

Test Code: 31012

FIAS – 2020 – GS12A/B

ForumIAS

ACADEMY

GENERAL STUDIES

ForumIAS
13/10/19
1910055909

Name Of Candidate	MITHUN PREMRAJ		
Email Id.		Roll No.	1910055909
Mobile No.		Date:	13/10/19

Time Allowed: Three Hours

Maximum Marks: 250

INDEX TABLE			INSTRUCTION	
Q. No.	Max. Marks	Marks Obtained	<p>1. Please do furnish Name, Email, Roll No and Mobile in the answer sheet.</p> <p>2. There are TWENTY questions printed in ENGLISH, all questions are compulsory.</p> <p>3. The number of marks carried by a question/part is indicated against it.</p> <p>4. Answers must be written in the medium authorized in the admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided.</p> <p>5. Word limit in questions, if specified, should be adhered to. Any page or portion of the page left blank in the Question-Cum Answer Booklet must be clearly Struck off.</p> <p><i>Any specific messages for ForumIAS Mentors/Evaluators with respect to your copy? Write it here.</i></p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>	
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Total Marks:				
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			Mode Of Examination :	Online <input type="checkbox"/> Offline <input type="checkbox"/>
			ECN CODE:	Evaluation Date:



Q.1) The vagaries of Indian Monsoon are not only a product of meteorological factors but also anthropogenic causes. Illustrate. (10 Marks, 150 Words)

Indian monsoon is highly variable, both temporally and spatially, ~~not due to~~, not only due to its inherent nature (meteorological characteristics), but also due to recent anthropogenic factors, especially over the past few decades.

Meteorological factors of monsoon variability

- i) Seasonality of monsoon winds
- ii) Orographic factors
 - Rain-shadow areas (beyond mountains → leeward side)
 - Winds parallel to mountains (eg: Rajasthan).
- iii) Monsoon breaks
- iv) Sea surface temperature and pressure variability (SST)
 - El Niño and La Niña
 - Indian Ocean dipole (IOD)
 - Pacific Decadal Oscillation (PDO)
- v) Development of low-pressure or high-pressure systems.
 - Cyclones
 - Cloud bursts.

However, anthropogenic factors have been increasingly influencing monsoon vagaries ~~as~~ ^{due} to its impact on hydro-ecologic balance.

- i) Deforestation - influencing moisture availability, microclimate regulation.
- ii) Increasing Greenhouse Gas emissions (GHGs) and rising global temperature.
- leading to global warming which in turn affects temperature and pressure systems → uncertainty in extent and timing of monsoon winds.
- iii) Degradation of Western Ghats and Himalayas.
- influences dynamics of monsoon circulation.
- iv) Urbanisation → Poor regulation of microclimate and hence erratic rainfall.

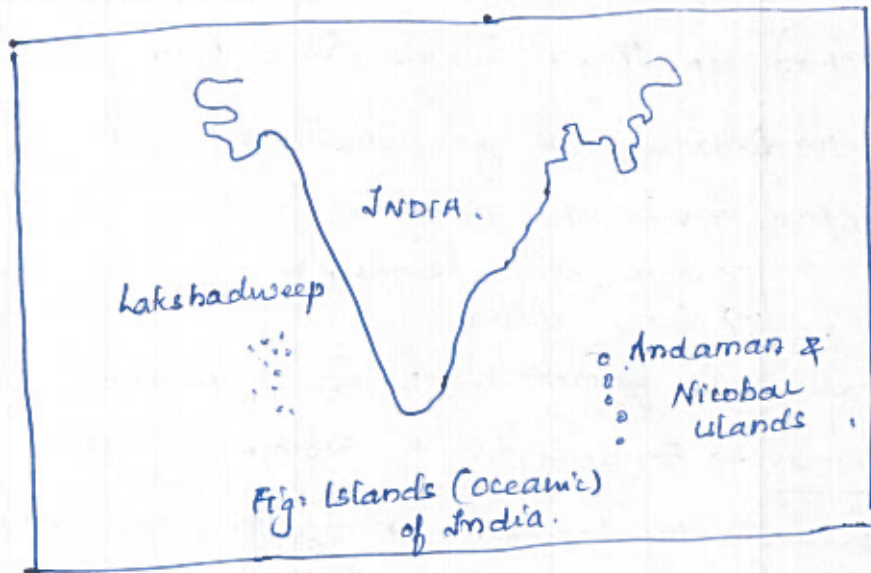
The sum total of reckless and unbalanced human activities have driven global warming and climate change impacting ~~as~~ already uncertain monsoon climate.

