on temperature and precipitation, as in the Köppen system.
In Thornthwaite's system, PET is a key factor used to classify regions. Potential Evapotranspiration (PET) represents the amount of moisture that would be evaporated and transpired by vegetation if water were readily available. It is influenced by temperature and humidity. Higher temperatures lead to higher PET, resulting in greater moisture loss.
Thornthwaite Climate Types Based on PET:
Mega Thermal Climate (PET > 114)
Key Characteristics:
High Temperatures: Mega thermal climates are found in tropical regions, where temperatures remain consistently high throughout the year.

High PET Index: The PET index is greater than 114, meaning the evaporation potential is extremely high. These areas experience substantial moisture loss due to high heat, leading to potential water deficits if rainfall is not sufficient.
Examples: Tropical rainforests (e.g., Amazon Basin) and tropical savannas (e.g., parts of Africa).

Meso Thermal Climate (PET between 72 and 114)

Key Characteristics:
Moderate Temperatures: Found in regions with moderate temperatures, typically in the subtropical or temperate zones.
Moderate PET Index: The PET index in these regions falls between 72 and 114, meaning these areas have moderate evaporation potential, suitable for supporting temperate forests and agriculture.
Examples: Humid subtropical regions like parts of Southeast United States.

Micro Thermal Climate (PET < 72)

Key Characteristics:
Cool to Cold Temperatures: These climates have cool or cold temperatures, typically found in temperate and polar regions.
Low PET Index: The PET index is below 72, meaning the evaporation potential is low due to cooler temperatures. These regions can sustain moisture more easily compared to tropical areas.
Examples: Northern Europe and northern parts of North America.

Tundra (PET close to zero)

Key Characteristics:
Cold Temperatures: The Tundra climate is characterized by extremely cold temperatures with long winters and short, cool summers.
Very Low PET: In Tundra regions, PET is almost zero because the cold temperatures restrict evapotranspiration.
Examples: Northern Canada, Greenland, and parts of Russia.

Q37. Which of the following pairs is not correctly matched?
(A) Kosi – Consequent river
(B) Narmada – Rift Valley river
(C) Sutlej – Antecedent river
(D) Ghaggar – Endoreic river
Choose the most appropriate answer from the options given below:
(A). (A) only
(B). (B) only
(C). (C) only
(D). (D) only
Answer: a
Solution:
The incorrectly matched pair is (A) Kosi – Consequent river because the Kosi River is not a consequent river; rather, it is a meandering, highly dynamic river that changes its course frequently due to sediment deposition.
Kosi River is an antecedent river, meaning it existed before the upliftment of the Himalayas and cut through them.
A consequent river forms in direct response to the slope of the land, which is not the case for the Kosi.

Information Booster:

 Consequent River: A river that follows the natural slope of the terrain. Example: Chambal River.

 Rift Valley River: A river that flows in a valley formed by faulting. Example: Narmada, Tapi.

 Antecedent River: A river that predates geological changes like upliftment. Example: Brahmaputra, Sutlej, Indus.

 Endoreic River: A river that does not reach the sea but ends in an inland basin. Example: Ghaggar, Luni.

Additional Knowledge:

(B) Narmada – Rift Valley River (Correct)

 The Narmada River flows through the rift valley formed by faulting.

 It follows a structural depression between the Vindhya and Satpura ranges.

(C) Sutlej – Antecedent River (Correct)

 The Sutlej River is older than the Himalayas, meaning it was present before the Himalayan uplift and continued to cut through the mountains.

 Such rivers are called antecedent rivers.

(D) Ghaggar – Endoreic River (Correct)

 The Ghaggar River is an endoreic (inland drainage) river because it disappears in the Thar Desert without reaching the sea.

 It is believed to be the remnant of the Sarasvati River.

Q38. The 'Chipko Movement' for forest conservation primarily originated in which state of India?

(A). Himachal Pradesh

(B). Uttarakhand (erstwhile U.P.)

(C). Madhya Pradesh

(D). Karnataka

Answer: b

Solution:

Introduction

The **Chipko Movement** was a landmark environmental movement in India aimed at forest conservation, and it primarily originated in **Uttarakhand (erstwhile Uttar Pradesh)**.

Information Booster

 Uttarakhand (erstwhile U.P.) - The **Chipko Movement** began in the **Garhwal region** of present-day Uttarakhand.

 It emerged in the early **1970s** as a response to large-scale **deforestation** and commercial logging.

 Local villagers, especially **women**, protested by **hugging trees** to prevent them from being cut down.

 The movement highlighted the close relationship between **forests, livelihoods, and ecological balance**.

 It played a significant role in shaping **India's forest conservation policies** and inspired environmental movements worldwide.

Additional Knowledge

 Himachal Pradesh -

o While similar conservation sentiments existed in Himachal Pradesh, it was **not the place of origin** of the Chipko Movement.

 Madhya Pradesh -
o Madhya Pradesh witnessed forest-based movements later.
o However, the original Chipko Movement did not start here.
 Karnataka -
o Karnataka saw movements like the **Appiko Movement**, inspired by Chipko.
o It was influenced by Chipko but was not its birthplace.

Q39. Consider the statements about currents in the Indian Ocean:
(A) North of the equator, the formation of ocean currents is not influenced by the changing nature of the monsoon wind system.
(B) Somali current is the warm current of the Indian Ocean.
(C) Somali current is the cold current of the Indian Ocean.
(D) Peru current is a cold current of the Indian Ocean.
(E) North-Equatorial current of the Indian Ocean disappears in the months of August and September.
Choose the correct answer from the options given below:
(A). (A) and (B) only
(B). (C) and (E) only
(C). (B) and (C) only
(D). (D) and (E) only
Answer: b
Solution:
Statements (C) and (E) are correct, while the others contain incorrect information.

(C) Somali Current is a cold current of the Indian Ocean – Correct
o The Somali Current is a cold current formed due to seasonal upwelling off the coast of Somalia.
o It is one of the few cold currents found in a tropical ocean and is influenced by the monsoon winds.

(E) North-Equatorial Current of the Indian Ocean disappears in August and September – Correct
o The North-Equatorial Current is seasonal and disappears during the monsoon months.
o Unlike in the Pacific and Atlantic Oceans, where equatorial currents are permanent, the Indian Ocean experiences monsoon-driven changes, causing this current to weaken in August-September.
Information Booster:
 The Indian Ocean is unique because of its monsoon-driven circulation, unlike the Atlantic and Pacific, which have permanent gyres.
 Somali Current is an exceptional cold current in the tropical region, formed by monsoonal upwelling.
 The North-Equatorial Current is seasonal, disappearing in late summer due to monsoonal reversal.
 Other major currents in the Indian Ocean include the Agulhas Current (warm), West Australian Current (cold), and Equatorial Counter Current.
Additional knowledge:
 (A) North of the equator, ocean currents are not influenced by monsoon winds – Incorrect
o TheIndian Ocean currents are heavily influenced by monsoons, especiallynorth of the equator.
o Unlike other oceans, where currents are driven primarily by trade winds, themonsoonal system reverses ocean currents seasonally.

 (B) Somali Current is a warm current – Incorrect
o TheSomali Current is a cold current, not warm.
o It forms due toupwelling caused by the Southwest Monsoon windsalong the Somali coast, bringingcold, nutrient-rich water to the surface.
 (D) Peru Current is a cold current of the Indian Ocean – Incorrect
o ThePeru Current (Humboldt Current) is in the Pacific Ocean, not the Indian Ocean.
o It is acold current along the west coast of South America, influencing Peru and Chile's climate.
o The Indian Ocean equivalent is theWest Australian Current.

Q40. Instruction:
In which ocean is the Walvis ridge located?
(A). Atlantic Ocean
(B). Pacific Ocean
(C). Indian Ocean
(D). Arctic Ocean
Answer: a
Solution:
Walvis ridge is located in the Atlantic Ocean. It is an oceanic plateau and large igneous province that runs for about 3000 km from the African coast to the Mid- Atlantic Ridge. The Walvis ridge was formed by volcanic activity during the cretaceous period and is named after the Walvis Bay, a coastal town in Namibia. The Walvis ridge is ana important location for studying the geological history of the Atlantic Ocean and the process of sea floor spreading. The ridge also plays a role in oceanic circulation and the distribution of marine life.

Q41. Arrange the following levels of ecological organization in increasing complexity:
1. Organism
2. Population
3. Ecosystem
4. Community
5. Biome
6. Biosphere
Choose the correct answer from the options given below:
(A). 1 - 2 - 3 - 4 - 5 - 6
(B). 1 - 3 - 2 - 5 - 4 - 6
(C). 1 - 3 - 2 - 4 - 6 - 5
(D). 1 - 2 - 4 - 3 - 5 - 6
Answer: d
Solution:
Each level of ecological organization in order of increasing complexity:
1. Organism – An individual living being (simplest unit)
2. Population – Group of individuals of the same species in an area
3. Community – All populations (of different species) living and interacting in an area
4. Ecosystem – A community plus its abiotic (non-living) environment
5. Biome – Large ecological regions defined by climate and vegetation (e.g., tundra, rainforest)

6. Biosphere – The global ecological system including all ecosystems on Earth (most complex)

Information Booster

The correct order reflects the hierarchical complexity of ecological levels:

 Organism is the basic unit, representing a single living entity.

 Population is the next level, comprising a group of organisms of the same species.

 Community is the collection of different species living and interacting in the same area.

 Ecosystem takes into account the interaction between the community of organisms and the abiotic (non-living) environment.

 Biome refers to a large area with similar climatic conditions and specific types of vegetation.

 Biosphere is the ultimate level, encompassing all ecosystems on Earth.

Q42. Instruction:

Which country never ratified the Kyoto Protocol?

(A). India

(B). Canada

(C). USA

(D). Japan

(E). Question not Attempted

Answer: c

Solution:

The United States of America (USA) never ratified the Kyoto Protocol, despite being a signatory to the agreement. The USA cited concerns over the protocol's impact on its economy and the exemption of developing countries from binding targets as the primary reasons for not ratifying it. Other countries like India and Japan have ratified the protocol, and while Canada initially ratified it, it later withdrew.

Information Booster:

1. The Kyoto Protocol was adopted in 1997 and entered into force in 2005.
2. It legally binds industrialized countries to reduce greenhouse gas emissions.
3. The USA signed the protocol but never ratified it, citing economic concerns.
4. Canada withdrew from the protocol in 2011, citing unachievable targets.
5. Developing countries like India were not subjected to binding targets under the protocol.

Q43. The Kyoto Protocol was adopted during the _____ held in 1997.

(A). COP 05

(B). COP 15

(C). COP 03

(D). COP 07

Answer: c

Solution:

The Kyoto Protocol was adopted during COP 3, which was the third Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). This conference was held in Kyoto, Japan in 1997 and was a significant milestone in global efforts to address climate change by setting legally binding targets for greenhouse gas emissions reductions for industrialized countries.

Information Booster:
1. The Kyoto Protocol was a landmark agreement adopted at COP 3 in 1997.
2. It set legally binding targets for developed countries to reduce greenhouse gas emissions.
3. The agreement marked the first time countries made a binding commitment to reduce emissions.
4. It set targets for 37 industrialized countries and the European Union to cut greenhouse gas emissions by an average of 5% below 1990 levels during the first commitment period (2008–2012).
5. Kyoto introduced market mechanisms:
6. Clean Development Mechanism (CDM)
7. Joint Implementation (JI)
8. International Emissions Trading

Additional Information:
 COP 5 (1999) was a meeting held in Bonn, focused on further discussions regarding the implementation of the Kyoto Protocol.
 COP 15 (2009) was held in Copenhagen and was associated with the Copenhagen Accord, a non-legally binding agreement.
 COP 7 (2001) took place in Marrakech and is where the Marrakech Accords were finalized to implement the Kyoto Protocol.

