

VISION IAS

www.visionias.in

GENERAL STUDIES (TEST CODE : 1693)

Name of Candidate	Wasim ur Rahman		
Medium Eng./Hindi	English	Registration Number	30458
Center	Karol Bagh	Date	16-11-2020

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.

All the Best

1. Explain the concept of volcanic winter giving examples. (150 words) 10
उदाहरण प्रस्तुत करते हुए बोलकैनिक विंटर की अवधारणा की व्याख्या कीजिए।

Volcanic winter is the substantial
reduction in the average temperature
of the earth brought by some massive
volcanic eruption.

Mechanism

Massive volcanic
eruption



Release of large
amount of SO_2 , Ash
particles in the
atmosphere



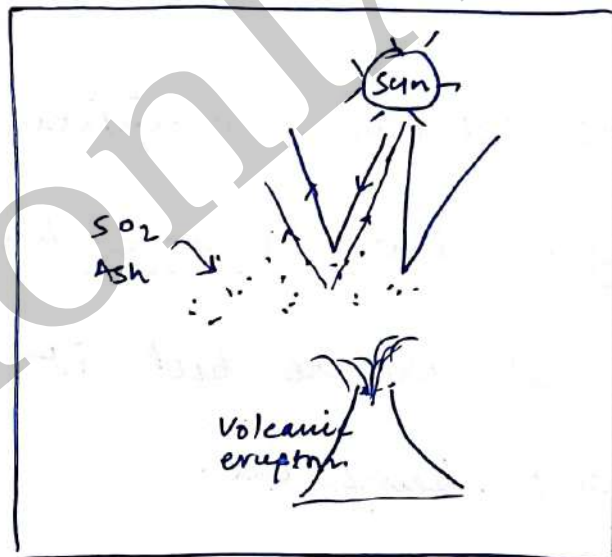
SO_2 , Ash particles reflect back sun rays
and prevent them from reaching earth
surface



Overall decrease in temperature



volcanic winter.



Instances of volcanic winter

- Mount Toba eruption : Around 74,000 years ago caused volcanic winter and a small scale extinction period happened.
- Mount Tambora eruption (1815) also caused volcanic ~~except~~ winter.

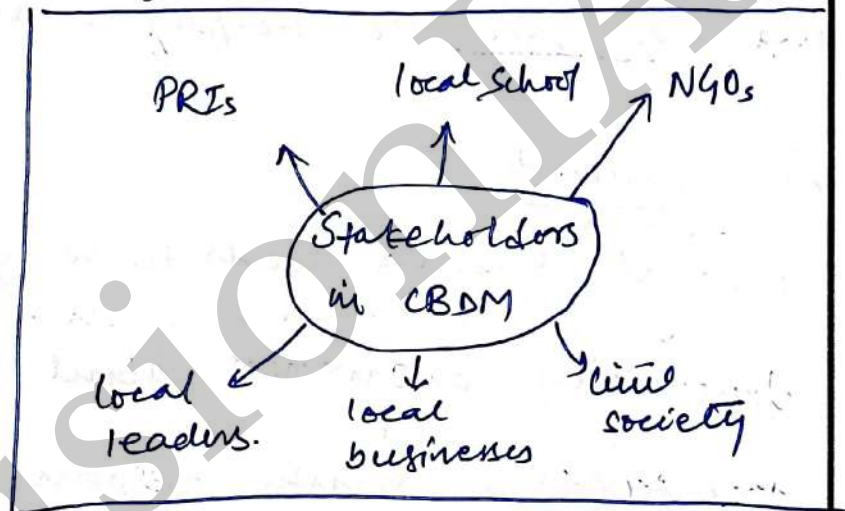
Thus volcanic eruption help in bringing down average temperature of our atmosphere but it may not be always beneficial.

2. Bring out the importance of community-based disaster management in India.

(150 words) 10

भारत में समुदाय-आधारित आपदा प्रबंधन के महत्व को स्पष्ट कीजिए।

Community Based Disaster Management (CBDM) refers to managing and planning disaster mitigation through active involvement of the local community



Importance of CBDM

1. Participatory management & solution finding
2. Decentralised planning
3. Bottom up approach
4. Inclusion of local knowledge of vulnerabilities and solutions

5. Better preparedness to deal with variety of disasters.
6. Better coordination during actual disaster.
7. community is the first responder and most reliable helping hands.

Steps required

1. Formal training needs to be given
2. Generating awareness about the standards of disaster response.
3. More engagement through use of social media and technology.

CBDM is a sustained and better path to prepare ourselves for disaster which can be helpful during any form of disaster. E.g- Kathmandu Earthquake

3. The concept of ecological footprint is a useful indicator for assessing progress on the sustainable use of resources in a country. Explain.

(150 words) 10

किसी देश में संसाधनों के संधारणीय उपयोग पर हो रही प्रगति का आकलन करने के लिए इकोलॉजिकल फुटप्रिंट की अवधारणा एक उपयोगी संकेतक है। व्याख्या कीजिए।

Ecological footprint basically refers to the impact that each activity of ours has in environment.

Useful indicator to assess progress

1. It brings environment at the centre stage in carrying out any activity.
2. It helps to bring out ecological cost of each small activity hence help in sensitising all stakeholders.

3. Resources of any country is limited.

Ecological footprint makes people aware of limitation of their resources.

4. Better coordination and data dissemination can be ensured.
5. Due to quantification, a better and sustainable plan to use resources can be charted out.

Steps required

1. Popularise the concept of Ecological footprint.
2. Give credits of reduction in ecological footprint of an activity.
3. Better data analytics and representation models should be developed.

Thus ecological footprint concept can prove very helpful in achieving all of our Sustainable Development Goals

4. The CRZ Notification, 2018 aims to maintain a balance between economic growth and conservation principles of coastal regions. Discuss.

(150 words) 10

CRZ अधिसूचना, 2018 का उद्देश्य आर्थिक संवृद्धि और तटीय क्षेत्रों के संरक्षण सिद्धांतों के मध्य संतुलन बनाए रखना है। चर्चा कीजिए।

On the recommendations of Shailesh Nayak Committee, a new CRZ notification 2018 has been released revising the 2011 notification.

