



VISION IAS

www.visionias.in

GENERAL STUDIES (TEST CODE : 1810)

Name of Candidate	R. Jaya Simha Reddy		
Medium Eng./Hindi	English	Registration Number	714260
Center	online	Date	28 th June, 2020

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.

1. Explain the phenomenon of Glacial Lake Outburst Floods (GLOFs). Discuss its impact and suggest measures to tackle this hazard. (150 words) 10

ग्लेशियल लेक आउटबर्स्ट फ्लड्स (GLOF) की परिघटना को स्पष्ट कीजिए। इसके प्रभाव की विवेचना कीजिए और इस संकट से निपटने के उपायों का सुझाव दीजिए।

Sudden release of water stored in a glacial lake is called as glacial lake outburst flood. The recent GLOF of Uttarakhand (Rishi ganga) brought about disasterous consequences.

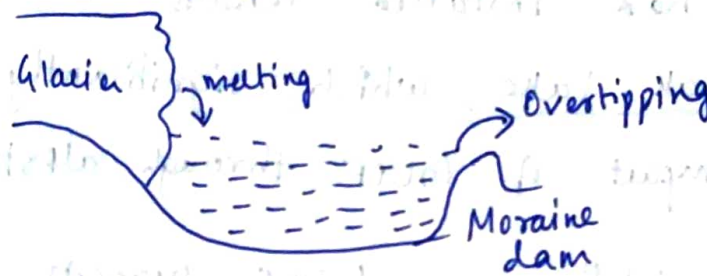
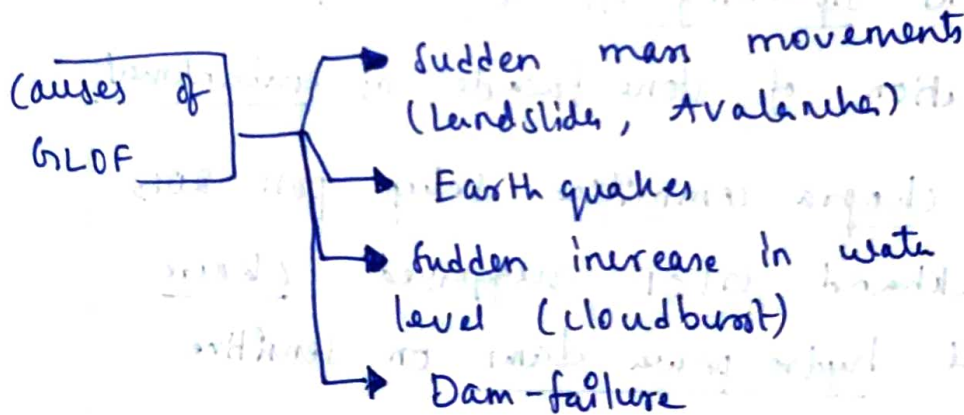


Figure:- Depiction of GLOF



Impact of GLOF :-

- ① Severe property loss & loss of lives

- ② Results in downstream flooding, submerging human settlements
- ③ Affects bio-diversity on mountain slopes
- ④ Causes hydro-electric dam failures

Measures to tackle :-

- ① Sikkim had installed sensors in South Lhonak lake, which significantly reduced impact of GLOF through alerts
- ② NDMA guidelines on GLOF suggests frequent siphoning off of water, and construction of stone facade as embankment
- ③ Ravi Chopra committee setup post 2013 Uttarakhand GLOF suggested closure of all hydro-power dams on sensitive Himalayan regions

Along with above measures, awareness building must be carried out.

2. Explain how the tsunami early warning system works. Also, mention some of the recent advances that have been made in the Indian Tsunami Early Warning System (ITEWS). (150 words) 10

व्याख्या कीजिए कि सुनामी पूर्व चेतावनी प्रणाली, किस प्रकार कार्य करती है। साथ ही, भारतीय सुनामी पूर्व चेतावनी प्रणाली (ITEWS) में हाल ही में हुई कुछ प्रगतियों का भी उल्लेख कीजिए।

Tsunami is a series of very long wavelength waves generated in large water bodies like oceans/seas due to disturbances resulting in displacement of large volume of water.

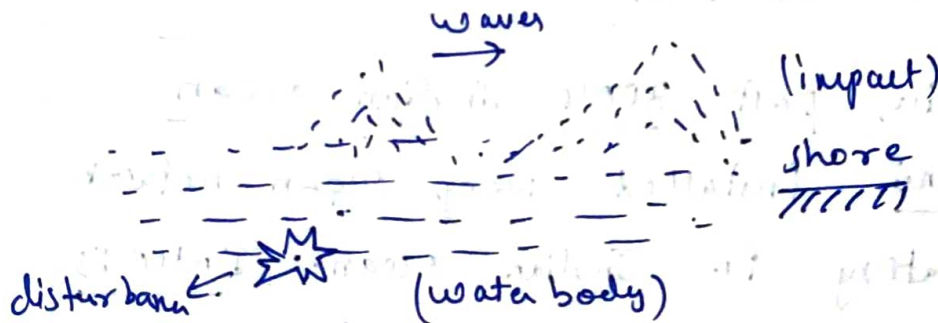


Fig:- Movement of Tsunami waves

Working of Tsunami EWS:-

- ① To detect disturbance to sea bed, a network of sensors (Deep ocean network advisory system) are

placed in oceans.

② The data from sensors is processed at a regional processing centre (Ex: Pacific Tsunami warning centre in Hawaii)

③ On confirmation of disturbances like Earthquake and its magnitude, intensity of Tsunami is predicted.

Recent advances :-

① India, post 2004 Indian Ocean Tsunami installed Deep Ocean network observatory in Indian Ocean. INCOIS is responsible for providing Tsunami related alerts.

② The recent progress made by INCOIS significantly reduces the time lag in generating alerts.