Q44. Arrange the following theories in ascending order according to the year they were propounded:
A. Central Place Theory – Christaller
B. Concentric Zone Model – Burgess
C. Sector Theory – Hoyt
D. Multiple Nuclei Model – Harris & Ullman
Choose the correct answer from the options below:
(A). D, A, B, C
(B). A, B, C, D
(C). B, A, C, D
(D). C, D, B, A
Answer: c
Solution:
The correct chronological order of these urban theories is:
B. Concentric Zone Model – Ernest Burgess (1925)
 Proposed that cities grow in concentric rings outward from the central business district (CBD).
 Used to explain urban structure and land-use patterns in cities.
A. Central Place Theory – Walter Christaller (1933)
 Focused on spatial distribution of cities and towns.
 Explained how settlements are arranged in a hierarchy based on their services.
C. Sector Model – Homer Hoyt (1939)
 Improved Burgess's model by showing that cities develop in sectors or wedges, not just rings.
 Explained urban growth along transportation routes.
D. Multiple Nuclei Model – Harris & Ullman (1945)
 Suggested that cities develop multiple centers (nuclei), each serving a different function.
 Explained modern urban decentralization.
Thus, the correct sequence is:
B (1925) → A (1933) → C (1939) → D (1945)

Q45. Instruction:
Match the following
Match the list I with list II

List I	List II		
A.	Base level	I.	L.C. King
B.	Parallel retreat	II.	W. Penck
C.	Cycle of erosion	III.	J.W. Powell
D.	Geomorphological cycle	IV.	W.M. Davis

(A). A- III, B- I, C- IV, D- II
(B). A- IV, B- II, C- III, D- I
(C). A- III, B- IV, C- II, D- I
(D). A- I, B- II, C- III, D- IV
(E). Question not attempted
Answer: a
Solution:

List I	List II		
A.	Base level	I.	J.W. Powell
B.	Parallel retreat	II.	L.C. King
C.	Cycle of erosion	III.	W.M. Davis
D.	Geomorphological cycle	IV.	W. Penck

J.W. Powell, an American geologist, introduced the concept of base level. Base level refers to the lowest point to which a river can erode its channel, the level of the body of water into which the river flows, such as the sea or a lake.
According to King a standard hillslope consists of all four elements- summital convexity, free face, rectilinearity and basal concavity. In the initial stage of hillslope development, the scarp face experiences parallel retreat due to back wasting caused by weathering of exposed rocks. This parallel retreat controls the evolution of entire hillslope.
W.M. Davis, introduced the concept of the cycle of erosion. According to Davis, landscapes undergo a continuous cycle of erosion, transportation, and deposition, driven by processes such as weathering, erosion by rivers and glaciers, and sedimentation.
W. Penck, a German geographer, is associated with the concept of the geomorphological cycle. Penck proposed that landscapes evolve through a series of sequential stages, involving processes such as erosion, transportation, and deposition.

Q46. Instruction:
What is the correct sequence of the 'Elements of Slope' on an ideal hill slope from top to bottom?
(A). Convexity - Free face - Rectilinearity - Concavity
(B). Concavity - Free face - Rectilinearity - Convexity
(C). Convexity - Free face - Concavity - Rectilinearity
(D). Concavity - Free face - Convexity - Rectilinearity

Answer: a

Solution:

The correct sequence of the **elements of slope** on an ideal hill slope from top to bottom is **Convexity - Free face - Rectilinearity - Concavity**. This sequence represents the typical slope profile found in many geomorphological studies:

1. **Convexity**: The uppermost part of the slope, gently curved outward.
2. **Free face**: A steep, often vertical or near-vertical section, typically found in cliffs or escarpments.
3. **Rectilinearity**: A straight section of the slope, usually indicative of uniform erosion or transportation processes.
4. **Concavity**: The lowermost part, curving inward, often found near the base where material accumulates.

Information Booster:

- **Convex slope**: Found at the top, caused by weathering and limited erosion.
- **Free face**: Indicates steep, eroded surfaces where material often detaches quickly.
- **Rectilinear slope**: Represents a transitional zone of uniform slope.
- **Concave slope**: Found at the bottom, where material is deposited, often indicating stability.

Q47. With regard to the relief of the Atlantic Ocean, which of the following statements are correct?

A. The continental shelf of North Atlantic is broad and flat surfaced.

B. The southern part of the Mid-Atlantic Ridge is called 'Dolphin Rise'.

C. The submarine ridge located between northern Scotland and Ireland is called Wyville Thompson Ridge.

D. Beyond the Cape of Good Hope, the Mid-Atlantic Ridge is called the Atlantic-Antarctica Ridge.

E. To the north and south of the Mid-Atlantic Ridge, there are several transverse ridges.

Choose the correct answer from the options given below:

(A). A, C & D Only

(B). B, C & D Only

(C). A, C & E Only

(D). C, D & E Only

Answer: a

Solution:

Statement A (Correct):

 The continental shelf of the North Atlantic is broad and flat, particularly along the eastern coast of North America and Western Europe.

 The Grand Banks (off Newfoundland) and Dogger Bank (North Sea) are well-known examples.

Statement C (Correct):

 The Wyville Thompson Ridge is a submarine ridge located between northern Scotland and Ireland.

 It separates the North Atlantic Ocean from the Norwegian Sea.

Statement D (Correct):

 The Mid-Atlantic Ridge extends beyond the Cape of Good Hope, and its southern extension is sometimes referred to as the Atlantic-Antarctica Ridge, though it is more commonly associated with the Southwest Indian Ridge.

Information Booster:
Wyville Thompson Ridge: A key oceanographic feature that controls deep-water circulation between the North Atlantic and the Arctic Ocean.
Mid-Atlantic Ridge Extension: It continues towards Antarctica, where it connects with the Southwest Indian Ridge and American-Antarctic Ridge.
Continental Shelf in the North Atlantic: One of the broadest in the world, rich in marine biodiversity and fishing resources.
Additional Knowledge:
Statement B (Incorrect):
 The southern part of the Mid-Atlantic Ridge is NOT called 'Dolphin Rise'.
 The Dolphin Rise is actually a submarine feature in the South Atlantic but not a part of the Mid-Atlantic Ridge.
Statement E (Incorrect):
 While there are transverse ridges north and south of the Mid-Atlantic Ridge, the terminology used is fracture zones rather than "transverse ridges."
 The major ones include the Romanche Fracture Zone and Charlie-Gibbs Fracture Zone.

Q48. Instruction:
Read the assertion (A) and reason (R) below and choose the correct option:
Assertion (A): The Sub-Tropical Jet stream is a narrow band of fast-moving air flowing from west to east
Reason (R): The Sub-Tropical Jet stream in the northern hemisphere flows between 25° to 35° N in the upper troposphere.
In the light of the above statements, choose the correct answer from the option 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: a
Solution:
Assertion (A): The Sub-Tropical Jet stream is a narrow band of fast-moving air flowing from west to east. This statement is correct. Sub-Tropical Jet stream as a relatively narrow, fast-moving belt of air flowing in the upper troposphere from west to east. This characteristic flow pattern is typical of westerly winds.
Reason (R): The Sub-Tropical Jet stream in the northern hemisphere flows between 25° to 35° N in the upper troposphere. This statement is correct. It specifies the geographic location of the Sub-Tropical Jet stream in the northern hemisphere, stating that it occurs between the latitudes of 25° to 35° N. This region is known for the presence of the Sub-Tropical Jet stream.

Q49. Instruction:
Friedrich Ratzel's concept of "Lebensraum" can be best described as:
(A). A theory that states should have access to abundant natural resources.
(B). The idea that states, like living organisms, require space to expand and thrive.
(C). A principle advocating for the preservation of cultural heritage.

(D). A policy for equitable distribution of resources among nations.
(E). Question not attempted
Answer: b
Solution:
The idea that states, like living organisms, require space to expand and thrive. This statement is correct. Ratzel was a German geographer and ethnographer who developed the concept of "Lebensraum" (German for "living space") in the late 19th and early 20th centuries. He proposed that political entities, such as states or nations, behave similarly to biological organisms. Just as living organisms require space to grow, develop, and thrive, Ratzel argued that states also need territory to support their populations, resources, and overall growth. This concept implies that for a state to maintain its health and strength, it must continuously expand its territory to accommodate its growing population and to secure necessary resources. This expansionist view suggested that a nation's survival depended on its ability to acquire more living space.
Information booster
A theory that states should have access to abundant natural resources. This statement is incorrect. While access to resources is a component of Lebensraum, the concept primarily focuses on the need for physical space and territorial expansion rather than just resource access.
A principle advocating for the preservation of cultural heritage. This statement is incorrect. Lebensraum does not concern itself with the preservation of cultural heritage. Instead, it is about territorial expansion and the survival of the state.
A policy for equitable distribution of resources among nations. This statement is incorrect. Lebensraum is not about equitable distribution. It is about competition and expansion, where stronger states expand at the expense of weaker ones, which contradicts the idea of equitable distribution.

Q50. Instruction:
What is the shape of a volcano formed by Hawaiian eruptions?
(A). Stratovolcano
(B). Cinder cone
(C). Shield
(D). Dome
(E). Question not attempted
Answer: c
Solution:
Hawaiian-style eruptions are non-explosive eruptions of gusher-like lava fountains (“fire fountains” or “curtains of fire”) that generate red-hot lava rivers of very fluid basaltic lavas. Hawaiian eruptions are typical for shield volcanoes, where eruptions take place both at the summit and at fissure vents.
Magma composition: basaltic
Description: Effusive (nonexplosive)
Eruption Products: Pahoehoe lava flows. Pele’s tears, Pele’s hair, and spatter.
National Park examples: Mauna Loa and Kilauea in Hawaii Volcanoes National Park
Information booster
Stratovolcanoes have relatively steep sides and are more cone-shaped than shield volcanoes. They are formed from viscous, sticky lava that does not flow easily. The lava therefore builds up around the vent forming a volcano with steep sides. Stratovolcanoes are more likely to produce explosive eruptions due to gas building up in the viscous magma.

A cinder cone is a steep conical hill of loose pyroclastic fragments, such as volcanic clinkers, volcanic ash, or cinder that has been built around a volcanic vent. The pyroclastic fragments are formed by explosive eruptions or lava fountains from a single, cylindrical, vent.

A lava dome (volcanic dome) is a mound-shaped protrusion (a structure that extends outside the surface) resulting from the slow extrusion (coming out) of viscous lava from a volcano.

In Lava domes, viscous magma piles up around the vent. The magma does not have enough gas or pressure to escape, although sometime later after sufficient pressure builds up, it may erupt explosively.

Q51. Instruction:

What is the correct North to South locational sequence of the following minor plates? (A) Nazca (B) Juan De Fuca (C) Cocos (D) Scotia

Code:

(A). (A), (B), (C), (D)

(B). (B), (A), (D), (C)

(C). (B), (C), (A), (D)

(D). (C), (B), (A), (D)

Answer: c

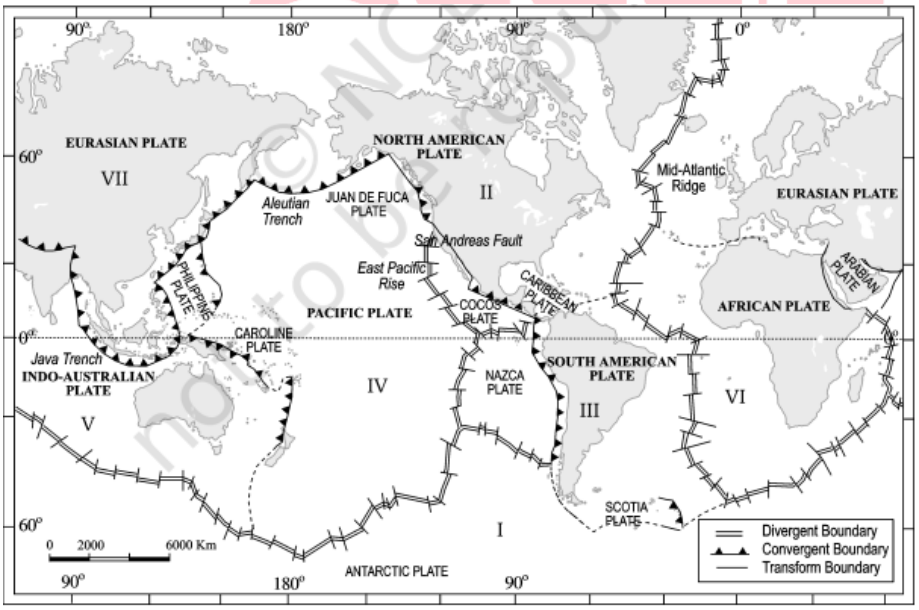
Solution:

The correct answer is **(c) (B), (C), (A), (D)**. The correct North to South order is:

1. **Juan De Fuca Plate (B)**: Located in the northern Pacific, off the west coast of North America.
2. **Cocos Plate (C)**: Lies to the south of Juan De Fuca, near Central America.
3. **Nazca Plate (A)**: Situated further south, off the west coast of South America.
4. **Scotia Plate (D)**: Located in the southern Atlantic, near the southern tip of South America.

