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GENERAL STUDIES (TEST CODE : 2414)

Name of Candidate	PURUJ SINGH SOLANKI		
Medium Eng./Hindi	ENGLISH	Registration Number	1362174
Center	JAIPUR	Date	25/06/23

INDEX TABLE		
Q. No.	Maximum Marks	Marks Obtained
1	10	
2	10	
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5	10	
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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 **HINDI & ENGLISH** इसमें बीस प्रश्न हैं हिन्दी और अंग्रेजी 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

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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.

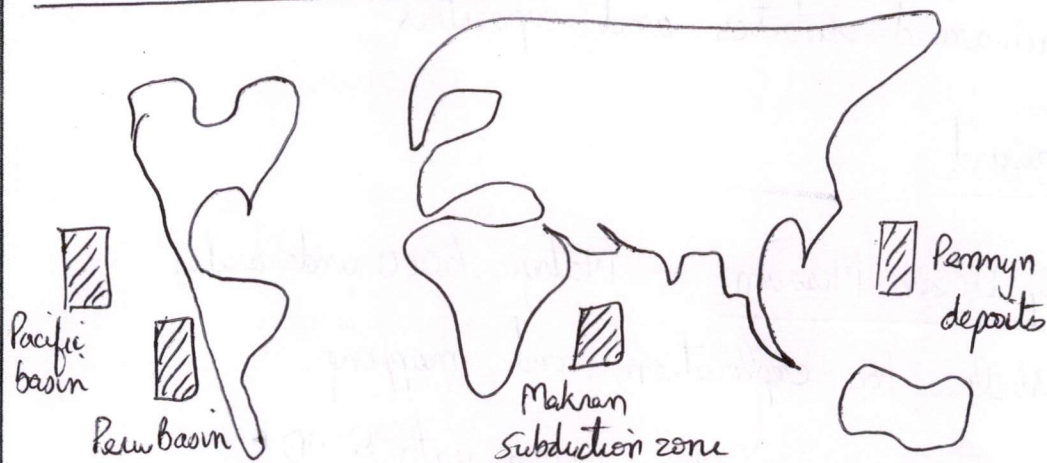
All the Best

1. बहुधात्विक ग्रंथिकाओं (पॉलिमेटेलिक नोड्यूल्स) के भौगोलिक वितरण का उदाहरण प्रस्तुत करते हुए, उनके महत्व पर चर्चा कीजिए।

Illustrate the geographical distribution of polymetallic nodules and discuss their significance. (Answer in 150 words) 10

Polymetallic' nodules are oceanic deposits of
Oxides and hydroxides of Iron, Manganese,
Nickel and Cobalt (Strategically important
Critical minerals)

Geographical distribution



Significance of Polymetallic' Nodules

① Technologies of the future

- Advanced supermagnets, superconduction
- Hybrid Vehicles

② Decarbonisation

- Solar and Wind energy equipment
- Powerful batteries (Lithium ion, Lithium-Sulfur)
- Grid networks

③ Defense equipment with high tensile strength④ Semiconductor doping and strengthening

- electronics industry
- advanced robotics and capacitors

Way forward

- Deep Ocean Mission - Matrya 6000 underwater vehicle for exploration and mapping
- Cooperation in Indian Ocean with QUAD
- KABIL investments in offshore locations

Poly metallic nodules are sine-qua-non for meeting climate action targets coupled with a just and equitable global growth.

2. हिमालय की वर्तमान अपवाह प्रणाली काफी हद तक क्रमिक नदी अपहरण का परिणाम है। चर्चा कीजिए।

The present drainage system of the Himalayas is, to a great extent, the result of progressive river piracy. Discuss. (Answer in 150 words) 10

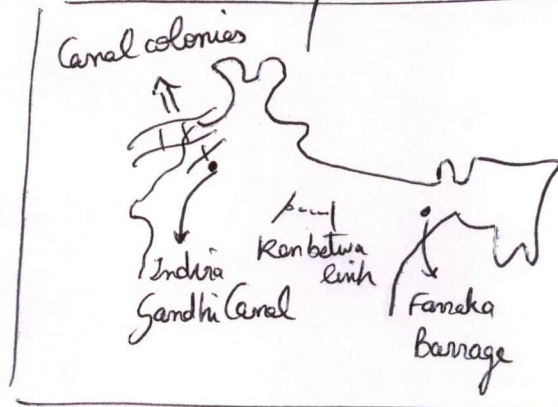
Himalayas are characterised by a dendritic drainage system with main rivers and tributaries spreading like branches of a tree.

Drainage a result of progressive river piracy

- ① River piracy means diversion of waters from main rivers via canals, embankments, barrages to achieve water security

② Implications

↳ Moulding the natural flow of water to meet human needs



↳ Water availability in N.W. Rajasthan

↳ Favourable relations with Bangladesh

③ Negative consequences

↳ @ Pakistan floods attributed to large scale

changes in river courses from British times

⑥ Ken - Betwa link → inundation of Panna expected.

Way forward

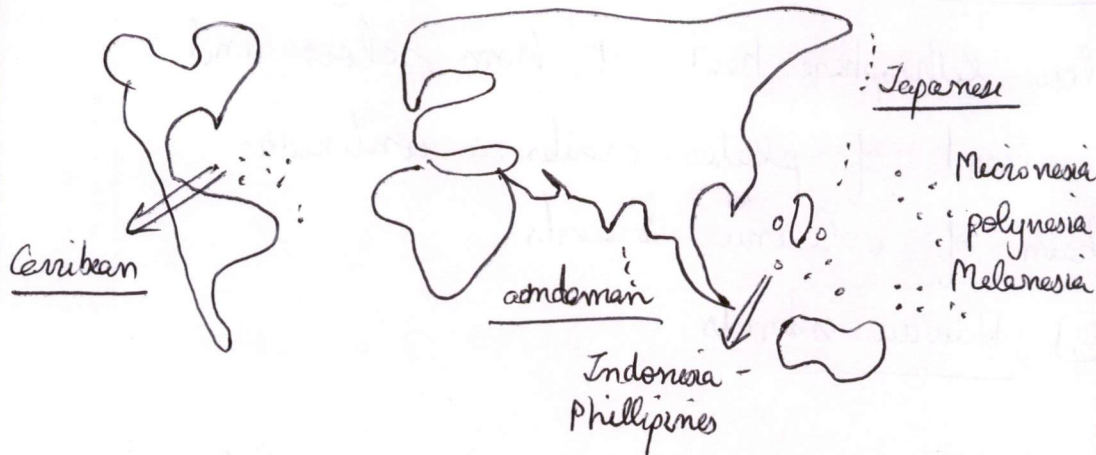
River piracy has 'dual sword' characteristic -
ensuring water security and inviting disasters.
Balancing the two is required.

