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GENERAL STUDIES (TEST CODE : 1824)

Name of Candidate	VIBHORE MENDIKATTA		
Medium Eng./Hindi	English.	Registration Number	1267413
Center		Date	

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
7	10	
8	10	
9	10	
10	10	
11	15	
12	15	
13	15	
14	15	
15	15	
16	15	
17	15	
18	15	
19	15	
20	15	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

- Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)।
- There are **TWENTY** questions printed in **ENGLISH & HINDI** इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
- All questions are compulsory.** सभी प्रश्न अनिवार्य हैं।
- The number of marks carried by a question/part is indicated against it.
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
- 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. No marks will be given for answers written in medium other than the authorized one.
प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
- Word limit in questions, if specified, should be adhered to.
प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
- Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

16-B, 2nd Floor, Above National Trust Building, Bada Bazar Marg, Old Rajinder Nagar, Delhi-110060

Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar
Delhi- 110009

EVALUATION INDICATORS

1. Contextual Competence
2. Content Competence
3. Language Competence
4. Introduction Competence
5. Structure - Presentation Competence
6. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

All the Best

1. Explaining the concept of meandering Identify the various landforms associated with flood plains. (150 words) 10

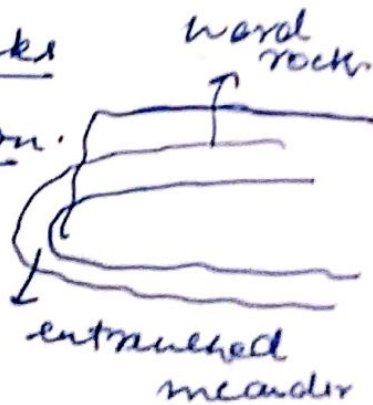
विषय की अवधारणा की व्याख्या करते हुए, बाढ़ के मैदानों में जुड़ी विभिन्न भू-आकृतियों की वर्णित कीजिए।

meandering refers to the curves formed by a river in its flood plains. Meanders can be of two types -

- 1) Entrenched Meanders

can be formed by young rivers around hardened rocks

[eg]: Colorado region.



- 2) Meanders formed by deposition of

activity of rivers [eg]: Ganga

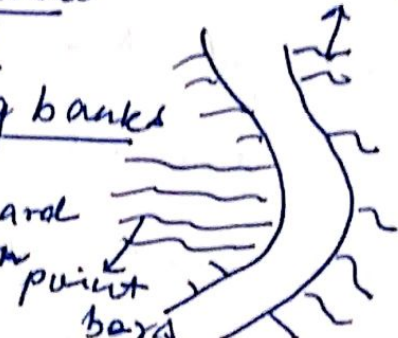
Formation of depositional meanders

Presence of + coriolis force $\Rightarrow$ meanders



Fig: river cutting into crack

Associated landforms

- 1) Point bars and levees
 ↓
horizontal deposition of silt at concave side
 ↓
along banks in outward fashion
 ↓
point bars

- 2) River terraces → When river cuts its own flood plains
- 3) Deltas → When river meets sea
 ↓
well stratified
 Hence a river forms various types of land forms.
 

2. What is a cloudburst and what are its effects? Why are they more frequent in the Himalayan region? (150 words) 10

बावून फटना क्या है और इसके क्या प्रभाव हैं? हिमालयी क्षेत्र में इनकी आवृत्ति अधिक क्यों है?

According to IMD cloudburst
cloudburst are rainfall events
with more than 100mm of
rainfall in one hour and ⁱⁿ less
than 20 km² area.

Why more frequent in Himalayas?

- 1) Strong winds carrying the moisture
upwards
- 2) Moisture from → Western
cyclonic
disturbances → Bay of
Bengal depression
moisture carried
instead of
falling down
- 3) Water cycle amplification in the
region because of global

warming.

- 4) steep slopes allowing quick run-off

[Effects]

- 1) heavy rainfall → flooding
→ landslides
(eg): Kedarnath 2013 cloud burst
- 2) can cause glacial lake outflows
(GLOF)
- 3) damage to infrastructure
- 4) loss of vegetation and soil erosion
- 5) Damming of rivers

To deal with cloudbursts a dense
doppler radar network and
canal management system of Copen-
hagen can be adopted.

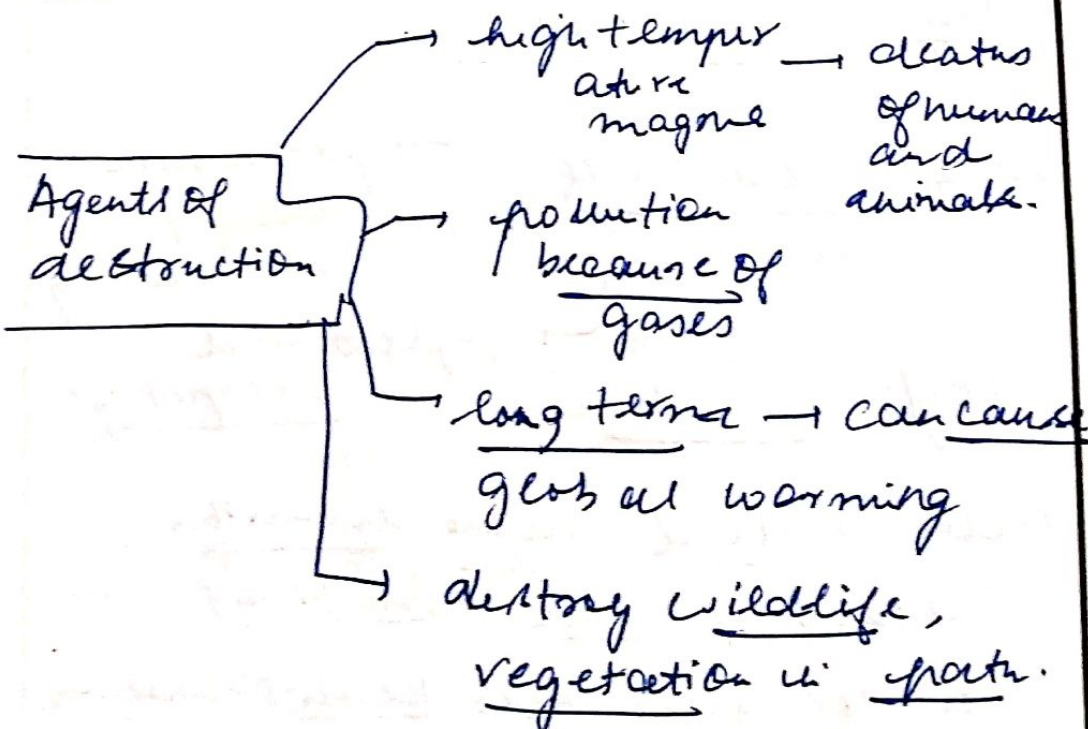
3. Volcanic eruptions are widely considered to be agents of destruction but they also have certain positive impacts on the people and landscape.
(150 words) 10
Discuss.

