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GENERAL STUDIES (TEST CODE : 845)

Name of Candidate	DILIP PRATAP SINGH SHEKHAWAT		
Medium Hindi/Eng.	ENGLISH	Registration Number	29253
Center	ORN	Date	11/3/2017

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	12.5	
2	12.5	
3	12.5	
4	12.5	
5	12.5	
6	12.5	
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17	12.5	
18	12.5	
19	12.5	
20	12.5	

Total Marks Obtained:

Remarks:

Signature of Examiner

INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
2. There are TWENTY questions printed in ENGLISH.
3. All questions are compulsory.
4. The number of marks carried by a question/part is indicated against it.
5. 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 that the authorized one.
6. Word limit in questions, if specified, should be adhered to.
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.

EVALUATION INDICATORS

1. Alignment Competence
2. Context Competence
3. Content Competence
4. Language Competence
5. Introduction Competence
6. Structure - Presentation Competence
7. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

All the Best

All the questions are compulsory and carry 12.5 marks each.

1. Soil management in Northeast India is critical for a viable agriculture economy. In this context, discuss the problems of soils in Northeast India. Suggest some steps that can be taken to counter this problem.
पूर्वोत्तर भारत में व्यावहारिक रूप से लाभप्रद कृषि अर्थव्यवस्था के लिए मृदा प्रबंधन महत्वपूर्ण है। इस संदर्भ में, पूर्वोत्तर भारत में मृदा संबंधी समस्याओं की चर्चा कीजिए। इस समस्या के हल हेतु उठाए जा सकने वाले कुछ कदम सुझाइये।

Ans:) North Eastern part of India is globally acknowledged as a Biodiversity Hotspot - as many species of flora and fauna are endemic to this region and also it has lost more than 70% of its original native species.

Why soil management is important in North - East →

(1.) A vast area of land is under permanent forest cover.

(2.) Rugged topography.

(3.) High rainfall throughout the year - makes the soil less appropriate for farming.

(4.) Soil of this region is largely under grass cover and has less porosity & are also deficient in some major Nutrients.

Due to the above issues, & further the less chance of availability of uncovered soil, Agriculture in North East becomes a major challenge. In the context of growing population and

economic development, the agricultural production has to rise to feed the people. Henceforth, a series of measures must be taken →

1. Terrace - farming - in hilly areas.

2. Soil health Card Scheme - in which suitability of the soil will be checked against the crops to be sown.

3. Proper drainage mechanisms must be put in place to prevent water logging and also soil erosion.

4. More emphasis shall be laid on horticultural crops as moving towards ~~agri~~. Commercial agriculture will be against the natural forest ecosystem of the region.

5. Bio pesticides and biofertilizers can be deployed to raise the yield.

Hence, for North East India to be more productive Climate smart Agriculture - with minimum inputs & maximum producivity must be practiced.

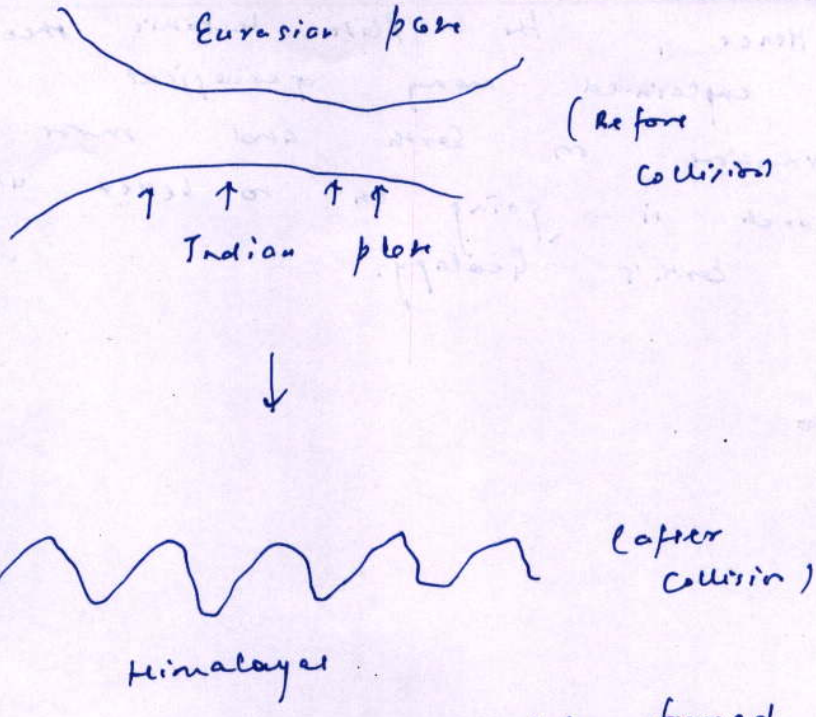
2. How does the plate tectonics theory help explain the formation of Himalayas and Deccan Traps?
प्लेट विवर्तिनिकी सिद्धांत किस प्रकार हिमालय और दक्कन ट्रैप्स के निर्माण की व्याख्या करता है?