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

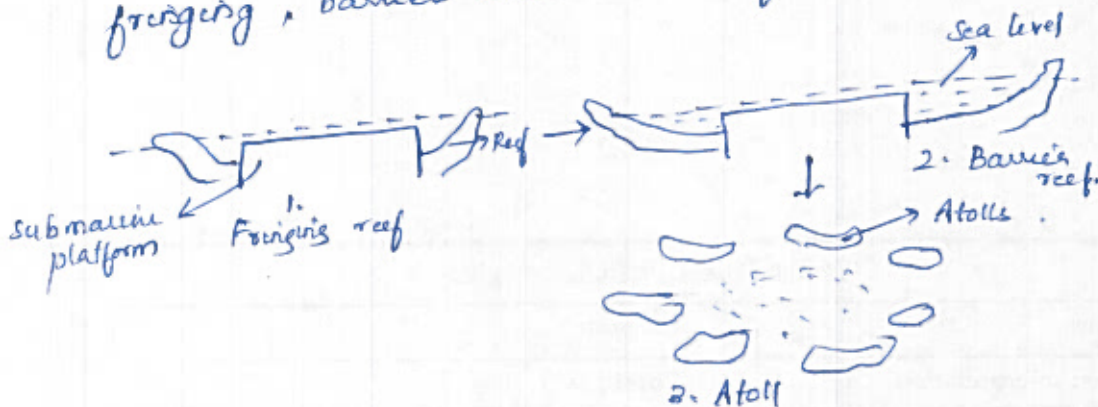


Q.2) Discuss the difference in the process of formation of Lakshadweep and Andaman & Nicobar Island of India. (10 Marks, 150 Words)



Lakshadweep Islands - Formation

- Lakshadweep islands are coral islands.
- Formed from coral reefs and comprise of fringing reef, barrier reef and atolls.
- Probably formed over a submarine platform formed due to hotspot volcanism.
- In stages, corals grew and sedimented forming fringing, barrier and atoll reefs chronologically



Andaman and Nicobar Island - formation

- Unlike Lakshadweep, these islands have been formed due to a combination of geological processes and comprise → volcanic islands
 - Continental islands; &
 - Coral islands.
- ~~Coral islands have formed similarly to Lakshadweep~~
- Volcanic islands → Formed due to submarine volcanism with ~~terrestrial~~ extrusive landform rising over sea level e.g.: Barren islands, Naucondam.
- Continental island → Formed due to submergence of ~~continental~~ part of Arakan Yoma mountains of Myanmar. (probably following sea level rise subsequent to ice age).
- Coral islands → Formed similarly to Lakshadweep on submarine platforms provided by either of the above processes.

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	



Q.3) Describe the concept of upwelling. Illustrate the causes and regions of upwelling and their socio-economic impact. (10 Marks, 150 Words)

Upwelling

Upwelling is an oceanographic phenomenon in which, ^{colder} nutrient-laden water from the ocean depths replaces the ~~colder~~ surface water of the ocean. It is part of larger system of global ocean circulation.