CRZ, 2018 allows for economic growth

1. Floor Surface Index (FSI) in CRZ-II has been defrozeed. It will allow development of residential complexes.
2. CRZ-II has been bifurcated and 'No Development zone' (NDZ) in CRZ-3A has been reduced from 200m to 50m.
3. Sewage treatment plants has been allowed in CRZ-1B.
4. Decision making have been decentralised.

by delegating responsibility of giving approvals for CRZ-II and CRZ-III areas to state govt

5. Strategic projects, pipelines etc have been exempted from the guidelines.

CRZ, 2018 provides environmental protection of coastal regions

1. 20 m NDZ has been maintained for backwaters.
2. Building of roads has been prohibited
3. CRZ-I (Eco sensitive zones) has been given full protection.

Thus CRZ notification has tried to balance environmental protection and aims to create employment opportunities for locals in coastal areas.

5. Fertilizers have been one of the key inputs in the agricultural sector since Green Revolution in India. In this context, give an account of distribution of fertilizer industry in India.

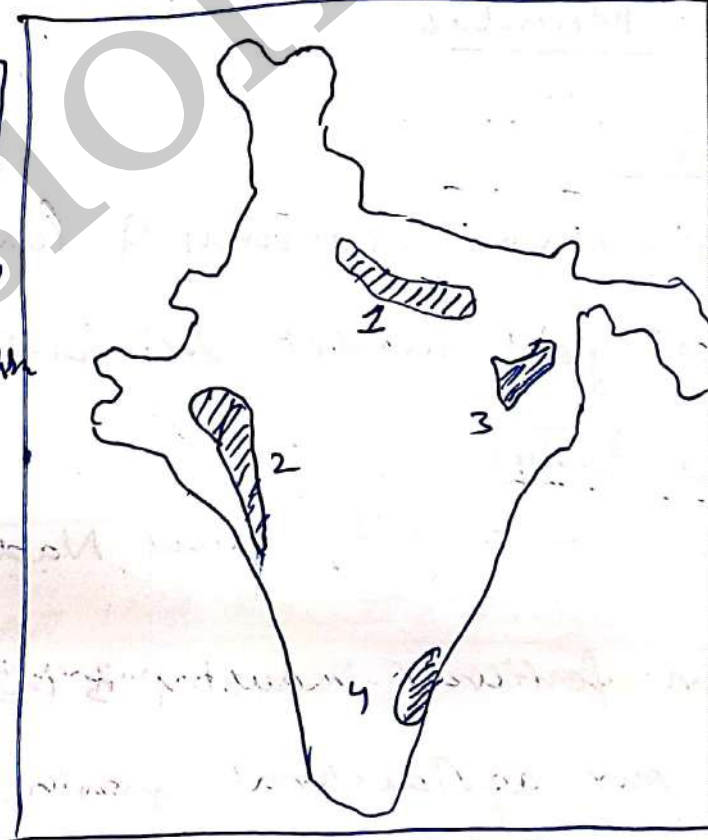
(150 words) 10

भारत में हरित क्रांति के बाद से, उर्वरक कृषि क्षेत्र का एक प्रमुख आदान (इनपुट) रहे हैं। इस संदर्भ में, भारत में उर्वरक उद्योग के वितरण का विवरण प्रस्तुत कीजिए।

Fertilizers along with high yielding variety of seeds were the primary drivers of green revolution. Since then the demand for fertilizers have consistently increased and has led to proliferation of fertilizer industries.

Distribution of
Fertilizer Industry

- 1 - Delhi-NCR and UP
- 2 - Gujarat & Maharashtra
- 3 - Chhotanagpur
- 4 - Chennai



Major clusters of fertilizer industries.

Factors affecting location

1. Raw material

Fertilizer industry needs naphtha, ~~potash~~ etc which can be obtained from oil refineries. Eg. Gujarat