Ans 2.) The Earth's Crust is a very thin portion of the entire solid structure of the Earth and hence over a period of time, it had developed fissures and hence, the breaking up of the Crust - which is now seen in the form of Plates eg: Eurasian plate, Gondwana plate.

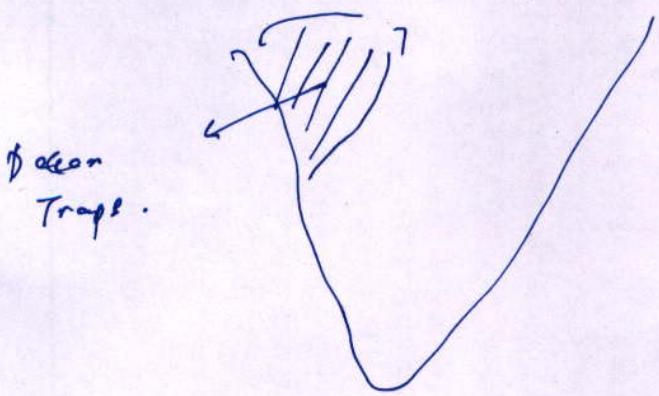
The interaction of these plates have resulted in a variety of Geological landforms like Oceans, Mountains, Ridges and also have lead to diasters such as Tsunami, Earthquakes, Volcanism, etc.

The plate tectonic theory →

(i) In Himalaya formation - This has been due to destructive collision of Indian plate moving North words towards the Eurasian plate & thus, the folds in the form of himalayas got developed. Himalayas are also the youngest fold mountains in the world.



(2) Deccan traps – are mainly formed due to submergence of one Oceanic plate under the Continental plate. Due to the heating up of Oceanic plate beneath the Earth's Crust, the Basaltic lava has flowing outwards and which has consolidated into step like features in the North western peninsular Plateau of India.



Hence, the Plate tectonic theory has explained many geological formation on Earth and more research is going on to better understand the Earth's Geology.

3. Inspite being one of the largest producer of fish, there is still considerable scope of improvement in the fishery sector. In light of the above statement, discuss the problems and prospects of Fishery industry in India with respect to both inland and marine fisheries.

मत्स्य के सबसे बड़े उत्पादकों में से एक होने के बाद भी, मत्स्य-क्षेत्र में सुधार की अभी भी पर्याप्त संभावनाएँ हैं। उपरोक्त कथन के आलोक में भारत में अंतर्देशीय और समुद्री मत्स्यन दोनों क्षेत्रों में व्याप्त समस्याओं एवं संभावनाओं पर चर्चा करें।

Ans 3.) The fishery sector in India is a traditional industry and it shows a huge potential to dominate Global markets.

India's virtues in this sector →

(1.) India has a 7,000 km long Coastline - which raised India's fishing industry's potential to 4 million Tonnes /year (currently only above 2 million tonne is produced)

(2.) India has enumerous Inland lakes, perennial and seasonal rivers - In this one, very less has to achieved by the Fisheries sector.

The major problems of Fisheries Sector in India are →

(1.) Technology - many Fishing houses are ~~very small and limit~~ still using the outdating manual techniques to catch fish.

(2.) Policy Support - So far, the Union Government and various state Government

have not given proper attention and focus towards fisheries sector.

(3) subsistence fishing — only for household consumption.

(4) lack of Investment from Corporates — due to numerous & numerous Government regulation in coastal areas. eg: Coastal Regulation Zones (CRZ).

(5) Transportation — This a huge problem, which result in rotting of fishes in long routes. Hence, the fisheries sector is mostly localised in India.

Solution →

(1) Government needs to come up with proper framework & policy incentives to promote fisheries — via Domestic and foreign investment.

(2) Research and development in this sector to evolve better ways to deal with problem of sub-optimal production.

(3) Tax-breaks and policy incentives for Corporates to invest in fisheries Sector..

(4) Collaboration with other world leaders like Japan & China — for Technology & Expertise.

(5:) Improving Transportation by dedicated freight corridors on all routes in the country & also abroad.

India has a huge potential to emerge as a leader in the fishing industry in the world; and with a favourable demographic dividend, the time is opportune to revolutionize fisheries in India.

4. Vegetation in deserts and saline areas have highly specialized means of adapting themselves to the environment. Explain.
मरुस्थलों और लवणीय क्षेत्रों में पाई जाने वाली वनस्पति में स्वयं को पर्यावरण के प्रति अनुकूलित करने की अत्यधिक विशेषीकृत युक्तियाँ होती हैं। व्याख्या कीजिए।

Ans 4.) Environmental Adaptation - Due to huge variability in the Climate in different parts of world, the native species have a natural phenomenon to adapt towards it. eg: In Polar areas, polar bears has thick layer of Blubber to prevent heat loss.

In a similar way the flora / vegetation of an area have different ways of adapting to its environment. For example →

(1) In Deserts →

(i) Trees have short leaves - to prevent water loss via transpiration

(ii) Needles & Spines.

(iii) Stomata is covered - throughout the day for protection from Transpiration.