3. द्वीपसमूह से आप क्या समझते हैं? इनके निर्माण में शामिल विभिन्न प्रक्रियाओं को उदाहरण सहित समझाइए।

What do you understand by archipelagos? Explain the different processes involved in their formation, with examples. (Answer in 150 words) 10

Archipelagos are groupings of islands of varied areal extends in close vicinity.

Key archipelagos in the world



Processes involved in their formation

① Plate Tectonics

↳ Convergent plate boundaries - Colliding plates create orogenic features on sea-bed, which rise above as mounts

[eg] Japanese and Philippines archipelago on Pacific Ring of fire

↳ Divergent plate boundaries - Weakening of oceanic crust and associated volcanism creates chain of islands [eg] Atlantic and Indian Ocean Ridges

② Mantle Plume Theory - Presence of Hotspots below lithosphere heats it from below and movement of plates creates a continuous chain of volcanic islands
[eg] Hawaii islands

Archipelagos have economical (fishing), cultural (indigenous tribes) and aesthetic significance.

4. अत्यधिक और अविवेकपूर्ण रेत खनन की पारिस्थितिक लागत इसके आर्थिक लाभों से कहीं अधिक है। संधारणीय रेत खनन के महत्व के संदर्भ में चर्चा कीजिए।
The ecological cost of excessive and indiscriminate sand mining far outweighs its economic benefits. Discuss in context of the importance of sustainable sand mining. (Answer in 150 words) 10

Sand Mining in river beds is a cost-effective way to get a good binding agent for cement, Key to infrastructure creation for 21st century India.

Ecological Cost

- ① Invitation to Coastal flooding esp. in low lying areas.
- ② Loss of infrastructure on unconsolidated sediment plains
- ③ Destruction of River ecosystem - loss of crabs, fishes and rapid rise of invasive alien species
- ④ Excessive sand mining hampers aquifer recharge
- ⑤ Eutrophication of water bodies from dissolved salts → further loss of biodiversity and algae blooms

Way forward

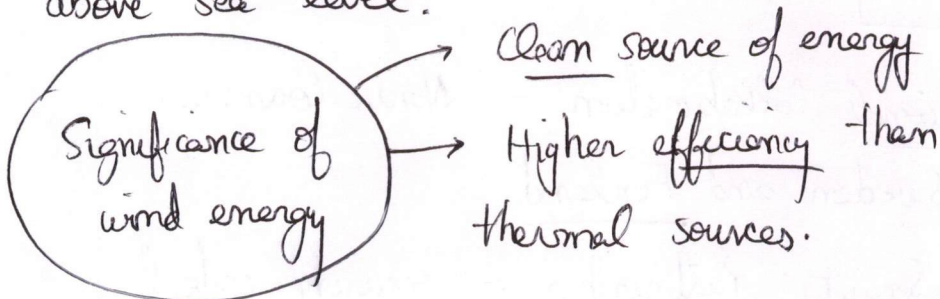
- ① Highly regulated mining esp. in rains
- ② Development funds like DMF
- ③ CRZ Rules and State laws to safeguard interests of residents
- ④ Technological innovations for reducing sand in concrete [eg] Carbon sequestration using CO_2 enriched cement needs less sand

Although Sand is vital for rapid economic growth, its environmental consequences cannot be ignored.

5. भारत विभिन्न कारणों से अपनी पवन ऊर्जा की उच्च क्षमता का दोहन नहीं कर पाया है। चर्चा कीजिए और आगे की राह सुझाइए।

The high wind energy potential in India remains untapped due to various reasons. Discuss and suggest a way forward. (Answer in 150 words) 10

According to National Institute of Wind energy, India can generate 300 GW of Offshore Wind energy at a height 100 m above sea level.



Untapped Wind energy potential in India

- ① Technology - Offshore wind energy is tech-intensive
- ② Capital intensive coupled with demand for critical minerals (13 times higher than coal thermal plants).
- ③ Environmental
 - Noise pollution
 - Threat to aquatic and aerial biodiversity

- ④ Competition with Solar Power - actively promoted by Government
- ⑤ Decline in sole wind power installations after 2024 - later on only solar wind hybrids

Way forward

- ① International Collaboration - Nordic Countries esp. Sweden and Finland
- ② Mineral Security Partnership - securing critical minerals
- ③ Technology upgradation and incentives to private sector (PLI for wind energy equipment)
- ④ Exploring potential regions - High ranges of Ladakh, Jaisalmer

Wind energy contribution needs to be upscalled from 10% to 20% for achieving Net Zero.

6. आपदा जोखिम न्यूनीकरण में अंतर्राष्ट्रीय सहयोग के महत्व पर प्रकाश डालिए। साथ ही, आपदाओं को कम करने में क्षेत्रीय सहयोग को मजबूत करने के लिए भारत द्वारा प्रारंभ की गई पहलों का भी उल्लेख कीजिए।

Highlight the significance of international cooperation in disaster risk reduction. Also, state the initiatives taken by India to strengthen regional cooperation for reducing disasters. (Answer in 150 words) 10

Sendai Framework 2015 identifies disaster risk reduction ^(DRR) as the strategies (structural and non-structural) to prepare for disaster's destructive potential, achieve disaster resilience and help in disaster recovery.

International Cooperation in DRR - significance

- ① Global nature of disasters - [eg] Covid A pandemic, 2004 Indian Ocean Tsunami
- ② Securing the best technological and ideological resources for risk reduction (Global best practices) - [eg] Japan's flexible construction in Earthquakes
- ③ Global funding mechanisms - Loss and Damage Fund (GP 27 UNFCCC), Adaptation fund

- ④ Matching capacities of Small countries
eg IRIS by CDRI (India led)
- ⑤ Realising 'Build back better' in true sense