Information Booster:

1. **Juan De Fuca Plate**: A small tectonic plate off the coast of the Pacific Northwest.
2. **Cocos Plate**: Lies beneath Central America, contributing to volcanic activity.
3. **Nazca Plate**: Responsible for the formation of the Andes Mountains through subduction under the South American Plate.
4. **Scotia Plate**: Found in the southern Atlantic, near the Drake Passage



Q52. Instruction:
Which of the following spectral band of Landsat-1 is generally NOT used for production of colour composite?
(A). Band 4
(B). Band 6
(C). Band 7
(D). Band 5
Answer: d
Solution:
Band 5 of Landsat-1, which captures the red portion of the visible spectrum, is sometimes excluded from specific color composites. The production of color composites involves selecting spectral bands that highlight key features in the image, such as vegetation, water bodies, and urban areas.
Information Booster:
• **Color Composites**: These are images created by assigning different spectral bands to the red, green, and blue channels of a digital image. Each channel highlights specific features of the landscape.
• **Visible and Infrared Bands**: Landsat's visible bands (Bands 4 and 5) are useful for visual interpretation of landscapes, while infrared bands (Band 7) are crucial for detecting moisture content and vegetation.
Additional Knowledge:
• **Band 4 (Green Band)**: Used in color composites to represent the green channel, it enhances vegetation visibility. It is typically included when examining plant life and ecosystems.
• **Band 6 (Thermal Infrared Band)**: It measures surface temperature, useful in environmental monitoring (heat islands, fire detection), but not for producing color images in the visible spectrum.
• **Band 7 (Shortwave Infrared Band)**: Ideal for monitoring moisture levels in soil and vegetation. It is often used to enhance color composites, especially in false-color images.

Q53. Match List I with List II and select the correct answer:

List-I (Slope Component)	**List-II (Description/Shape)**
a. Waxing slope	i. Concave
b. Free face	ii. Retreat with free face
c. Debris slope	iii. Convex
d. Waning slope	iv. Bedrock outcrop

Codes:
(A). a–iv, b–i, c–ii, d–iii
(B). a–iii, b–ii, c–iv, d–i
(C). a–i, b–iii, c–ii, d–iv
(D). a–iv, b–iii, c–i, d–ii
Answer: b
Solution:
Introduction:
This matching links slope components with their typical shape or characteristic; the correct matching is **a – iii, b – ii, c – iv, d – i** (Waxing slope → Convex; Free face → Retreat with free face; Debris slope → Bedrock outcrop; Waning slope → Concave).

Information Booster:

 Waxing slope → Convex

A waxing slope is the upslope segment where the slope angle increases downslope. On a profile this produces a convex curvature because the upper part is gentler and the middle part steepens.

 Free face → Retreat with free face

A free face is a near-vertical or steep exposed rock surface (cliff) that commonly undergoes retrogressive erosion. The characteristic process is retreat with a free face as the cliff face collapses and moves backward while keeping a steep exposure.

 Debris slope → Bedrock outcrop

A debris slope is the zone of accumulated broken rock and talus at the base of a cliff or steep escarpment. Its presence is closely linked to the underlying bedrock outcrop, which provides the material through weathering and rockfall.

 Waning slope → Concave

A waning slope is the downslope segment where the slope angle decreases toward the toe. This produces a concave profile as the slope flattens out and merges with the lower ground.

Additional Knowledge:

 Convex slopes are associated with increasing steepness downslope (waxing); waning implies reduction of slope and so corresponds to concavity.

 Debris slopes accumulate from material derived from adjacent bedrock outcrops and cliff faces; thus the bedrock exposure is the source and closely associated characteristic.

 Free faces are not simply debris-covered slopes; their defining feature is a steep rock exposure undergoing active retreat.

 Waning slopes are not linked with bedrock outcrops because their defining feature is decreasing gradient, typically associated with deposition rather than exposed bedrock.

Q54. Which of the following parameters are the basis of the Fujita Scale for classifying tornadoes?

(a) Pressure Gradient

(b) Temperature Gradient

(c) Wind Speed

(d) Related Property Damages

Choose the correct option:

(A). (a) and (b)

(B). (b) and (d)

(C). (c) and (d)

(D). (a) and (d)

Answer: c

Solution:

The Fujita Scale (F-Scale), developed by Tetsuya Fujita in 1971, classifies tornadoes based on:

Wind Speed (c) – Tornadoes are categorized from F0 (weakest) to F5 (strongest) based on estimated wind speeds.

Related Property Damages (d) – The classification is based on observed damage to buildings, vegetation, and infrastructure.

Information Booster

Fujita Scale Category	Wind Speed (mph / km/h)	Damage Description
F0 (Weak)	40–72 mph (64–116 km/h)	Light damage (branches broken, shallow trees uprooted)
F1 (Moderate)	73–112 mph (117–180 km/h)	Moderate damage (roofs damaged, mobile homes overturned)
F2 (Strong)	113–157 mph (181–253 km/h)	Considerable damage (houses unroofed, large trees uprooted)
F3 (Severe)	158–206 mph (254–332 km/h)	Severe damage (trains overturned, walls torn off buildings)
F4 (Devastating)	207–260 mph (333–418 km/h)	Extreme damage (houses destroyed, cars lifted)
F5 (Incredible)	261–318 mph (419–512 km/h)	Total destruction (strong buildings swept away, debris in air)

Q55. Arrange the following industrial location theories in chronological order.
A. Alfred Weber's theory
B. Allen Pred's theory
C. Edgar Hoover's theory
D. Walter Isard's theory
Choose the correct answer from the options given below:
(A). A, D, B, C
(B). A, C, D, B
(C). A, B, D, C
(D). A, C, B, D
(E). Question not attempted
Answer: B
Solution:
The correct answer is: (b), **A, C, D, B**
A. Alfred Weber's theory -1909
B. Edgar Hoover's theory - 1937
C. Walter Isard's theory – 1956
D. Allen Pred's theory - 1967
Alfred Weber's theory of industrial location: Alfred Weber, an eminent German economist gave a theory on industrial location. " Theory of location of industries" was published in 1909 in German language and was translated into English in 1929 and was published by Cral Joachim Friedrick.
Weber's theory called locational triangle, sought the optimum location for the production of a good based on the fixed location of the market and two raw material sources, which geographically form a triangle.
According to Weber, firms seek to minimize production costs, including transportation costs and labor costs, in order to maximize profits. Therefore, industrial plants will tend to locate near raw materials or markets to reduce transportation costs and near sources of labor to reduce labor costs.
Allen Pred's theory (1967) is based on behavioural approach. Allen pred published his theory entitled ' behavior and location' in which he devised a behvioural matrix to illustrate an analysis of locational decisions.

Assumptions:
1. Availability of locational information.
2. Ability to use the information

Hoover gave considerable attention to the impacts of supply and demand on locational analysis in the book of "**The location of economic activity" (1948).**

Hoover also considered the locational influences of short term economic changes such as recessions or times of high inflation (busts and booms), and to long tern trends such as innovations in technology.

Walter Isard was a prominent economist and regional scientist known for his contributions to the field of regional science. He is often considered one of the founders of regional science as an academic discipline. While Isard developed several theories and methodologies throughout his career, one of his notable contributions is the concept of "location theory" within regional science.

Location theory, also known as spatial economics, focuses on understanding the spatial distribution of economic activities and the factors that influence the location decisions of firms, households, and individuals.

Q56. Match the Following List-I (Ocean Currents) and List-II(Type and Effect)

List I (Ocean Current)	**List II (Type and Effect)**
A. Gulf Stream	I. Cold current; creates one of the world's richest fishing grounds by mixing with the Gulf Stream.
B. Agulhas Current	II. Warm current; the strongest western boundary current in the Indian Ocean.
C. North Atlantic Drift	III. Warm current; an extension of the Gulf Stream influenced by westerlies, which moderates Europe's climate.
D. Labrador Current	IV. Warm current; flows along the east coast of the USA, carrying warm equatorial water poleward.

(A). A-IV, B-II, C-III, D-I
(B). A-IV, B-III, C-I, D-II
(C). A-III, B-I, C-II, D-IV
(D). A-II, B-IV, C-III, D-I

Answer: a

Solution:

Introduction

Ocean currents are massive, continuous movements of water in a definite direction, driven by factors like wind, temperature, Earth's rotation, and gravity. They significantly influence global and regional climate, navigation, and marine ecosystems.

Information Booster

• Gulf Stream: A **warm current** that flows along the east coast of the USA (beyond Cape Hatteras), carrying warm water from the Strait of Florida northward.

• Agulhas Current: A **warm current** that flows south along the east coast of Southern Africa and is the strongest western boundary current in the **Indian Ocean**.

• North Atlantic Drift: A **warm current** and an eastward extension of the Gulf Stream, whose movement is driven by the **westerlies**. It reaches the British Isles and the Norwegian coast, keeping Murmansk ice-free and moderating Europe's climate.

• Labrador Current: A **cold current** that flows south from the Arctic Ocean along the Labrador coast. Its meeting with the warm Gulf Stream at the **Grand Banks** is famous for producing heavy fog and creating one of the world's richest fishing grounds.

Additional Knowledge:

• Warm currents generally flow along the east coasts of continents in low and middle latitudes, while cold currents are typically found on the west coasts of continents in the same latitudes.

• The **Canary Current** is a cold current in the North Atlantic completing the circuit of the North Atlantic Gyre.

Q57. The concept of 'Primate City' was given by Jefferson in:

(A). 1929

(B). 1938

(C). 1939

(D). 1940

Answer: c

Solution:

The concept of the Primate City was introduced by Mark Jefferson in 1939. He proposed this concept in his work titled *"The Law of the Primate City"*. According to Jefferson, a primate city is the largest city in a country that is significantly larger than the second-largest city and dominates the economic, political, and cultural aspects of the nation.

Information booster

Size Dominance – The primate city is much larger than any other city in the country.

Economic Centralization – It serves as the primary economic hub of the nation.

Cultural and Political Importance – It holds a central role in culture, governance, and administration.

Examples – Some famous primate cities include Bangkok (Thailand), Paris (France), London (UK), and Mexico City (Mexico).

Q58. In Late Expanding Stage of Demographic Transition

(A). Total population increases with increasing growth rates

(B). Total population decreases due to declining growth rates

(C). Total population increases with declining growth rates

(D). Total population decreases and growth rates become negative

Answer: C

Solution:

The correct answer is: (c), **Total population increases with declining growth rates**

Total population increases with declining growth rates

I stage- high birth and death rate

II stage- decline in death rate no change in birth rate

III stage- death rate declining rapidly

IV stage- birth rate equals to death rate

Q59. Instruction:

Consider the following statements

(A) Maximum salinity is observed between 20° N and 40° N hemisphere.
(B) Ocean currents affect the spatial distribution if salinity by mixing seawater.
(C) Precipitation is positively related to salinity.
(D) Evaporation is inversely related to salinity.
Which of the statements given above is/ are correct?
(A). A and B
(B). C and D
(C). A, D and C
(D). A and D
Answer: a
Solution:
Maximum salinity is observed between 20° N and 40° N hemisphere. This statement is correct. Maximum salinity is observed between 20° N and 40° N hemisphere because this zone is characterized by high temperature, high evaporation but significantly low rainfall.
Ocean currents affect the spatial distribution if salinity by mixing seawater. This statement is correct. Ocean currents play a crucial role in affecting the spatial distribution of salinity in the world's oceans by mixing seawater. This mixing process, driven by various factors such as wind, temperature differences, and the Earth's rotation, redistributes salinity both horizontally and vertically.
Information booster
Precipitation is positively related to salinity. This statement is incorrect. Precipitation is inversely related to salinity e.g., higher the precipitation, lower the salinity and vice- versa.
Evaporation is inversely related to salinity. This statement is incorrect. There is direct positive relationship between the rate of evaporation and salinity e.g., greater the evaporation, higher the salinity and vice- versa.