(iv) High & Deep penetration of roots to reach ground water - as the water table is low.

(2.) In saline areas, esp. in Estuaries and Deltas. Eg: Sunderbans in West bengal, Plants adopt differently →

(1.) Pneumatophores – Roots impinge from the Ground in vertical direction.

(2.) Anaerobic bacteria in the roots are major source of Nutrients as saline waters are low in Oxygen.

Thus, both the species of flora and fauna have their own evolution and development to adapt to their surrounding environment. But, it took of a huge time for these species to adapt and with the current pace of Climate change – many of these species have become extinct due to habitat loss. for example, Dodo, Javan Tiger, etc.

5. Give an account of the distribution of cement industry in India and the factors that affect its location. Also trace the growth of cement industry in India.
भारत में सीमेंट उद्योग के वितरण और इसकी अवस्थिति को प्रभावित करने वाले कारकों का विवरण दें। साथ ही, भारत में सीमेंट उद्योग की वृद्धि की रूपरेखा भी प्रस्तुत कीजिए।

Ans 5:) Cement Industry in India is one of the 8 core industries of Index of Industrial Production (IIP) in India. Thus, it has a significant contribution to the Indian Economy in the form of-

1. Exports.
2. Building houses & commercial spaces
3. Roads, etc.
4. Raw material for other Industries, etc.

Factors affecting the Location of Cement Industry →

(1) Raw material availability - as Cement is a powdered product of Limestone, hence, it is preferred to be located a place where Limestone is produced - to save transportation cost.

(2) Factory Cluster - Industrial areas & Cluster are more preferable as it has impact on pollution & also can be used as a raw material in other Industries.

(3) Mainly near Cities - as Cement finds huge application in Construction sector.

(4) Near Seaports - in case of Exporting to other Countries.

In India, the Cement factories are mainly located between 2 or more major towns. This serves two purposes →

(1) Equidistant transportation to either cities - on demand.

(2) Pollution control norms in the cities.

Performance of Cement Industry in the past →

Issues →

(1) Pollution - due to use of inefficient & obsolete technology a lot of dust & soot is generated leading to Health problems for people.

(2) Limestone Conversion rate - to Cement is very low & leads to a lot of waste generation -

Recently, the Government has conferred Infrastructure Status to HOUSING & hence, this provide a huge platform

for the revival of Cement Industry in India.

6. Despite the enormous demand of electronics, the manufacturing of electronic goods has not been a feature of the Indian industry. Enumerate the reasons for the same. Suggest measures which are required to acheive the target of Net Zero Import by 2020.
इलेक्ट्रॉनिक्स की भारी मांग के बावजूद इलेक्ट्रॉनिक वस्तुओं का विनिर्माण भारतीय उद्योग का वैशिष्ट्य नहीं है। इसके कारणों को उल्लिखित करें। ऐसे उपायों का सुझाव दीजिए जो 2020 तक शुद्ध रूप से शून्य आयात का लक्ष्य प्राप्त करने हेतु वांछित हैं।

Ans 6.) Electronic Industry in India has registered an exponential growth since the opening up of the Indian Economy in 1991.

Currently, the Electronic sector is mostly regulated by foreign players like Sony, Samsung, Onida, Whirlpool, etc. Also, in low-cost electronic markets, the Chinese Goods have flooded & captured the Indian markets due to its cheap costs.

Despite a surge in demand for Electronics in India, the Domestic players have not been able to utilise it to their benefit (essentially leaving out to foreign players). Here are some major issues of Electronic Manufacturing Industry in India →

(1) Lack of Research & Development - to make use of cheap raw material & technology - to compete with foreign players.

(2) Lack of Policy support - by the Government to revive the sector.

(3) Poor State of Electronics Engineering in India - The Students studying in Indian Universities - have mostly been recruited by MNCs & other foreign companies - due to attractive packages.

(4) PSUs - such as BEL, BHEL, C-DoT etc. - have largely been inefficient to compete with Private MNCs.

The Government of India has envisaged a Net zero import by 2020 - in Electronics sector, but with only 3 years to accomplish, this seems a difficult target to achieve.

Nevertheless, we can raise our domestic potential in the following ways →

(1) R&D - more fund & emphasis should be laid to develop State of the Art technology to attract Indian Consumers.

(2) Lay much greater emphasis on Electronics Engineering in Premier Institutes - to match with the demands of the Domestic Industries.

(3.) Reduction in Corporate tax – to incentivise Electronics manufacturing.

(4) Government PSUs – must give a way out to Private players to lead the sector.

7. Agroforestry is seen as a solution to meet the challenges of food, nutrition, energy, employment and environment security. Elucidate.

कृषि-वानिकी को भोजन, पोषण, ऊर्जा, रोजगार और पर्यावरण सुरक्षा की चुनौतियों के समाधान के रूप में देखा जाता है। स्पष्ट कीजिए।

Ans 7.) Agroforestry - is a kind of farming where in intensive Agriculture is carried on simultaneously along with planting trees around the same areas. Thus, from a limited area of land the benefits of both forests and Agriculture can be extracted. It has the following benefits for the Society →

(1.) Food Security — Intensive agriculture can solve the problem of food grains. eg: wheat, rice, etc.

