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GENERAL STUDIES (TEST CODE : 1324)

Name of Candidate	Vishakha Yadav		
Medium Eng./Hindi	English	Registration Number	295520
Center	Karol Bagh	Date	7/9/19

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	
7	12.5	
8	12.5	
9	12.5	
10	12.5	
11	12.5	
12	12.5	
13	12.5	
14	12.5	
15	12.5	
16	12.5	
17	12.5	
18	12.5	
19	12.5	
20	12.5	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

1. 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)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI**
   इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**
   सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
   प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
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.
   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।
6. Word limit in questions, if specified, should be adhered to.
   प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. 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।

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

Answer all the questions in NOT MORE THAN 200 WORDS each. Content of the answers is more important than its length. All questions carry equal marks.

12.5X20=250

1. Give an account of distribution of sugar industry in India. Also, highlight the problems plaguing the sugar sector.

   भारत में चीनी उद्योग के वितरण का विवरण प्रस्तुत कीजिए। साथ ही, चीनी क्षेत्र को अवरुद्ध करने वाली समस्याओं पर प्रकाश डालिए।

Sugarcane is a tropically grown extensive crop in India. Majorly found in Maharashtra, Karnataka, UP, Bihar.

Sugar Industry distribution

① Based on the Webber's Theory of Transportation, a weight losing crop has industry located near to its cultivation.

② North India

Uttar Pradesh is the largest producer of Sugarcane. (73rd NSSO)

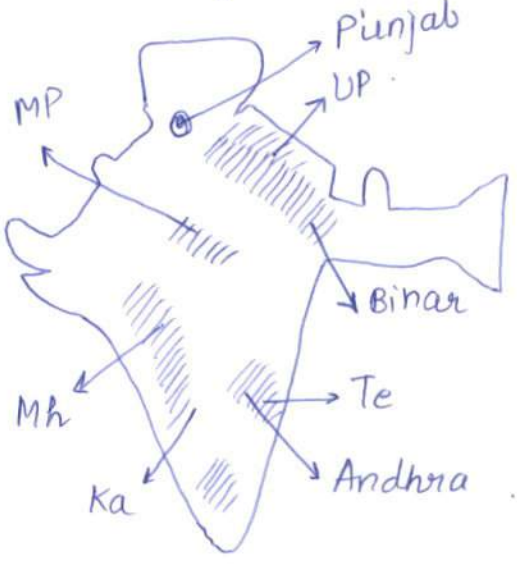


fig: Major Sugarcane producing States

(3) Bihar, Bengal and parts of western Madhya Pradesh also as it requires 21-27°C tropical climate and 100-150cms of rainfall.

(4) There is cultivation in few areas of Punjab and Haryana owing to the irrigation facilities (ground water)

(5) South India

Sugar industry has witnessed a shift from North to South due to :-

(a) Availability of rains (coastal areas)
(b) The moderating climate - all year cultivation
(c) Presence of FPOs and the cooperatives culture in South leading to large baits of land under cultivation.
(d) Penetration of technology.

[Problems plaguing the sector]

(1) The arrears and pending payments (debts) of the mill owners towards the farmers.

(2) The compulsory Jute Packaging Rules mandating 20% of the sugar packaging (2018).

(3) The SAP and FRP on the sugarcane see a wide difference.

(4) Govt interference and regulation at all levels.

(5) Excise duty on the molasses and 20% export duty on sugar.

(6) Decline in area due to competition from local Khandsari and Jaggery.

Rangarajan panel had advised to rationalise Cane reservation area and minimum distance area to boost the production.

2. Bamboo has been referred to as green gold for its numerous commercial applications. Discuss the distribution of bamboo in India, and the recent steps taken by the government with regards to this industry.

बाँस को इसके अनगिनत वाणिज्यिक अनुप्रयोगों के कारण हरित सोना (ग्रीन गोल्ड) के रूप में भी जाना जाता है। भारत में बाँस के वितरण और इस उद्योग के संबंध में सरकार द्वारा हाल में उठाए गए कदमों की चर्चा कीजिए।

Bamboo or the green gold is famously called 'poor man's timber' in India with more than 10Mn ha of land under cultivation.

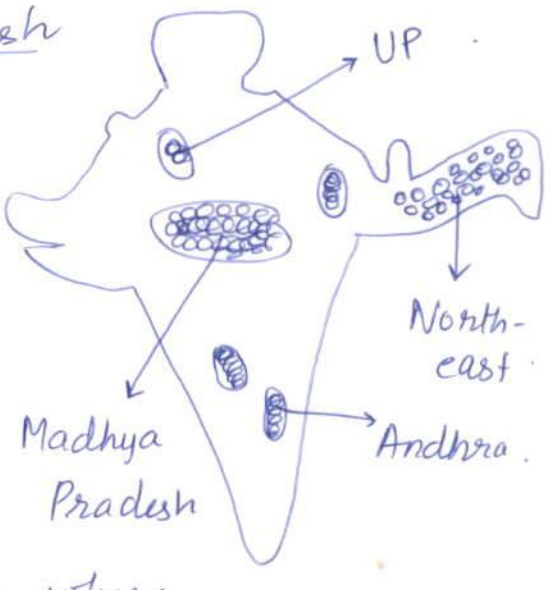
Significance and commercial Applications :-

(1) Carbon sequestration and great ecological value with only 4-7 years of maturity.