Indian efforts for regional cooperation

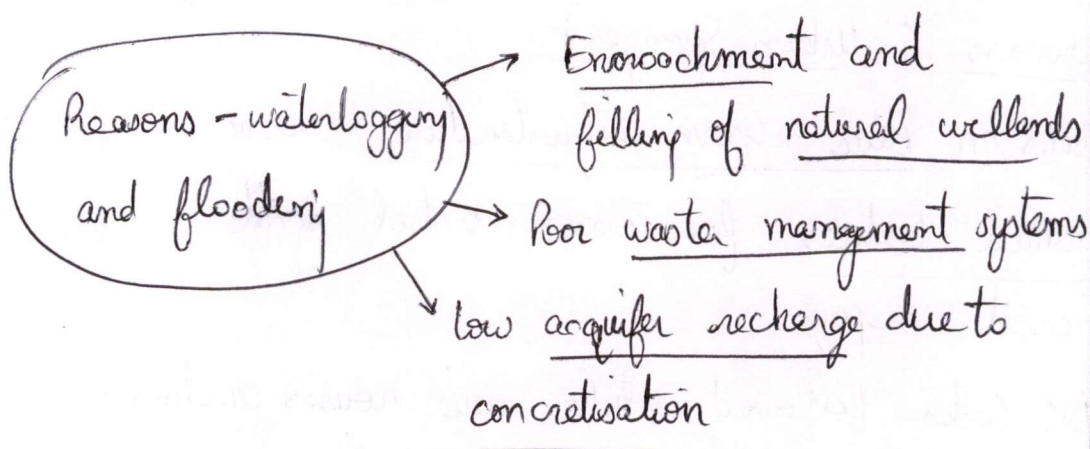
- ① ISRO support for island states in Pacific for disaster risk mapping.
- ② Coalition for disaster resilient infrastructure (CDRI) - 2019 for technological aid
- ③ IMD acts as Regional Meteorological station for cyclone alerts to > 10 Nations

Regional and global cooperation is vital for DRR and risk mitigation in line with India's vision of Saudhava Kutumbakam

7. भारत के शहरों में व्यापक जलजमाव और बाढ़ को देखते हुए, बाढ़ प्रबंधन के पारंपरिक दृष्टिकोणों को त्यागना महत्वपूर्ण होता जा रहा है। चर्चा कीजिए। साथ ही, इस संदर्भ में अपनाए जा सकने वाले कुछ वैकल्पिक दृष्टिकोणों का भी वर्णन कीजिए।

In view of extensive waterlogging and flooding of cities in India, it has become increasingly important to shift away from traditional approaches of flood management. Discuss. Also, state some alternative approaches that can be adopted in this context. (Answer in 150 words) 10

With 50% citizens to live in cities by 2047
and increased frequency and intensity of
urban flooding, policymakers face key
challenges in urban planning and retrofitting



Traditional approach	limitations
① Non-synchronous retrofitting of existing cities ② Re-settlement from low-lying to elevated areas.	① Reactive rather than proactive ② loss of livelihoods and housing.

- | | |
|---|--|
| ③ Ad-hoc development of drains
④ Checkdams and embankments around urban rivers | ③ Infrastructure breakdown after rains every year
[eg] Case of Mumbai |
|---|--|

Alternative approaches

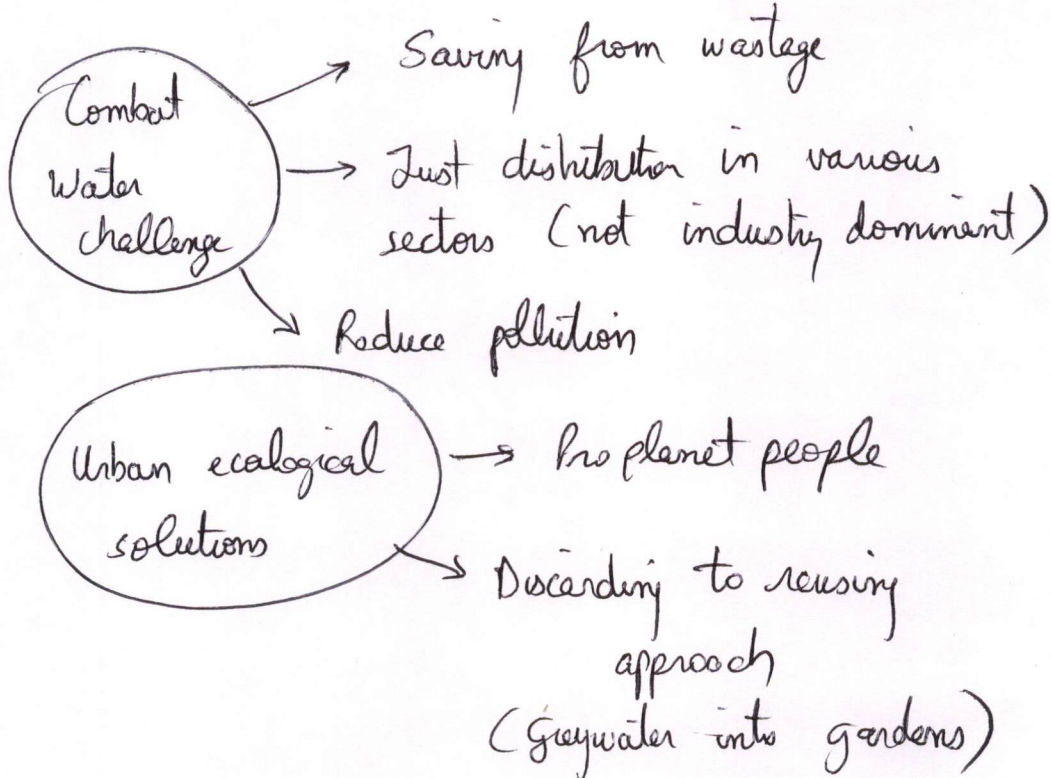
- ① Revivification of urban wetlands - Amrit Sarovars (Urban Sponges)
- ② Focus on Blue - Green Infrastructure - using technical textiles for erosion control and increased seepage
- ③ BIS Codes followed while new houses creation under PMAY.
- ④ Lesson from N.E Indian cities - urban amenities on higher grounds, self sufficiency in food grains during disasters

A Responsive and proactive approach is vital for creating Sustainable cities (SDGs 11)

8. जल और शहरी-पारिस्थितिकी चुनौतियों से निपटने के लिए 'वन वाटर' दृष्टिकोण महत्वपूर्ण है। चर्चा कीजिए।

'One Water' approach is the key to combat water and urban-ecological challenges. Discuss. (Answer in 150 words) 10

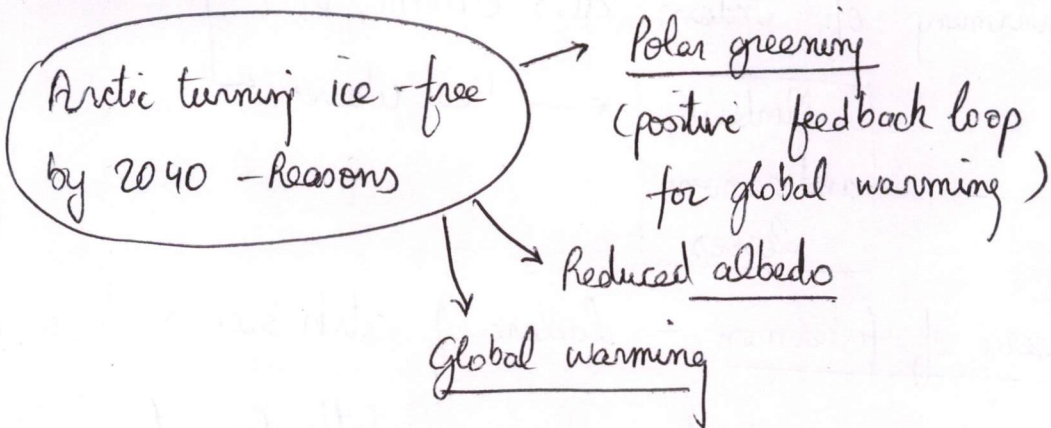
One Water approach means a comprehensive management of water bodies, ground water and industrial liquid waste for achieving objectives of Circular Economy.