3. Identify and explain the importance of key components of Pre-Disaster Recovery Planning. (150 words) 10

आपदा-पूर्व रिकवरी योजना के प्रमुख घटकों के महत्व की पहचान करते हुए उन्हें स्पष्ट कीजिए।

Recovery is an important phase of disaster management. NDMP 2019 calls for integrating "Build Back Better" principle into recovery planning.



Fig: Components of pre-disaster recovery planning

Importance of pre-disaster recover planning

→ Infrastructure

- ① It helps in building disaster-resilient infrastructure

② Planning allows to prioritise infra needs post disaster
(Ex:- Critical infra like communications)

→ Livelihoods

③ Disasters render several people jobless pushing them into poverty
(Ex:- Farmers → droughts)

④ Recovery planning helps in formulating plans to revive jobs & make them resilient

→ Economy

⑤ Pre-disaster recovery planning allows to formulate economic policies to revive consumer demand

⑥ It helps in creating green jobs

→ Environment

⑦ Damage to bio-diversity & animal habitat can be minimised

→ Essential services like health care facilities can be made more resilient

4. The extraction of groundwater in India has reached a level that is threatening the water security in the country. Analyse the guidelines issued by the Central Ground Water Authority in this regard. (150 words) 10

भारत में भूमिजल का निष्कर्षण एक ऐसे स्तर पर पहुंच गया है, जो देश में जल सुरक्षा के समझ खतरा उत्पन्न कर रहा है। इस संबंध में केंद्रीय भूमि जल प्राधिकरण द्वारा जारी किए गए दिशा-निर्देशों का विश्लेषण कीजिए।

With an annual extraction of 253 billion cubic meters of groundwater, India stands at the top in the world. CGWB report shows that ground water level declined by 61% between 2007 & 2017.

Threat to water security :-

- ① Already one-fifth of urban local bodies face extreme water stress (CGWB).
- ② NITI Aayog predicts that by 2030, demand for water will be twice supply.
- ③ Over exploitation of groundwater is resulting in pollution & heavy metal contamination.

GoWA guidelines :-

- ① Mandatory requirement of license & payment of abstraction charges for all except agriculture & domestic use.
- ② In critically exploited areas, only MSMEs will be allowed to extract.
- ③ To encourage salt water usage, no abstraction charges are charged.
- ④ In all housing societies, waste water treatment plant is made mandatory.
- ⑤ In areas within 500m of wetlands, EIA is mandatory for utilising ground water.

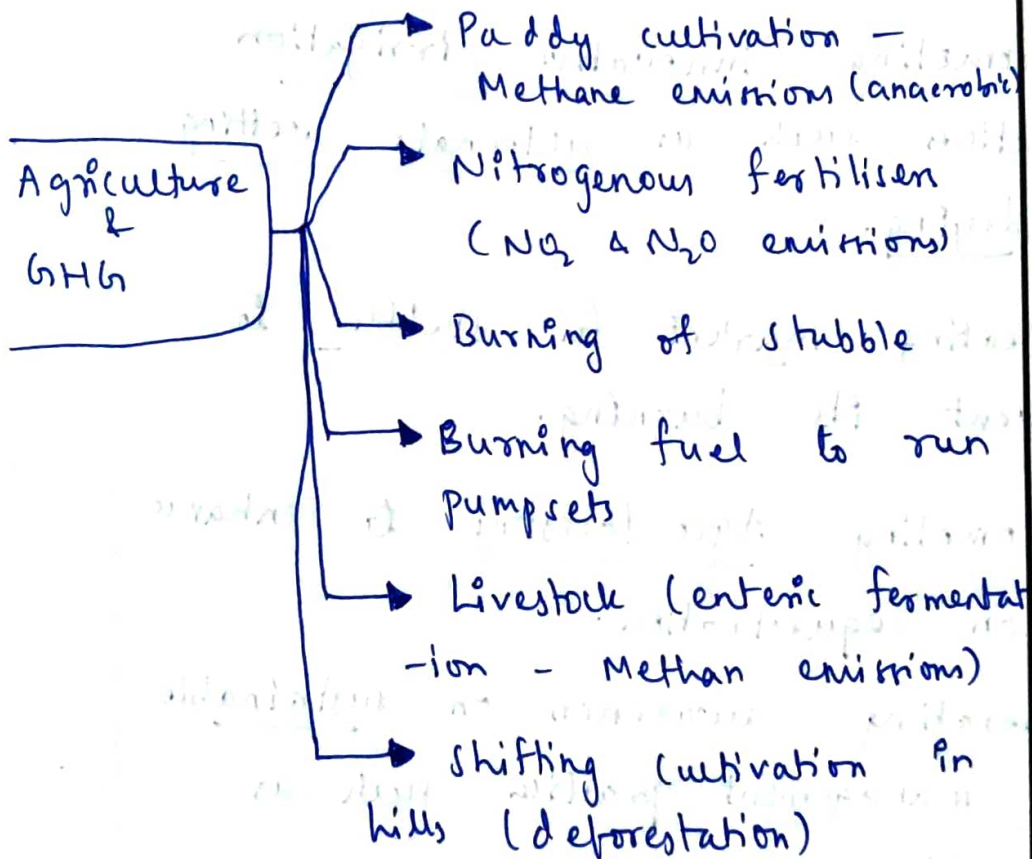
Concerns :-

- ① Agriculture, which utilises 90% of ground water is exempted.
 - ② Proposes no measures to conserve ground water aquifers.
- Mandating sustainable utilisation of ground water is must to avoid impending water crisis.

5. Throw light on the contribution of agriculture to GHG emissions. Suggest measures that can be undertaken to address the challenges in reducing agriculture's carbon footprint in India. (150 words) 10

GHG उत्सर्जन में कृषि के योगदान पर प्रकाश डालिए। भारत में कृषि के कार्बन फुटप्रिंट को कम करने में विद्यमान चुनौतियों से निपटने के लिए किए जा सकने वाले उपायों का सुझाव दीजिए।

Agriculture, in India, amounts for 18% of GHG emissions (MoEFCC), only third after energy & industry sectors.