ज्वालामुखी विस्फोटों को व्यापक रूप से विनाश का कारक माना जाता है, लेकिन उनका लोगों और भूदृश्य पर कुछ सकारात्मक प्रभाव भी पड़ता है। चर्चा कीजिए।

Recently the Tounga volcanic
eruption caused the rise of
ashes, and gases upto tropopause.

Volcanic eruptions refer to the
outflow of magma from

~~Agents of~~ beneath the earth.
~~disaster~~



Positive impacts

- 1) increase in soil fertility and soil formation in the long run.
- 2) Nutrient cycling in the ecosystem
[eg]: Phosphorous cycle
- 3) Aerosols etc released can cause decrease in local weather
- 4) formation of physical topography
[eg]: hcean plateau
- 5) Magma chambers if close → geothermal energy harnessing
→ geysers and hot springs
[eg]: Yellowstone
- 6) Allow natural niche evolution
(secondary niche evolution)
Hence volcanoes also benefit and are part of Earth's natural system of maintaining balance

4. How does the Interaction between oceans and the atmosphere stabilize and regulate the climatic variations over the earth? (150 words) 10
महासागरों और वायुमंडल के बीच परस्पर क्रिया किस प्रकार पृथ्वी पर जलवायुविक भिन्नताओं को स्थिर और नियंत्रित करती है?

The Atmosphere and hydrosphere jointly interact to set the climate patterns of the Earth.

Relation with variations

Fulfill the balance of heat deficit at poles and heat excess at equator

[eg] general circulation of Atmosphere

global ocean currents circulation

Balance the local and pressure and thermal differences

[eg]: ENSO • variations

Water cycle → cycling of nutrients

like CO₂ and H₂O (gaseous cycles)

4) Both act as long term sinks of
materials like calcium carbonate

methane hydrates

↳ hence stabilizing the output

and input to ecosystem

5) Feedback between Hydrosphere
and Atmosphere

[eg]: Land-sea breeze system

6) Maintain Variables like Salinity

[eg]: Thermohaline circulation

in which Gulf Stream → surface
current etc.

hence both form an integral
part of regulation of environ-
ment.

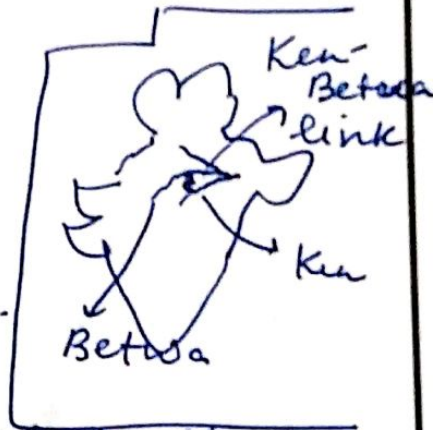
5. Despite its potential, there are several challenges in the Implementation of the Ken-Betwa Link Project. Discuss. (150 words) 10

केन-बेतवा लिंक परियोजना की शमता के बावजूद, इसके कार्यान्वयन में अनेक चुनौतियां विद्यमान हैं। चर्चा कीजिए।

The Ken-Betwa link project is a part of River interlinking project to transport water from Ken to Betwa river

[Potential]

- 1) water security to Bundelkhand region.
- 2) generation of hydroelectricity
- 3) brought-flood management.
- 4) Improved agricultural productivity (currently rained)
- 5) Model for further river interlinking



[Challenges]

- 1) No concrete data on excess of

water in Ken river

2) Requirement of energy to transport
water upland to Betwa

3) Submergence of 40,000 Km² of
Panna Tiger reserve

4) Harm to biodiversity like
gharial

5) Loss of geological plateau rock
resources of the region

6) Proper EIA not conducted

7) Water sharing issues between
UP and Madhya Pradesh

Thus rather than grand projects
thoughts should be first given
to decentralized systems like
Rainwater harvesting for 505 ~~506~~

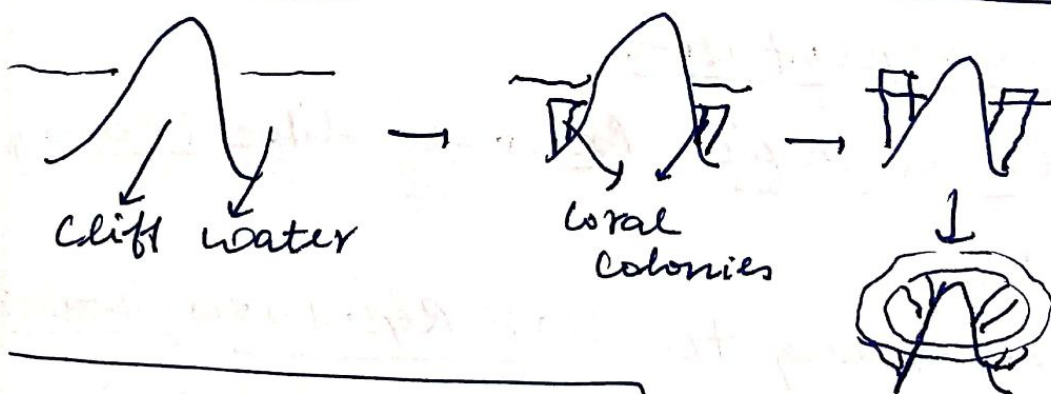
6. How are atolls formed? Discuss the threats faced by them due to anthropogenic factors. (150 words) 10

एटॉल कैसे निर्मित होते हैं? मानवजनित कारकों के कारण उनके समक्ष विद्यमान खतरों की विवेचना कीजिए।

Atolls are types of coral islands that form a ring structure are around a given piece of land.

Formation

Formed by the coral building activity of polyps in which layers of calcium carbonate are added by them.



Threats

- 1) ~~total~~ coral bleaching due to marine

heatwaves, warming of oceans

[eg]: In 2020, Tamil Nadu
heatwaves caused bleaching of
coral of corals.

- 2) Ocean acidification
- 3) oil spill events - eg: Recently
by Sri Lanka,
- 4) Excess siltation by rivers →
corals prefer clean water
- 5) Direct killing by chemicals,
pollution of water
- 6) Overexploitation
- 7) unscientific practices like trawling
etc

According to SCF Report 2021, Indian
corals decreased. Hence it is imper-
ative to take steps like forming
marine conservation parks to save them.

7. Foaming in the beginning of winters in River Yamuna in and around Delhi has been in news. Identify the reasons behind this and discuss its larger impact.
(150 words) 10

दिल्ली और उसके आसपास यमुना नदी में शीत ऋतु के प्रारंभ में उत्पन्न झाग सुर्खियों में रहा है। इसके पीछे के कारणों की पहचान करते हुए इसके व्यापक प्रभाव पर चर्चा कीजिए।

The River Yamuna, near Agra and Delhi is one of the most polluted stretchs of any river in the country.

[Reasons]

- 1) Direct discharge by industries into rivers.
- 2) No a common effluent treatment (LET) plants around the region.
- 3) Proper monitoring to ensure guidelines assent.
- 4) Chemicals like Ammonia, which mix with air to cause foam.
- 5) Bathing of livestock, people in the river.

- 6) reduced ecological flow because
of diversion.