9. यह पूर्वानुमान लगाया गया है कि 2040 की ग्रीष्म ऋतु तक आर्कटिक हिम-मुक्त हो सकता है। महासागरों पर इसके संभावित प्रभावों का उल्लेख कीजिए। साथ ही, चर्चा कीजिए कि भारत इस स्थिति में किस प्रकार प्रभावित होगा।

It is predicted that the Arctic could be ice-free in summer by 2040. State its possible impact on oceans. Also, discuss how India will be affected in this scenario. (Answer in 150 words) 10

Arctic amplification refers to heating and permafrost thawing in arctics at twice the rate in rest of the world.



Possible impact on oceans

- Weakening of Atlantic Meridional Overturning Circulation (AMOC) - one of 9 tipping points
- Water scarcity in polar latitudes - river drying
- Biodiversity hazard - polar bears reproductive success impaired → ecosystem at risk
- Poor plankton growth - food scarcity for bottom species

Arctic Thawing - impact on India

- ① Increased intensity of El-Niño → monsoon failure and food insecurity (46% monsoon dependence)
- ② Permafrost thaw releases methane (potent GHG)
 - ↳ Warming of Indian cities (Delhi, UP)
 - Heat Waves
 - ↳ Mortality and economic losses
- ③ Misery of fishermen - failure of catch success
- ④ Increased frequency of cyclones in both Bay of Bengal & Arabian Sea

Way forward

- ① Sustainable living (Mission life) and reducing dependence on fossil fuels
- ② Safeguarding Biodiversity beyond National Jurisdiction
Polar regions
~~Oceans~~ are the key to keeping Global Temperatures in check, safeguarding is need of the hour.

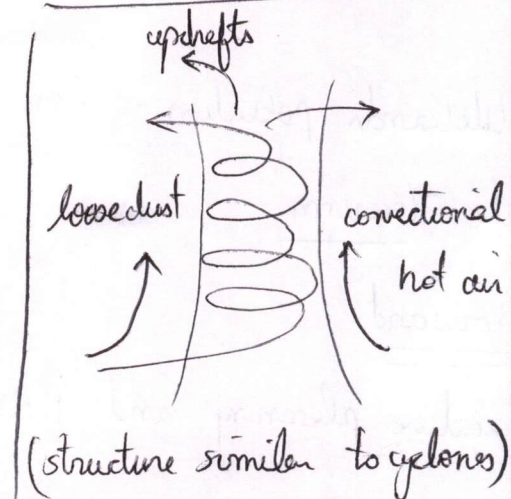
10. रेत एवं धूल भरी आंधियों के पर्यावरणीय और आर्थिक प्रभावों पर चर्चा कीजिए।

Discuss the environmental and economic impacts of sand and dust storms.
(Answer in 150 words) 10

Sand and dust storms are a result of high convective currents coupled with an elevated ground temperature and pollutant levels.

Environmental impact

→ Avian confusion - inability to reach nests, deaths and prey to ground animals



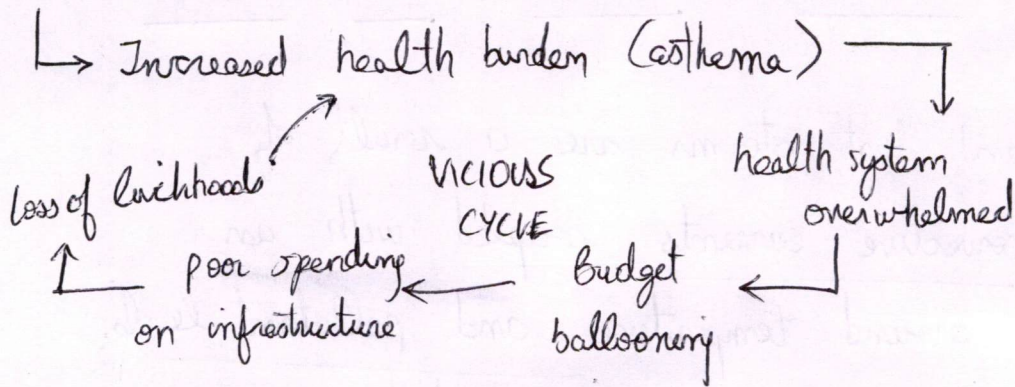
→ Respiratory failure - smaller plants have sensitive stomata openings which are damaged

→ Movement of sand dunes - deserts have no climatic boundaries

→ Pollution of water bodies [eg] gharbi in Italy

Economic impacts

→ Infrastructural damage - electricity towers



↳ Wetlands pollution - loss of ecosystem services like tourism

Way forward

- ① Proactive planning and HRVA for dust storm prone regions
- ② Additional medical staff on stand-by.
- ③ Green bonds for creating additional infrastructure

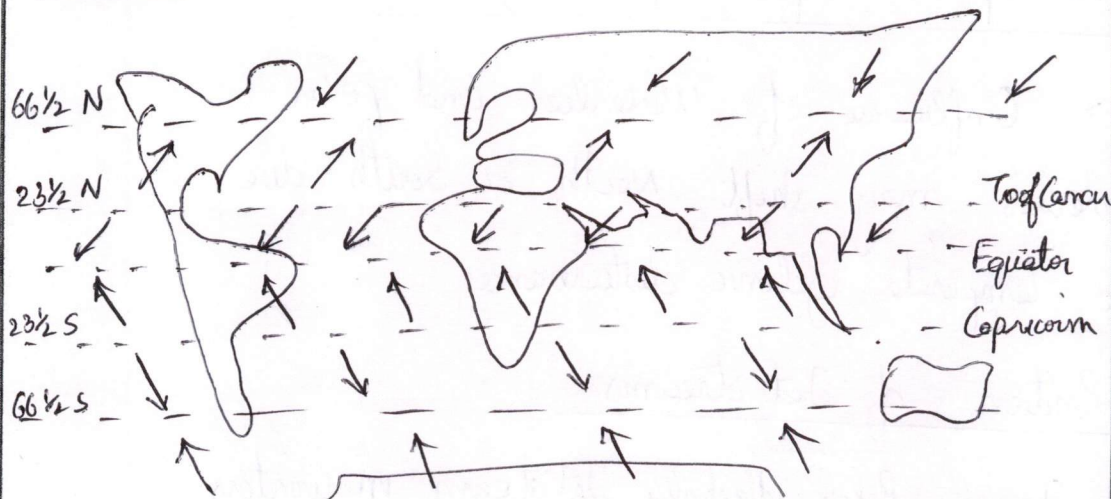
Sand and dust storms, although a nature's fury, can be mitigated provided state - citizen - private sector hold hands timely.