Measures to reduce carbon footprint :-

- ① Crop diversification to encourage

- Crops such as Pulses & cereals in place of paddy
- ② Encouragement of organic fertilisers (bio-manures) in place of synthetic ones
 - ③ Usage of solar water pumps (Ex:- PM KUSUM)
 - ④ Promoting innovative irrigation practices such as alternate wetting & drying.
 - ⑤ Creating market for stubble to prevent its burning.
 - ⑥ Promoting Agro-forestry to enhance carbon sequestration.
 - ⑦ Generating awareness on sustainable land management practices such as zero-tilling.

The Green-Ag mission launched by GOI is a step in right direction to minimise C-footprint

6. Discuss the challenges that lie in harnessing the potential of hydroelectricity in North-East India. (150 words) 10
- पूर्वोत्तर भारत में जलविद्युत की संभावना का दोहन करने में आने वाली चुनौतियों की विवेचना कीजिए।

Due to its unique geographic - al features such as perennial rivers (Brahmaputra) and high hills, India's North East holds significant potential for hydroelectricity.

Challenges in harnessing :-

- ① Unpredictability in flow of rivers
 (Ex :- frequent floods → Assam floods (2019))
- ② The region is seismically prone to Earth quakes. Construction of hydroelectric projects amplifies risks.
- ③ The region's bio-diversity may be threatened due to large scale deforest - ation required to construct dams.
 (Ex :- Itanin hydropower project in Elephant reserve)

- ④ The harsh terrain makes laying of electric poles, and cables difficult
- ⑤ Resistance from indigenous tribal people against outsider interference
- ⑥ Difficult cross-border cooperation in management of transboundary river
(Ex:- China refusing to share hydrological data of Brahmaputra river)

Way forward :-

- ① To promote development in backward N. East, developing hydroelectricity becomes important.
- ② To this effect, proper EIA must be carried before constructing major dam
- ③ All diplomatic means should be leveraged to eliminate internal & external resistance.

7. What are the challenges faced by the jute industry in India? Highlight the steps taken by the government to address these challenges.

(150 words) 10

भारत में जूट उद्योग को किन चुनौतियों का सामना करना पड़ रहा है? इन चुनौतियों से निपटने के लिए सरकार द्वारा उठाए गए कदमों को रेखांकित कीजिए।

India is the largest producer of Jute and 2nd largest exporter of Jute products in the world.

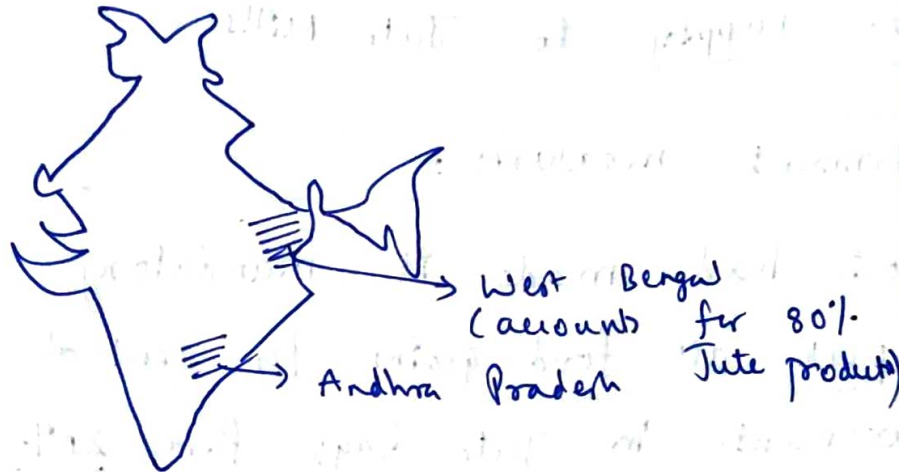


Fig:- Major Jute producing regions

Challenges faced by Jute industry :-

- ① Post partition, most of the Jute producing regions came under Bangladesh
- ② Domestic Jute production is insufficient to meet the demand
- ③ Obsolete technology employed by mills

- ④ High competition from Bangladesh Jute mills
- ⑤ Growing synthetic fibre usage, reducing the demand for Jute.
- ⑥ Poor capital investment & erratic power supply to Jute Mills.

Government measures :-

- ① Govt had made it mandatory to pack all food grains for central procurement in Jute bags, force 20% of sugar packing too in Jute bags.
- ② Govt of West Bengal offers subsidies on electricity to Jute Mills.

Way forward :-

With growing environment consciousness, Jute industry has huge opportunities. Hence, Govt must take suitable measures to ensure a thriving Jute industry.

8. Discuss the causes and consequences of Harmful Algal Blooms (HAB).
(150 words) 10

हानिकारक शैवाल प्रस्फुटन (HAB) के कारणों और परिणामों की विवेचना कीजिए।

HABs are conditions observed in water bodies such as lakes & ponds in which massive Algae growth takes place covering the top layer of the water body.

Causes of HAB :-

① Natural

- ① In small water bodies, when nutrient levels increase, it results in eutrophication causing algal bloom.

Man made

- ② Surface run-off of agricultural fertilisers dumping of municipal waste into water bodies enhances the nutrient levels (Phosphorous & Potassium) causing Cultural Eutrophication.

Consequences of HAB :-

- ① It increases Bio-chemical Oxygen Demand (BOD) of water, which makes water polluted.
(BOD threshold for drinking - 2mg/l)
- ② Due to covering of top layer, sunlight is blocked preventing photosynthesis.
- ③ As the oxygen levels greatly decline due to HAB, aquatic biodiversity is threatened.
- ④ It reduces carbon sequestration capacity of water bodies.

Thus, to avoid HAB, steps must be taken to prevent surface runoff of nutrients from waste through measures such as treatment of waste.

9. Identify the factors affecting location of cement industry in India. Also, suggest measures to control the carbon footprint of the cement industry.