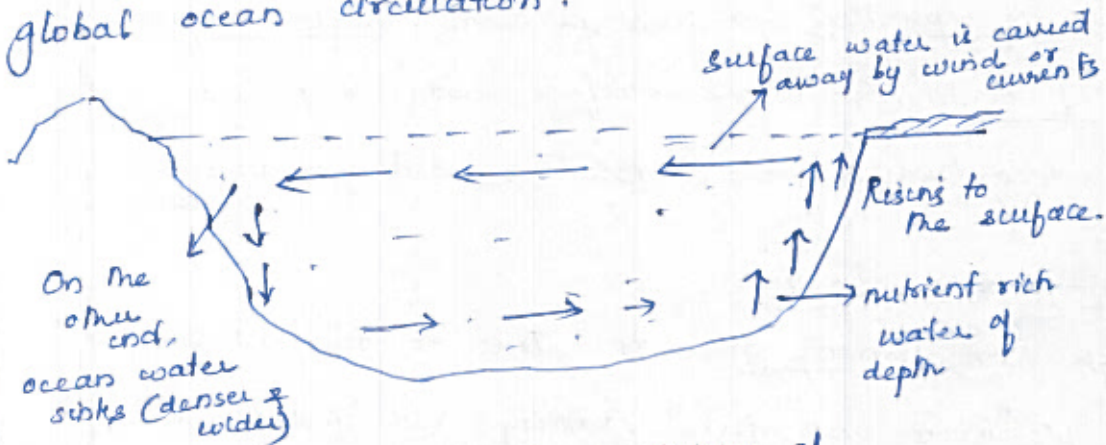
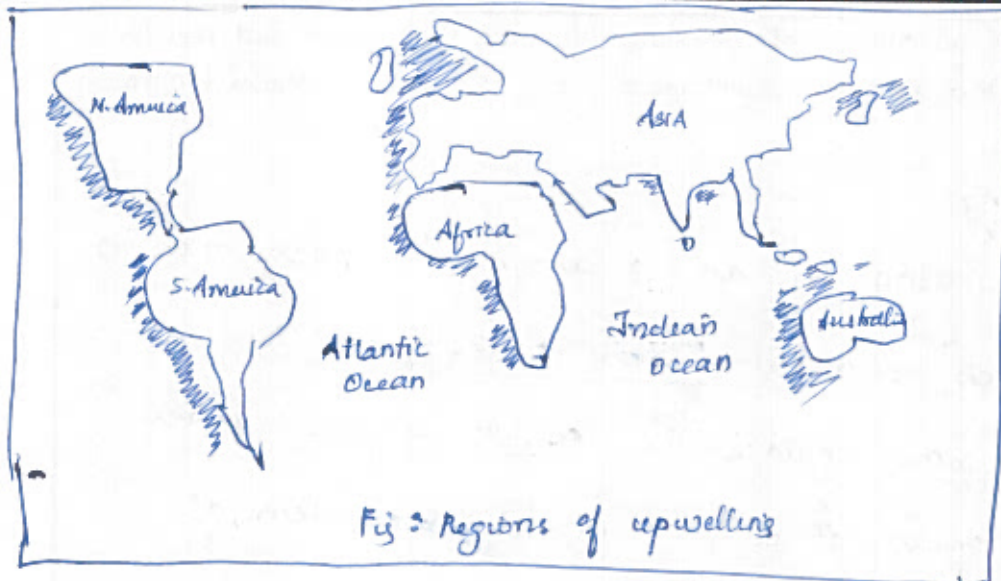


Fig: Vertical circulation of Ocean water → ~~causes~~

- Causes →
- Surface water is carried away by winds or ocean currents.
 - Density differences (due to temperature or salinity).



Regions of upwelling → Usually along western margins of continents, where surface water is pushed westward due to Earth's rotation, winds & ocean currents.

Socio-economic impact

- i) High Rich fishing grounds - Due to nutrient-rich plankton and fishes (variety and quantity) abundant → Hence fisheries a major economic activity.
- ii) Colder surface water → More stable atmospheric conditions → ↓ rainfall → Dry climate.
→ Arid conditions lead to modification of social and economic activity, deserts occur along margins.

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	



Q.4) Differentiate between agro-climatic zones and agro-ecological zones of India.
Also enumerate need for such zoning. (10 Marks, 150 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	



Q.5) What is apiculture? Explain its importance in agriculture and rural development. (10 Marks, 150 Words)

Apiculture is the process of rearing bees (usually honey bees) for the purpose of commercial production of honey, beeswax or other products and services availed from bees..

Apiculture is an important allied agricultural practice and have several advantages in rural areas for effecting economic and social development, as well as promoting agriculture.

i) Relatively inexpensive

While it might incur some initial capital expenditure, apiculture is relatively inexpensive and maintenance is cheap.

ii) low or land requirement is low

Commercially viable apiculture farms can be set up over small areas compared to large parcels of land required for crop production.

iii) Skill training can be imparted easily in a short period of time.

iv) Minimal technological requirement - Though sophisticated apiculture set ups are available,

basic farms can be made with minimal technology.

- v) Maintenance relatively easy and cheap.
- vi) High value products with potential for further value additions
 - Honey, beeswax.
 - Can serve as raw material for small-scale industries in rural areas.

In addition to such benefits, apiculture provides further benefits for agriculture and environment.

Agriculture

- i) Increase in number of pollinators.
- ii) Improved natural biodiversity of pollinators and beneficial insects.
- iii) Improvement in yield of agricultural crops.
- iv) Preservation and propagation of natural germplasm of local crops.