Q60. Instruction:
What characterizes Hawaiian eruptions?
(A). Explosive eruptions with high gaseous content
(B). Formation of steep, cone-shaped stratovolcanoes
(C). Effusive eruptions with fluid basalt-type lavas and low gaseous content
(D). Formation of large calderas due to volcanic collapse
Answer: c
Solution:
Effusive eruptions with fluid basalt-type lavas and low gaseous content: This is Correct. Hawaiian eruptions are characterized by the steady, effusive flow of fluid basaltic lava and low levels of gas.
Information booster
Explosive eruptions with high gaseous content: Hawaiian eruptions are not explosive and typically have low gaseous content.
Formation of steep, cone-shaped stratovolcanoes: Hawaiian eruptions typically create shield volcanoes, which are broad and gently sloping, not steep and cone-shaped.
Formation of large calderas due to volcanic collapse: Hawaiian eruptions do not generally form calderas; they build up shield volcanoes through the accumulation of lava flows.

Q61. Given below are two statements:
Statement I: In Zone V of Burgess model, people living there were low-income groups.
Statement II: Multiple Nuclei model of Harris and Ullman was given in an article, "The Nature of Cities".
In the light of the above statements, choose the correct answer from the options given below.
(A). Both Statement I and Statement Il are true
(B). Both Statement I and Statement Il are false
(C). Statement I is true but Statement Il is false
(D). Statement I is false but Statement Il is true
Answer: D
Solution:
The correct answer is: (d), **Statement I is false but Statement Il is true**
Statement I: In Zone V of Burgess model, people living there were low-income groups: This statement is false. The Burgess model, also known as the concentric zone model, does not designate Zone V as an area for low-income groups. In the Burgess model, Zone V represents the commuter zone, which is located on the outskirts of the city and consists of suburban residential areas. People living in this part were high- income groups.
Statement II: Multiple Nuclei model of Harris and Ullman was given in an article, "The Nature of Cities": This statement is true. Multiple Nuclei Model of 1945 by Harris and Ullman are based on the arrangement of the cities have multiple growth points or nuclei around which growth take place. This model was given in an article by them "The Nature of Cities".

Q62. Debris controlled slope is called –
(A). Free face slope
(B). Rectilinear slope
(C). Convex slope
(D). Concave slope
(E). Question not attempted
Answer: b

Q63. Match List I (Local Wind) with List II (Type/Region):

List I (Local Wind)	List II (Type/Region)
A. Loo	I. Cold wind in Southern coast of Spain
B. Samun	II. Hot, dry wind in plains of northern India and Pakistan
C. Levanter	III. Warm, dry wind in Argentina
D. Zonda	IV. Hot, dry wind in Iran

Choose the correct answer from the options given below:
(A). A-I, B-IV, C-II, D-III
(B). A-II, B-IV, C-I, D-III
(C). A-III, B-II, C-IV, D-I
(D). A-II, B-III, C-I, D-IV
Answer: b
Solution:
Local winds are short-lived winds that blow over small areas, often caused by local differences in temperature and pressure.

Information Booster:

• Loo → Hot, dry wind in plains of northern India and Pakistan: The Loo is a hot, dry wind that blows in the plains of northern India and Pakistan during the summer season.

• Samun → Hot, dry wind in Iran: Samun is a hot, dry wind blowing in the desert regions of Iran and nearby areas.

• Levanter → Cold wind in Southern coast of Spain: The Levanter is a cold, easterly wind that blows along the southern coast of Spain, bringing cool, moist air from the Mediterranean.

• Zonda → Warm, dry wind in Argentina: The Zonda is a warm, dry wind descending from the Andes mountains in Argentina.

Additional Knowledge:

• Another local wind, the **Harmattan**, is a dry and dusty trade wind blowing over the West African subcontinent from the Sahara.

• The **Bora** is a cold, northeasterly wind that blows from the mountains down to the coast in the former Yugoslavia region (e.g., Croatia).

Q64. Arrange the following islands of Indian ocean in north to south direction.

A. Diego Garcia

B. Cocos

C. Socotra

D. Réunion

Choose the correct answer from the options given below:

(A). B, C, A, D

(B). C, A, B, D

(C). A, C, B, D

(D). B, C. D, A

Answer: B

Solution:

The correct answer is: (b), **C, A, B, D**

Q65. Match the Himalayan Passes with the States/Regions they are located in:

Himalayan Passes	States/Regions
A. Karakoram Pass	1. Arunachal Pradesh
B. Shipkila Pass	2. Sikkim
C. Bomdila Pass	3. Jammu & Kashmir
D. Nathula Pass	4. Himachal Pradesh

(A). A-3, B-4, C-1, D-2

(B). A-1, B-4, C-2, D-3

(C). A-4, B-3, C-1, D-2

(D). A-3, B-2, C-1, D-4

Answer: a

Solution:

Answer: (a) A-3, B-4, C-1, D-2

Explanation:

• Karakoram Pass – Jammu & Kashmir
• Shipkila Pass – Himachal Pradesh
• Bomdila Pass – Arunachal Pradesh
• Nathula Pass – Sikkim

Q66. Match List I with List II:

List I (Local wind)		List II (Type)	
(A)	Levanter	(I)	Warm wind in Argentina
(B)	Norwester	(II)	Cold wind in France
(C)	Zonda	(III)	Cold wind in Southern Spain
(D)	Bise	(IV)	Dry and gusty wind in New Zealand

Choose the correct answer from the options given below:
(A). A - IV, B - II, C - I, D - III
(B). A - III, B - IV, C - I, D - II
(C). A - III, B - I, C - II, D - IV
(D). A - II, B - IV, C - I, D - III
Answer: b
Solution:
 (A) Levanter → (III) Cold wind in Southern Spain
 (B) Norwester → (IV) Dry and gusty wind in New Zealand
 (C) Zonda → (I) Warm wind in Argentina
 (D) Bise → (II) Cold wind in France
Thus, the correct answer is (2) A - III, B - IV, C - I, D - II.
Information Booster:
1. The Levanter is a strong, easterly wind that blows in the western Mediterranean Sea and through the Strait of Gibraltar. While it can bring moist air, it's often associated with cooler temperatures, especially in Southern Spain.
2. Nor'westers are foehn winds that occur in New Zealand, particularly on the South Island's east coast. They are known for being hot, dry, and strong.
3. The Zonda is a hot, dry wind that descends from the Andes Mountains in Argentina.
4. The Bise is a dry, cold, and northerly or northeasterly wind that blows in Switzerland and France.

Q67. Instruction:
The book 'Geography of Peace' laid the foundation of the_____ concept.
(A). Heartland
(B). Rimland
(C). Sea Power
(D). Air Power
Answer: b
Solution:
The book *'Geography of Peace'*, written by **Nicholas Spykman**, laid the foundation for the **Rimland concept**. Spykman argued that the control of the coastal fringes or the **Rimland** surrounding the Eurasian Heartland was key to global dominance. This theory was in contrast to Mackinder's **Heartland theory**, which emphasized the importance of central Eurasia.

Information Booster:

• **Rimland Theory** focuses on the strategic importance of the coastal areas surrounding Eurasia. According to Spykman, these regions hold geopolitical significance as they are more accessible to maritime powers and can serve as a buffer between the Heartland and the oceans.

• Spykman's theory contrasts with **Mackinder's Heartland theory**, which emphasized the central area of Eurasia as the "pivot area" for controlling the world.

Additional Knowledge:

Heartland: The **Heartland theory** by Halford Mackinder proposed that whoever controls Eastern Europe and the central part of Eurasia controls the world. Spykman disagreed with this by emphasizing the Rimland instead.

Sea Power: Alfred Thayer Mahan argued that control of the seas, through a powerful navy, was critical for securing global dominance. While important, this theory is not linked to Spykman's *Geography of Peace*.

Air Power: The **Air Power** concept emerged later, emphasizing the importance of air superiority in military strategy, particularly during and after World War II.

Q68. Arrange the following plates from north to south based on their geographic locations:

[if !supportLists](A) [endif]Juan de Fuca Plate

(B) Philippine Plate

(C) Cocos Plate

(D) Nazca Plate

Choose the correct sequence:

(A). A → B → C → D

(B). A→ C→ B → D

(C). B→ A → C → D

(D). B→ C → A → D

Answer: a

Solution:

1. Juan de Fuca Plate (A) is located farthest north, just off the coast of the Pacific Northwest near the United States and Canada.

2. Philippine Plate (B) is located slightly south of the Juan de Fuca Plate, to the east of the Philippines.

3. Cocos Plate (C) is positioned further south, off the coast of Central America in the Pacific Ocean.

4. Nazca Plate (D) lies to the south of the Cocos Plate, off the western coast of South America.

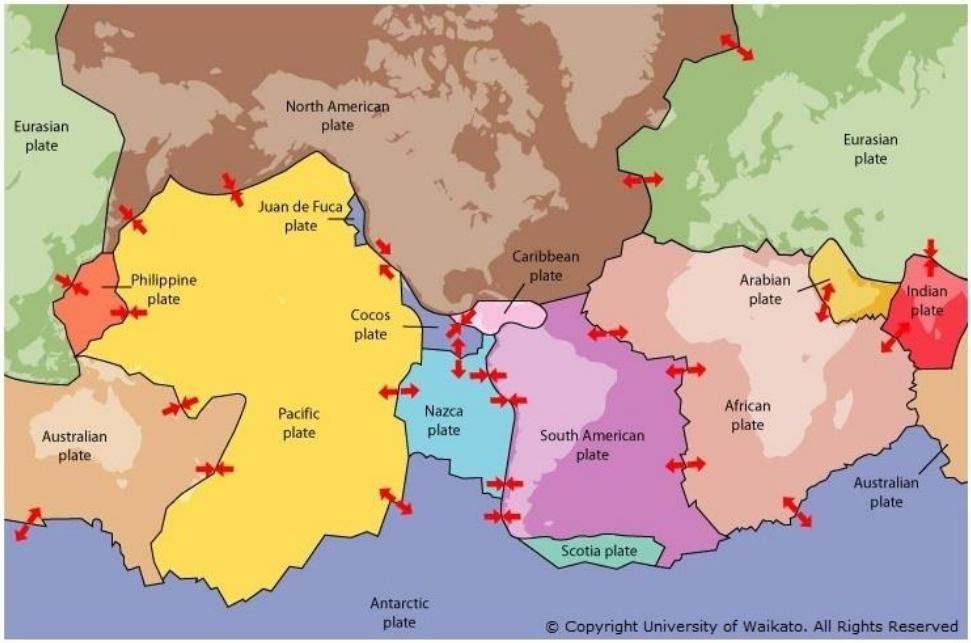
Information Booster:

1. Juan de Fuca Plate (A): A small tectonic plate that lies off the Pacific coast of North America, associated with the Cascadia Subduction Zone.

2. Philippine Plate (B): Located east of the Philippines, it plays a significant role in the tectonic activity in Southeast Asia.

3. Cocos Plate (C): This oceanic plate is found off the coast of Central America and subducts beneath the North American Plate.

4. Nazca Plate (D): The Nazca Plate is found off the western coast of South America and is responsible for the formation of the Andes Mountains due to subduction beneath the South American Plate.



Q69. Consider the following statements with reference to Central Place Theory:
A. Central Place Theory is concerned with the industrial agglomeration.
B. Central Place Theory is given by Walther Christaller in 1933.
C. Christaller based his theory on data obtained from Mecklenburg, Germany.
D. Central Place Theory is based on principle of hierarchy and principle of centralisation.
Which of the statements given above is/are correct?
(A). A and B
(B). A, B and C
(C). B and D
(D). A, B, C and D
Answer: C
Solution:
The correct answer is: (c), **B and D**
Central Place Theory is given by Walther Christaller in 1933: This statement is correct. Walther Christaller introduced the Central Place Theory in 1933, outlining a theoretical framework for understanding the spatial organization of human settlements and their economic functions.
Central Place Theory is based on the principle of hierarchy and principle of centralization: This statement is correct. Central Place Theory is grounded in the principles of hierarchy, which refers to the arrangement of settlements in a system of levels or ranks based on the range and threshold of goods and services they offer, and centralization, which emphasizes the concentration of goods and services in central places to serve larger hinterlands.
Information booster
Central Place Theory is concerned with the industrial agglomeration: This statement is incorrect. Central Place Theory is primarily concerned with the spatial arrangement and distribution of human settlements and the services and goods they provide. It focuses on the hierarchy of central places and their functional relationships, rather than industrial agglomeration.