(150 words) 10

भारत में सीमेंट उद्योग की अवस्थिति को प्रभावित करने वाले कारकों की पहचान कीजिए। साथ ही, सीमेंट उद्योग के कार्बन फुटप्रिंट को नियंत्रित करने के उपायों का भी सुझाव दीजिए।

As cement is the primary construction material, cement industry is of immense significance economically.

Factors affecting location of cement industry :-

- ① Raw materials :- Cement uses Coal, Limestone, etc. as raw materials, which are weight losing in nature.
- ② Ex:- Basant nagar cement factor close to Singareni Collieries
- ③ Access to power to run large furnaces.
- ④ Availability of cheap labour
 (Ex:- cement industry in U.P & Bihar)
- ⑤ Transportation facilities

(Ex: Vizag cement factory)

- ⑤ Closeness to market to reduce transportation cost.
- ⑥ Availability of capital & technology.

Measures to control Carbon footprint

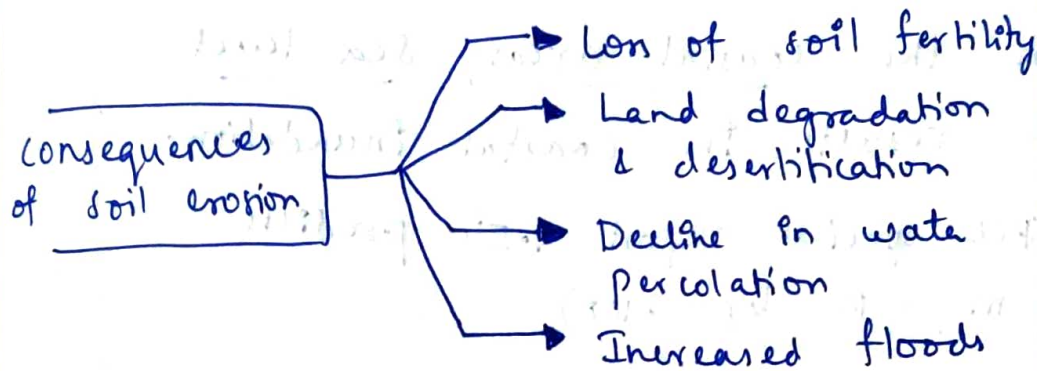
- ① Encouraging usage of Clean coal technologies such as washing of coal to remove sulphur ~~industry~~ impurities.
- ② Encouraging mixing of Fly ash in cement to reduce cement usage.
- ③ To reduce transport emissions, measure to decentralize cement industry have to be taken.
- ④ State of the art technology like electric furnaces must be adopted.

As cement is a vital industry, steps to reduce C-footprint will ensure economy as well as environment.

10. Explain how soil erosion is further exacerbated by changing climate and weather patterns. (150 words) 10

स्पष्ट कीजिए कि कैसे मृदा अपरदन जलवायु और मौसम के बदलते प्रतिरूपों से और भी तीव्र हो जाता है।

Loss of top layer of soil rich in nutrients & microorganisms is called as soil erosion.



Soil erosion is exacerbated by climate change & weather patterns in following ways:-

- ① Rising temperatures increases heat stress in soils which enhances its vulnerability to soil erosion.
- ② Extreme weather events like cloud bursts & floods accelerate soil

erosion

- ③ Altered vegetation patterns due to alteration in weather systems results in decline of addition of organic matter (dead leaves) to soil.
- ④ In the coastal areas, sea-level rise results in coastal inundation.
(IPCC special report 1.5°C predicts 1.1 m SLR by 2100).
- ⑤ In the polar regions, permafrost thawing enhances soil erosion.
- ⑥ Accelerated loss of soil organic carbon due to enhanced microbial activity at higher temperatures also accelerates soil erosion.

Thus climate change & soil erosion are closely linked.

11. The pattern of the Indian monsoon has been witnessing changes in recent decades. Examine in the light of recent studies linking this phenomenon to climate change. (250 words) 15

भारतीय मानसून के प्रतिरूप में हाल के दशकों में परिवर्तन देखा गया है। इस परिघटना का, जलवायु परिवर्तन से इसे सम्बद्ध करने वाले हालिया अध्ययनों के आलोक में परीक्षण कीजिए।

Monsoons are rain-bearing seasonal winds that are responsible for 85% of total rainfall in Indian subcontinent

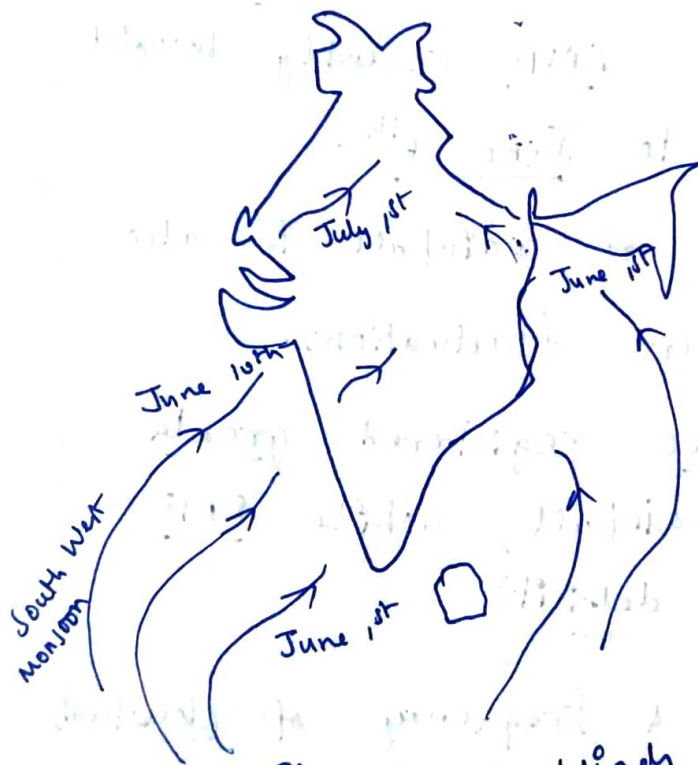


Fig: Monsoon winds & arrival dates

Pattern of Indian monsoons :-

- ① Expected date of arrival at Kerala

Coast is June 1st.