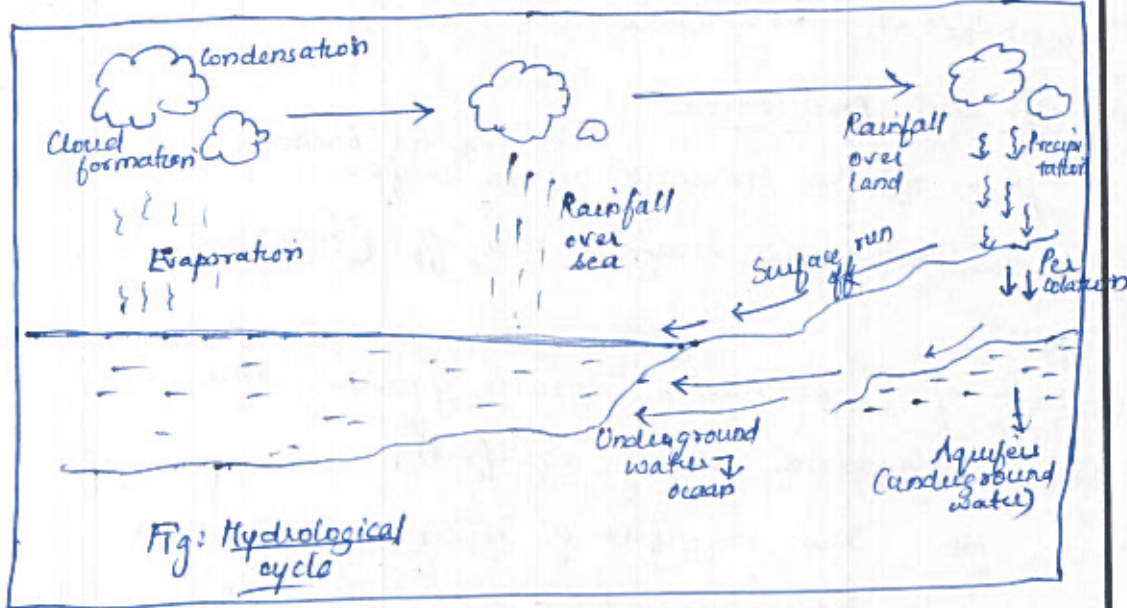
Thus, apiculture can serve as a catalyst to bring about rural development and regional ecological stability.

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	



Q.6) Explain hydrological cycle and its various elements? How do these various elements interrelated?
(10 Marks, 150 Words)



HYDROLOGICAL CYCLE

1. Evaporation

- Evaporation of water from huge water bodies
→ ~~the~~ oceans (main), lakes, reservoirs etc.
- The water vapour rises in the atmosphere.

2. Condensation

- As the water vapour rises in the atmosphere, it cools and condenses to form clouds bearing water droplets and ice.

- The clouds migrate depending on ~~the~~ air circulation.

3. Precipitation

- ~~Due to various factors~~ As the clouds become saturated, the water ~~vapour~~ ^{droplets} coalesce to form

water drops or ice/snow and fall down as precipitation over land and water.

4. Runoff and Percolation

- A part of the precipitation ~~run-off~~ ^{moves back} into water-bodies as surface run-off (completing the cycle).
- A part of it percolates beneath ground and becomes ground water (aquifers).
- Water from these aquifers is utilised by humans and/or animals and part of it enters back into water bodies.

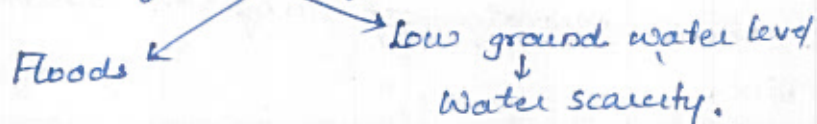
Thus cycle is completed.

Inter relationship

i) If evaporation increases → more moisture in atmosphere → more clouds (condensation) ↓ can lead to more precipitation.

ex: Tropical cyclones formed due to high sea surface temperature.

ii) If percolation is poor due to impermeability of ground → surface run off increases.



Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	



Q.7) What is Land Degradation Neutrality? In what ways it can act as a centrepiece in achieving the goals of Sustainable Development Goal by India. Discuss.

(10 Marks, 150 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	



Q.8) What do you understand by temperature inversion? Discuss various types of inversions. (10 Marks, 150 Words)

Normally, the temperature of troposphere decreases as we go up (as altitude increases), at an average rate of 6.5°C per km (Normal Lapse Rate).