Christaller based his theory on data obtained from Mecklenburg, Germany: This statement is incorrect. While Christaller developed his theory based on observations of rural settlements in Bavaria, Southern Germany.

Q70. Match List I with List II:

List I (Social Movement)		List II (State of Origin)	
(A)	Save Silent Valley	(I)	Jharkhand
(B)	Chipko	(II)	Gujarat
(C)	Narmada Bachao	(III)	Uttarakhand
(D)	Jungle Bachao	(IV)	Kerala

Choose the correct answer from the options given below:
(A). (A) – (I), (B) – (II), (C) – (III), (D) – (IV)
(B). (A) – (II), (B) – (III), (C) – (IV), (D) – (I)
(C). (A) – (III), (B) – (IV), (C) – (I), (D) – (II)
(D). (A) – (IV), (B) – (III), (C) – (II), (D) – (I)
Answer: d
Solution:
(A) Save Silent Valley – (IV) Kerala:
This movement originated in Kerala to protect the Silent Valley, a pristine tropical rainforest, from being submerged due to a hydroelectric project. It was a significant environmental movement to preserve biodiversity.
(B) Chipko – (III) Uttarakhand:
The Chipko Movement started in the Chamoli district of Uttarakhand (then part of Uttar Pradesh) to protect trees from being felled. Women actively participated by hugging trees, symbolizing a non-violent protest.
(C) Narmada Bachao – (II) Gujarat:
The Narmada Bachao Andolan originated in Gujarat and Madhya Pradesh to oppose the construction of large dams on the Narmada River, which would displace thousands of people and submerge vast ecological areas.
(D) Jungle Bachao – (I) Jharkhand:
The Jungle Bachao movement began in Jharkhand (then Bihar) as a tribal protest against the government's decision to replace natural forests with commercial teak plantations, threatening their livelihood and ecosystem.
Information Booster:
Save Silent Valley (Kerala):
Focused on preserving the rich biodiversity of the Silent Valley National Park.
Led to the declaration of the area as a National Park in 1984.
Chipko Movement (Uttarakhand):
Originated in the 1970s under leaders like Sunderlal Bahuguna.
Highlighted the importance of forests in preventing soil erosion and maintaining ecological balance.
Narmada Bachao Andolan (Gujarat):
Led by Medha Patkar and others, it became a global example of resistance to displacement caused by development projects.

Focused on sustainable and equitable development.

Jungle Bachao Andolan (Jharkhand):

Tribal communities protested against forest policies.

Highlighted the importance of conserving natural forests and tribal rights.

Q71. Instruction:

Which characteristic best describes the primate city?

(A) The ratio of the population of the three largest cities is approx. 100:30:20.

(B) It is the oldest city in the country.

(C) High per capita income.

(D) A primate city is always the most technologically advanced city in the country.

Choose the correct answer from the options give below:

(A). A, B and C

(B). B, C and D

(C). A, B and D

(D). A only

Answer: d

Solution:

The ratio of the population of the three largest cities is approx. 100:30:20: It suggests that the largest city (primate city) is significantly larger than the next two cities in the country. In a primate city system, the largest city often has a population that is substantially greater than other cities in the urban hierarchy. This disproportionate size and dominance of the primate city in terms of population and influence are key characteristics of a primate city.

Information booster

It is the oldest city in the country: Being the oldest city isn't a defining characteristic of a primate city. The age of a city doesn't necessarily relate to its dominance

High per capita income: High per capita income is not a defining characteristic of a primate city.

A primate city is always the most technologically advanced city in the country: Technological advancement is not a defining characteristic of a primate city.

Q72. Instruction:

Given below are two statements: one is labelled as Assertion A and the other is labelled as reason R

Assertion: Areal Differentiation is also known as chorology or chorography.

Reason: Areal differentiation may be termed as idiographic as it is concerned with unique and particular.

In the light of the above statements, choose the correct answer from the option given below.

(A). Both A and R are correct and R is the correct explanation of A.

(B). Both A and R are correct but R is Not the correct explanation of A.

(C). A is correct but R is not correct

(D). A is not correct but R is correct

Answer: b

Solution:

Assertion: Areal Differentiation is also known as chorology or chorography. This statement is correct. Areal differentiation is another term for chorology or chorography, which are disciplines concerned with the study and description of the characteristics of geographic areas.

Reason: Areal differentiation may be termed as idiographic as it is concerned with unique and particular. This statement is correct. Idiographic refers to the study of unique and particular phenomena or characteristics of specific areas or regions.

Q73. Instruction:
The Water (Prevention and Control of Pollution) Act was enacted in:
(A). 1977
(B). 1982
(C). 1974
(D). 2006
Answer: c
Solution:
The **Water (Prevention and Control of Pollution) Act, 1974** was the first significant environmental legislation enacted in India to address water pollution. Its primary aim was to prevent and control water pollution by maintaining or restoring water quality. This Act also provided for the establishment of the **Central Pollution Control Board (CPCB)** and **State Pollution Control Boards (SPCBs)** to implement and monitor its provisions. The legislation was a milestone in India's environmental protection efforts, paving the way for subsequent environmental laws.
Information Booster:
1. The Act was introduced to ensure the conservation of water resources.
2. It provides for the penalization of industries or individuals that pollute water bodies.
3. The Act empowers boards to set water quality standards and inspect industries.
4. CPCB monitors interstate water bodies, while SPCBs oversee state-level water quality.
5. It emphasizes both prevention and restoration measures for polluted water sources.

Q74. Arrange the following social-ecological movements in correct chronological order.
A. Aarey Movement, Mumbai
B. Chipko Movement
C. Narmade Bachao Andholan
D. Jungle Bachao Andholan
Choose the correct answer from the option given below:
(A). A, B, C, D
(B). B, D, C, A
(C). B, C, D, A
(D). D, C, B, A
Answer: B
Solution:
The correct answer is: (b), **B, D, C, A**
Chipko Movement - 1973
Jungle Bachao Andholan - 1982
Narmade Bachao Andholan - 1985
Aarey Movement, Mumbai – 2014

Chipko Movement: The Chipko Movement, also known as the Chipko Andolan, originated in the early 1970s in the Himalayan region of India. It involved the villagers, particularly women, hugging trees to prevent them from being cut down by contractors and loggers.
Jungle Bachao Andolan: The Jungle Bachao Andolan, or Forest Conservation Movement, is associated with the tribal communities in India. It emerged in the late 1970s and early 1980s and aimed to resist deforestation, encroachment on tribal lands, and displacement of indigenous communities from their traditional forest habitats.
Narmada Bachao Andolan: The Narmada Bachao Andolan (NBA) is a social movement that began in the 1980s to protest against the construction of large dams on the Narmada River in India. Led by activist Medha Patkar, the movement advocated for the rights of displaced communities and highlighted the environmental and social impacts of large dam projects.
Aarey Movement, Mumbai: The Aarey Movement in Mumbai started in 2014, primarily opposing the felling of trees in the Aarey Milk Colony to make way for infrastructure projects such as a metro car shed. The movement focused on environmental conservation and the protection of green spaces in urban areas.

Q75. Given below are two statements:
Statement I: Zone I in Von Thunen model is devoted to horticulture.
Statement II: Zone V in Von Thunen model used a seven-year crop rotation.
In the light of the above statements, choose the correct answer from the options given below.
(A). Both Statement I and Statement Il are true
(B). Both Statement I and Statement Il are false
(C). Statement I is true but Statement Il is false
(D). Statement I is false but Statement Il is true
Answer: C
Solution:
The correct answer is: (c), **Statement I is true but Statement Il is false**
Statement I: Zone I in Von Thunen model is devoted to horticulture: This statement is true. Zone I in which the economic rent is high is devoted to horticulture, nearest to the city because of the perishable nature of the products.
Statement II: Zone V in Von Thunen model used a seven-year crop rotation: This statement is false. Zone V in Von Thunen model followed a three-field system, whereby one- third of the land was used for field crops, another one- third for pastures, and the rest left fallow.

Q76. Which of the following pairs of Himalayan Passes and the Ranges in which they are located is/are correctly matched? 1. Zoji La - Great Himalayas 2. Banihal Pass - Pir Panjal Range 3. Photu La - Ladakh Range 4. Khardung La - Karakoram Range Select the answer using the code given below:
(A). 2 only
(B). 4
(C). 1 and 2 only
(D). 1, 2 and 3
Answer: c
Solution:
The correct Ans is (c) 1 and 2 only. 1. Zoji La - Great Himalayas

2. Banihal Pass - Pir Panjal Range
3. Photu La - **Zanskar range**
4. Khardung La - Ladakh Range

Information Booster:

Zoji La – Zanskar Range
• **Location**: Connects Srinagar with Leh in Ladakh.
• **Range**: Zanskar Range (not in the Great Himalayas).

Banihal Pass – Pir Panjal Range
• **Location**: Connects the Kashmir Valley with Jammu.
• **Range**: Pir Panjal Range.

Photu La – Ladakh Range
• **Location**: Lies on the road between Kargil and Leh.
• **Range**: Ladakh Range.

Khardung La – Ladakh Range
• **Location**: Gateway to Nubra and Shyok Valleys in Ladakh.
• **Range**: Ladakh Range (often confused with the Karakoram Range but located in the Ladakh Range).

Nathu La – Eastern Himalayas (Sikkim)
• **Location**: Connects India with Tibet, located in Sikkim.
• **Range**: Eastern Himalayas.

Lipulekh Pass – Kumaon Himalayas
• **Location**: Situated on the border between India and Tibet, in Uttarakhand.
• **Range**: Kumaon Himalayas.

Shipki La – Himalayas
• **Location**: Connects Himachal Pradesh with Tibet.
• **Range**: Himalayas.

Thang La – Ladakh Range
• **Location**: Near Leh.
• **Range**: Ladakh Range.

Mana Pass – Greater Himalayas
• **Location**: Near Badrinath, in Uttarakhand.
• **Range**: Greater Himalayas.

Q77. Instruction:
Match the following
Match the list I with list II

List I	List II		
A.	Topophilia	I.	The area served by a city
B.	Transhumance	II.	The application of the principles of ecology to a study of urban environment
C.	Urban Ecology	III.	A seasonal movement of men and animals between different seasonal grazing grounds
D.	Umland	IV.	The feeling of affection individuals has for particular places

(A). A- IV, B- III, C- I, D- II
(B). A- IV, B- III, C- II, D- I
(C). A- IV, B- I, C- II, D- III
(D). A- IV, B- II, C- I, D- III
Answer: b
Solution:

List I	List II		
A.	Topophilia	I.	The feeling of affection individuals has for particular places
B.	Transhumance	II.	A seasonal movement of men and animals between different seasonal grazing grounds
C.	Urban Ecology	III.	The application of the principles of ecology to a study of urban environment
D.	Umland	IV.	The area served by a city

Topophilia reflects the emotional connection people feel toward specific places, which can range from personal spaces like a favorite room to larger areas such as entire cities or countries. It encompasses the personal, emotional significance that a location holds.
Transhumance involves the periodic migration of livestock and herders between lowland and highland areas according to seasonal changes. This practice helps to maximize the availability of grazing resources throughout the year and is different from nomadism in that it follows a regular pattern.
Urban ecology examines how ecological principles apply to urban areas, focusing on interactions between natural and human-made environments. It involves studying how urban spaces affect and are affected by ecological processes, including the impact of human activities on the environment.
Umland refers to the surrounding region that depends on a city for various services and economic activities. It is essentially the city's sphere of influence, encompassing areas that interact with and are impacted by the urban center.

Q78. Which of the following bodies is established under the Water Act, 1974?
(A). National Water Authority
(B). Central Pollution Control Board (CPCB)
(C). Ministry of Water Resources
(D). River Basin Authority
Answer: b
Solution:
The Water (Prevention and Control of Pollution) Act, 1974 established the Central Pollution Control Board (CPCB). The CPCB is the key authority responsible for regulating water pollution, setting standards, and implementing measures to prevent and control water pollution across India. It plays a central role in monitoring the quality of water, implementing the Water Act, and coordinating with state pollution control boards.
Information Booster
Central Pollution Control Board (CPCB):
The Central Pollution Control Board (CPCB) was established in 1974 under the Water (Prevention and Control of Pollution) Act, 1974. Its primary objective is to prevent and control water pollution in India.