- ② The long-period average of monsoon rainfall is approximately 950 cm (IMD).

Changes witnessed in recent decade :-

- ① The expected date of arrival has been changing. IMD recently sought to revise it to June 6th.

- ② The intensity of rainfall is also undergoing severe fluctuations.

(Ex:- 2019, 2020 registered greater than usual rainfall, while 2018 register severe deficit)

- ③ The intensity & frequency of cloudburst is also increasing.

- ④ The time taken by monsoon winds to cover entire subcontinent is also changing.

(Ex:- In 2021, Delhi received monsoons

very lately)

Linkages with climate change :-

① The changes witnessed in monsoon behaviour are broadly in line with other weather phenomenon impacted by climate change
(Ex :- EL Nino)

② The frequency of cyclonic activity in Arabian sea has also increased in recent decades

③ Assessment of climate change on India by MOES shows that Indian ocean registered 1°C temp rise, which will inevitably impact monsoons.

The rising vagaries of Indian monsoon will subject Indian agrarian economy to greater vulnerability. Hence, climate resilient agriculture must be adopted

12. Dead Zones are emerging as a serious threat to world's oceans. Analyze the causes and impacts of dead zones. What solutions do you suggest to curb this growing menace? (250 words) 15

मृत क्षेत्र विश्व के महासागरों के लिए एक गंभीर खतरे के रूप में उभर रहे हैं। मृत क्षेत्रों के कारणों और प्रभावों का विश्लेषण कीजिए। इस बढ़ते खतरे पर अंकुश लगाने के लिए आप क्या समाधान सुझाएंगे?

Dead zones are areas ^{in water bodies} with low (Hypoxic) or zero (anoxic) oxygen levels which render life impossible.

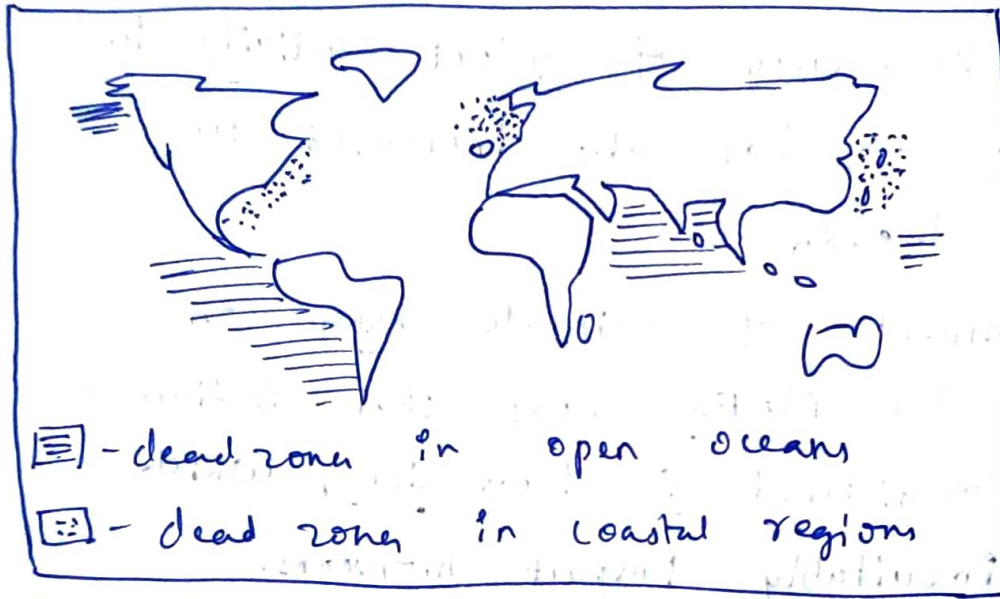


Fig:- Distribution of dead zones according to global ocean oxygen network

Causes behind dead zones :-

Natural

- ① Stratification of water due to

density difference inhibits vertical
mixing of oxygen rich top layer with
oxygen deficient bottom one.

② Climate change induced rise in sea
surface temperatures reduce oxygen
solubility as warm water holds less
oxygen.

③ Easter-boundary upwelling systems
are naturally oxygen deficient.

Man made

④ Eutrophication caused by run-off of
nutrients increases BOD of water

⑤ Pollution such as Plastic, oil spill
reduces oxygen dissolution in top layer

⑥ Anthropogenic GHG emissions driving
climate change

Impacts of dead zones :-

Economic

- Decline in Fish catches
- Loss of corals with immense medicinal & aesthetic value
- Severe impact on blue economy

Environmental

- Threatens aquatic biodiversity
- Reduces C-sequestration ability of water bodies
- Strengthens positive climate feedback loops

Solutions:-

IPCC special report on Oceans has warned about accelerated spreading of dead zones. This calls for solutions like:-

- ① Strict implementation of marine pollution protocols like MARPOL convention
- ② Compulsory treatment of waste before discharging into water.
- ③ Global effort to clean up plastic waste & oil spills
- ④ Promoting sustainable development.

13. Plate tectonics, which is a unifying theory combining the continental drift and seafloor spreading theories, explains many features and processes that we find on the Earth. Discuss. (250 words) 15

प्लेट विवर्तनिकी, जो महाद्वीपीय प्रवाह और सागरीय तल विस्तार के सिद्धांतों के संयोजन का एक एकीकृत सिद्धांत है, कई अभिलक्षणों और प्रक्रियाओं को स्पष्ट करता है जिन्हें हम पृथ्वी पर पाते हैं। चर्चा कीजिए।

Plate tectonic theory suggests that earth's surface is made up of lithospheric plates which move over ductile asthenosphere as rigid units.