Temperature inversion is the phenomenon where temperature of troposphere increases as we go the altitude increases.

Types of temperature inversion

i) Radiation inversion

- On ^{long} cold nights with clear ^{skies} sky (cloudless), the Earth's surface radiates away heat into space, cooling the surface.

↓
The air in contact with the surface gets cooled due to conduction.

↓
Leads to the lower temperature of air near surface than upper regions.

- This can be manifest in the forms of dew or frost.

ii) Valley Inversion

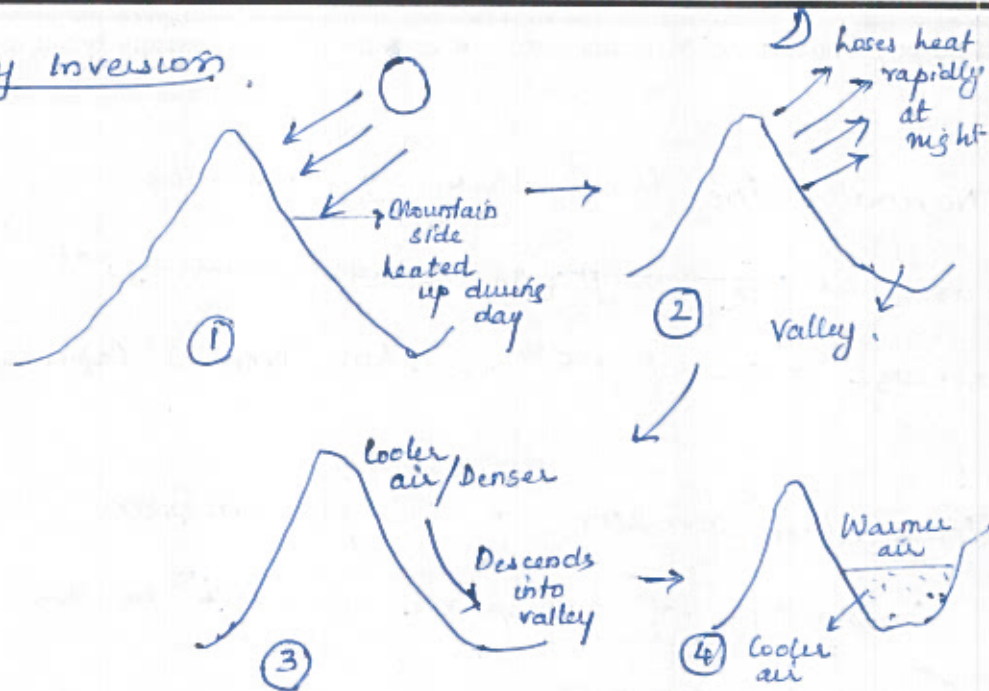
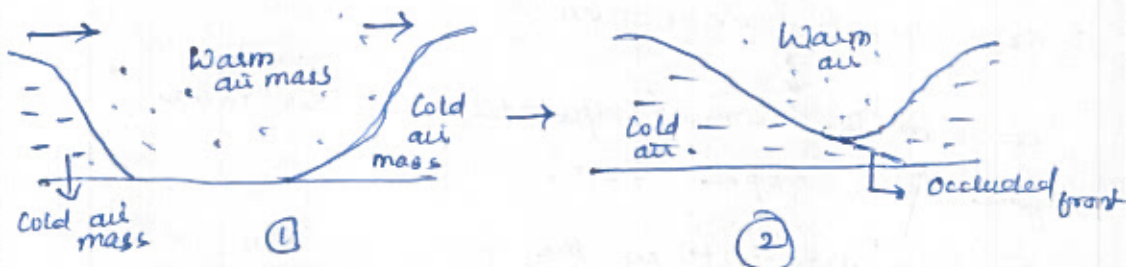


Fig: Valley inversion.

iii) Frontal Inversion

- Happens in the last stages of temperate cyclones.
- Cold front overtakes the warm front and lifts up the warmer air mass above it, resulting in inversion (Occluded front).



Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	



Q.9) Explain the concept of Weather Fronts, also discuss their formation and characteristics. (10 Marks, 150 Words)

Air masses are large, homogeneous parcels of air with ~~the~~ the same temperature and pressure characteristics.