Key Responsibilities: The CPCB is tasked with setting water quality standards, monitoring water pollution levels, and advising the government on water management strategies. It collaborates with the State Pollution Control Boards (SPCBs) to enforce these standards and take corrective actions where pollution levels exceed permissible limits.

Functions:

The CPCB formulates rules and standards for water quality.

It monitors the quality of surface water bodies such as rivers, lakes, and reservoirs.

It also plays a critical role in identifying industries that contribute to water pollution and ensuring that they comply with the necessary regulations for waste treatment and disposal.

The CPCB has been pivotal in ensuring the sustainable management of water resources in India, working toward improving the quality of water and reducing pollution in water bodies.

Additional Knowledge:

National Water Authority, Ministry of Water Resources, River Basin Authority:

 National Water Authority and River Basin Authorities are not established under the Water Act, 1974. These bodies are part of different mechanisms for managing water resources and river basins, but their establishment is not specifically under the Water Act of 1974.

 The Ministry of Water Resources is a government body responsible for the formulation of policies and regulations related to water resources but was not established by the Water Act, 1974. The Ministry manages water-related projects and programs through various departments and agencies.

Q79. Instruction:

Identify the correct pair:

1. World Island: Europe, Asia, and Africa
2. Pivot Area: Core region of Mackinder's Heartland
3. Geography of Peace: Mackinder
4. All of the above

Choose the correct option:

(A). 1 and 3

(B). 2 and 3

(C). 4 only

(D). 1 and 2

(E). Question not Attempted

Answer: d

Solution:

World Island → Europe, Asia, and Africa: This is a correct pair. Mackinder referred to the combined landmass of Europe, Asia, and Africa as the "World Island," emphasizing its geopolitical importance.

Pivot Area → Core region of Mackinder's Heartland: This is also correct. The Pivot Area was identified as the central part of the Heartland, critical for controlling global power.

Information Booster

1. World Island: A term coined by Mackinder, referring to the combined landmass of Europe, Asia, and Africa, which he believed was pivotal to controlling global power.
2. Pivot Area: The central region of the Heartland, identified by Mackinder as the "geopolitical pivot" critical for dominance over the World Island.

3. Geography of Peace: A book by Nicholas Spykman, which presented the Rimland Theory in opposition to Mackinder's Heartland Theory.

Additional Knowledge

Geography of Peace → Mackinder: This is incorrect. The book *Geography of Peace* was written by Nicholas Spykman, not Mackinder.

Q80. Regarding the urbanization data in Census 2011, identify the correct statements:

1. Goa is the most urbanized state in India in terms of percentage of the total population.
2. Himachal Pradesh has the highest percentage of rural population.
3. Statutory Towns are those that are notified by law/statute irrespective of demographic characteristics.
4. Census Towns must have at least 75% of the male main working population engaged in non-agricultural pursuits.

(A).1 and 3 only
(B). 2 and 4 only
(C). 1, 2, and 3
(D). 1, 2, 3, and 4

Answer: d

Solution:

Introduction

The **Census of India 2011** provides comprehensive insights into the patterns of urbanization in the country, and in this context, **all the given statements are correct**.

Information Booster

 Goa is the most urbanized state in India in terms of percentage of the total population - As per Census 2011, **Goa** has the **highest proportion of urban population** among all Indian states.

 This is due to factors such as **tourism-driven economy, service sector dominance, and compact settlement patterns**.

 Himachal Pradesh has the highest percentage of rural population -Himachal Pradesh records one of the **lowest levels of urbanization** in India.

 The predominance of **mountainous terrain, dispersed settlements, and agrarian livelihoods** contributes to its high rural population share.

 Statutory towns are those that are notified by law/statute irrespective of demographic characteristics -Statutory towns are declared urban by a **state or central legislation**.

 Their status does not depend on population size, density, or occupational structure.

 Census towns must have at least 75% of the male main working population engaged in non-agricultural pursuits - One of the three essential criteria for a **Census Town** is that **75% or more of the male main workers** should be engaged in **non-agricultural activities**.

 The other criteria include a **minimum population of 5,000** and a **population density of at least 400 persons per sq km**.

Additional Knowledge

 Urbanization classification in Census 2011 -

o Census 2011 classifies urban areas into **Statutory Towns** and **Census Towns**.

o This classification helps capture both **administrative urbanization** and **functional urban characteristics**.

Correct answer interpretation -
o Since **all four statements accurately reflect Census 2011 definitions and data**, none of them are eliminated.
o Therefore, the correct answer is **1, 2, 3, and 4**.

Q81. Match the following List-I (Geographers/Thinkers) and List-II (Associated Idea/Critique)

List I (Geographer/Thinker)	List II (Associated Idea/Critique)
A. Michel Foucault	I. Critique of power structures in space; dialectical understanding
B. Henri Lefebvre	II. Discourse, power/knowledge, and spatial regimes
C. David Harvey	III. Phenomenological experience, sense of place, *Topophilia*
D. Yi-Fu Tuan	IV. The "Production of Space" under capitalism

(A). A-II, B-I, C-IV, D-III
(B). A-II, B-IV, C-I, D-III
(C). A-III, B-I, C-II, D-IV
(D). A-IV, B-II, C-I, D-III
Answer: b
Solution:
Information Booster
• **Michel Foucault:** A French philosopher whose concepts of **discourse, power/knowledge, and surveillance** have profoundly influenced post-structuralist geography, analyzing how spatial arrangements enforce social control.
• **Henri Lefebvre:** A French Marxist sociologist, his work *The Production of Space* argues that space is not neutral but is actively **produced by social relations**, particularly under capitalism.
• **David Harvey:** A leading figure in radical and Marxist geography, he critiques **power structures in space**, particularly urban and economic geography, using a **dialectical understanding** of capitalism.
• **Yi-Fu Tuan:** A pioneer of humanistic geography, he explored the subjective, emotional bonds between people and place, coining terms like **Topophilia** (love of place) and emphasizing **phenomenological experience**.
Additional Knowledge
• Lefebvre's ideas on the **"right to the city"** have significantly influenced contemporary urban social movements and critical urban theory.

Q82. Arrange the following Indian environmental legislations in their correct chronological order of enactment:
1. The Air (Prevention and Control of Pollution) Act
2. The Wildlife Protection Act
3. The Water (Prevention and Control of Pollution) Act
4. The Environmental (Protection) Act
Choose the correct option:
(A). 3, 2, 1, 4
(B). 2, 3, 1, 4
(C). 4, 1, 3, 2
(D). 2, 1, 3, 4

Answer: b
Solution:
Introduction
India has enacted several key laws to protect its environment, wildlife, and control pollution, reflecting the national commitment to ecological balance.
Information Booster
• **The Wildlife Protection Act:** Enacted in **1972**.
• **The Water (Prevention and Control of Pollution) Act:** Enacted in **1974**.
• **The Air (Prevention and Control of Pollution) Act:** Enacted in **1981**. This Act stipulates the functions of the **Central Pollution Control Board (CPCB)** and State Pollution Control Boards.
• **The Environmental (Protection) Act:** Enacted in **1986**. This is an umbrella Act designed to implement the decisions of the UN Conference on the Human Environment (Stockholm, 1972).
Additional Knowledge:
• The **Water Act of 1974** led to the establishment of the Central and State Pollution Control Boards.
• The **Air Act of 1981** was later amended in 1987.
• The **National Green Tribunal Act** was enacted much later in **2010** for the effective and expeditious disposal of cases relating to environmental protection and conservation.

Q83. Arrange the following works by Arab scholars in the order of their publication/major period:
1. *Kitab-ul-Hind* (Al-Biruni)
2. *Muqaddimah* (Ibn Khaldun)
3. *Kitab-i-Rujar* (Al-Idrisi)
4. *Muruj-adh-Dhahab* (Al-Masudi)
(A). 4, 1, 3, 2
(B). 1, 4, 2, 3
(C). 4, 2, 1, 3
(D). 2, 1, 3, 4
Answer: a
Solution:
Introduction:
The chronological development of Arab scholarly works reflects the evolution of historical, geographical, and philosophical thought, and the correct order of publication is 4, 1, 3, 2.
Information Booster:
 Muruj-adh-Dhahab - This work by **Al-Masudi** is one of the earliest comprehensive texts on world history and geography, written in the **10th century**.
 It documents extensive travels, cultural observations, and descriptions of different regions, making it a cornerstone in early Islamic historiography.
 Kitab-ul-Hind - Authored by **Al-Biruni** in the **11th century**, this text provides an in-depth study of Indian society, religion, science, and culture.
 Its scientific approach and cross-cultural perspective make it a landmark in anthropology and comparative studies.
 Kitab-i-Rujar - Written by **Al-Idrisi** in the **12th century**, this work is a major contribution to medieval world mapping and geographic documentation.

 It was commissioned in Sicily and is known for its accuracy in depicting trade routes, cities, and climate zones.
 Muqaddimah - Written by **Ibn Khaldun** in the **14th century**, it is considered the foundation of sociology, historiography, and economic theory.
 It introduces concepts such as social cohesion, rise and fall of civilizations, and scientific historical analysis.

Additional Knowledge:

 Kitab-ul-Hind - Though extremely valuable, it is **not the earliest** among the listed works; it belongs to the 11th century, making it come after Muruj-adh-Dhahab.
 Muqaddimah - This groundbreaking intellectual work is the **latest** among the four, written much after the medieval geographical texts.
 Kitab-i-Rujar - A highly accurate medieval map but placed in the 12th century, so it cannot come before Muruj-adh-Dhahab or Kitab-ul-Hind.
 Muruj-adh-Dhahab - The earliest of all the four works, establishing the starting point of the correct chronological sequence.

Q84. Which of the following scenarios best exemplifies a primate city?
(A). A country where the top three cities follow a 100:50:25 population ratio.
(B). A nation with no intermediate cities between its capital and small towns.
(C). A region where cities grow uniformly due to balanced infrastructure investment.
(D). An urban system where the largest city is twice the size of the second-largest.
Answer: b
Solution:
A primate city is characterized by:
1. Disproportionate size dominance: The largest city is significantly larger (typically at least twice the size) than the second-largest city.
2. Absence of intermediate cities: The urban hierarchy lacks medium-sized cities, creating a "gap" between the primate city and smaller towns.
3. Centralized functions: The primate city dominates political, economic, and cultural life (e.g., London in the UK, Bangkok in Thailand).
Information booster
100:50:25 ratio: This follows therank-size rule(gradual decline in city sizes), not primacy. Primate cities show ratios like100:30:20(Jefferson's Law).
Uniform growth: Balanced urban systems (e.g., Germany) contradict primate city patterns.
Largest city twice the size of the second: While suggestive, this alone doesn't confirm primacy. The key is the lack of intermediate cities and extreme dominance(e.g., Paris is 10x larger than Lyon, not just 2x).

Q85. Instruction:
Given below are two statements:
Statement I: Zone IV in Von Thunen model used a seven-year crop rotation.
Statement II: Zone VI in Von Thuen Model was devoted to livestock ranching.
In the light of the above statements, choose the correct answer from the options given below.
(A). Both Statement I and Statement II are true
(B). Both Statement I and Statement II are false

(C). Statement I is true but Statement II is false
(D). Statement I is false but Statement II is true
Answer: a
Solution:
Statement I: Zone IV in Von Thunen model used a seven-year crop rotation. This statement is correct. In the crop rotation, there was one yar of rye, one year of barley, one year of oats, three years of pastures, and one year of fallow.
Statement II: Zone VI in Von Thuen Model was devoted to livestock ranching. This statement is correct. In the Von Thunen model, Zone VI (the outermost zone) is designated for livestock ranching. This zone is the furthest from the central market and is suitable for activities that require large areas of land but involve lower transportation costs per unit of output.