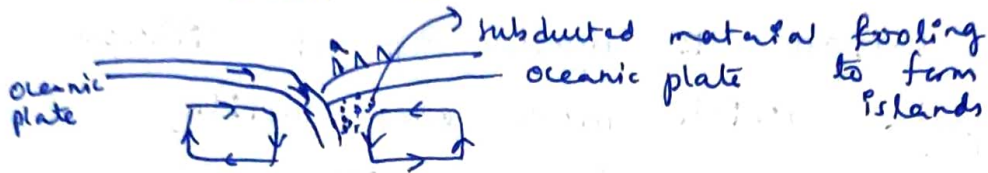
Plate tectonic theory is a unifying theory because :-

- ① It is based on the idea that continents are not stationary, but moving as suggested by continental drift theory, ~~used~~
- ② It is based on evidences in support of sea floor spreading theory such as geo-magnetic reversal, expansion of oceanic crust, among others.

Plate tectonics theory explains many features that we find on earth such as :-

① Formation of Island arcs

→ Plate tectonic theory suggests that oceanic plate - oceanic plate convergence as the reason behind Island arc formation



→ The theory sufficient explained the formation of:

Indonesian archipelago (subduction of Indo-Australian plate under Sunda plate)

② Distribution of Earth quakes & volcanoes

→ The theory explained the occurrence of disturbance in earth crust as a result of interactions between lithospheric plates (convergence, divergence, and transform boundaries).

→ The pacific ring of fire, which is home to 70% Earthquakes & 80% volcanoes is at boundary of

plates such as Pacific plate, N. American plate, Norica plate, Eurasian plate, etc.

③ Rise of Himalayas

→ The formation of fold mountains like Himalayas, according to this theory is due to continent-continent convergence.

→ Himalayas were formed due to collision between Indo-Australian plate & Eurasian plate. The subduction of Indo-Australian plate is still continuing.

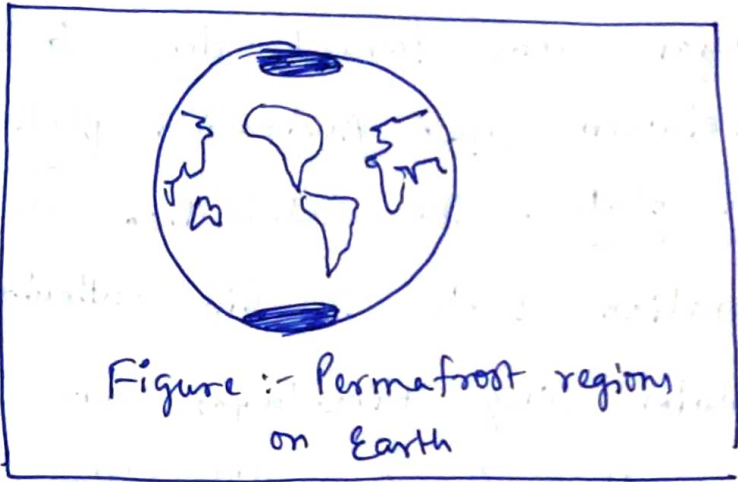
→ This explains why Himalayas are tectonically active & are still rising.

Thus, plate tectonic theory is a significant landmark in study of earth movements.

14. Describing its formation, delineate the region that is commonly referred to as 'Permafrost'. Also, discuss the concerns associated with the melting of permafrost. (250 words) 15

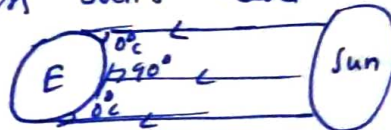
स्थायी तुषार (पर्माफ्रॉस्ट) के निर्माण का वर्णन करते हुए, सामान्यतः 'स्थायी तुषार' के रूप में संदर्भित क्षेत्र का निरूपण कीजिए। साथ ही, स्थायी तुषार के पिघलने से जुड़ी चिंताओं की भी विवेचना कीजिए।

Permafrost is a region which remains below or equal to 0°C consecutively for two years -



Formation of permafrost :-

- ① In the polar regions, due to high ~~po~~ near horizontal inclination of Sun's rays, very less sun's heat is absorbed

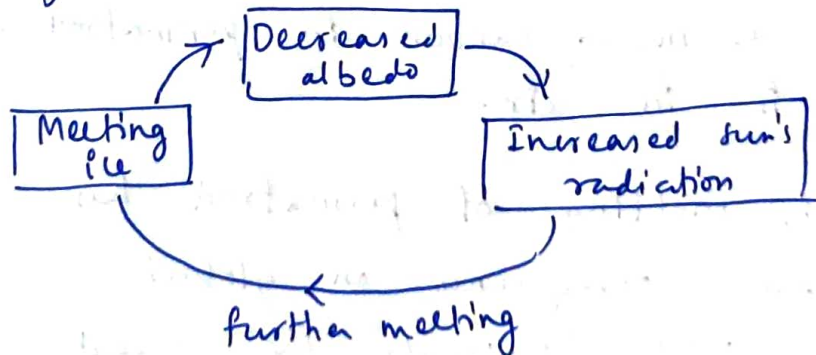


- ② Further, due to long periods of nights, temperature also remains very less.
- ③ These conditions facilitate the conversion of large water bodies (Arctic & Antarctic ocean) into Ice. As a result, permafrost is formed.

Concerns associated with melting of permafrost :-

- ① Positive climate feedback loop:

Ice reflects sun radiation (high albedo). When Ice melts, albedo decreases, resulting in further melting.



- ② Rise in sea-levels. Ice spread

report on oceans estimates 1.1 m SLR
by 2100 even if temperature rise is
limited to 1.5°C .

- ③ Destroys habitat of polar animals
like polar bear
- ④ Adversely impacts atmospheric, oceanic
and weather circulation
(Ex:- Atlantic meridional ocean current)
- ⑤ Impacts local weather in the form
of decreased precipitation, increased
temperatures, etc.
- ⑥ Release of soil organic carbon into
air as it is estimated that there
is twice as much carbon in permafrost
as it is in air.