2. It needs natural gas to produce urea.
Eg. Hazira (HBJ pipeline)

3. It also need potash which is mostly imported. Thus situated near ports.
Eg - Mumbai

2. Market

1. Agricultural economy of Punjab, UP etc gives good market for fertilizer industries.

3. Govt Policy

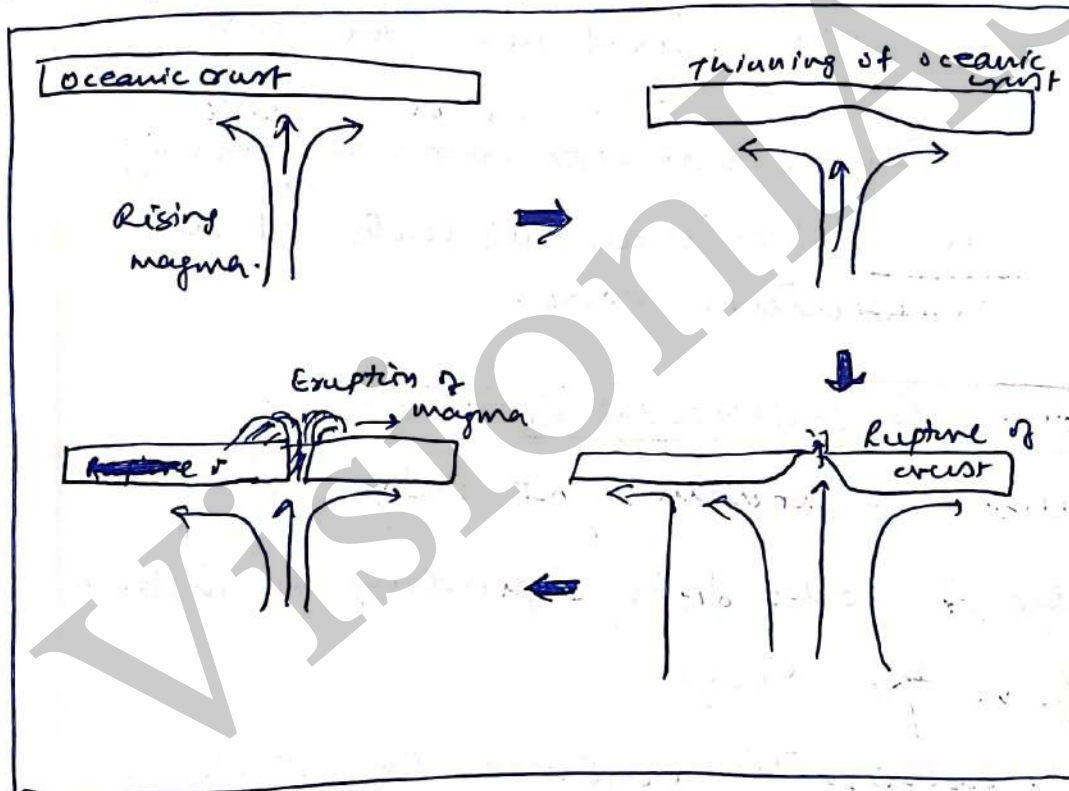
Tax incentives by Tamil Nadu govt etc

Thus fertilizer industry is instrumental for our agricultural growth and for Green Revolution 2.0.

6. Giving example, explain how continental rupture ultimately results in the formation of a new ocean basin. (150 words) 10

उदाहरण देते हुए, स्पष्ट कीजिए कि किस प्रकार महाद्वीपीय विदारण के परिणामस्वरूप अंततः नवीन महासागरीय बेसिन का निर्माण होता है।

Harry Hess proposed the theory of Sea floor spreading. He explained the formation of new ocean basin through this concept.



Examples : ~~Greatest~~ Mid-Atlantic Ridge

Steps

Rising magma pushes on to oceanic crust
↓
Thinning of oceanic crust

↓
Rupture of oceanic crust happens

↓
Basaltic magma erupts out & cools down

↓
Horizontal limbs of rising magma pushes the lithosphere apart

↓
Slowly older rocks move away from the ridge and newer rocks form near the ridge.

↓
Thus ocean floor keeps on renewing while older rocks subducts at the subduction zone.

Evidence of continental Rupture

1. Higher temperature at ridge
2. Age of rocks differ depending on distance from the ridge
3. Palaeogeographic evidence. Eg. Carlsberg ridge

Though Harry Hess couldn't fully explain the concept of formation of ocean and continents but laid the foundation on which plate tectonics theory was later built

7. COVID-19 has exposed gaps in India's domestic laws to deal effectively with outbreaks of infectious diseases, especially pandemics. Discuss.

(150 words) 10

कोविड-19 ने संक्रामक रोगों, विशेष रूप से महामारियों के प्रकोप से प्रभावी ढंग से निपटने में भारत के घरेलू कानूनों में व्याप्त अंतरालों को उजागर किया है। विवेचना कीजिए।

COVID-19 has been an unprecedented challenge to our healthcare system as well as administrative mechanism to deal with infectious diseases.

Legislation to deal with outbreaks of infectious diseases

- Epidemic Diseases Act, 1897 (EDA, 1897)
- Disaster Management Act, 2005 (DMA, 2005)
- Some sections of IPC

Shortcomings with legal framework

1. Epidemic Diseases Act is too old to deal with new and rising trend of diseases.
2. It doesn't define what a serious outbreak means.

2. EDA, 1897 doesn't deal with procedure to be followed in vaccine and drug administration.

4. EDA, 1897 is not clear on its territorial application.

5. OMA, 2005 jeopardises federal framework and intrudes into the jurisdiction of state govt i.e. Health is a state subject.

Steps required

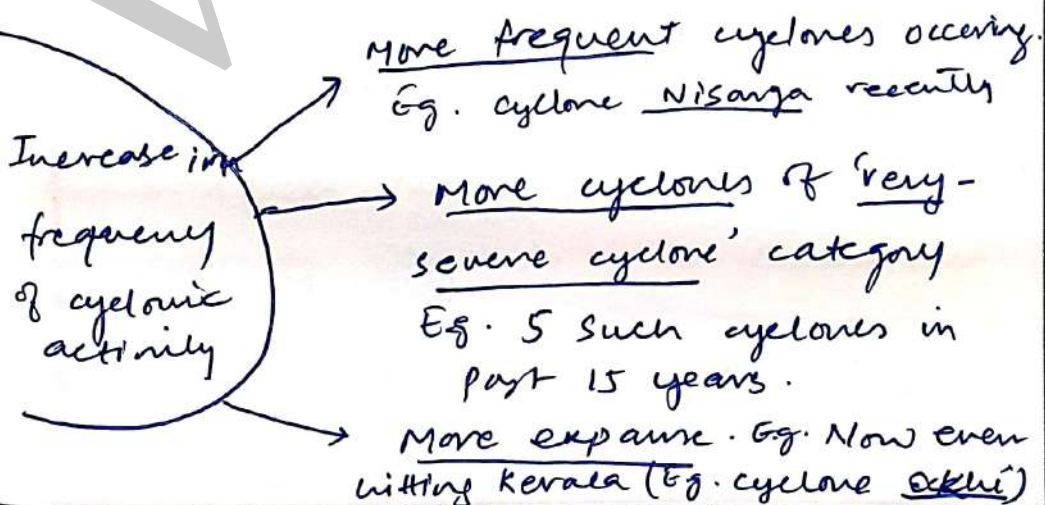
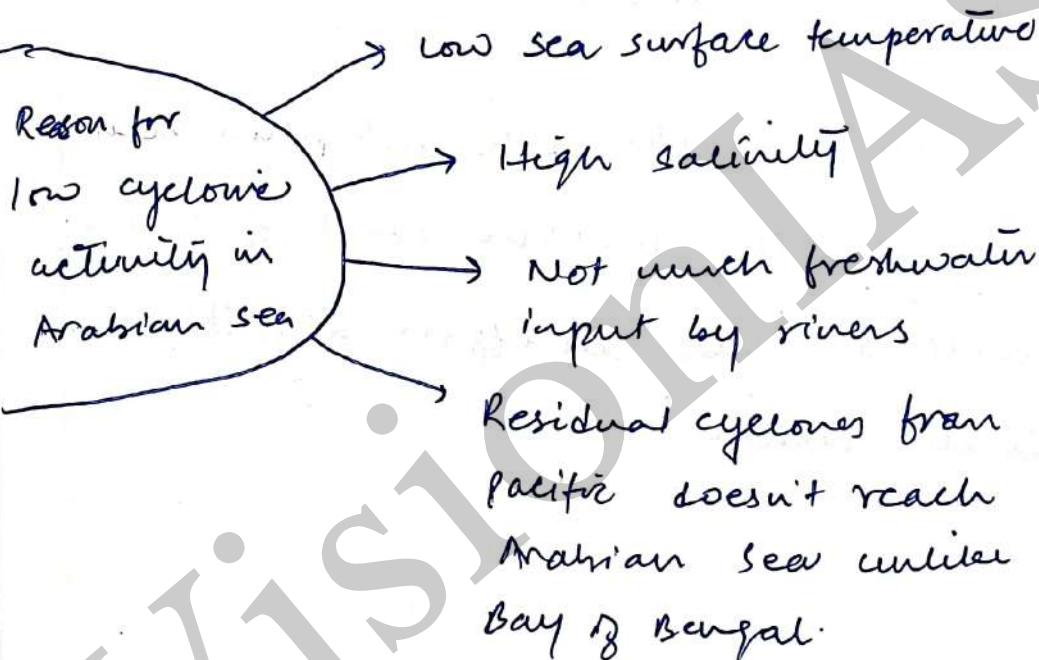
1. Framing a new law to comprehensively deal with all kinds of disease outbreaks
2. Formation of a specialised agency for the same purpose.
3. Federal forums like NITI Aayog could be setup to ensure better coordination among states.