11. वायुदाब पेटियों के विस्थापन की परिघटना को स्पष्ट कीजिए। साथ ही, किसी क्षेत्र की जलवायु पर इसके प्रभाव का वर्णन कीजिए।

Explain the phenomenon behind the shifting of wind belts. Also, illustrate its impact on the climate of a region. (Answer in 250 words) 15

The Surface Winds on Earth's surface are a result of complex interaction of Solar energy, rotation of the earth and regional climatic factors - classified into primary and secondary wind systems

Primary wind belts



Reasons for shifting of Wind Belts

- ① Apparent movement of Sun between Tropics
 ↳ When Sun approaches Tropic of Cancer during

Northern Hemisphere summer, Trade Winds shift from South to North due to shift in Inter Tropical Convergence Zone (ITCZ)

② Localised factors - [29] Monsoon in India

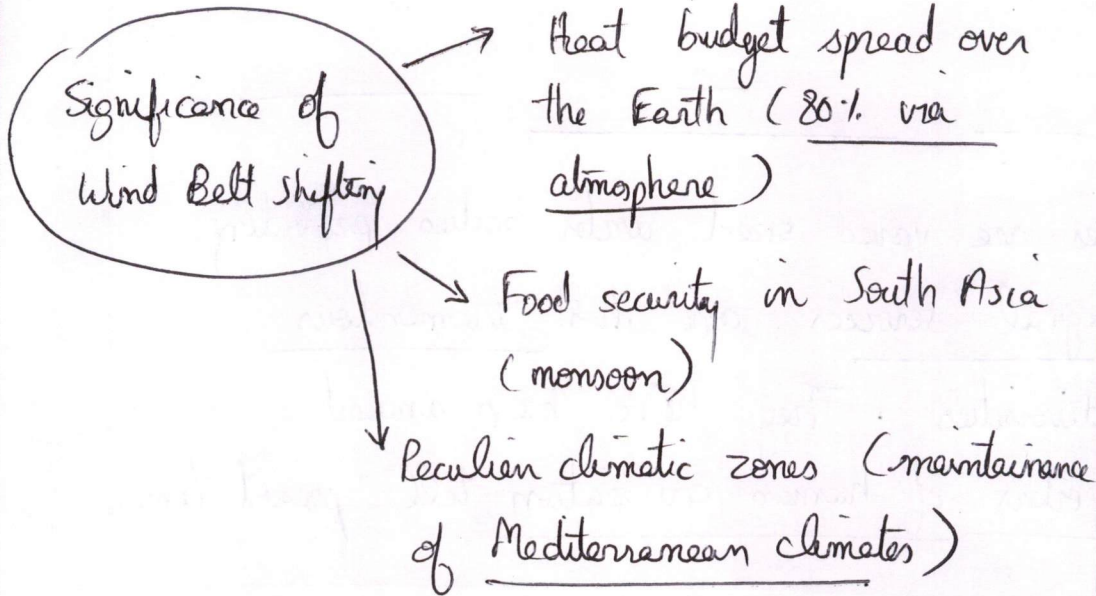
↳ Extensive heating of Tibetan plateau and ITCZ over Indian subcontinent attracts Trades from S. Hemisphere from S-W direction

③ Development of Temperate cyclones

↳ Confluence of Westerlies and polar easterlies may shift North or South due to Temperate cyclonic disturbances

④ Position of Jet streams

↳ Strong Polar Westerly Jet stream in winters and its meandering (Rossby Waves) also shifts temperate wind belts.



Shift in Wind belts gives new insights in the atmospheric dynamics of Troposphere, key to understand regional climatic variations

12. भू-संचलन के कारण निर्मित झीलों का संक्षिप्त विवरण देते हुए, झीलों के आर्थिक और पारिस्थितिक महत्व पर चर्चा कीजिए।

Giving a brief account of the lakes formed due to Earth's movement, discuss the economic and ecological significance of lakes. (Answer in 250 words) 15

Lakes are varied sized water bodies providing ecological services and host tremendous biodiversities. They have been ancient supporters of human civilization till present times.

Formation of lakes from Earth's movements

(I) Divergent Continent - Continent plate boundaries

Case of Africa - Lake Tanganyika, Lake Victoria

(II) Volcanic eruptions - craters filled [eg]

Lakes in Chile

(III) Asteroid impact lakes in Maharashtra

(IV) Earthquake induced fault lines and heavy rains

Economic significance

(I) Tourism potential [eg] Nakki Lake in Rajasthan

- (II) Solution to Urban Water problem - Urban droughts
- (III) Safeguard from Urban floods and act as Water sponges

Environmental significance

- (a) Provide Edge effect for species biodiversity
- (b) Regulate temperature of cities - Urban Heat Domes
- (c) Attract Monsoonal Winds - rain
- (d) Ecological kidneys - purify Greywater from Rivers

Lakes have vital significance for humans in a fast changing urbanisation space.