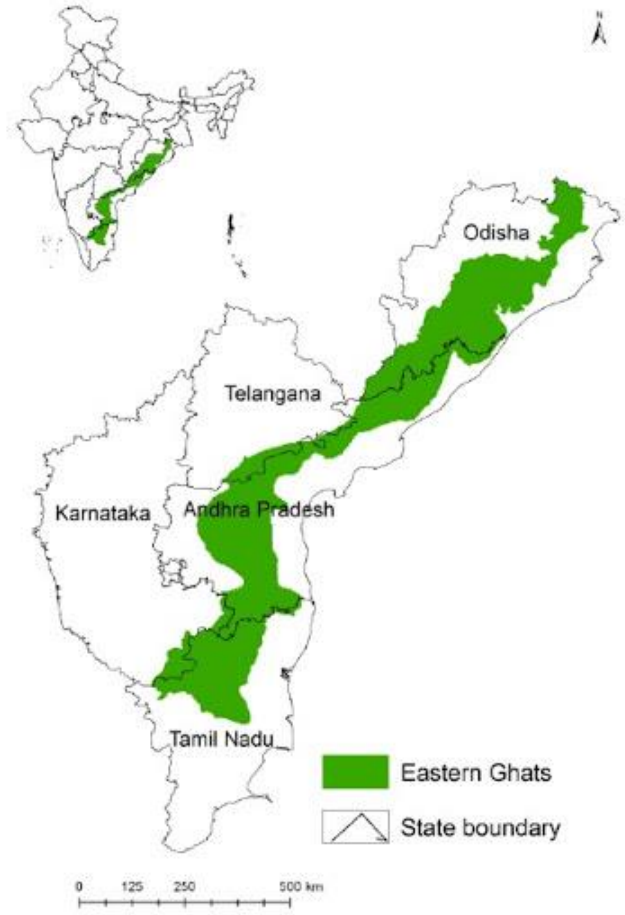
Q86. Match the geographer with the concept/idea they are primarily associated with:

List I (Geographer)	List II (Concept/Idea)
A. Yi-Fu Tuan	I. Nomogenesis (Evolutionary Theory)
B. Edward Relph	II. Chorological Science (Study of Regions)
C. Lev Berg	III. Topophilia (Love for a place)
D. Alfred Hettner	IV. Placelessness (Lack of identity/connection)

(A). A-III, B-IV, C-I, D-II
(B). A-IV, B-III, C-II, D-I
(C). A-I, B-II, C-III, D-IV
(D). A-II, B-I, C-IV, D-III
Answer: a
Solution:
Introduction
This question links geographers, particularly those from the Humanistic and Russian schools of thought, with their unique theoretical contributions.
Information Booster
• Yi-Fu Tuan (Humanistic Geography) explored emotional bonds to places, coining the term **Topophilia**.
• Edward Relph (Humanistic Geography) differentiated between space and place, and introduced the concept of **Placelessness** as a lack of identity due to modernization.
• Lev Berg (Russian School) proposed the evolutionary theory of **Nomogenesis**.
• Alfred Hettner (German School) advocated for geography as a **Chorological Science**, focusing on the study of regions.
Additional Knowledge
• The German School geographer **Ferdinand von Richthofen** also differentiated between 'general' and 'regional' geography and emphasized systematic regional study.
• Humanistic geography uses qualitative methods like directed intuition to engage with lived experiences.

Q87. The Eastern Ghats are characterized by which of the following?

(A). known as Sahyadri
(B). discontinuous chains of residual mountains
(C). Anai Mudi is the highest peak
(D). continuous chains of mountains
Answer: b
Solution:
The Eastern Ghats are a series of discontinuous and residual mountains. Unlike the Western Ghats, which form a continuous chain of mountains along the western coast, the Eastern Ghats are interrupted at various intervals. These mountains do not have a uniform alignment and break up into several smaller ranges.
Information Booster:
1. The Eastern Ghats are a discontinuous mountain range, unlike the Western Ghats, which are a continuous chain.
2. The Eastern Ghats run along the eastern coast of India, from Odisha in the north to Tamil Nadu in the south.
3. The Eastern Ghats are made up of residual mountains, which means they are remnants of older mountain systems.
4. The highest peak in the Eastern Ghats is Mahendragiri, located in Odisha, with an elevation of 1,501 meters.
5. The Eastern Ghats are located parallel to the Bay of Bengal and do not significantly contribute to the monsoon rainfall, unlike the Western Ghats.



Additional Information:

 The Western Ghats are also called Sahyadri in Maharashtra and are continuous, unlike the Eastern Ghats, which are fragmented and disjointed.

 Anai Mudi, located in the Western Ghats, is the highest peak in India's southern region at an elevation of 2,695 meters.

 Continuous chain of mountains is incorrect because the Eastern Ghats are not a continuous chain of mountains but rather a series of disconnected ranges.

Q88. The concept of Lebensraum became popular in the discipline of political Geography after the publication of –

(A). Making Political Geography

(B). Geographical Pivot of History

(C). Cosmography

(D). Politische Geographic

Answer: d

Solution:

The concept of Lebensraum (living space) became prominent in political geography due to the publication of Politische Geographic by Friedrich Ratzel. In this work, Ratzel proposed the idea that the expansion of a state's territory, or "Lebensraum," was essential for its growth and survival, influencing political geography and geopolitics.

Politische Geographic is a key text in the development of political geography and discusses ideas that later influenced Nazi territorial expansion policies, making the concept of Lebensraum notorious.

Information Booster:

Lebensraum is a term that suggests that nations must expand their territories in order to accommodate their growing populations, a concept Ratzel used to explain state behavior.

Friedrich Ratzel is known for his work on geopolitics and political geography, where he linked the state's territory with its survival and growth.

Geographical Pivot of History, by Halford Mackinder, is another influential geopolitical work but does not focus on the Lebensraum concept.

Making Political Geography is another important text, but it is unrelated to the specific development of the Lebensraum theory.

Cosmography refers to the study of the universe and its structure and does not contribute to the theory of political geography or Lebensraum.

Additional Knowledge:

Geographical Pivot of History by Halford Mackinder emphasizes the strategic importance of the "Heartland" and how controlling it can lead to world dominance, though it does not discuss Lebensraum.

Making Political Geography by Richard Hartshorne is another influential text but focuses more on the theoretical framework of political geography, not on expansionist theories like Lebensraum.

Cosmography, on the other hand, is more of a scientific and philosophical exploration of the universe, unrelated to political theories on territorial expansion.

Q89. "Transportation and the Societal Framework" work is associated with which of the following scholars?
(A). Edward Ullman
(B). M. E. Hurst
(C). G. K. Zipf
(D). John Friedman
Answer: b
Solution:
The work "Transportation and the Societal Framework" is attributed to M. E. Hurst, who focused on the relationship between transportation and societal structures. Hurst's studies analyzed how transportation networks shape social, economic, and spatial organization, highlighting their role in urban and regional planning.
Information Booster:
1. M. E. Hurst examined the impact of transportation systems on societal development.
2. His research contributed to economic geography and spatial planning.
3. Transportation infrastructure influences migration, trade, and economic growth.
4. Urbanization and regional connectivity are directly linked to efficient transport systems.
5. Modern transport policies are often based on principles from early transport geography studies.
6. Hurst's work helps in understanding how transport development affects industrial and residential locations.
Additional Knowledge:
(a) Edward Ullman: Incorrect; Ullman was a leading transportation geographer but is known for spatial interaction models, not this specific work.
(c) G. K. Zipf: Incorrect; known for Zipf's Law, which describes urban rank-size distribution.
(d) John Friedman: Incorrect; developed theories on regional planning and core-periphery models.

Q90. Which of the following countries has the largest population?
(A). Brazil
(B). Nigeria
(C). Indonesia
(D). United States of America
Answer: d
Solution:
Introduction
Among the four countries listed, the **United States of America (USA)** has the largest population. As of recent global estimates, the USA is the third-most populous country in the world, while the other countries listed (Brazil, Nigeria, and Indonesia) have smaller populations.
Information Booster
• **Ranking**: The **United States of America (USA)** is one of the world's most populous countries.
• **Population Size**: The USA's population is significantly larger than the populations of Brazil, Nigeria, and Indonesia.
• **Global Context**: The world's largest populations are in India and China.
• **Demographic Profile**: The USA's population is characterized by a relatively low growth rate but high net migration.

• **Economic Impact**: A large population contributes to a massive domestic consumer market.

Additional Points for Incorrect Options

• **Brazil**, **Nigeria**, and **Indonesia**: While all are highly populous countries, their populations are smaller than that of the United States of America.

Q91. The agricultural activities from the city centre to the periphery propounded by Von Thunen: Arrange it

(A) Grain farming

(B) Market Gardening

(C) Three fold system

(D) Firewood and lumbering product

Choose the correct answer from the options given below:

(A). (D), (B), (A), (C)

(B). (A), (B), (C), (D)

(C). (C), (D), (A), (B)

(D). (B), (D), (A), (C)

Answer: d

Solution:

Von Thünen's model of agricultural land use describes the arrangement of different agricultural activities around a central market (city center) in concentric rings, based on transportation costs and land value. The arrangement is as follows:

(B) Market Gardening:

Closest to the city center because perishable goods like vegetables, fruits, and dairy need to be transported quickly to the market. High transportation costs and perishability make it suitable for this zone.

(D) Firewood and Lumbering Product:

Located in the second ring, as wood is bulky and expensive to transport. It needs to be relatively close to the market but does not perish quickly.

(A) Grain Farming:

Found in the third ring, as grains are less perishable and easier to store and transport over longer distances.

(C) Three-Fold System:

Located at the periphery, where land is cheapest. This system involves extensive farming practices like crop rotation with minimal transportation costs needed.

Information Booster:

Von Thünen's Model Assumptions:

A single, isolated market city surrounded by uniform soil and climate.

Farmers aim to maximize profits.

Transportation costs increase with distance.

Modifications in Real World:

Modern infrastructure, refrigeration, and global trade make transportation costs less significant.

Factors like government policies, land ownership, and climate influence land use.

Relevance Today:
The model explains certain patterns of land use, especially in developing areas where transportation and markets still play a significant role.

Q92. Match the items in List-I with those in List-II and select the correct code.

List I (Philosophical Critique)	List II (Core Term/Focus)
A. Humanistic Geography	I. Structure and Agency
B. Radical Geography	II. Discourse and Heterotopias
C. Post-Structuralism	III. Topophilia and Lifeworld
D. Structuration Theory	IV. Exploitation and Uneven Development

(A). A-III, B-IV, C-II, D-I
(B). A-IV, B-III, C-I, D-II
(C). A-III, B-I, C-II, D-IV
(D). A-II, B-IV, C-III, D-I
Answer: a
Solution:
Information Booster
• **Humanistic Geography:** Focuses on subjective experience, with concepts like **Topophilia** (Yi-Fu Tuan) and the **Lifeworld** (Edward Relph), emphasizing meaning over objective measurement.
• **Radical Geography:** Rooted in Marxism, it analyzes the capitalist system's role in creating **exploitation** and **uneven development** (David Harvey).
• **Post-Structuralism:** Influenced by Foucault, it examines how power operates through language and ideas (**Discourse**) and studies spaces of difference/exclusion (**Heterotopias**).
• **Structuration Theory:** Developed by Giddens and applied by Thrift, it attempts to bridge the gap between **Structure** (social rules/systems) and individual **Agency** (human action).
Additional Knowledge
• These approaches collectively form the **Critical Turn** in geography, moving the discipline away from the nomothetic-spatial focus of the Quantitative Revolution.

Q93. Match List I (Scale/Number) with List II (Measured Entity/Intensity):

List I (Scale/Number)	List II (Measured Entity/Intensity)
A. Fujita Scale	I. Maximum wind speed and storm surge
B. Beaufort Number 12	II. Tornado severity and damage
C. Saffir-Simpson Scale	III. Wind force of Hurricane
D. Roaring Forties	IV. Prevailing wind region ≈40°S latitude

Choose the correct answer from the options given below:
(A). A-I, B-II, C-IV, D-III
(B). A-IV, B-III, C-I, D-II
(C). A-II, B-III, C-I, D-IV
(D). A-III, B-I, C-II, D-IV
Answer: c
Solution:

Various meteorological scales are used to classify the intensity of winds and storms based on their speed and damage potential.

Information Booster:

• Fujita Scale → Tornado severity and damage: The Fujita Scale (and later, the Enhanced Fujita Scale) measures tornado intensity based on wind speed and the damage inflicted on structures and vegetation.