(2.) Nutrition — many useful plants like Apple, Banana, etc. & other nutritious plants can help in providing Nutrition security.

(3.) Energy — from Biomass generated can be used for various purposes. eg: Electricity.

(4.) Employment Generation — Due to such intensive production scale, a huge labour force is required.

(5) Environment protection → Utilizing the forest potential to its maximum without depleting it can make our Environment secure & robust. In modern times, such Innovative methodologies, like AGROFORESTRY has huge potential to help us move towards Sustainable Development.

8. Explain the phenomenon of Tsunami formation and highlight reasons for India's vulnerability to Tsunamis. List some measures to mitigate the impact of Tsunamis.

सुनामी उत्पन्न होने की परिघटना की व्याख्या कीजिए और सुनामी के प्रति भारत की सुभेद्यता के कारणों पर प्रकाश डालिए। सुनामियों के प्रभाव का न्यूनीकरण करने हेतु कुछ उपायों को सूचीबद्ध कीजिए।

Ans 8.) Tsunamis are huge water waves exceeding to the height of even upto 30 m along the coastal areas - which upon Descending cause huge & large scale damage in the Coastal areas. Eg: the 2004 Tsunami - along the Chennai Coast.

Phenomenon of Tsunami formation →

Tsunamis are mainly formed to 2 main reasons →

(1.) Earthquakes,

(2.) Major Tectonic shifts in the Ocean bed. eg: Transform faulting.

Thus, the above SHOCKS - generate energy in the surface water above the SHOCK area and hence the surface water get momentum - which leads to formation of a small wave, but energetic wave in the direction of the disturbance.

As the wave moves over deep ocean, it is short in height; but as it reaches the coastal boundary, it continously increases in height (even upto 25-30 m) & then it descends with huge force, causing widespread destruction & damage.

Indias vulnerability →

(1) India has a 7,000 km long coastline.

(2) Presence of a no. of faults in the Indian Ocean, esp. Bay of Bengal makes the Eastern Coast more vulnerable.

Measures for mitigation →

(1.) Highly sophisticated Early warning system – to raise Alerts at appropriate time.

(2.) Robust Evacuation plans.

(3.) No building zones in risk prone areas.

(4.) Spreading awareness in Coastal areas. Eg: Receding of Shoreline – is the most significant sign of arrival of a Tsunami.

9. Explain the role of Himalayas in influencing the climate of South Asia. Enumerate the changes observed recently in the Himalayan region with respect to climate and geomorphology. What are the possible anthropogenic causes behind them ?

दक्षिण एशिया की जलवायु को प्रभावित करने में हिमालय की भूमिका की व्याख्या कीजिए। हिमालयी क्षेत्र में जलवायु और भू-आकृतिविज्ञान के संबंध में हाल ही में चिन्हित किए गए परिवर्तनों की गणना कीजिए। इनके पीछे संभावित मानवजनित कारण क्या हैं?

Ans 9.) Himalayas stand as the most significant landmass in the South Asian region as it plays a major role in shaping the South Asian Climate & the resulting rich biodiversity.

(1.) Himalayas act as a barrier - to moisture laden monsoon winds & thus, is responsible for significant Orographic rainfall in Northern India.

(2) Himalayan Ecosystem - provides a huge reservoir of adaptation by various species of Flora & Fauna. Esp. Eastern Himalayas - a Biodiversity hotspot

(3.) Himalayas also act as a barrier to Cold Siberian & Eurasian winds.

(4.) Many Perrenial rivers flow from the Himalayas - leading to huge biodiversity of flora & fauna across the plains of India - which in turn make the Indian Climate relatively less harsh.

Recent Changes in Himalayas →

(1) Recently, it was found that the Glaciers of Gangotri & Yamunotri - have been receding very fast - due to Global warming - leading to increasing instance of floods during monsoon season.

(2) Landslides - due to various anthropogenic causes such as building houses & Industries - soil has become loose - leading to landslides.

The Government of India - has included the Conservation of Himalayan Ecosystem in its National Action Plan for Climate Change, 2008, but very less work has been done at the Ground level to protect the Himalayas. Some measures to solve the problem can be →

(1) Community led tourism.

(2) Effective regulatory mechanism - to regulate industries, tourism, construction, etc.

(3) Proper

10. Explain the different types of earthquake waves and the concept of shadow zone. What inferences can we draw from shadow zones regarding the interior of the Earth?
विभिन्न प्रकार की भूकम्पीय तरंगों और छाया क्षेत्र की अवधारणा की व्याख्या कीजिए। पृथ्वी के आंतरिक भांग के संबंध में छाया क्षेत्रों से हम क्या निष्कर्ष निकाल सकते हैं?