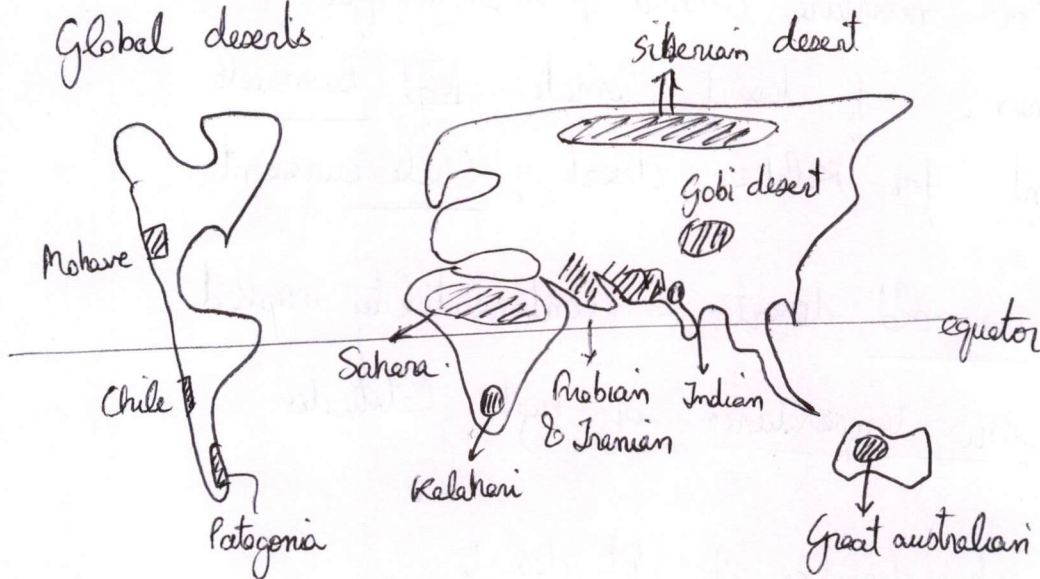
13. विश्व भर में पाए जाने वाले विभिन्न प्रकार के मरुस्थलों के निर्माण की व्याख्या करते हुए, उनका विवरण प्रस्तुत कीजिए और उनकी विशेषताओं का उल्लेख कीजिए।

Explaining their formation, provide an account of the various kinds of deserts found across the world along with their characteristics. (Answer in 250 words)

15

Desert landscapes (hot/cold) spread across the world are visible manifestations of extreme climatic conditions, low water resources and specially adapted species.

Global deserts



Formation factors

- ① Offshore Easterlies - Carry very little moisture from inland areas - formation of Sahara desert and Arabian desert.

- ② Continentality - very hot conditions with minimal rainfall [eg] Gobi desert and Thar.
- ③ Leeward side of Mountains - blocking of Moisture laden winds [eg] Patagonian desert overshadowed by Andes
- ④ Cold Ocean Currents - create updrafts with very low moisture content, reason for sustenance of desert climate [eg] Benguela Current for Kalahari desert, Chile current
- ⑤ Siberian cold desert - Continental coupled with low temperatures of high latitudes

General characteristics of Hot deserts

- ① Xerophytic vegetation - waxy leaves, thorns as leaves, photosynthetic stems,
- ② Fibrous roots with high aerial and depth extent - search of water
- ③ Animal adaptations - Camel with hump,

Kangaroo rat for resistance to water scarcity

- ① Types
- Rocky - Mohave.
 - Sandy - Thar
 - Mixed - Sahara

Characteristics of Cold deserts

- ① Waxy leaves and slanting trees, no ice buildup
- ② Animals with heavy fur and blubber
- ③ Eels, Polar Bears.

Desert ecosystem inspire awe and aesthetic sense but their expansion needs to be checked with revival of traditional water harvesting techniques.

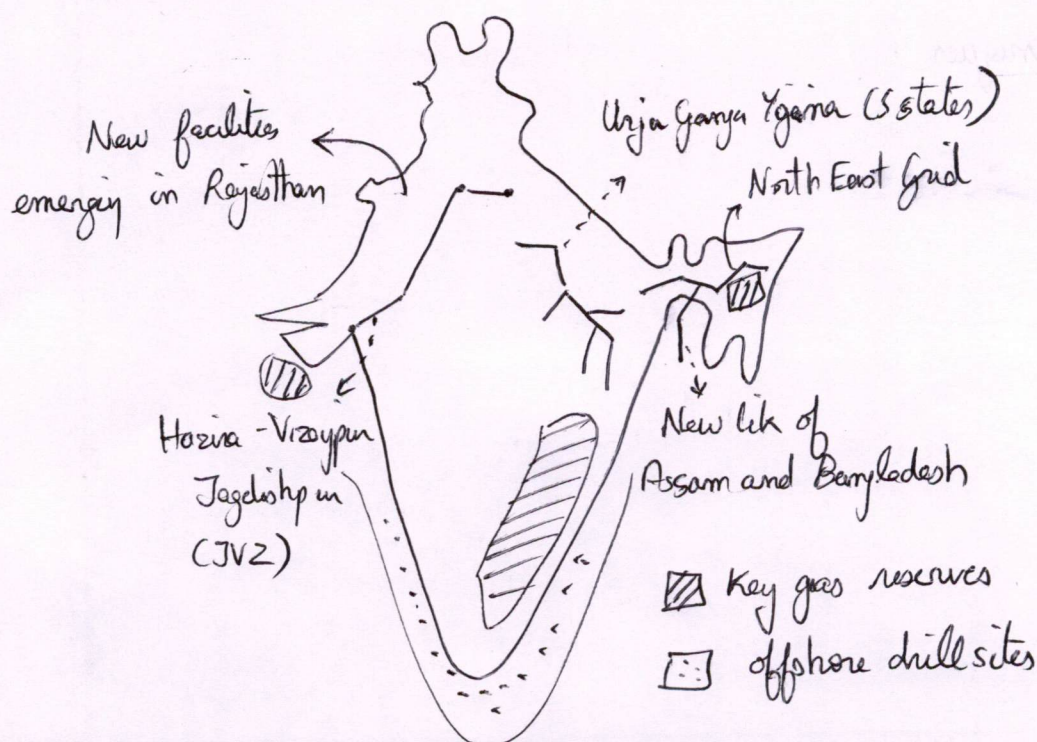
14. तेल और गैस पाइपलाइन को अर्थव्यवस्था की धमनी माना जाता है। इस संदर्भ में, भारत में तेल और गैस पाइपलाइन की स्थिति पर प्रकाश डालिए। साथ ही, पाइपलाइन परिवहन के लाभ और हानियों को भी सूचीबद्ध कीजिए।

Oil and gas pipelines are considered as the veins of the economy. In this context, throw some light on the status of oil and gas pipelines in India. Also, enlist the advantages and disadvantages of pipeline transportation. (Answer in 250 words) 15

Oil and gas are 'input goods' (Economic Survey) for Indian economy without which a deep economic shock is inevitable in the present scenario.

Statistics for India → 85% oil, 48% gas - import dependence
→ 0.01% oil, 1% gas - global reserves.