COVID-19 has come as a formidable challenge and we should take all efforts and reforms to address the shortcomings

8. Give an account of the increasing frequency of cyclonic activity in the Arabian Sea region. (150 words) 10

अरब सागर क्षेत्र में चक्रवाती गतिविधि की बढ़ती आवृत्ति का विवरण प्रस्तुत कीजिए।

Arabian Sea region has been traditionally been as a calm region climatically but due to climate change, things are changing very fast.



Reasons for change in frequency & severity

1. Rising sea surface temperature due to global climate change.
2. Decreasing salinity due to greater precipitation. (It is happening for entire Indian oceans).

Thus better disaster risk mitigation need to done on the western coast of India as well as take all efforts at mitigating climate change.

9. Explain the phenomena of Sudden Stratospheric warming witnessed in recent years. How does it affect the ozone hole formation over Antarctica?

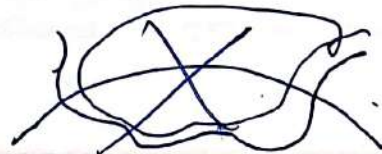
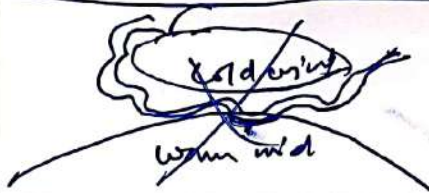
(150 words) 10

हाल के वर्षों में देखी गई आकस्मिक समतापमंडलीय तापन की परिघटना की व्याख्या कीजिए। यह अंटार्कटिका के ऊपर ओजोन छिद्र के निर्माण को किस प्रकार प्रभावित करता है?

Sudden Stratospheric warming (SSW) refers to sudden increase in the temp in the lower stratosphere in the polar region.

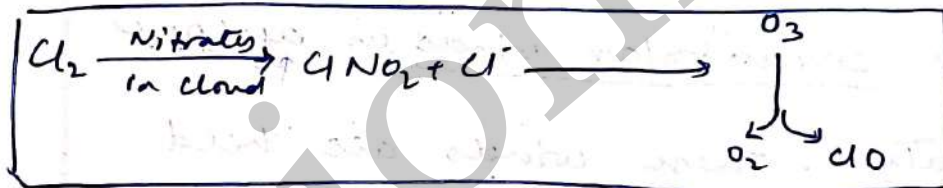
Phenomenon

- In the stratosphere and upper troposphere of polar region, there occurs cold, low pressure circumpolar winds in cyclonic circulation. These winds are held in the polar region by Westerly winds.
- But sometimes Westerly winds become weaker. This leads to descend of cold air in the stratosphere which further invades lower latitudes.
 - This leads to warming in the stratosphere



SSW and Ozone Hole

- SSW leads to formation of Polar Stratospheric cloud - a nacreous cloud containing sulphuric and nitric acid.
- This cloud provides free radicals and free halogens (eg. Cl^- , ClO) which accentuates the destruction of ozone.



Thus SSW leads to depletion of ozone and creates ozone hole in the antarctic.

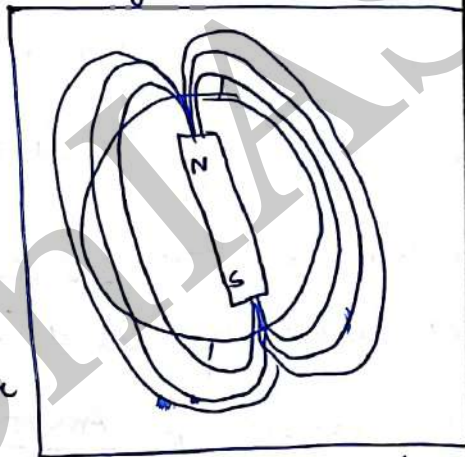
10. Write a brief note on Earth's magnetism and its role in protecting the Earth from solar winds.
 पृथ्वी के चुंबकत्व तथा सौर पवनों से पृथ्वी की रक्षा में इसकी भूमिका पर संक्षिप्त टिप्पणी लिखिए।
 (150 words) 10

Earth is protected from solar winds and other disturbances due to its magnetism and this resulted into life on earth.

Earth's Magnetism: Dynamo theory.

Earth's outer core consists of molten iron and ferric elements like Nickel.