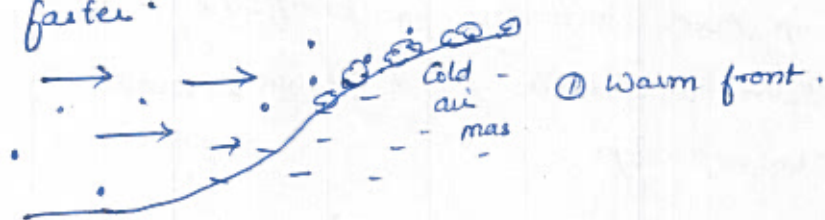
~~to~~ Weather fronts are meteorological phenomena that develop at the interface of two different air masses with different characteristics. ~~to~~

They usually form at the interface between warm and cold air masses.

Types and formation

i) Warm air Front

- Develops at the interface of warm and cold air masses when the warm air mass is moving faster.



Characteristics

- Warm air mass is lifted off.
- ^{Rain} Clouds are formed along interface and rainfall occurs ahead of the front.

ii) Cold Front at the interface

- Develops when cold air mass moves faster

than warm air mass.

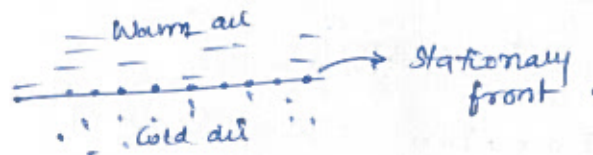


Characteristics

- Warm air is lifted as cold air seeps in.
- Rain clouds and rain occur behind the front.

iii) Stationary Front

- Warm and cold air masses parallel to each other.
- Relatively stable weather conditions.



iv) Occluded Front

- Warm air sandwiched between 2 cold air masses.
- Occurs at the end of temperate cyclones.
- Accompanied initially by rainfall.
- The frontal system (and cyclone) subsides subsequently.

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

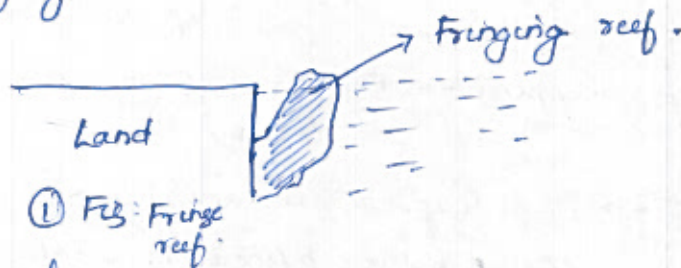


Q.10) Explain the different types of corals. Also explain the challenges and threats faced by corals. (10 Marks, 150 Words)

Types of Corals

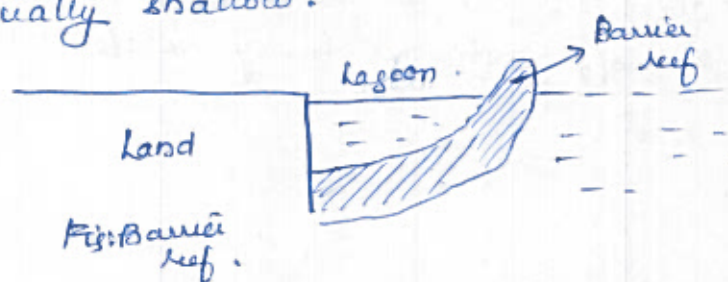
i) Fringing Coral Reef

- Fringing Corals grow on a submarine platform where the climatic and oceanographic factors are favourable.
- They grow upward and outward and are seen hugging the land or island or platform.



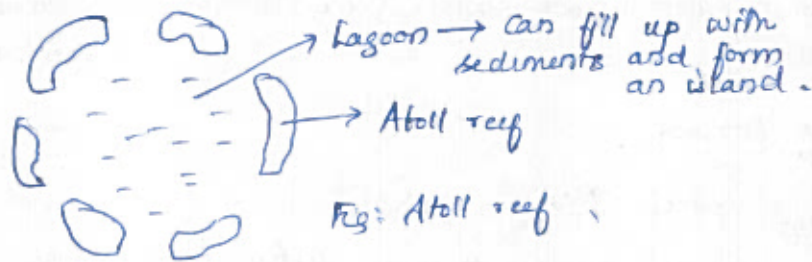
ii) Barrier reef

- Corals grow more outward from the land.
- Separated from land by a lagoon, which is usually shallow.



iii) Atoll

- As corals grow further ^{out}, the platform may be fully eroded.
- Results in a circular reef pattern with a shallow or deep lagoon in the centre with numerous outlets to sea.