Oil and gas pipelines in India



Status of pipelines in India

- (a) 22000 km of 35000 km planned under One Nation One Gas grid already laid down
- (b) PM Ujja Ganga Yojana - To cover UP, Bihar, Jharkhand, Odisha and West Bengal
- (c) Success of North East Gas grid from Assam to other states
- (d) Limitations
 - low coverage in Central and South India
 - Slow progress of existing schemes

⇒ Pipeline transport has both :

Pros	Cons
① <u>Convenient</u>, esp. over long distances than Coal ② Easy to <u>lay</u> and <u>maintain</u> ③ Terrain is not a big issue with improved tech	① <u>leakages</u> and repeated maintenance ② Inter-state laying hampers revenue potential by states from transportation

Way forward

- ① Extension of Gas grid network - including to Nepal and Afghanistan (TAPI)
- ② Import resilience (IPEF)
- ③ Self sufficiency in long term

Oil and pipeline for gas are basis for present day economy, but their ecological burden must be reduced in time (Carbon sequestration)

15. भारत में आई.टी. & बी.पी.एम. (बिजनेस प्रोसेस मैनेजमेंट) उद्योग की स्थिति का संक्षिप्त विवरण दीजिए। साथ ही, विभिन्न भारतीय शहरों में आई.टी. हब की अवस्थिति का निर्धारण करने में महत्वपूर्ण भूमिका निभाने वाले कारकों पर चर्चा कीजिए।

Give a brief account of the state of IT & BPM (Business Process Management) industry in India. Also, discuss the factors that are at play in determining the location of IT hubs in different Indian cities. (Answer in 250 words)

15

India's IT and BPM is the largest contribution to Service sector exports (3.1% of globe), Making them important partners in creation of quality employment in India.

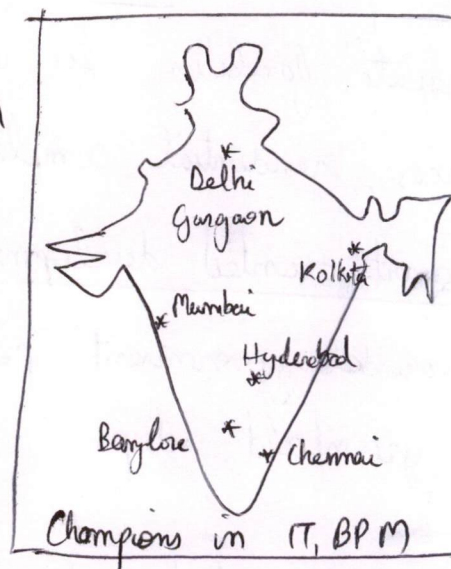
State of IT, BPM in India

- ① Booming industry - great placement prospects in engineering colleges every year

- ② Highly Competitive sector

- ③ Need for specific skills esp. after advent of AI, Machine Learning

- ④ Disruptive and a Transformative industry



However there are associated challenges

- ① Lack of adequate housing - Gurgaon
- ② Transportation issues - Bangalore
- ③ Mental Wellness and anxiety
- ④ Job losses in recent times - Mass lay offs
by Top IT firms

Factors affecting location of IT Hubs

- ① Quality labor - skilled, English convenient
- ② Adequate facilities for urban expansion -
offices, residential complexes
- ③ Transit oriented development cities
- ④ Favourable government policies - Tax benefits
for greenfield setups

IT and BPM industry has high potential to create a quality workforce for reaching the target of \$1Tn digital economy by 2025.

16. जलवायु शमन और अनुकूलन के साथ-साथ जैव विविधता को बनाए रखने और मानव स्वास्थ्य के लिए आर्द्रभूमियों को जीवंत बनाए रखना महत्वपूर्ण है। चर्चा कीजिए। इसे सुनिश्चित करने के लिए भारत में कौन-से तंत्र मौजूद हैं?

Ensuring healthy wetlands is critical for climate mitigation and adaptation as well as sustaining biodiversity and human health. Discuss. What are the mechanisms that exist in India to achieve this? (Answer in 250 words) 15

India, occupying 2.86% of Total geographical area of world is blessed with > 7 Lakh wetlands which hold central importance in environment sustainability and economy.

Present Threats faced by wetlands

- a) Encroachment and filling of natural wetland areas esp in urban landscapes
- b) Cultural Eutrophication - fertiliser, industrial waste beyond carrying capacity
- c) Pollution via institutional sewage lines, plastic pollution
- d) Species overexploitation - fishing
- e) Unsustainable Tourism

Wetlands - Key for climate action and biodiversity

- ① Kidneys - filter out heavy metals
- ② Urban sponges - absorb flood water, prevent inundation
- ③ Species biodiversity and aesthetic significance
- ④ Carbon Sequestration potential - higher than Deciduous forests
- ⑤ Climate adaptation - Part of Mission life - harmony with nature
- ⑥ Human health → Waste to wealth potential
(Moorh Mats in Assam)
→ Fresh air in polluted cities

Mechanisms in India to ensure healthy wetlands

- ① Wetlands Policy 2017 - Institutionalise wetland protection and sustainable management
- ② CRZ Rules - Safety of Coastal wetlands
- ③ Ramsar Convention and Montreux Record - Safeguard & recognise critical wetlands

- ④ Wetland Research institute
- ⑤ Amrit Sarovar initiative - local participation
in wetland conservation

Case - Anate in California uses series of 6
wetlands for water purification

Wetlands are quintessential to the policy of
urban planning, meeting climate commitments
and ensuring a healthy lifestyle.

17. भारतीय संदर्भ से उदाहरण प्रस्तुत करते हुए, स्पष्ट कीजिए कि रासायनिक आपदा से आप क्या समझते हैं। साथ ही, ऐसी आपदाओं का शमन करने में सामना की जाने वाली चुनौतियों का उल्लेख कीजिए और चर्चा कीजिए कि इन चुनौतियों का समाधान कैसे किया जा सकता है।
Explain what you understand by a chemical disaster with examples from the Indian context. Also, mention the challenges to mitigate such disasters and discuss how these challenges can be addressed. (Answer in 250 words) 15

Chemical disasters are large-scale disruption of social and economic systems by accidental release of toxic/hazardous chemicals in the environment. They are part of 4 known anthropogenic hazards

Examples in Indian Context

C - Chemical
B - Biological
R - Radiological
N - Nuclear

① Bhopal Gas Tragedy 1986

↳ Release of Methyl Isocyanate due to pressure imbalance in Union Carbide plant in Bhopal

② Srinam Industry Tragedy - SC later brought Concept of Absolute liability of chemical company

③ Vizag Polystyrene gas leak - hospitalisation of employees by inhalation of suffocating gas.

Challenges in mitigating such disasters

- ① Large aerial coverage - esp- when chemical is a gas.
- ② Poor safety protocols and equipment (scrubbers) in place
- ③ No pro-active advisories and suddenness of disaster claims lives - lack of timely evacuation
- ④ Poor liability fixing - multiple stakeholders like Company, env. audit agencies, law enforcement
- ⑤ Slow pace of Justice - Compensation takes years to be released.