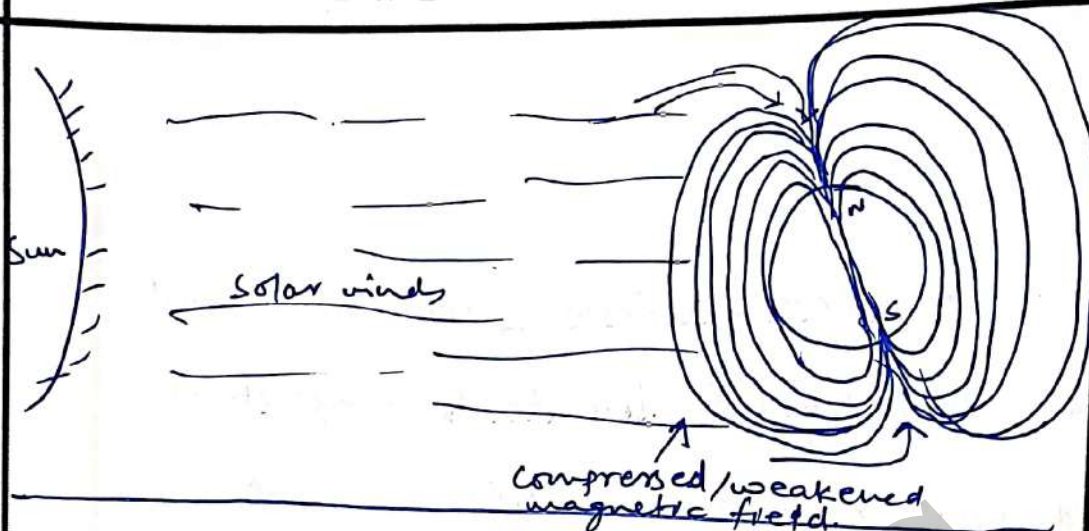
Due to earth's rotation then ferric elements act as dynamos which give rise to earth's magnetic field.



Earth's magnetic field.

Role in protection from solar winds

Solar winds are the ejection of highly charged particles from the Sun's surface which spreads into entire solar system.



- Earth's magnetic field act as shield to the incoming charged particles and prevent them reaching to the atmosphere.

However at the poles charged particles reach deeper and give rise to the phenomenon of Auroras

thus magnetic fields are contemplated as ~~the~~ an important reason why atmosphere could sustain on earth and gave birth to life by protecting it from solar winds.

11. How does climate change affect the process of desertification?

(250 words) 15

जलवायु परिवर्तन मरुस्थलीकरण की प्रक्रिया को किस प्रकार प्रभावित करता है?

As per ISRO's satellite data, around 25% of India's land would be under desertification

Role of climate change in Desertification

1. Climate change (CC) has led to overall rise in temp which has reduced soil moisture predisposing them to desertification.
2. CC is leading to erratic weather and increase in frequency of droughts which leads to desertification.
3. CC is altering the rainfall pattern.
Eg. erratic monsoon
4. CC is leading to more cyclonic storms thus more inundation of coastal plain.

5. CC is leading to more frequent events of heat waves which also damages vegetation and thus augments the process of desertification.

Steps taken

I. To combat desertification

1. India signed United Nations Convention to combat desertification UNCCD
2. India accepted Bonn challenge and pledged to restore 26 million hectares of land by 2030.
3. National Afforestation Programme, Forest @ initiative, Agroforestry submission etc.

II. To combat climate change

1. Signing of Paris Agreement
2. Declaration of Nationally Determined Contributions
3. Focus on renewables
4. Electric vehicle push etc

Steps Required

1. climate change and desertification are closely related phenomena and mitigation efforts need to ^{be} synchronised.
2. Climate Smart Agriculture
3. Reduction of fertilisers in agriculture.
4. Aggressive push to afforestation etc.

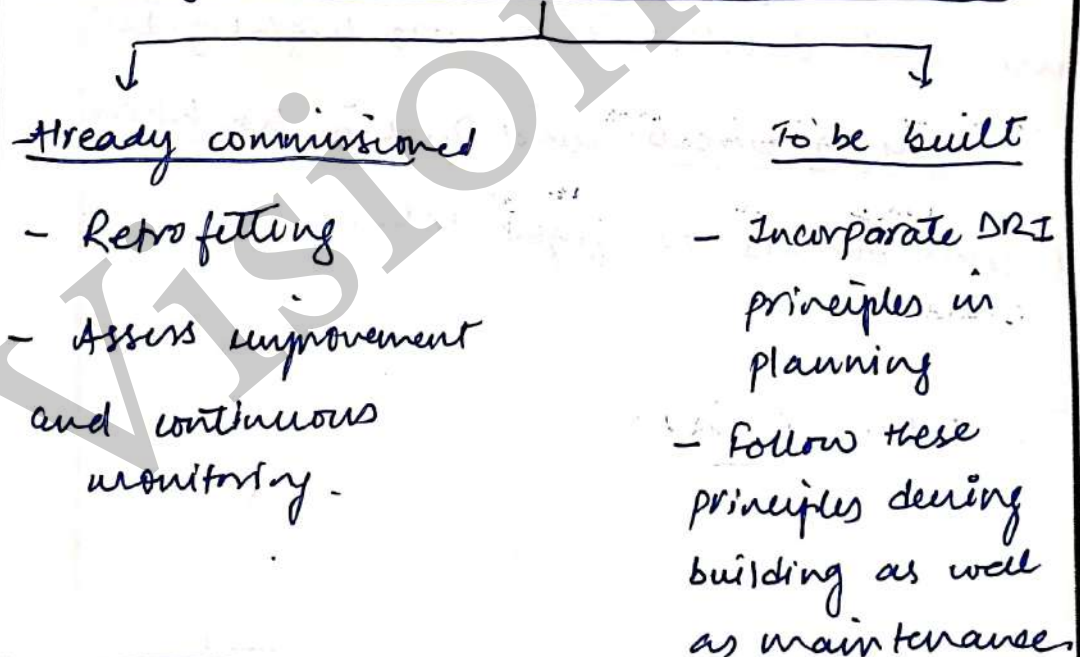
Thus the twin challenge of climate change and desertification was highlighted in COP-14 of UNCCD and India has taken bold commitments to fight both.