Thus, melting of permafrost has
irreversible consequence on global
climate which highlights the need
for retention efforts to mitigate their
melting

15. India's response to the Covid-19 pandemic has brought to the fore several inadequacies and ambiguities in India's disaster management framework. Discuss.

(250 words) 15

कोविड-19 महामारी के प्रति भारत की अनुक्रिया ने भारत के आपदा प्रबंधन ढांचे में व्याप्त अनेक कमियों और अस्पष्टताओं को उजागर किया है। चर्चा कीजिए।

Covid-19 is the first pan-India biological disaster faced by Independent India. India's response had highlighted weaknesses in India's preparedness.

Inadequacies in disaster management framework :-

- ① Pandemic/ Epidemic is not a notified disaster under DM act, 2005
- ② There is no national level policy on handling the pandemics
- ③ Until the Ministry of Home affairs declared Covid-19 as notified disaster, states couldn't tap into SDRF funds
- ④ The Epidemic diseases act, 1879 was a colonial era act which was archaic to contemporary needs.

⑤ While the Epidemic diseases act empowered states to take measures to mitigate the pandemic, it doesn't highlight the steps to be take to improve preparedness.

Ambiguities in disaster management frame work

- ① The definition of pandemic under Epidemic diseases act is vague.
- ② There was lack of clarity on role of centre & state governments.
- ③ Though Health is state subject, Union gave overriding order using its powers under DM act, 2005.
- ④ The role of private sector health industry, and safety provisions w.r.t frontline workers were not mentioned in any legislation.

Thus, covid-19 pandemic has highlighted shortcomings in India's disaster management framework.

As enunciated in PM 10-point agenda on disaster management, opportuni-
ty to learn from disaster must not be wasted.

Way forward:-

- ① Enactment of a comprehensive legislation delineating role of Union, state governments & private healthcare sector during pandemic
- ② Investment in prevention/mitigation measures such as public health infra augm-
entation.
- ③ Enhancing capacity of civil society and health care professionals through training & awareness programs.
- ④ Adopting state of the art disease surveillance network for early warning

16. In light of the increasing Industrial disasters in India, examine the reasons for their occurrence. Discuss the steps that have been taken to deal with industrial disasters. (250 words) 15

भारत में बढ़ती औद्योगिक आपदाओं के आलोक में, उनके घटित होने के कारणों की जांच कीजिए। औद्योगिक आपदाओं से निपटने के लिए उठाए गए कदमों की विवेचना कीजिए।

Industrial disasters are events causing large scale damage to environment, lives, and/or property triggered by leakage of chemicals from industries (an explosion among others). The recent Vizag gas leak brought into forefront the threat posed by industrial disasters.

Reasons for occurrence:-

- ① Poor monitoring of rules
 (Ex:- Lt Polymer plant in Vizag had been running without Environmental clearance)
- ② Poor adherence to land use rules
 resulting in encroachment into vulnerable zones surrounding industries.
- ③ Low awareness among staff on industrial safety measures

- ④ Large number of industries dealing with chemicals / explosives are small & marginal with limited capacity to invest in safety precautions.
- ⑤ Low absorption of ^{expensive} safety technology to remain competitive
- ⑥ Lack of capacity building of communities living in vicinity, in the form of mock drills, to ensure preparedness.

steps taken to deal with Industrial disasters :-

- ① Several laws like Chemical Hazards management act, Public liability insurance act, 1991 have been enacted to fix accountability of industries
- ② NGT introduced the concept of absolute liability to deter industries from ignoring the rules w.r.t safety

③ NOMA had issued guidelines for industries re-opening during Covid-19 pandemic to minimise the accidents.

Way forward :-

② In the light of increasing industrial disasters, apart from laws, following measures are needed:-

- ① Strict monitoring of compliance.
- ② Instituting safety audits in industries
- ③ Mandating preparation of evacuation plan by industries in case of disasters.
- ④ Awareness generation among nearby communities or crisis management

17. Highlight the reasons behind high concentration of plantations in South India. Also, give an account of the significance and challenges that the plantation sector of South India is confronted with. (250 words) 15

दक्षिण भारत में बागानों के उच्च संकेन्द्रण के लिए उत्तरदायी कारणों पर प्रकाश डालिए। साथ ही, दक्षिण भारत के बागान क्षेत्रों के महत्व और उनके समक्ष व्याप्त चुनौतियों का भी विवरण दीजिए।

Plantation includes crops such as cotton, coffee, sugarcane, Jute, Tea, Coconut, among others.

Reasons behind high concentration of plantation in South India :-

- ① Warm, humid climate is ideal for growth of crops like coffee & sugarcane.
- ② Monsoon rainfall ensure continuity in water supply in South India.
- ③ The Sucrose content of sugarcane is higher in South India
- ④ Access to ports (Vizag, Kochi, Mysore, etc.) facilitate easy exports
- ⑤ Favourable government policies such as cotton procurement by Telangana government.

⑥ Proximity to processing industries
(Ex:- Coffee in Karnataka; sugarcane in Telangana, Tamil Nadu; cotton in Coimbatore, etc)

Significance of plantation sector:-

- ① It ensures self-sufficiency
(Ex:- India is 2nd largest producer of sugar, largest producer of cotton)
- ② It contributes to exports
- ③ Employment generation & balanced regional development

Challenges faced :-

- ① Concern of water scarcity
- ② Huge pending arrears from sugar millen to cane producers
- ③ Competition from emerging economies

like Vietnam, Bangladesh & China

- (4) Fragmented land holdings
- (5) Increasing variability of monsoon due to climate change.