[Impact]

- 1) Disruption of watershed ecosy
stem of Ganga and Yamuna
- 2) Impacts biodiversity
[eg]: Yangtze dolphin
- 3) Impacts water security and
increases water stress.
- 4) Discharge downstream at Sunder
bans → harmful to mangroves.
- 5) Air pollution along with water
↳ release of gases
- 6) loss of public resources in cleaning^{from}
which could be avoided at first
place
Technologies like Bubble curtain can
be used to deal with the same.

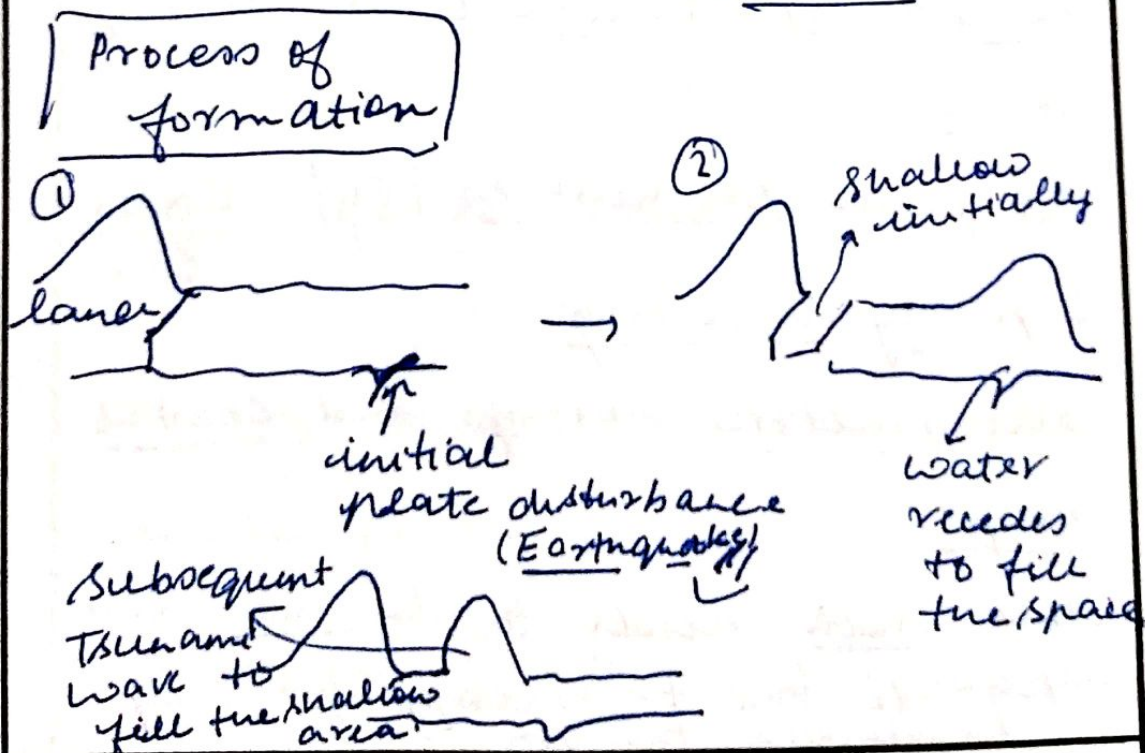
8. Explain the process of formation of a tsunami. Also, mention the tsunami preparedness and mitigation efforts taken by the government. (150 words) 10

सुनामी उत्पन्न होने की प्रक्रिया की व्याख्या कीजिए। साथ ही, सुनामी के विरुद्ध सरकार की तैयारियों और इसके द्वारा किए गए शमन प्रयासों का भी उल्लेख कीजिए।

Tsunami refers to huge waves formed in the middle of oceans.

They are not so conspicuous in the middle but waves attain large amplitudes when it reaches surface.

(eg.) 2004 Indian Ocean
Tsunami



Tsunami preparedness methods

- 1) Installation of Indian Tsunami
early
Warning system (ITIEWS) as per
NMA Guidelines-
- 2) Disaster rescue & exercises in
Indian oceans
- 3) Coastal radar system → at Malay
Sia, Thailand etc
- 4) Oceanic buoys and doppler
radars at Indian coasts to keep
check.
- 5) Regional partnerships [eg]: IONS
etc
- 6) Capacity building
- 7) Bathymetric surveys and coastal
maps.

Still India needs to be alert and
upgrade the technology for any
emerging threat

9. Discuss the role of geospatial technologies in developing effective approaches for disaster risk reduction and disaster management.
(150 words) 10

आपदा जोखिम न्यूनीकरण और आपदा प्रबंधन के लिए, प्रभावी दृष्टिकोण विकसित करने में भू-स्थानिक प्रौद्योगिकियों की भूमिका की विवेचना कीजिए।

Geospatial technologies refer to use of space technology like satellites, in various applications.

Role in Disaster risk reduction

- 1) collection of information
[eg]: Bathymetric surveys using LIDAR
- 2) Monitoring the local weather conditions for extreme events.
[eg]: Aircraft on Probe (APC) for cyclones
- 3) Issuing advisories uninterrupted during response.
- 4) Pinpointing exact location of

target (eg: using GPS) for
rescue operations

5) Zonation mapping
(eg): landslides

6) Satellite system use in early
warning systems
(eg): EOS-4 satellite

Hence geospatial technology has
huge potential and India needs
to invest in it as part of
SDG 9: Building resilient
infrastructure.

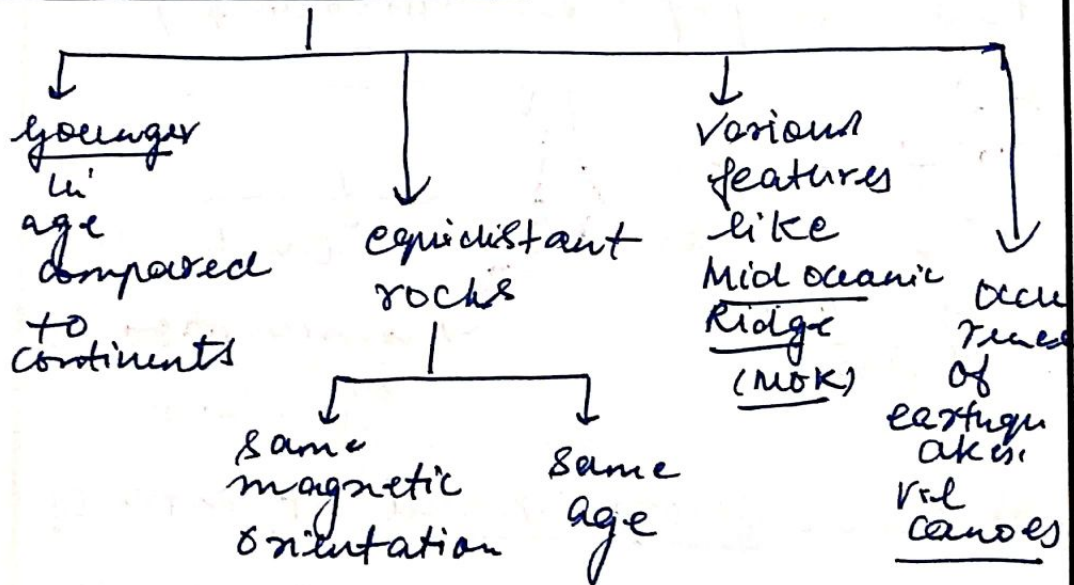
11. Post drift theories based on ocean floor mapping provided new dimensions to the study of distribution of oceans and continents. Elaborate.