12. Discuss the increasing need of 'disaster resilient infrastructure' in India. Mention the steps taken in this direction with specific reference to the Global Coalition for Disaster-Resilient Infrastructure. (250 words) 15

भारत में 'आपदा-प्रत्यास्थ अवसंरचना' की बढ़ती आवश्यकता पर चर्चा कीजिए। ग्लोबल कोएलिशन फॉर डिजास्टर-रेजिलिएंट इन्फ्रास्ट्रक्चर के विशेष संदर्भ में इस दिशा में उठाए गए कदमों का उल्लेख कीजिए।

'Disaster Resilient Infrastructure' means such infrastructures which can withstand variety of disasters it will face in its lifetime

Building Disaster Resilient Infrastructure (DRI)



Need for DRI

1. India faces variety of disasters. Eg. Earthquake, Flood, Tsunami, Cyclones etc

2. Increasing frequency of disaster events due to climate change. Eg. cyclones hitting west coast of India.
3. High economic & social cost of disasters due to dense population. Eg. Chennai floods.
4. Economic cost of building DRI and other mitigation efforts are much less than the loss due to disasters actually happening.
5. Disasters widens gulf within the society hence DRI need to be priorities to build resilience.

Steps taken for DRI

1. Disaster Management Act, 2005 : Attempts to holistically address disaster including resilience component.
2. Coalition for Disaster-Resilient Infrastructure (CDRI) : It is an intergovernmental forum

Spearheaded by India to cooperate and collaborate & share best practices in DRI.

3. Learning from the best practices. Eg

Japan is well known for DRI

4. Sendai Framework for Disaster Risk Reduction also endorses DRI.

5. Impetus on research in building practices and entire construction process.

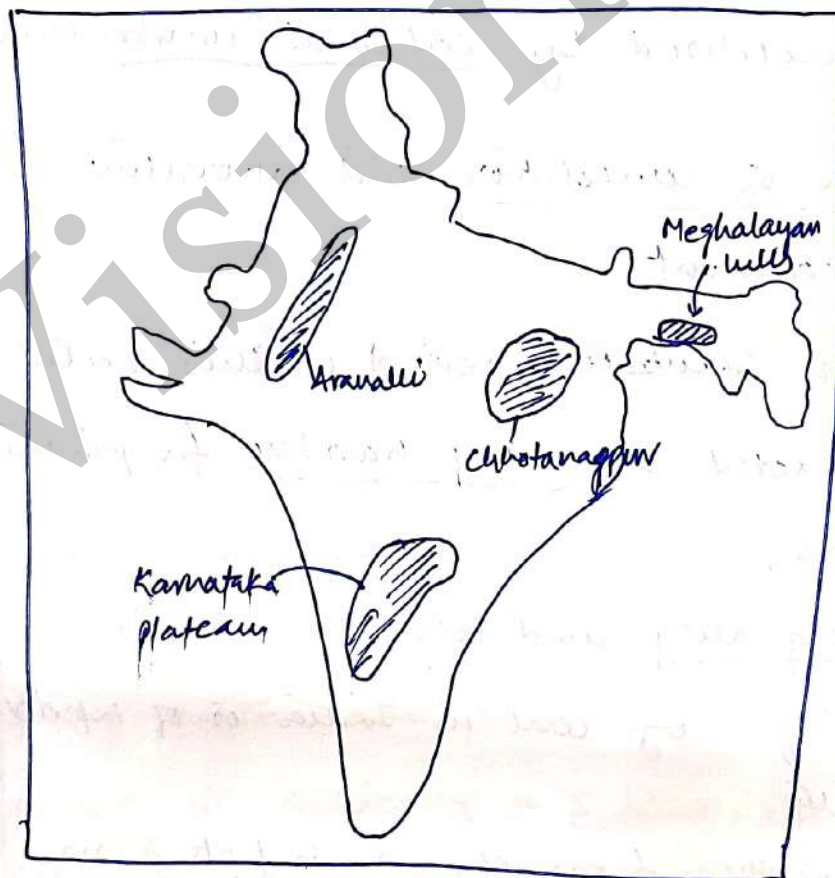
Thus, with rising number of disasters (eg. Hyderabad floods recently), it is imperative that we should focus on DRI to build resilience against any kind of disaster.

13. Identify the important mineral belts of India. Highlighting some of the issues plaguing the mining sector in India, discuss how the National Mineral Policy 2019 aims to address these issues. (250 words) 15

भारत की महत्वपूर्ण खनिज पट्टियों की पहचान कीजिए। भारत में खनन क्षेत्रों को समस्याग्रस्त करने वाले कुछ मुद्दों को रेखांकित करते हुए, चर्चा कीजिए कि राष्ट्रीय खनिज नीति-2019 इन मुद्दों को किस प्रकार संबोधित करने का लक्ष्य रखती है।

India is counted among mineral rich countries. It has been endowed with minerals ranging from coal, iron, copper, diamond, limestone to even uranium.

Mineral Belts of India



Issues being faced by mining sector

1. Unregulated mining. Eg. Sand mining
2. Illegal mining of minerals. Eg. Rat hole mining in Meghalaya.
3. Excessive space taken by Public sector units which has led to continued inefficiency. Eg. coal mining mostly monopolised by Coal India Limited (CIL)
4. Lack of competition and innovative environment.
5. High incubation period in this sector has acted as entry barrier for private players.
6. Low quality and less remunerative mining. Eg. Coal in India is of inferior quality
7. Competition from cheaper imports from Australia, China etc.

National Mineral Policy, 2019

1. It seeks to give 'Industry' status to mining sector.
2. It allowed for Right of First Refusal for RP/PL (Reconnaissance Permit/Prospecting Licence)
3. It seeks to ensure better implementation of projects under District Mineral Foundation
4. Facilitates entry of private sector in mining.
5. Allows for transfer of mining lease from one party to another.