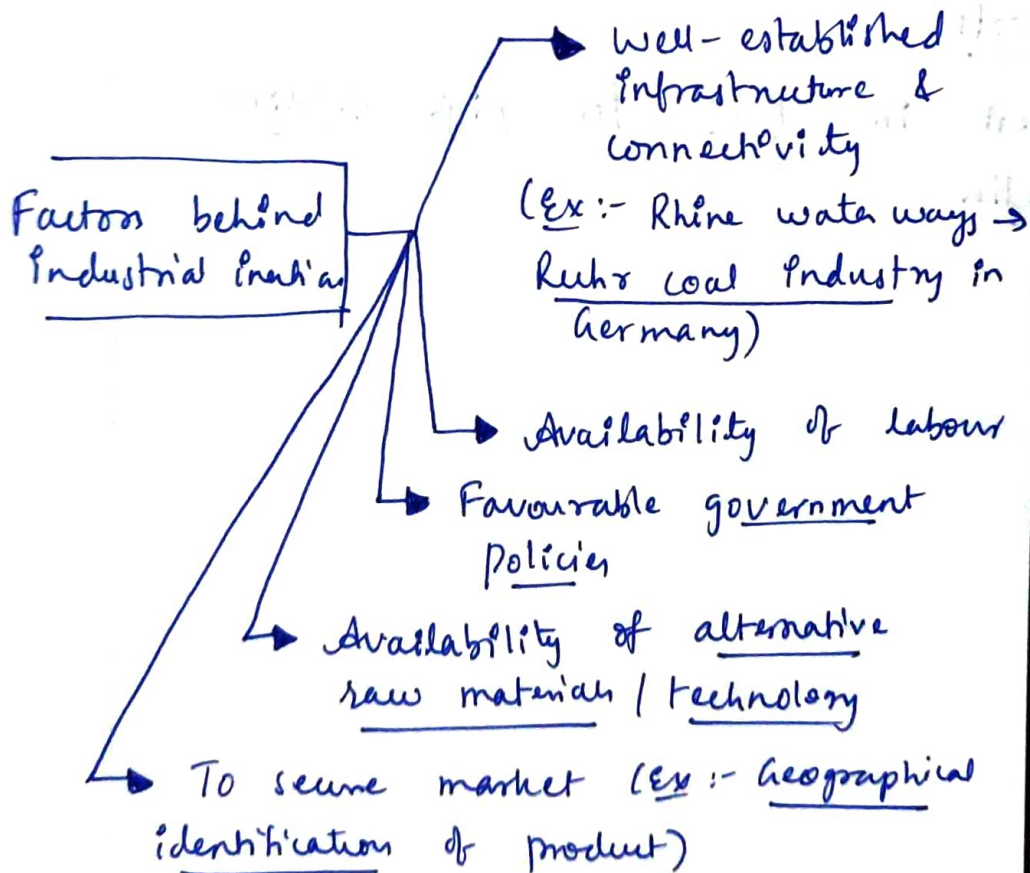
Way forward :-

- (1) Promote climate resilient agriculture
- (2) Encourage value-addition to diversify exports
- (3) Invest in R&D for high yielding varieties

18. What do you mean by industrial inertia? Bring out the factors that contribute to industrial inertia and also give a few examples from the Indian context. **(250 words) 15**

औद्योगिक जड़त्व से आप क्या समझते हैं? औद्योगिक जड़त्व में योगदान देने वाले कारकों को स्पष्ट कीजिए और साथ ही भारतीय संदर्भ से कुछ उदाहरण भी दीजिए।

When an industry continues to remain in a region despite the decline of factors that contributed to its rise in that region is called as industrial inertia.



Examples from India :-

① Vishvesaraya Iron & Steel Industry :-

→ Initially, it was setup due to its proximity to forests which will ease supply of wood for fuel.

→ However, despite regulation felling of forests, it continued to remain there as electric furnace technology was introduced resulting in decline in need of wood.

② Textile mills in Maharashtra & Gujarat :-

→ Though cotton textile industry got decentralized, many mills continue to operate in the region even by importing raw material

→ This is to realize the benefits of economies of scale

[Faint handwritten text, likely bleed-through from the reverse side of the page. The text is mostly illegible due to fading and bleed-through.]

19. What are rare earth elements? Highlighting their industrial applications, give an account of their distribution across the world. **(250 words) 15**

दुर्लभ मृदा तत्व क्या हैं? उनके औद्योगिक अनुप्रयोगों को रेखांकित करते हुए, विश्व भर में उनके वितरण का विवरण दीजिए।

20. India needs to move from being an assembler to a manufacturer of microchips. In this context, identify the associated challenges and opportunities. (250 words) 15

भारत को माइक्रोचिप्स के असेंबलर से विनिर्माता बनने की दिशा में आगे बढ़ने की आवश्यकता है। इस संदर्भ में, संबंधित चुनौतियों और अवसरों की पहचान कीजिए।

Economic survey 2019-20 estimates

that by moving from being an assembler to 'make in India for world', India can create several lakhs of well-paid jobs.

Need to move from assembler to manufacturer of micro-chips :-

- ① To secure strategic independence from imports which is dominated by china
- ② To create well-paying white collar jobs in knowledge industry
- ③ To support other parallel schemes such as 'Make in India', 'Atmanirbharta'
- ④ To ensure that enough jobs are created for bourgeoning youth

- ⑤ To prevent brain drain of well-educated professionals to developed countries
- ⑥ To bring down costs of microchips and thereby making technology like mobile phone affordable to all.
- ⑦ To enhance its share in world exports

Associated challenges :-

- ① Low availability of raw materials such as 'silicon'.
- ② Huge dependency on imports for spare parts
- ③ Lack of enough technical expertise in semi-conductors & chip designing.
- ④ Low level of Industry-academia collaboration
- ⑤ Large number of firms continue to be MSMEs

Opportunities :-

- ① Expanding global market for smart devices
- ② Countries are looking to diversify supply chains from China due to geo political differences.
- ③ India, by 2040, is expected to have world's largest workforce.

Way forward :-

- ① Entering into bilateral partnerships with other countries to secure raw material & spare parts imports
- ② A national policy on manufacturing of microchips must be designed giving sufficient incentives to industries through schemes like PLI
- ③ Create industry-academia must be encouraged to enable cutting edge research in microchip development.