(250 words) 15

महासागरीय अधस्तल के मानचित्रण पर आधारित उत्तरवर्ती प्रवाह सिद्धांत ने महासागरों और महाद्वीपों के वितरण के अध्ययन को नए आयाम प्रदान किए हैं। सविस्तार वर्णन कीजिए।

The drift theory was given by Alfred Wegener. Though the theory of splitting of Pangaea was accepted, he was unable to explain the reasons. This was accomplished by post drift theories.

Ocean floor Mapping



Post drift theories

The following post drift theories

were elaborated based on the above mapping

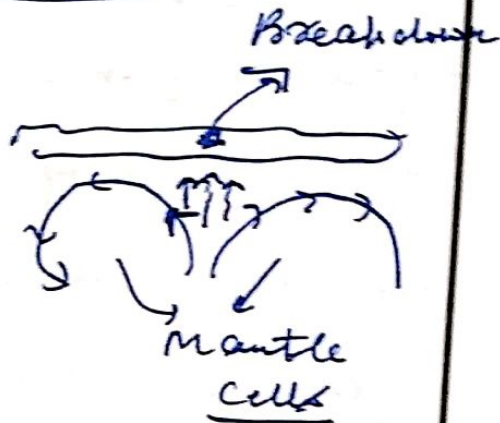
1) Hoyle's Mantle Circulation

1.1) given by Hoyle

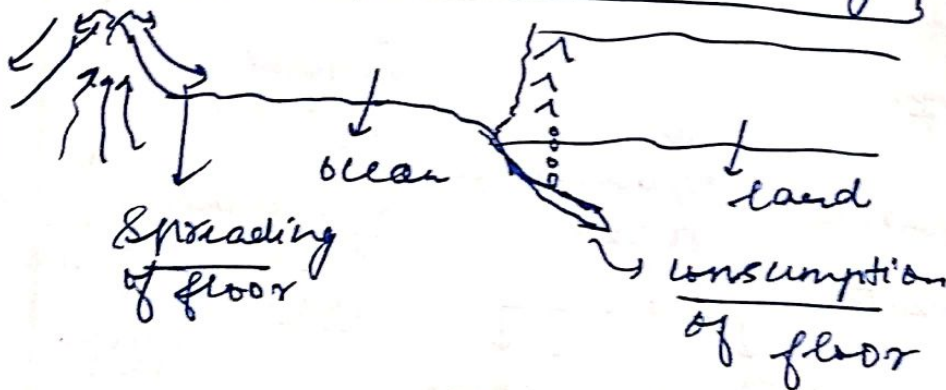
1.2) Mantle Convection

Cells set up because of thermal differences

↓
responsible for breakdown of crust above.



2) Hess' theory of Ocean Spreading



~~2nd~~ Ocean floors spread at sites of volcanism i.e. Mid oceanic ridges (mors) and consumed near continents because of submergence

[New Dimensions]

- 1) Helped in understanding the
breakup and movement of continents
[eg]: African Rift Valley formation
- 2) The Earthquakes at centre of Oceans
and continent - oceanic edge
could be understood
[eg]: 'Pacific Ring of Fire'
- 3) Relative younger age of Oceans
understood
- 4) Major and minor Plates were
discovered
[eg]: Nazca, Coco, Australian Indian
Plate.
- 5) Plate convergence and formation of
fold mountains understood
hence the rust drift theories greatly

12. Explain the phenomenon of heat waves. Also, enumerate conditions favourable for the development of heat waves in India and their associated health impacts. (250 words) 15

हीट वेव्स की परिघटना की व्याख्या कीजिए। साथ ही, भारत में हीट वेव्स के विकास के लिए अनुकूल परिस्थितियों और उनसे संबद्ध स्वास्थ्य प्रभावों को सूचीबद्ध कीजिए।

According to WMO, heat waves occur when the tempera-
ture remains above 5°C than the average for consecutive five days.

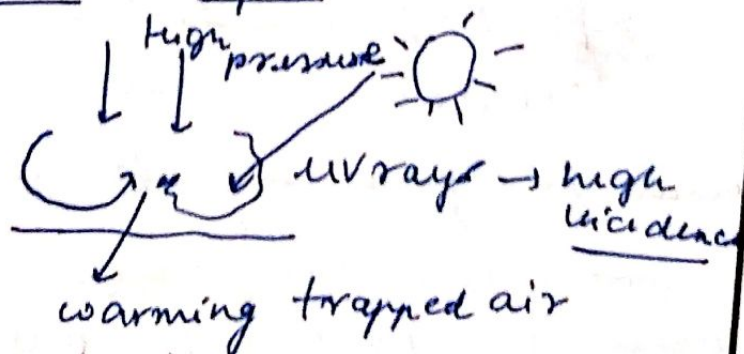
Favourable conditions

In India heat waves are common in Northern and central regions.



1) Transparent sky and

high pressure system



- 2) Presence of local winds like
loo.
- 3) continentality → lessens the moder
ating impact of sea
- 4) Urban heat island effect (UHI)
↳ increased concretization leading
to increased heat absorption
- 5) less vegetation and green cover
- 6) Low moisture and water content
in soil/surface
↳ evaporates and could
absorb heat decreasing effect
- 7) ~~high~~ global warming

Associated health impacts

- 1) hypothermia → ~~and~~ increase of
temperature of body.

- 2) Decreased efficiency of the body
- 3) High rate of sweating → loss of salt and dehydration.
- 4) Headaches
- 5) Increased heart rates
- 6) Heat rash

Finally, if not treated properly heat waves could be fatal

Hence there is need to adopt WOMA guidelines

- 1) Building green roofs, green build ings to decrease UHI effect
 - 2) Training to medical staff → ice slab treatment etc and identification of conditions.
- Also steps of Doha government like changing timings could be followed

13. Elaborate various factors that determine the nature of circulation of the oceanic currents. Also, highlight the major oceanic currents along with their unique features. (250 words) 15

महासागरीय धाराओं के संचलन की प्रकृति को निर्धारित करने वाले विभिन्न कारकों का सविस्तार वर्णन कीजिए। साथ ही, प्रमुख महासागरीय धाराओं के साथ-साथ उनकी अनूठी विशेषताओं को भी रेखांकित कीजिए।

Ocean currents are constant
flow of water via particular
direction throughout the year
in most cases

Various factors

Two types of factors are identi-
fied

- 1) Primary → cause the generation
of oceanic currents
- 2) Secondary → change the character-
istics of the current like direction