Ans 10.) Earthquake occurs due to a fault in Earth's crust - which leads to generation of energy in the form of vibrations. These vibrations can be divided into 4 kinds of waves →

Surface waves (emerging from Epicenter on the surface)

1. Rayleigh waves (R-waves)
2. Love waves (most destructive)

Interior waves. (emerging from Hypocenter in the area of fault)

1. Primary waves (P-waves)
2. Secondary waves. (S-waves)

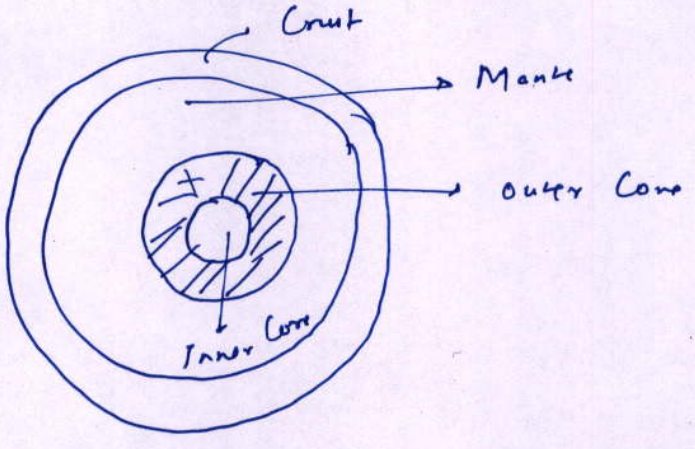
Interior of Earth :

By the study of P-waves & S-waves, Geologists have found the structure of the Earth. This can be explained as follows →

① P-waves could travel through all mediums, while S-waves can travel only through solid.

this leads to creation of a SHADOW ZONE - from 105° - 120° on both sides - as S. waves are blocked by the Molten Outer Core.

Also, the densities of different layers have be deduced by the deflection of waves - due to change in Medium



Since, the Interior of the Earth is very hot, Scientist have mainly dependent upon such waves to predict the Interior of Earth.

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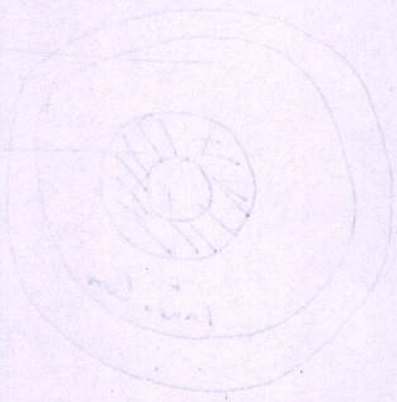

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11. Explain the difference between chemical weathering and physical weathering. What is the ecological and economic significance of weathering?
रासायनिक अपक्षय और भौतिक अपक्षय के बीच अन्तर की व्याख्या कीजिए। अपक्षय का पारिस्थितिक और आर्थिक महत्व क्या है?

Ans 11) Weathering is a phenomena of wearing down of Bigger rock particles into smaller ones - which eventually lead to soil formation. The difference between Chemical & Physical weathering is as follows →

Chemical weathering	Physical weathering
(1.) Hot & humid climate is preferable Hot Climate promotes Better Microbial action.	(1.) Cold & dry Climate is preferable. Even Hot & dry Climate - will lead to weathering.
(2) Microbes play a very important role in breaking of Rocks. eg: Lichens.	(2.) Mechanical breaking of Rocks. eg: Falling of Rocks from higher places due to frequent Glaciation.
(3.) Fast process	(3.) Slow process

Ecological significance of weathering →

(1) Formation of soil – a reservior of a variety of Insects, flora & fauna.

(2) Growing plants & vegetation on this soil.

Economic significance →

(1) Sustainable livelihood on plain.

(2) Food security via Agriculture.

12. Tropical regions are not only the most resource rich but also one of the most underdeveloped regions of the world. What are the factors responsible for this? How have some of the tropical countries turned their natural limitations to their advantage? Illustrate.

उष्णकटिबंधीय क्षेत्र न केवल सर्वाधिक संसाधन संपन्न हैं वरन् विश्व के सर्वाधिक अविकसित क्षेत्रों में से भी एक हैं। इसके लिए कौन-से कारक उत्तरदायी हैं? कुछ उष्णकटिबंधीय देशों ने अपनी प्राकृतिक रूकावटों (बाधाओं) को स्वयं हेतु लाभप्रद स्थितियों में किस प्रकार परिवर्तित किया है? व्याख्या कीजिए।

Ans 12.) Tropical regions mostly constitute the Geographical landmass lying between the two tropics — $23\frac{1}{2}°N$ & $23\frac{1}{2}°S$. This is also the TORRID ZONE - as the Climate is very warm & hot. As they recieve the greater part of Sun's insolation & also high rainfall - it is the most resource rich region of the world - in terms of Flora, Fauna &, fossil fuels and human resource.

But, at the same time these are the most under-developed regions in the world. The reasons are →

(1.) Climate - being very hot & humid - is less favourable of optimal productivity of man when compared to Mid latitudes.

(2.) A huge chunk of population in this belt - puts huge pressure on the natural resources.

(3) Due to presence of vast Natural resources, these areas were invaded & Colonized by many European powers for their own benefit – further exploiting these resources & leaving their area – at of hunger & under development.