Thus National Mineral Policy has been able to diagnose the problems in mining sector and its vision will augment in achieving a 5 trillion dollars economy

14. Not only is the spatial and temporal distribution of freshwater in India very skewed, but also its usage inefficient and wasteful. Discuss in context of the current water crisis. (250 words) 15

भारत में ताजे जल का स्थानिक और सामयिक वितरण न केवल अत्यधिक विषम है, अपितु इसका उपयोग भी अकुशल एवं अपव्ययी है। वर्तमान जल संकट के संदर्भ में चर्चा कीजिए।

With just 3% of landmass, India is home to 18% of population of the world who need water for sustaining each of them.

Freshwater in our country is not uniformly distributed rather very skewed due to various reasons.

~~Spatial~~

Skewed spatial distribution of water

1. Major River Basin of Ganga-Brahmaputra lies in North while South is catered by seasonal rivers.
2. Northern plains receive good rainfall during monsoon while regions in South like Rajasthan, Telangana receive very little.

3. Due to floods in North, groundwater is recharged frequently in north unlike south.

Skewed Temporal Distribution of water

1. India receive major portion of rainfall during monsoon while rest of the period runs dry.
2. Rainfalls even bring floods during one part of the year while other part turns parched.

Inefficient usage of water

1. Agriculture uses around 85% of the average freshwater usage.
2. Industries do not comply with the norms and often suck up more groundwater than actually allowed.
3. There's ~~no~~ territorial sovereignty over groundwater in one's field so people extract as much groundwater as they wish.

4. Households do not value water and keep tap running.
5. Lack of sensitisation of people about water usage leads to huge water wastage.
6. Lack of efficient supply infrastructure also leads to huge water loss.

Water crisis is real and over 20 cities will turn dry very soon. Water preservation and conservation needs to be turned into a 'Jan-andolan' (People's movement).

15. Examine how resource efficiency can bring about multiple benefits along the three dimensions of sustainable development - economic, social and environmental - in India.

(250 words) 15

परीक्षण कीजिए कि संसाधन दक्षता, भारत में संधारणीय विकास के तीन आयामों-आर्थिक, सामाजिक और पर्यावरणीय - के साथ-साथ किस प्रकार विविध लाभ प्रदान कर सकती है।

Resource efficiency means using of the resources in most efficient manner so as to ensure their continuous availability as our resources are limited.

Benefits of Resource Efficiency

Economic Development

1. It will ensure maximum output from the limited resources hence boost economic growth.
2. It will lead to generation of sustainable employment.
3. It will help in growth of trade and of both export and import.

Social Development

1. It will help in development of each segment of the society - developmental justice
2. It will ensure harmony and reduce conflict
3. It will protect the rights of future generation as ~~we~~ borrow resources from our kids and not inherit from our fathers.

Environmental Development

1. Resource efficiency will ensure climate justice
2. It will be instrumental in our effort at controlling climate change
3. It will reduce burden on the environment as the demand for

resources will decrease

4. It will help in preventing pollution as resources will be utilised in efficient manner through Reuse, Reduce & Recycle

thus to ensure an overall sustainable development, resource efficiency should be given an adequate focus and a sustained behavioural change should be targetted.

16. Highlighting the significance of unconventional hydrocarbons for India, discuss the issues faced in their exploration and extraction. (250 words) 15
- भारत के लिए अपरंपरागत हाइड्रोकार्बनों के महत्व पर प्रकाश डालते हुए, उनके अन्वेषण एवं निष्कर्षण में आने वाली समस्याओं की विवेचना कीजिए।

With increasing population and rising energy demands, India is looking for alternative sources of energy of which unconventional hydrocarbons seems promising.

Unconventional Hydrocarbons

These are the hydrocarbons which can help in energy generation but till now they have not been utilised much and remain unexplored.

Examples

- coal bed methane
- Shale gas
- shale oil
- Methane Hydrate

Significance for India

1. As per preliminary survey, these hydrocarbons

are available in abundance in our country.

Eg. Krishna-Godavari Basin

2. They are less polluting than the conventional ones.
3. They can help in achieving energy security
4. They can help reduce our import bill of oil and natural gas.
5. Their extraction can push economic growth and generate employment

Issues being faced

1. Technologies for extraction remain in nascent stage.
2. Serious implications in their extraction.
E.g. Fracking for extraction of shale gas may lead to — Contamination of groundwater
— Increased earthquake probability
— Disturb ecology

3. Lack of adequate funds to finance such large scale ~~products~~ projects
4. Their extraction and use will require overhauling of entire energy infrastructure.
5. No concrete plans by the govt yet.
6. Focus has now shifted more on green technologies than hydrocarbons.

Nevertheless, we can learn from USA which has already started extraction of shale gas and thus we can diversify our energy basket.

17. What is Soil Organic Carbon (SOC)? Identify various factors affecting SOC levels. Also, highlight the beneficial impacts of SOC on soil health and functionality. (250 words) 15

मृदा जैविक कार्बन (SOC) क्या है? SOC के स्तर को प्रभावित करने वाले विभिन्न कारकों की पहचान कीजिए। साथ ही, मृदा स्वास्थ्य और कार्यात्मकता पर SOC के लाभकारी प्रभावों पर प्रकाश डालिए।

Soil Organic Carbon is the Carbon (SOC)

present in soil due to accumulation of decomposed and detritus matter.

Sources of SOC

1. Decaying plant matter
2. Decaying animal matter
3. Microorganisms present in the soil
4. Dead matter of burrowers living in the soil

Factors affecting SOC

1. Soil Type

- More fertile soil → More productivity
Eg. Alluvial soil
↓
Higher SOC
- Saline and alkaline Soil → Less productivity
↓
Lower SOC

2. Soil Moisture

Higher moisture → Delay decomposition
↓
Lower SOC

3. Rainfall

Higher rainfall → waterlogging → Delayed decomposition
↓
Lower SOC

4. Flood

It leads to distribution of SOC across flood plain. E.g. Gangetic plain.