Primary factors

- 1) Insolation → heat supply demand
balance mismatch

→ expansion of water

[eg]: The water at equator exp
ands and moves sideward

1 [eg 2]: Because of latitudinal heat
difference ^{warm} currents like Gulf
move towards poles on surface

2) general circulation of wind → lets

• the movement of water

[eg]: Trade winds → equatorial
currents

3) salinity difference

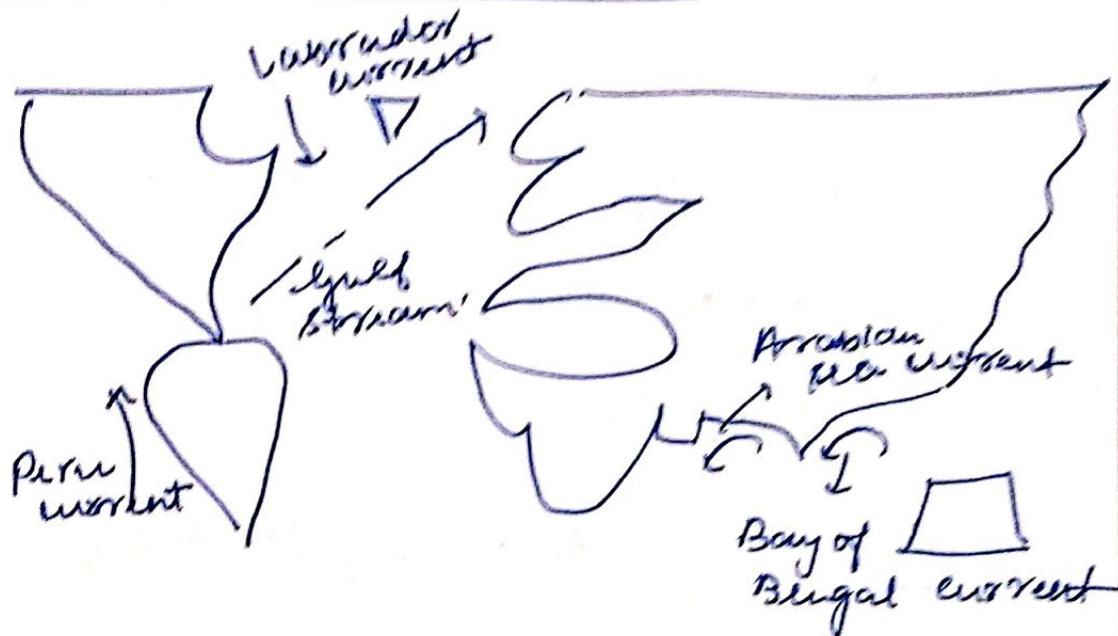
[eg]: Mediterranean Atlantic
less saline current
saline current

Secondary factors

1) Land and topography → changes
directions

[eg]: Chile tip causes
westward current → Humboldt
current

Major oceanic currents



- 2) Gulf Stream → part of AMOC
→ keeps Norwegian coast ice free
- 2) Peruvian current → associated with phenomenon of El Niño
- 3) Arabian sea and Bay of Bengal current → change direction in summer.
- 4) Labrador current → mixing with Gulf Stream causes formation of fishing grounds

14. Despite both being polar regions, the environmental threats faced by the Arctic region are slightly accentuated as compared to Antarctica. Comment. Also, discuss the measures needed to protect the Arctic ecosystem. (250 words) 15

दोनों ध्रुवीय क्षेत्र होने के बावजूद, अंटार्कटिका क्षेत्र की तुलना में आर्कटिक क्षेत्र द्वारा सामना किए जाने वाले पर्यावरणीय खतरों में वृद्धि हुई है। टिप्पणी कीजिए। साथ ही, आर्कटिक पारिस्थितिकी तंत्र की रक्षा के लिए आवश्यक उपायों की विवेचना कीजिए।

Both Arctic and Antarctic regions ~~have~~ are nearing 'tipping points'.

In October 2021, according to Arctic report card, it reported the lowest ice extent ever.

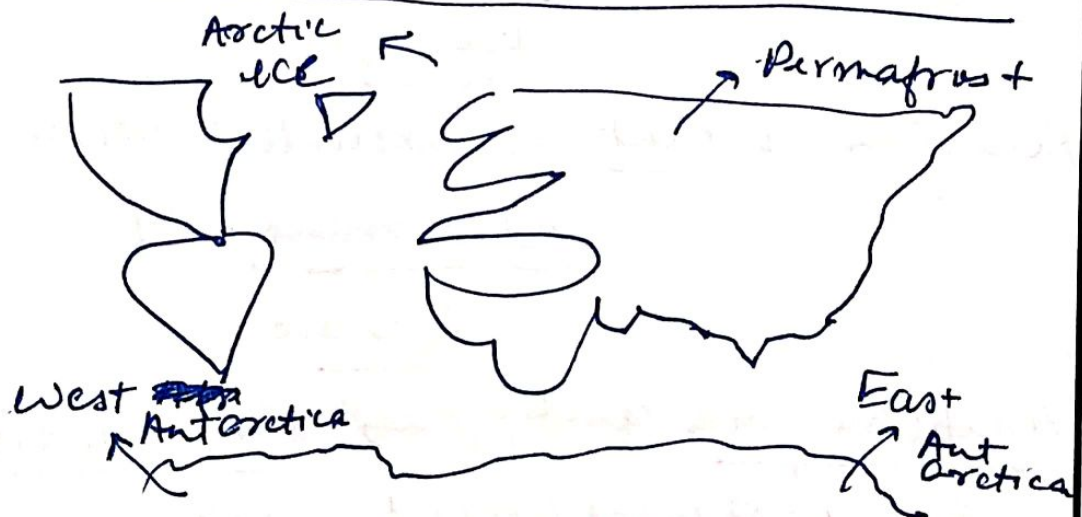


Fig : tipping points

Threats faced by Antarctica

- 1) loss of glaciers to sea.

2) Positive feedback loop of warm water.

3) Biodiversity threatened

Why Arctic has higher risk

1) No international binding treaty system like Antarctic Treaty system

2) Opening of sea lanes of communication
↳ further threat of exploitation

3) Permafrost melting
↳ release of CO_2 } increased
↳ release of viruses } threat.

4) Human population residing in the region unlike Antarctica which is a sanctuary
↳ difficult mitigation.

5) associated changes like slowdown

of Amoc which can create a
feedback loop.

6) geopolitical race in the region

[eg]. for oil resources and
territory

7) Release of methane hydrates

Measures

1) Give binding decision powers to
Arctic Council

↳ Arrest exploitation of
resources

2) Global research and development

[eg]: India - UK - Norway

3) Adhering to Paris Goals as per
IPCC AR6 mandates to protect
Arctic

4) Human capability building

5) Green shipping routes

Also an Arctic Treaty system could

15. Explaining the formation of the Great Northern Plains of India, describe its physiographic divisions and their important characteristics.