But, since the independence of many countries in this belt during mid-20th Century, the picture has changed – which countries such as China, Brazil, India emerging as significantly powerful Countries →

(1.) China – has excellently utilized its natural resources and currently is a dominant regulator of the Export market.

(2.) India – has also rose in prominence with its dominance in areas such as Fishery, Agriculture, Milk production, etc.

Further, the recent initial of India – of formation of International Solar Alliance (ISA) – an alliance of Countries falling in the tropical belt – for harnessing the immense Solar potential in this region is a step in right direction.

13. Coral reefs are the most biologically diverse and economically valuable ecosystems on earth. Elaborate. Discuss the factors responsible for the decline of coral reefs across the world. Also, list some measures that have been taken for their preservation.

प्रवाल भित्तियाँ पृथ्वी पर जैविक रूप से सर्वाधिक विविधतापूर्ण और आर्थिक रूप से मूल्यवान पारिस्थितिक तंत्र हैं। सविस्तार व्याख्या कीजिए। विश्व में प्रवाल भित्तियों की कमी के लिए उत्तरदायी कारकों की चर्चा कीजिए। साथ ही, उनके संरक्षण हेतु किए गए कुछ उपायों को सूचीबद्ध कीजिए।

Ans (13.) Coral Reefs are also known as "Rainforests" of the Ocean - due to its huge significance in Marine Biodiversity. It has the following 2 main features →

(1) Biologically diverse — these reefs are are a result of symbiotic relationship between the microscopic Algae - Phytoplankton and the Zoo xanthalae - which cover these corals, thus giving them colourful shape. These reefs play a huge role in sustaining Marine biodiversity due to formation of coral polyps - which support a wide range of marine plants & animals.

(2) Economically valuable → these are also famous tourist destinations - eg: Deep sea diving @ the Great barrier Reef in Australia.

Recently, the Barrier Reef of North East coast of Australia has suffered the worst bleeching event in history. The following are the main reasons of for this →

(1.) Warming sea waters of greater than 30°C - leads to dying of Corals.

(2.) Pollution near the Coastal areas - mainly untreated Industries & municipal wastes.

(3.) Excessive human interference, eg: fishing in these regions.

The following measure are known being taken around the world to prevent this →

(1.) Put restrictions on burning of fossil fuels. eg: the Kyoto protocol.

(2.) Moving towards renewable sources of Energy. eg: The Paris Climate Summit.

(3.) To end Commercial Tourism in the sensitive areas & high regulation by the Government.

14. Despite EIA being a useful policy tool for sustainable development, deficiencies in its design and implementation have prevented it from realising its potential. Discuss.

संधारणीय विकास के लिए एक उपयोगी नीतिगत उपकरण होने के बावजूद, पर्यावरणीय प्रभाव आकलन (ई.आई.ए.) की अभिकल्पना (डिजाइन) और कार्यान्वयन संबंधी कमियों ने इसकी सम्पूर्ण क्षमता को साकारित होने से बाधित किया है। चर्चा कीजिए।

Ans (14.) Environmental Impact Assessment (EIA) - is undertaken by the Government or any agency authorised by it - to register & mitigate the harmful impact of Commercial & Developmental projects on the surrounding Environment.

In this pursuit, the Government of India laid down the EIA notification in 2006.

But, despite its limited effectiveness it has the following issues →

(1.) Implementation of EIA →

* The Assessing Authority is not fixed and is mostly outsourced to different autonomous regional organisations. Hence, making EIA documents to be manipulated.

* Lack of a Monitoring mechanism with the Ministry of Environment to see the progress on EIA.

(2.) Design →

* The EIA rules suffer with Complexity - making them more vulnerable to be tweaked for the benefit benefit of the Developers.

* More authority is given in the hands of District Bureaucracy - with less or minimum accountability leading to rent seeking and faulty EIA.

Thus, after over a decade of EIA rules, there have been many instances of Regional conflicts, leading to hazardous consequences for Local people & the Corporates. Hence, some change must be brought →

(1) More power needs to be vested in Local Community - for clearing projects.

(2.) A Central Authority to monitor all EIAs in the country.

(3.) Regular Environmental Audits by the local people to fix Accountability.

(4.) Renewal of EIA licence after a fixed period.

15. According to the Indian Fertiliser Scenario 2014, the use of urea in India has increased by more than 50 per cent since 2000. How does human intervention turn nitrogen from a nutrient to a pollutant? Discuss the impacts of nitrogen pollution on environment and human health. Also, explain how nitrogen pollution can be managed.

भारतीय उर्वरक परिदृश्य 2014 के अनुसार, भारत में यूरिया का उपयोग सन् 2000 के बाद 50 प्रतिशत से अधिक बढ़ गया है। मानवीय हस्तक्षेप किस प्रकार नाइट्रोजन को एक पोषक तत्व से प्रदूषक के रूप में परिवर्तित कर देता है? पर्यावरण और मानव स्वास्थ्य पर नाइट्रोजन प्रदूषण के प्रभावों की चर्चा कीजिए। साथ ही, व्याख्या कीजिए कि नाइट्रोजन प्रदूषण का प्रबंधन किस प्रकार किया जा सकता है?