• Beaufort Number 12 → Wind force of Hurricane: Beaufort Number 12 is the highest category on the Beaufort scale and corresponds to Hurricane Force winds (speeds ≥73 mph or 118 km/h).

• Saffir-Simpson Scale → Maximum wind speed and storm surge: This scale ranks hurricanes into five categories primarily based on sustained wind speed, but is also associated with pressure and storm surge estimation.

• Roaring Forties → Prevailing wind region ≈40°S latitude: This refers to the strong westerly winds found primarily between 40° and 50° South latitude.

Additional Knowledge:

• The Beaufort scale measures wind speed based on observable effects on land or sea.

• The Richter scale is used to measure **earthquake** magnitude.

Q94. Match the Slope Element (List I) with its Correct Description/Alternative Name (List II) as presented in the ideal hillslope profile:

List I (Slope Element)	List II (Description/Alternative Name)
A. Summital Convexity	1. Slope of Derivation / Back wasting segment
B. Free Face	2. Debris Controlled Slope / Repose Slope
C. Rectilinear Element	3. Waning Slope / Lower Wash Slope
D. Concave Element	4. Waxing Slope / Upper Wash Slope

Choose the correct answer from the options given below:

(A). A - 1, B - 4, C - 3, D - 2

(B). A - 4, B - 1, C - 2, D - 3

(C). A - 3, B - 2, C - 1, D - 4

(D). A - 2, B - 3, C - 4, D - 1

Answer: b

Solution:

An ideal hillslope profile consists of four distinctive segments (elements) which are shaped by denudational processes acting between the hilltop (crest) and the valley bottom.

Information Booster:

• Summital Convexity: Located at the hill crest, this is also called the **Waxing Slope** because it was thought to grow in height and dimension (size). It is also known as the **Upper Wash Slope**.

• Free Face (or Cliff): This is the steep, wall-like slope of bare rock. It is called the **Slope of Derivation** because of the instantaneous downslope transport of weathered materials. It is subject to **back wasting** (retreat).

• Rectilinear Element: The straight segment, often covered in debris, is called the **Debris Slope**. Its angle is controlled by the angle of repose, leading to the name **Repose Slope**. It is also known as a **Debris Controlled Slope**.

• Concave Element: The basal segment where the slope angle decreases. This is why it is called the **Waning Slope** and sometimes the **Lower Wash Slope**.

Additional Knowledge:
• W.M. Davis's Slope Decline Model suggests a progressive decline in slope angle and a sequential change in form from convex (youth) to rectilinear (mature) to concave (old).
• L.C. King's Parallel Retreat Theory maintains that the **Free Face** and **Rectilinear** elements retreat laterally while maintaining their angle, with the **Concave** pediment extending upslope.
• W. Penck's Slope Replacement Theory involves the parallel retreat of the steeper slope segments which leads to the **replacement** of the lower segment with a new unit of gentler gradient.

Q95. Select the correct option to fill in the blank.
The Himalayan passes vary by region, including Nathu La in Sikkim, Khardung La in Ladakh, Rohtang Pass in Himachal Pradesh, and Lipulekh Pass in Uttarakhand, _____ trade and travel through the mountains.
(A). all facilitates
(B). both facilitate
(C). every facilitating
(D). each facilitating
Answer: d
Solution:
The correct option to fill in the blank is (d) "each facilitating."
Each facilitating: This option is correct because it grammatically fits the structure of the sentence. It means that each of the mentioned passes (Nathu La, Khardung La, Rohtang Pass, and Lipulekh Pass) facilitates trade and travel through the mountains.
Why other options are incorrect:
• **(a) all facilitates**: This option is incorrect because "facilitates" is a singular verb, and "all" requires a plural verb ("facilitate").
• **(b) both facilitate**: This option is incorrect because it implies only two subjects, whereas the sentence mentions more than two passes.
• **(c) every facilitating**: This option is incorrect because "every" is typically used with singular nouns and would not fit the plural subjects listed in the sentence.
Correct sentence: "The Himalayan passes vary by region, including Nathu La in Sikkim, Khardung La in Ladakh, Rohtang Pass in Himachal Pradesh, and Lipulekh Pass in Uttarakhand, each facilitating trade and travel through the mountains."

Q96. Instruction:
The slope declining model was proposed by
(A). W. Penck
(B). W.M. Davis
(C). L.C. King
(D). Wood
Answer: b
Solution:
Davis theory of slope decline has its roots in his essays on the 'convex profile of badland divides' (1892), the grading of mountain slopes (1898) and the geographical cycle (1899). Like the cyclic development of landscapes Davis hillslope and valleyside slope also undergo the process of cyclic development wherein there is progress decline in slope angle and sequential change in slope from youth(convex) through mature (rectilinear) to old. (concave) stages.

Q97. Match the following Environmental Laws in India with their Key Objectives:

List I (Act / Legislation)	List II (Objective)
A. The Wildlife (Protection) Act, 1972	I. Protection of endangered species and establishment of sanctuaries and national parks
B. The Water (Prevention and Control of Pollution) Act, 1974	II. Prevention and control of water pollution through regulatory boards
C. The Air (Prevention and Control of Pollution) Act, 1981	III. Regulation of industrial and vehicular air pollution
D. The Forest Conservation Act, 1980	IV. Restriction on diversion of forest land for non-forest purposes

Options:
(A). A–IV, B–II, C–III, D–I
(B). A–II, B–III, C–IV, D–I
(C). A–III, B–IV, C–I, D–II
(D). A–I, B–II, C–III, D–IV
Answer: d
Solution:
Introduction
India's environmental governance is underpinned by a series of landmark legislative acts enacted primarily since the 1970s. These laws establish the legal and institutional framework for conservation, pollution control, and sustainable resource management, aiming to balance development with ecological preservation.
Information Booster
Wildlife (Protection) Act, 1972
o This was India's first comprehensive wildlife conservation law.
o It established schedules for species protection, created a network of national parks and sanctuaries, and prohibited hunting, poaching, and illegal trade.
o Amendments introduced Community Reserves and Conservation Reserves for participatory conservation.
Water Act, 1974
o Aimed at preventing and controlling water pollution, it established the Central and State Pollution Control Boards (CPCB & SPCBs) to regulate discharge of pollutants and promote sewage and effluent treatment.
Air Act, 1981
o Designed to combat air pollution from industrial and vehicular sources, its empowered authorities to set emission standards and control airborne pollutants.
o It also extended monitoring mechanisms from the Water Act.
Forest Conservation Act, 1980
o Introduced to restrict diversion of forest land for non-forest purposes (like mining or industry).
o It mandated central government approval for land use change, curbing deforestation and ensuring compensatory afforestation.

Additional Knowledge

 The umbrella legislation guiding India's environmental protection is the **Environment (Protection) Act, 1986**.

 The establishment of the **National Green Tribunal (NGT, 2010)** further strengthened the enforcement mechanism for these laws.

 India's legal framework has evolved in response to global trends and local ecological disasters (like the Bhopal Gas Tragedy).

Q98. The theory of 'parallel retreat of slopes' was proposed by:

(A). Lester King

(B). Walther Penck

(C). John Wesley Powell

(D). G.K. Gilbert

(E). Question not Attempted

Answer: a

Solution:

The theory of 'parallel retreat of slopes' was proposed by Lester King in 1953. According to this theory, the process of slope retreat involves the uniform and parallel recession of the slopes due to weathering and erosion. This means that as the slopes weather and erode, they move back in parallel, maintaining the same shape and steepness, as opposed to other theories that suggest irregular or differential retreat. Lester King's theory focuses on the mechanical weathering processes, including freeze-thaw action, which lead to the gradual recession of the slope face in a parallel manner. This theory is part of the broader field of slope evolution and is a critical concept in the study of landform development.

Information Booster:

 Parallel Retreat of Slopes: The theory emphasizes the uniform erosion of slopes over time, where the back of the slope retreats in a parallel manner, rather than producing more irregular landforms. Over time, the slope angle remains roughly constant due to this parallel retreat.

 The theory stands in contrast to other models, such as Penck's theory of slope development, which discusses steps and stages of slope evolution, including differential erosion.

 Slope Evolution: This theory is essential in understanding how slopes evolve in relation to factors like climate, geological structure, and the type of weathering that predominates in a particular region.

Additional Knowledge

 (B) Walther Penck:

o Walther Penck proposed a different theory, known as the Penck's model of slope development. He believed that slopes undergo step-like development and are shaped by differential erosion, involving periods of steady-state followed by sudden changes due to tectonic activities.

 (C) John Wesley Powell:

o John Wesley Powell is best known for his work in the field of geomorphology and geography, particularly his studies of the Colorado River and the Grand Canyon. He proposed ideas about river erosion and landform development, but he did not propose the theory of parallel retreat of slopes.

 (D) G.K. Gilbert:

o G.K. Gilbert was an American geologist who is famous for his studies of landform processes and river terraces. He proposed a theory of base-level changes and lake shorelines, but not the theory of parallel retreat of slopes.

Q99. Instruction:
Identify correct statements about relief features of the oceans.
A. Telegraph plateau and Albatross plateau are located in North Atlantic and South Atlantic, respectively.
B. The Walvis Ridge separates Angola basin from Agulhas basin.
C. Carlsberg Ridge is located in Indian Ocean.
D. Amsterdam-St. Paul plateau is located in the South Pacific Ocean.
Choose the correct answer from the options given below:
(A). A, B and C only
(B). B, C and D only
(C). B and C only
(D). A and D only
Answer: c
Solution:
Statement B:The Walvis Ridge separates the Angola Basin from the Agulhas Basin. This statement is correct because the **Walvis Ridge** is a significant underwater geological feature in the **South Atlantic Ocean** that separates the **Angola Basin** to the north from the **Agulhas Basin** to the south.
Statement C:Carlsberg Ridge is located in the Indian Ocean. This statement is correct. The **Carlsberg Ridge** is a prominent tectonic feature in the **Indian Ocean**, forming part of the mid-ocean ridge system responsible for seafloor spreading in this region.
Information Booster:
• The **Walvis Ridge** is a prominent geological feature separating two basins in the South Atlantic.
• The **Carlsberg Ridge** is part of the Indian Ocean's mid-ocean ridge system, contributing to tectonic activity in the region.
• **Telegraph Plateau** is an underwater plateau in the North Atlantic.
• The **Amsterdam-St. Paul Plateau** is found in the southern Indian Ocean, near the islands of Amsterdam and St. Paul.
Additional knowledge:
Statement A:Telegraph plateau and Albatross plateau are located in the North Atlantic and South Atlantic, respectively. This statement is incorrect because, while the **Telegraph Plateau** is located in the **North Atlantic Ocean**, the **Albatross Plateau** is not in the South Atlantic; it is located in the Pacific Ocean.
Statement D:Amsterdam-St. Paul plateau is located in the South Pacific Ocean. This statement is incorrect. The **Amsterdam-St. Paul Plateau** is actually located in the **Indian Ocean**, near the islands of Amsterdam and St. Paul, not in the **South Pacific**.

Q100. Arrange the following elements of hill slope in correct sequence from top to bottom.
A. Waxing slope
B. Wanning slope
C. Debris slope
D. Free face

Choose the correct answer from the options given below:
(A). A, C, D, B
(B). A, D, C, B
(C). B, A, C, D
(D). C, D, A, B
Answer: B
Solution:
The correct answer is: (b), **A, D, C, B**
Waxing slope
Free face
Debris slope
Wanning slope
Slope, defined as angular inclinations of terrain between hill tops and valley bottoms, resulting from the combinations of many causative factors like geological structure, climate, vegetation cover, drainage texture and frequency, dissection index, relative reliefs and mass movements of rock wates, erosion and transportation of eroded materials etc.
The entire slope profile is punctuated by the presence of convexity, concavity, rectilinearity and free face.
These distinctive segments of slope profile are called elements or slope segments.
Summital convexity or waxing slope: the convex segment is found at the hill crest and this element is called summital convexity.
Free face: Free face element of hillslope represents wall like hill slope of bare rocks and is devoid of any debris.
Rectilinear element or debris slope: The rectilinear segment of hillslope profile between upper free face and lower concave element is called rectilinear element. Because of the presence of rock debris this element is called debris slope.
Concave element or wanning slope: The basal segment of an ideal hillslope profile is always characterized by concave element. The slope angle decreases as the segment of basal concavity increases. This is why this segment is called wanning slope.