(250 words) 15

भारत के विशाल उत्तरी मैदानों के निर्माण की व्याख्या करते हुए, इसके भौगोलिक विभाजन और उनकी महत्वपूर्ण विशेषताओं का वर्णन कीजिए।

The Great Plains of Northern India are fertile depositional plains ~~also~~ containing deposits from river systems of Indus-Ganga - Brahmaputra

Formation

The great plains were formed during the collision of Indo Australian

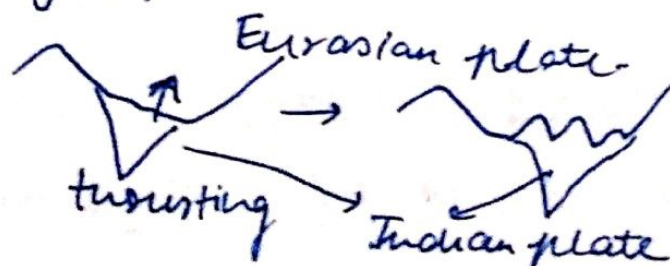


Fig: great plains

plate with European plate in the following phases

Phase 1:

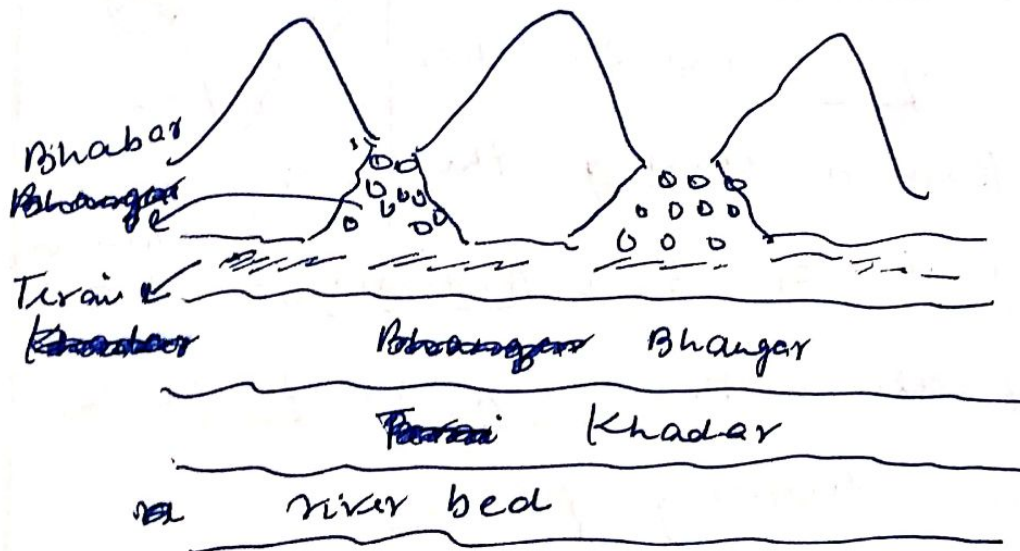
Rise of Himalayas



Phase 2 :Depression of $\approx$
region below
Himalayas

Phase 3 : Filling of the depression
by the river systems of
Indus - Ganga - Brahmaputra
slowly

(Physiographic divisions)



1)

Bhangar Bhabar1.2) Deposits of rock segments

by river that it carries from
the mountains

1.2) Sometimes stream disappear

2) Terai

2.1) Morhy and Swampy

2.2) Streams reappear

3) Bhangar and Khadar

- | | |
|-----------------------------|---------------------------|
| - old alluvium | - new alluvium |
| - renewed rarely | - renewed every year |
| - <u>conglomerate rocks</u> | - small calcium deposits. |
| | - Extremely fertile |

The great plains are important
to food system and economy with
majority rice and wheat production

16. In recent years, states of Uttarakhand and Himachal Pradesh have witnessed an alarming increase in the rate of landslides. Discuss the reasons for this increase and suggest some remedial measures.
(250 words) 15

हाल के वर्षों में, उत्तराखंड और हिमाचल प्रदेश राज्यों में भूस्खलन की दर में खतरनाक वृद्धि देखी गई है। इस वृद्धि के कारणों की विवेचना कीजिए तथा कुछ उपचारात्मक उपाय सुझाइए।

Landslides refer to the rapid
sliding of upper layers of
soils on slopes

Recently Uttarakhand and Himachal
Pradesh have witnessed
increased rate of landslides
like Chamoli, Kinnaur etc

Reasons

- 1) Building of dams
↳ According to SKK Chopra
committee 22/23 of dams are
unviablu
↳ cause earthquakes → landslide
as
result

- 2) unscientific developmental projects
[eg]. expansion of Chardham roads
against the earlier recommend
ations of experts
- 3) increased climate extreme events
[eg]: landslides → Kedarnath
landslide
- 4) Explosion and mining activities
in the region
- 5) unscientific afforestation after
deforestation and decrease of
vegetation cover
[eg]: Kinnaur landslide according
to NIDM for this season
- 6) glacial lake outbursts (GLOF)
because of global warming
[eg]: was suspected in recent

Chamoli incident

7) Melting of snows that leaves
the soul

8) uncontrolled tourism, traffic and
settlements

↳ disturbing the slopes

[Remedial measures]

NOMA guidelines say -

1) Vulnerability assessment by hazard
zonation mapping

2) Retention walls

3) increasing vegetation cover

4) No settlements at landslide
prone places

SRK Chopra committee recommended
for cancellation of 22 dams

Such steps are needed to ensure
the goals of Sustainable and Resilient
India

17. Haphazard growth and poor management make the Indian cities the locus of disasters, both large and small. Comment. Also, discuss the current gaps in policies in addressing these challenges. (250 words) 15

अव्यवस्थित विकास तथा निम्न स्तरीय प्रबंधन ने बड़े और छोटे दोनों प्रकार के भारतीय शहरों को आपदाओं का केंद्र बना दिया है। टिप्पणी कीजिए। साथ ही, इन चुनौतियों का समाधान करने में नीतियों में विद्यमान वर्तमान अंतराल पर चर्चा कीजिए।

As per the UN Habitat in
2030 more than 50% of Indian
population will reside in cities.
Current growth and management
make Indian cities heavily
vulnerable to disasters.

|eg|: chennai $\xrightarrow{2018}$ drought
 $\xrightarrow{2019}$ floods.

Haphazard growth

- 1) Encroachment of wetlands, lakes
|eg|: reason of floods in hyderabad
- 2) Near storm ~~area~~ sea water rise
sites, expansion taking place
(INCOIS map)

- 3) Settlements too cutting slopes
↳ risk of landslides

[eg]: Kerala

- 4) New settlements and habitations

in vulnerable hill areas

[eg]: hill tourism during COVID

- 5) No space for green coverts etc

↳ urban heat island
effect (UHI)

Poor management

- 1) No concentration on inclusive urbanisation.