Ans 15:) In the Current Scenario the use of Urea has seen a tremendous increase by over 50% - leading to various health & environmental hazards & pollution.

Human Intervention →

Human Intervention has converted Nitrogen from a Nutrient to a major pollutant as due to the excessive use of Urea in farm fields, the Urea is leached into ground water and thus contaminates it. It also lead to run-off in the the Ocean, thus impacting the marine Ecology.

Urea is a major pollutant both in terrestrial ecosystem & aquatic ecosystems - as it is only the Nitrogen which is fixed by

Soil bacteria - which is utilized by the plant.

Impact of Nitrogen pollution on Environment →

(1.) Eutrophication - in Oceans leading to Harmful Algal Blooms & death of fishes and other marine organisms.

(2.) Contamination of Groundwater - can further reduce the fertility of soil.

Impact on Human health →

(1.) Urea entering in the food chain - can lead to various health problems.

(2.) Excess of Nitrate in Groundwater - can lead to Blue baby Syndrome.

16. Temperate grasslands are called 'Granaries of the world'. Elucidate. How have the farming practices adopted in these regions impacted the environment?

शीतोष्ण घास के मैदानों को 'विश्व के अन्न भंडार' कहा जाता है। स्पष्ट कीजिए। इन क्षेत्रों में अपनायी गई कृषि प्रथाओं ने पर्यावरण को किस प्रकार प्रभावित किया है?

Ans 16.) Temperate Grasslands are the most suitable landmasses for large scale farming of staple foods such as Corn, Wheat, etc. — Thus - they are known as "Granaries of the World".

The main Climatic Conditions that support it are →

(1) Moderate climatic conditions — with sufficient rainfall.

(2) Plane topography / uniform topography.

(3) No presence of Trees — as in Savanna / Tropical Grasslands.

Hence, many countries in Europe and the Americas have utilised this Climate to their benefits & presently these are the largest producing areas of the world. But, some advanced farming practices in these regions of have impacted the environment severly →

(1) Monoculture of Plantation crops has drive out many species of flora

and fauna.

(2.) Intensive Mechanisation has led to Soil deterioration.

(3.) Ground water tables have fallen down

(3) Huge scale use of fertilizers have impacted the health of many consumers.

17. Enumerate the global targets and priorities for action of the Sendai Framework for Disaster Risk Reduction. Discuss the positive features and limitations of the framework.

आपदा जोखिम न्यूनीकरण हेतु सेनडाई फ्रेमवर्क के अनुरूप कार्रवाई के लिए वैश्विक लक्ष्यों और प्राथमिकताओं की गणना कीजिए। इस फ्रेमवर्क की सकारात्मक विशेषताओं और सीमाओं की चर्चा कीजिए।

Ans 17.) In [illegible], 2015 - The Sendai Framework for Disaster Risk Reduction was adopted by UN member nations at Sendai in Japan - which lays a road map for countries to follow from 2015 - 2030. The framework has 4 main priority areas →

1. Disaster Risk identification
2. Disaster Risk Governance
3. Disaster Mitigation through community based approach
4. Build - back - better after an event of Disaster.

The Framework lays down the Goals for achieve the Disaster Risk reduction Goals along with SDGs by the year 2030.

The Positive features for the framework are as follows →

(1.) It adopts a 15-year vision to build a resilient Disaster Resilient Society.

(2.) It is in consonance with 10 out of 17 Sustainable development Goals (SDGs) - leading to sustained Disaster Risk reduction.

(3.) Community based approach - As the top down approach has failed continously in the past, esp. in India. eg: Uttarakhand floods - 2013 — there was no coordination among agencies at the state level.

(4.) It allows the member nations to come up with their own models of Disaster risk reduction (Bottom up approach).

But, there are also a couple of major setbacks in the framework →

(1.) It is voluntary in Nature — it is detrimental to countries like India for whom Disaster Management has not been on the priority list in the past.

(2.) No tangible Goals to be achieved. Thus, it does not provide

enough incentives for the countries to take full-fledged steps towards Disaster Risk Reduction.

Nevertheless, India has ratified the Sendai framework and has shown a positive intent →

(1) "New Delhi Declaration" - hosted by India - for Disaster risk reduction in Countries of the Asian region.

(2) A comprehensive Disaster management plan - 2016 - on the lines of Sendai framework.

18. What is a heat wave? Discuss the health impacts of heat wave in India. Analyse the reasons behind high incidence of mortality rates due to heat wave in India. Suggest measures to tackle the above problem.

हीट वेव (ऊष्ण लहर) क्या है? भारत में ऊष्ण लहर के स्वास्थ्य संबंधी प्रभावों की चर्चा कीजिए। भारत में इस घटना के कारण उच्च मृत्यु दरों की घटना के पीछे विद्यमान कारणों का विश्लेषण कीजिए। उपर्युक्त समस्या का समाधान करने के उपाय सुझाइए।

Ans 18.) Heat waves are winds blowing in the summer season - which are intensely hot and can lead to medical conditions. eg: Loo in North India. The major reason for heat waves is Global warming.