Challenges/Threats to corals

- i) Ocean warming → due to global warming.
es: El Niño have caused mass coral death.
- ii) Ocean acidification → Increased CO₂ in atmosphere absorbed by oceans → acidification → death of corals.
- iii) Fishing, dredging, shipping → mechanical damage to corals.
- iv) Sea level changes → Can lead to sub-aerial exposure or being pushed to depths.
↓
Both of which can kill corals.
- v) Pollution → Reduces sunlight availability (opacity of water)
→ chemicals can cause direct damage.
→ Run-off (pesticides, heavy metals etc).
- vi) Enzootic diseases

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.11) What factors govern global distribution of rainfall? Explain how rainfall variation impacts human activities and vegetation in an area. (15 Marks, 250 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.12) Despite the implementation of various programmes for cleaning of our major rivers by the government, riverine pollution continue unabated in India. Explain by giving reasons. (15 Marks, 250 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.13) Explain with evidence, how continental drift theory explained the shifting of world continents over the earth's surface. Also, highlight its limitations.

(15 Marks, 250 Words)

Continental Drift Theory was popularised by Alfred Wegener in the early 20th century to explain ~~various~~ ^{different climatic} geomorphic and geomorphic phenomena on Earth's surface.

Evidences for Continental Drift Theory

i) Jigsaw fit of Continents

- If the continents of North America and South America are placed alongside Europe and Africa respectively, they seem to ~~be~~ ^{fit as} ~~part~~ a single whole.
- This indicates that these continents might have been together at some point in past and later disintegrated.

ii) Structural similarities

- Rocks, ^{formations} on Western coast of Africa are structurally similar to those on Eastern coast of South America (Brazil).
- Placer deposits ^{of gold} are found in Ghana coast and similar deposits are found in Brazilian coast while source rocks are not found in both the places.

iii) Paleoclimatic evidence

- Tillite^(glacial) deposits are found in Africa, India, Australia etc indicating that these continents would have been in a more poleward location in the past.
- Carboniferous coal deposits are found in Canada and Northern Europe indicating these places would have ~~be~~ been closer to equator.

iv) Fossil Evidence

- Several fossils including Mesosaurus and Glossopteris are found across continents separated by vast oceans. These continents would have been a single land mass in the past.

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.14) Insensitivity towards ecology of the Western Ghats is making the Southern States vulnerable to floods and landslides. What measures are required to arrest the widespread ecological devastation that the fragile Western Ghats are facing?

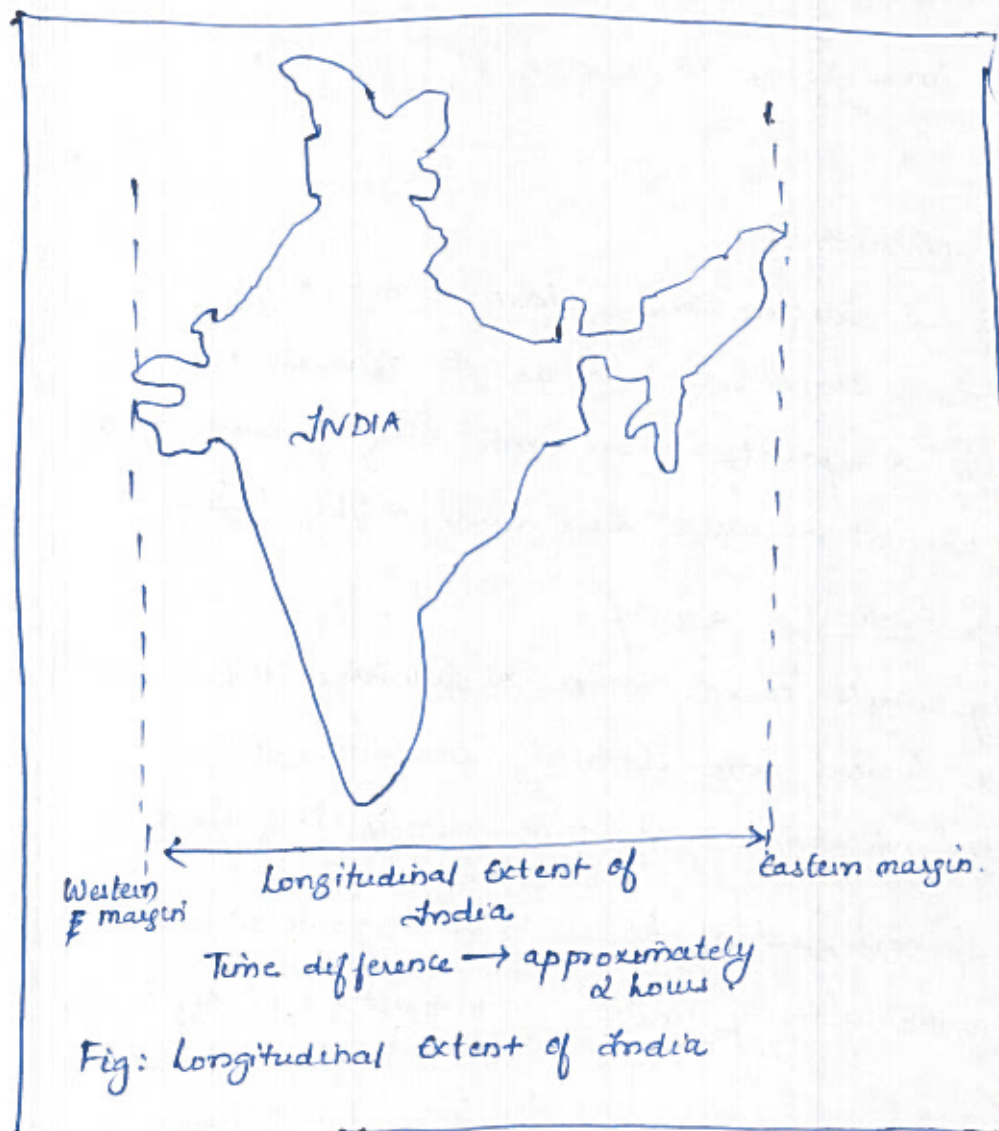
(15 Marks, 250 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.15) Why is there a demand for a separate time zone in our country? Discuss its pros and cons. Also, explain how it is different from daylight saving.