[eg]: Affordable rental housing
negligible → slums → disaster
vulner
ability

- 2) No water - land management policy

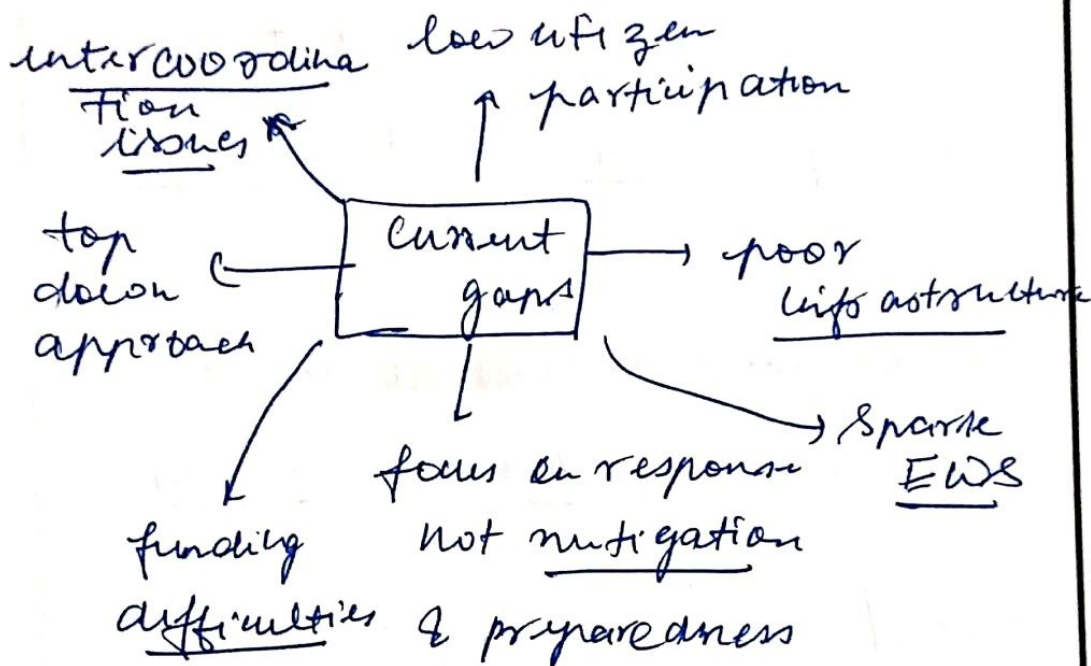
[eg]: Bangalore water crisis.

- 3) No last mile connectivity, accessib
ility

↳ difficult to mount response

4) Not learning from past mistakes

1 eg: Kerala Silverline project



Way forward

1) 1st Finance Commission recomm
endation → Disaster Mitigation
Policy

2) NOMA → Urban Wetland and
Watershed policy

The steps are needed to make
Indian cities 'disaster resilient' in Future

18. What are the reasons behind vulnerability of coastal areas to cyclones in India? In this context, critically discuss India's cyclone management framework. (250 words) 15

भारत में तटीय क्षेत्रों की चक्रवातों के प्रति सुशेयता के लिए कौन-से कारण उत्तरदायी हैं? इस संदर्भ में, भारत के चक्रवात प्रबंधन ढांचे की समालोचनात्मक विवेचना कीजिए।

Among ~~the~~ The previous 23 mega cyclones, 21 cyclones hit the coast of India and Bangla desh.

Hence Indian coastal areas are uniquely vulnerable to cyclones

Reasons

- 1) warming of Penins ular region → surrounded by sea from 3 sides (geographical factor)



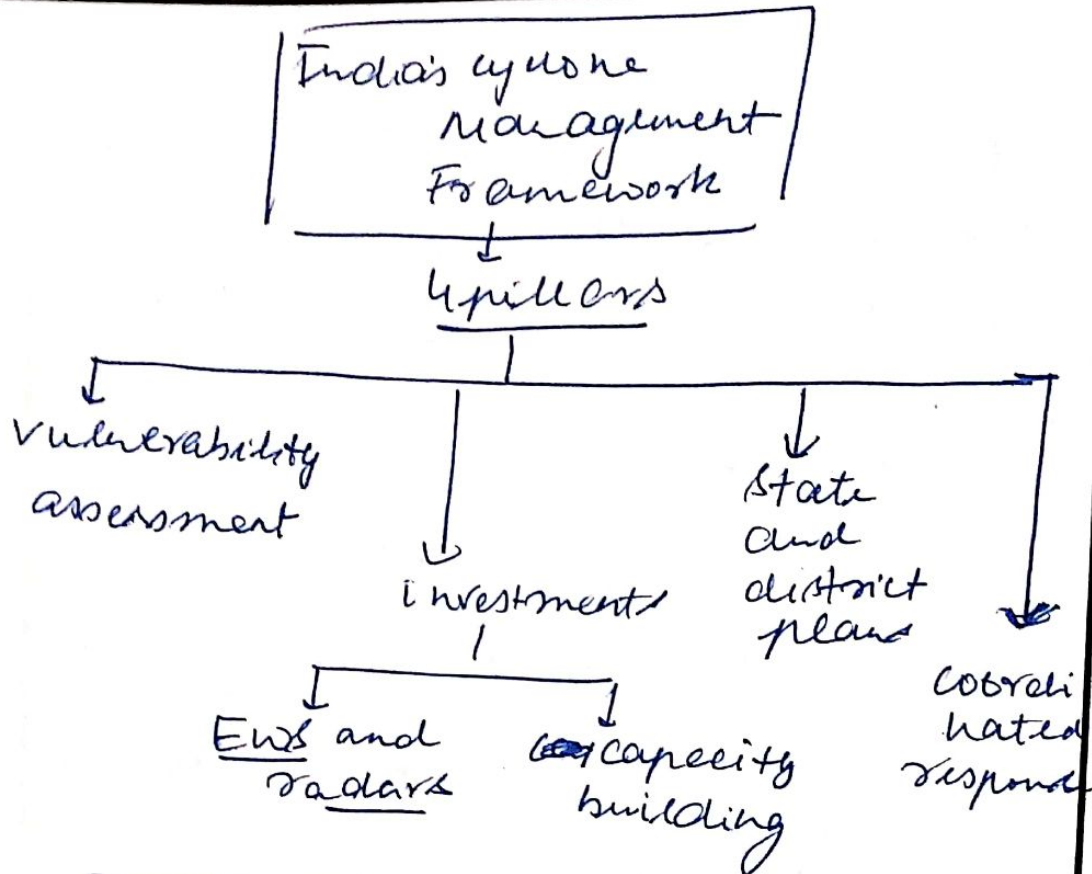
- 2) Global warming and consequent warmth of the

Scas

[eg]: Increase in frequency of
cyclones in Arabian sea with
likes of Tankore.

- 3) Rise of sea level and submerg
ent nature of Eastern coastline
- 4) Decrease of Natural vegetation,
mangroves, corals along the coastline
(Status of Forest report 2021)
- 5) Rising influxes of tropical depress
ions from Pacific to Bay of
Bengal.
- 6) El Niño events increase → increase in
cyclone formation in Arabian sea
- 7) Direction of cyclones in the
region ⇒





Criticism

- 1) poor infrastructure (not cyclone resilient)
 - 2) focus on response not mitigation
 - 3) low public participation.
 - 4) Poor implementation and dilution of laws like LRZ.
 - 5) less Research and Development
 - 6) sparse network of doppler radars
- Hence there is need to adopt NDMA 2010 guidelines to protect the coastal cities from cyclones.