Health impacts of Heat wave →

(1) In summers, due to difference in body temperature, It can lead to fever.

(2) It also irritates the eyes & skin & may cause severe infections.

(3.) Vector borne diseases - rise - as hot air is a more suitable for vectors such as mosquitos, etc.

Reasons behind high Mortality rates due to heat waves →

(1.) Lack of Shelter homes - for the poor & homeless people

(2.) Epidemic like Dengue & Malaria spread at this time of the year.

(3.) Lack of Awarness among citizens to take precautions in tackling with diseases.

Some useful measures are —

(1.) Covering face and eyes while going out.

(2.) Using mosquito repellants & wearing covered clothes outside.

(3.) Less exposure outside during the daytime.

(4.) Not eating at unhygine places - esp. in crowded areas.

19. "Rising accidents involving merchant ships leading to oil spills in Indian waters is a growing concern that needs to be addressed." Discuss the impact of oil spills on marine environment. Also, suggest measures to prevent such disasters.

"व्यावसायिक जहाज संबंधी दुर्घटनाएँ निरंतर बढ़ने के कारण भारतीय जलीय क्षेत्र में तेल रिसाव की चिंता उत्पन्न हो रही है, जिसका समाधान करने की तत्काल आवश्यकता है।" समुद्री पर्यावरण पर तेल रिसाव के प्रभावों की चर्चा कीजिए। साथ ही इस प्रकार की आपदाओं का निवारण करने हेतु उपायों का सुझाव दीजिए।

Ans 19:) Oil Spills occur when a huge quantity of oil spills out of Carrier Ships in the Ocean. This have various hazardous impacts, esp. on Marine Environment →

(1.) Decreasing the sunlight penetration in the ocean - leading to death of Phytoplankton & seagrasses & other marine organisms.

(2.) Fish mortality - due to consumption of oil.

(3.) Destructive impact on Coral Polyps.

(4.) Health Hazards for human - by Consumption of Contaminated fishes.

Recently, the Oil spill near the Marine beach led to a huge controversy at the National level to address the issue. Further, the National Action Plan under the Coast Guard - was also ineffective in dealing with it.

Thus, a few measures need to be taken to address future oil spills →

(1) Using Satellite technologies to prevent collision of ships - moving in the same coastal area.

(2) Use of Oil Consuming Chemicals - For example - Oil Zapper - invented by TERI - for mitigation of future Oil Spills.

(3) Responsibility fixation - In Coastal Area, the responsibility must be fixed upon the Local Authorities - by equipping them better than before.

(4) The Nation Action Plan - under Coast Gaurd needs to be aligned with the Authorities of the concerned various coastal states.

Thus, affirmative steps need to be taken in right direction to prevent deterioration on already thretned coastal marine ecology.

20. Forest fire pose a threat not only to the forest wealth but also to the entire regime of flora and fauna. What are the causes of forest fire? Discuss the ecological, economic and social impacts of forest fires.

दावानल *(जंगल में लगने वाली आग)* न केवल वन सम्पत्ति बल्कि क्षेत्र की संपूर्ण वनस्पतियों और जीवों के लिए भी खतरा प्रस्तुत करती है। वनों में आग लगने के कारण क्या हैं? दावानलों के पारिस्थितिक, आर्थिक और सामाजिक प्रभावों पर चर्चा कीजिए।

Ans 20.) In recent years, widespread concerns have been raised over the issue of forest fires - as these fires destroy a good amount of forest ecosystem and biodiversity.

~~These main causes are~~

Forest fires are mainly caused due to human activities (95%) & only 5% are attributed to natural causes. The major causes are →

(1) 1991 Law banning felling of trees - drives some Industries to burn forests to clear areas for Production.

(2) Shifting Cultivation

(3) Accidental fires in fodder Crops & Spines.

(4) Increasing Dryness of forests - due to lack of Moisture (esp. during March - May).

(5.) Drying up of Lakes in the nearby areas.

The major impact of forest fires are →

(1.) Ecological impact →

* It leads to destruction to vast areas of forests turning them to degraded lands.
* a huge chunk of bio diversity is lost.

(2.) Economic Impact →

* vested interests of various Industries in the forests - for example Plantation Agriculture in hilly areas - tend to use such malpractices.
* Forests play a huge role in Indian Economy as Carbon sinks, Shelter for Tribals, Tourism, etc.

(3.) Social Impact →

* forest fires often tend to drive away Tribal people from the forests, who are largely dependent upon Minor forest produce.

Forest fire incidents are becoming more frequent in India and is putting further stress on already endangered Ecology of India. Hence, the Government must play a proactive role in preventing these forest fires. Some initiative could be →

(1) Maintaining water reservoirs in forest areas

(2) Making stringent norms for activities in forest area.

(3) Spreading more awareness with regard to forest fires among the local community.

(4) Equipping forest Guards with Effective and advanced fire extinguishers for faster mitigation.