(15 Marks, 250 Words)



- India has a longitudinal extent of nearly 30° , making the eastern margin of India 2 hours ahead of the western margin.
- This has resulted in a demand for separate time zone as the people in Eastern parts (especially North East India) have much earlier

dawn and dusk (according to Indian Standard Time) and hence day and night.

Separate Time Zones of India

1. Pros

i) More productivity

People in Eastern India have short days (as per Indian standard time) as it gets dark early. A separate time zone will provide them with normal or usual day and night hours.

ii) Saving Electricity saving

- Early dark means more ~~at~~ lighting requirements and hence more electricity consumption.
- A different time zone can rectify this issue.

iii) Makes work, school hours and commercial or economic activity more convenient and efficient.

2. Cons

i) Difficult Administrative difficulty

- Due to 2 separate times in different parts of the country.

ii) Travel/Transport related difficulty

- Can complicate travel schedules or timings.

- Especially, in case of railways, which work on a unified or integrated schedule across the country.

iii) Adaptation difficulty

Shifting to a new system will entail adoption issues and difficulty in adaptation.

Daylight saving

- Daylight saving is used in Western countries, in winter seasons, when the clock is turned ahead by one or 2 hours to account for reduction in day length.
- ~~This is~~ Here, the time zone remains the same, but the time is adjusted ahead by a particular amount for a specified duration.
- It is also meant to improve productivity and convenience.

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.16) Defining blue revolution, explain the problems and strategies for pisciculture development in India. (15 Marks, 250 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.17) Explain the origin and types of volcanoes. Also, explain various landforms associated with volcanoes.

(15 Marks, 250 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.18) What factors are responsible for geographical localization of automobile industries? Also identify major automobile clusters in the world and in India.

(15 Marks, 250 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.19) In light of population explosion in cities assess the importance of land use planning in assuring sound urban transport. (15 Marks, 250 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Q.20) How does sand mining affect the Hydraulic structure in the country? What measures can be taken to mitigate these effects? (15 Marks, 250 Words)

Feedback (For OFFICE use only)

Structure		Content	
Question Interpretation		Total :	

Mentor Feedback Questions

- 1
- 2
- 3
- 4
- 5

Test Goal

- 1
- 2
- 3

Outcomes

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Marking Scheme

Marks	Good	Average	Below Average
10 Marker	3.75 – 5.0	3.0 – 3.5	< 3.0
15 Marker	5.75 – 7.0	4.0 – 5.5	< 4.0

*Subject to change without prior notice.

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