19. To build greater disaster resilience amongst communities, it is important to avoid looking at disaster events in isolation and understand the interconnections between global disasters. Elaborate, with examples.

(250 words) 15

समुदायों में अधिक आपदा प्रत्यास्थता विकसित करने हेतु, आपदा की घटनाओं को अलग-अलग देखने से बचना और वैश्विक आपदाओं के बीच अंतर्संबंधों को समझना महत्वपूर्ण है। उदाहरण सहित सविस्तार वर्णन कीजिए।

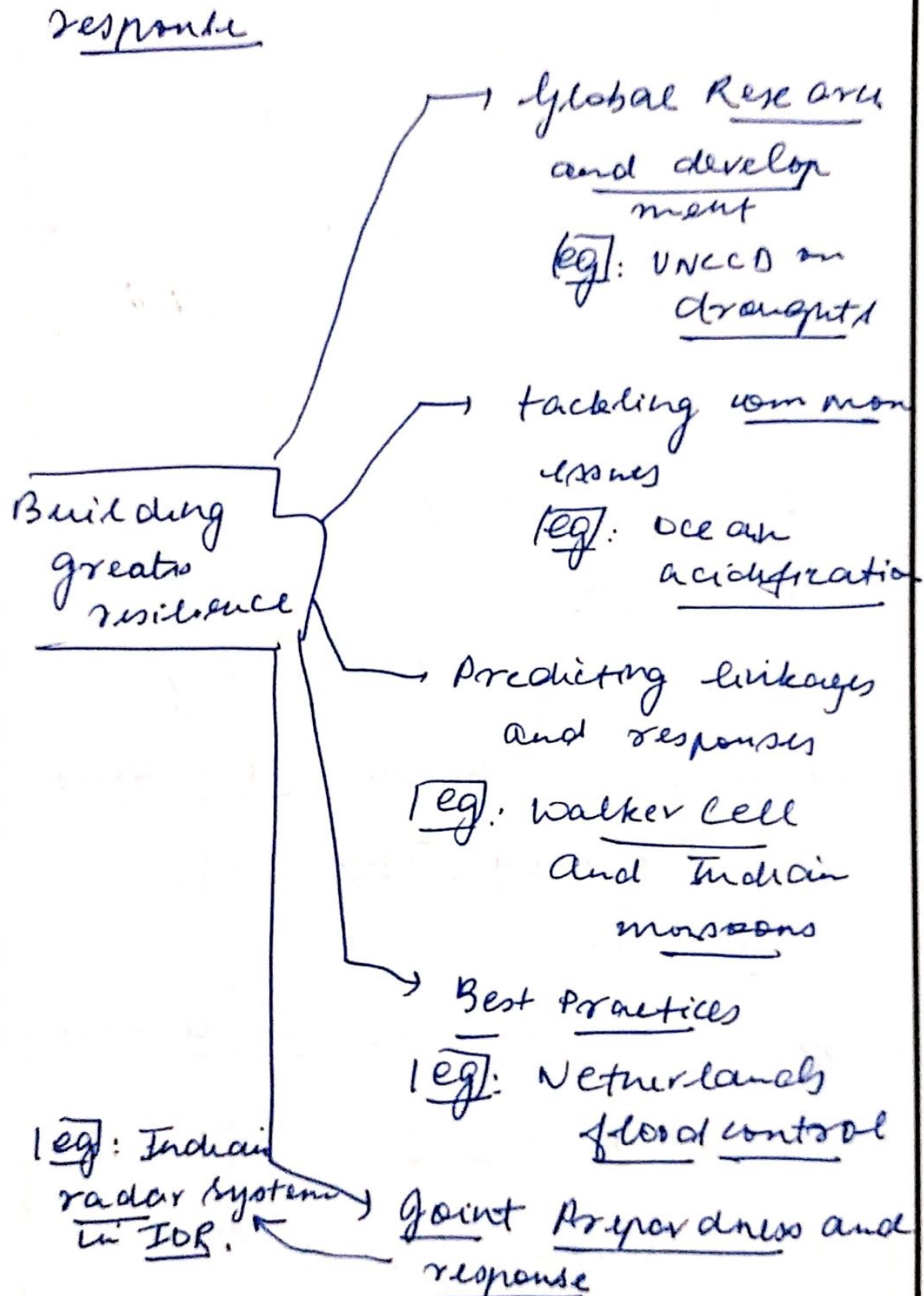
The Sendai Framework targets
recommend the building of
interconnections to tackle disaster
threats because of interrelated
nature of global climate.

Understanding interconnections

Disaster and related and extreme
climate events → often occur
because of disruption of
normal climate cycle somewhere
on globe

1 eg: El Niño → forest fires in
Australia
→ floods in
China

- 2) Increasing disaster events →
joint problem because of common
on issues of global warming
and climate change.
- 3) Feedback loop system in
environment.
[eg]: Melting of Arctic → slowing
AMOC → storms and floods
in Europe → further warming
- 4) Most disasters like droughts →
global phenomenon transgressing
regions and climates
- 5) Need of mounting joint response
[eg]: 2004 Tsunami
- 6) Multiple places → same issue
[eg]: coral bleaching in India
and Australia
↳ need to learn from



Hence an interconnected response to the disasters can hasten the achievement of 2030 sustainable goals

20. [How does the Himalayan mountain range shape the climate of the Indian subcontinent? Also, discuss the impact of the warming of the Himalayas on the Indian subcontinent.] (250 words) 15

हिमालय पर्वत शृंखला भारतीय उपमहाद्वीप की जलवायु को कैसे आकार प्रदान करती है? साथ ही, भारतीय उपमहाद्वीप पर हिमालय के उष्मण के प्रभाव की विवेचना कीजिए।

The Himalayan mountain ranges are called 'the sentinels of North' because of their role in shaping the climate of India

[Shaping the climate system]

- 1) Protecting the Indian subcontinent from the cold ^{dry} winds of central asia
- 2) Trapping the monsoon winds that come from Indian ocean
- 3) Together with Tibetan plateau influence the positioning of the western ^{sub} tropical jet

Stream.

- 4) Cryosphere system of Himalayas →
regulates riverine systems and
connected climate events like
floods, droughts.
- 5) More Albedo of ice in Himalayan
region → comparatively less heat
absorption

Impact of warming

- 1) Water security → first → increased
flow → flooding
→ long term → decreased
flow → drought
- 2) snow ice melting
→ cultural loss
eg: ice
stupas
→ increased risk of
landslides, GLOFs

- 3) Temperature Amplification effect
because of decreased albedo
(eg): local Himalayan temperature,
expected increased by 5.2°C by
2100 at RCP 4.5
- 4) Invasion of vegetation upslope →
risk to flora
- 5) Decreased living space to fauna
like Brown Bear, Snow Leopard
Biodiversity loss,
- 6) Water cycle amplification of region →
increased extreme events
Way forward
- 1) Increased Research on Cryosphere
- 2) Sticking to Paris Goals and Targets
as per AR6 recommendations.
Also Himalayas can be considered
global reserve like Antarctic to