Way forward

- ① Fixing absolute liability and polluter pays principle in India
- ② Safety drills on town / city wide scales once in 6 months - esp. for plants around residential areas

- ③ Env. Impact assessment - Civil and criminal liability for flouting rules.
- ④ Specialised medical personnel for chemical poisoning and symptoms posted strategically
- ⑤ Including NGOs and local bodies in capacity building and enforcing accountability

Bhopal Tragedy holds wide-ranging lessons for India, government must not allow unrestricted operations of polluter firms in interest of public.

18. आपदाओं से निपटने में पंचायती राज संस्थानों (PRIs) द्वारा सामना की जाने वाली चुनौतियों पर प्रकाश डालते हुए, चर्चा कीजिए कि पंचायती राज मंत्रालय की आपदा प्रबंधन योजना इन चुनौतियों से निपटने में कैसे सहायता कर सकती है।

Highlighting the challenges faced by Panchayati Raj Institutions (PRIs) in tackling disasters, discuss how the Disaster Management Plan of the Ministry of Panchayati Raj can help in addressing these challenges. (Answer in 250 words) 15

Disaster invariably affects the bottommost unit of governance (Panchayats) the hardest by overwhelming the economic infrastructure and leaving people helpless. Thus Disaster management should be a bottom-up approach.

Challenges faced by PRIs in tackling disasters

- ① Poor finances - only 10% revenues are not tied to any central schemes - leaving very small amount for disaster preparedness
- ② Poor training - lack of volunteers and trainers for educating masses about evacuation, assistance to injured.
- ③ Limited hazard mapping - poor understanding of diverse natural hazards in the region.

- ④ Late information dissemination - lack of Village Wide area networks for alerts
- ⑤ Low technical expertise - disaster preparedness is as good as disaster prediction but lack of doppler radars at grassroots

A new dawn - Disaster Management Plan (DMP)
of MoPR

⇒ Features

- ↳ Disaster management a primary responsibility of Gram Panchayat
- ↳ DMP activity on e-GramSwaraj Portal with valuable inputs and best practices from across India
- ↳ Inclusion of CSOs in DMP formulation
- ↳ Training modules for Aapla Mitras, Aapla Sakhis

⇒ Advantages

- ↳ Rural empowerment and responsible management of disasters.

- local inputs from CSO, are vital for DMP
 - Knowledge of regional topography, location for creation of shelters etc. pre-planned
 - Re-vitalise role of grass root volunteers
- Ex Aapda Sabhis in Assam floods.

Way forward

- DMP is a much needed step towards effective disaster risk mitigation and resilience

19. भारत में पारिस्थितिकी संवेदनशील क्षेत्रों (ESZs) के निर्माण की आवश्यकता पर प्रकाश डालते हुए, इससे संबंधित मुद्दों पर चर्चा कीजिए। साथ ही, इस संबंध में हाल ही में किए गए प्रयासों का भी उल्लेख कीजिए।

Highlighting the need to create Eco-Sensitive Zones (ESZs) in India, discuss the associated issues. Also, mention the recent developments in this regard.
(Answer in 250 words)

15

ESZ are areas surrounding the protected areas like National Parks and Wildlife Sanctuaries for limiting human - wild animal interaction and ensuring effective in-site conservation

ESZ - crucial for India

- a) Rise in human-animal conflicts
(200 Tigers and 200 elephants dead in 3 years)
- b) Environmental pollution seeping into protected areas
* ESZ prohibits polluting industries and waste discharge
- c) Safeguarding innocent - passage of animals from one protected area to other
- d) Protect crops and other infrastructure
[eg] Elephant rampage in Kerala.

Recently SC ruled to create atleast 1km ~~SE~~ ESZ around all protected areas

Associated issues

- ① loss of farmland and agricultural income
(farmer protests in Kerala)
- ② Uniformity across all areas - One size fits
approach ineffective
- ③ Federalism under threat - states not consulted
- ④ 1km may be too less for some protected areas
- ⑤ Regular flouting of ESZ rules by mining companies [eg] Coal mining, Iron ore in Western Ghats

Way forward

- ① K. Kasturirangan Committee on Western Ghats recommended 37.1% ESZ coverage
- ② Strict compliance and hefty fines
- ③ Diversion from agriculture to industrial sector and allied activities for livelihood support

ESZ is vital to safeguard endangered species of flora and fauna. A balance must be struck between environmental goals and economic growth.

20. जलवायु क्षतिपूर्ति (क्लाइमेट रेपरेशन) के विचार से आप क्या समझते हैं? इस विचार को वर्तमान संदर्भ में लागू करने की आवश्यकता पर चर्चा कीजिए। साथ ही, इसके कार्यान्वयन के समक्ष विद्यमान चुनौतियों को रेखांकित कीजिए।

What do you understand by the idea of climate reparations? Discuss the need to implement this idea in the current context. Also, highlight the challenges you foresee in its implementation. (Answer in 250 words) 15

Climate reparations are the legacy claims of developing countries over the developed countries who grew by encroaching over the carbon space of former. Climate reparations can be either financial or technological transfer for achieving just energy transition

Need to implement in 21st Century

① Climate change is a global threat

- Disproportionate disaster burden on small island nations (only 1% global emission)
 - Climate change induced disasters are growing in magnitude and frequency
 - Climate equity is missing in negotiations
- | | |
|-------------------|---------------|
| Top 1% households | 17% emissions |
| Bottom 50% | 12% emissions |

- ② For realising Common but differentiated responsibility and 'Respective Capacities'
- ③ To implement climate justice - already 80% of climate budget for 1.5°C target spent of which India contributed only 4%.

Key challenges in implementation

- ① Attitude of Developed countries
 - ④ Australia - No historic responsibility as Renewable were not developed
 - ⑤ US - Conditional support if India, China match the climate targets
- ② Falling short of previous commitments
 - ④ \$100 bn per year is biting dust
 - ⑤ Lack of clarity on 'Loss and Damage Fund'
- ③ Poor implementation of climate market
 - ④ Debate on carry forward of Carbon credits
 - ⑤ Funding for infrastructure creation is challenges to sovereignty - [29] China BR1

Way forward

- ① Functional carbon market
- ② Operationalise Loss and Damage fund, Santiago Network and green climate funds
- ③ International pressure tactics - India with African Union, SIDS and BRICS.

Climate Reparation is one part of Climate justice which is a key cornerstone of climate action for a just and equitable future.