Benefits of SOC on Soil Health

1. SOC increases water holding capacity of the soil
2. It increases porosity of soil hence ensure better aeration
3. It help in keeping together nutrients of soil and prevent them from leaching away. E.g. Phosphorus

4. SOC ensures better productivity of the crops grown ~~with~~ on it.

Thus the SOC should be studied and improved to ensure better productivity small

VisionIAS

18. Ocean deoxygenation is one of the most detrimental, yet under-reported side-effects of human-induced climate change. Identify the causes behind it. Also, mention its socio-economic and environmental implications for the world. (250 words) 15

महासागरीय डीऑक्सीजनेशन मानव प्रेरित जलवायु परिवर्तन के सर्वाधिक हानिकारक, तथापि अल्पसूचित दुष्प्रभावों में से एक है। इसके लिए उत्तरदायी कारणों की पहचान कीजिए। साथ ही, विश्व के लिए इसके सामाजिक-आर्थिक और पर्यावरणीय निहितार्थों का भी उल्लेख कीजिए।

Ocean deoxygenation refers to progressive depletion in levels of dissolved oxygen in the ocean water.

Causes

- Climate change → Global warming
↓
Rise in sea surface temp
← Decreased oxygen holding capacity of ocean water
← Ocean deoxygenation
- Climate change → ↑ Greenhouse gases → More CO₂ getting dissolved in water
← Comparatively less oxygen in water
← Ocean deoxygenation
- Eutrophication due to dumping of untreated waste and agricultural runoff

is increasing the Biological oxygen demand hence causing Ocean Deoxygenation.

Implications

I. Socio-economic

1. Decrease in fish production and affect farmers livelihood.
2. Destroys corals hence their economic benefit will no longer be available.
3. Ocean deoxygenation further exacerbates climate change and its impacts on human society and economy.

II. Environmental

1. Decline in fish population. They either migrate or die.
2. Decline in biodiversity of the region.
3. It augments coral bleaching.
4. It will disturb oxygen cycle.
5. It may simultaneously lead to Algal bloom.

Steps needed

1. Intensive research into entire mechanism
2. Introduction of species which improve oxygen profile of water. Eg. seagrasses
3. Controlling dumping of untreated water into rivers and oceans.
4. Organic farming should be promoted to reduce chemical fertilizer runoff
5. Multi-pronged and holistic approach to deal with all the related phenomena and overall climate change.

Thus ~~oxygen~~ ocean deoxygenation need to be studied in depth and awareness is needed to make our ocean healthy and protect flora and fauna.

19. Approach to flood control in India should evolve from piecemeal measures to an integrated basin management. Comment. (250 words) 15
- भारत में बाढ़ नियंत्रण के लिए खंडित रूप में उपाय करने वाला दृष्टिकोण क्रमिक रूप से एकीकृत बेसिन प्रबंधन के रूप में विकसित होना चाहिए। टिप्पणी कीजिए।

Floods are one of the most frequent disasters happening in our country like Hyderabad floods recently.

Issues with our approach to flood control

1. Lack of holistic understanding of the entire cause of floods
2. Reactive rather proactive response.
3. Lack of interstate coordination
4. Inability to identify encroachments over river bed. Eg. Mumbai over Mithi river
5. Inability to restore wetlands. Eg. Hyderabad
6. Inadequate modelling to predict heavy rainfalls. Eg. Kerala floods.
7. Lack of regular assessment of old dams.

Steps required

1. Rivers should not be seen just as the current form of stream rather the whole basin should be visualised.
2. Watershed based management plans need to be charted out
3. Urgent restoration of all wetlands & lakes
4. Collaboration with neighbours where rivers flow from. Eg. Nepal for Kosi floods
5. Build capacity of the local communities, NGOs, PRIs etc.
6. Ensure functional drainage system in urban areas.
7. Learn from best practices in flood control. Eg. Japan, China

Steps taken

1. Disaster Management Act, 2005
2. Dam Safety Bill, 2019
3. Inclusion of Wetlands under Ramsar and their effective management subsequently.
4. Quick and agile deployment of NDRF in rescue efforts.

So Floods have to be managed holistically and each factor need to be given adequate attention to ensure less incidence and less damage.

20. Programmes for cleaning polluted rivers in India have been implemented for a long time, however, the results of these programmes are not very encouraging. Identify the reasons for the same and possible steps to rectify the situation. (250 words) 15

भारत में प्रदूषित नदियों की सफाई के कार्यक्रम लंबे समय से कार्यान्वित किए जाते रहे हैं, हालाँकि, इन कार्यक्रमों के परिणाम बहुत उत्साहजनक नहीं हैं। इसके कारणों और इस स्थिति में सुधार लाने के संभावित उपायों की पहचान कीजिए।

Due to rising urbanisation and industrial activity, our rivers have become increasingly polluted. This has been sought to be corrected through various programmes.

Programmes for cleaning Rivers

1. National River Conservation Project
2. Namami Gange Programme
3. Water Act, 1954

Reasons for failure

1. Inadequate enforcement. Eg. Tanneries in Kanpur continue to discharge directly in Gange
2. Inadequate infrastructure. Eg. Sewage Treatment plants have not been built

3. Inadequate focus on non-point sources of pollution. Eg. Agricultural runoff
4. Lack of awareness about the implication of pollution. Eg. Idols submerged in Ganga
5. Lack of inter-state coordination. Eg. Yamuna - Haryana, Delhi, UP
6. Paucity of funds as river cleaning needs lot of money.

Steps Required

1. Strict enforcement of regulations and strict check on industries.
2. Proper sewage treatment before discharge into rivers. Eg. Okhla sewage treatment plant in Delhi
3. Promotion of inter-ministerial collaboration to deal with the problem holistically

4. Declaring rivers as living entity.

Eg. Ganga

5. Integrating Swachha Bharat Mission with Namami Gange. Eg. Development of Swachha villages on bank of Ganga

6. Continuous monitoring of BOD, COD, coliform level etc to assess the health of river.

Thus rivers need to be brought back to their natural state to ensure Swachha India and Swastha India