(2) Forms part of the culture and day to day application of people in N.E in the form of rice cooking, food (edible bamboo)

(3) Also used as raw material for construction, and irrigation channels of Bamboo drip irrigation in Meghalaya.

Distribution of Bamboo



(1) Madhya Pradesh is the largest area under the cultivation

(2) North-east has the most extensive bamboo culture where Millions of livelihoods depend on the bamboo cultivation.

(3) It covers almost 13% of the forested area in India (ISFR 2017)

Steps taken by Govt

(1) Taxonomically a grass under the FSI classification, GOI amended the Indian Forests Act 1927 to allow felling of the Bamboo in non-forested

areas to boost the cultivation.

(2) Restructured National Bamboo Mission which aims to support an area based, technologically advanced and input driven approach to boost monoculture plantations of Bamboo.

(3) The funding pattern has been 60:40 for other states and 90:10 for north-east.

(4) Seperate fund allocations in Budget 2018-19 to further give impetus.

India needs to leverage its second largest cultivation with support from international organisations (INBAR). It also holds developmental key for North-east and SDG 1, 7, 11, 13.

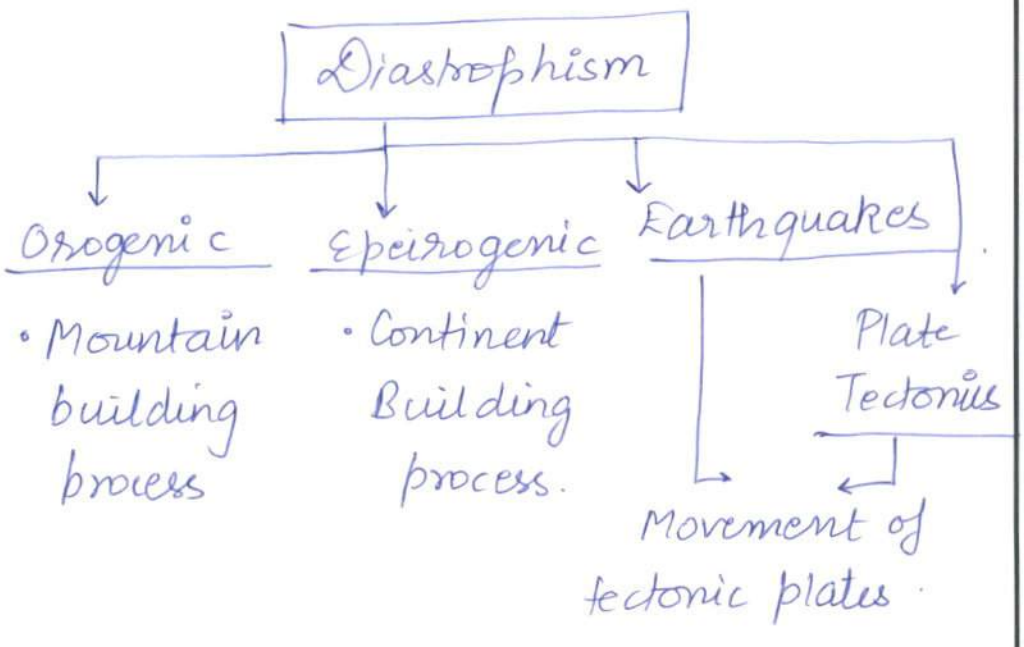
Don't write anything this margin (इस भाग में कुछ ना लिखें)

3. Explain the concept of Diastrophism and elaborate on the processes that form part of it.

पटल विरूपण की अवधारणा की व्याख्या कीजिए और इसके अंतर्गत सम्मिलित प्रक्रियाओं का सविस्तार वर्णन कीजिए।

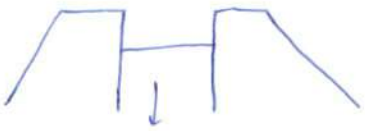
Diastrophism refers to the processes movements, elevation, subsidence of the earth's crust in response to the convectional endogenic forces operating beneath the crust.

It results into the changes in the earth's crust with PVT (Pressure Volume and Temperature) changes and resultant metamorphism in the rocks.



(A) Orogenic forces : Result due to endogenic compressive forces resulting into folding and faulting in the rocks.

Folding process.



Subsided Plank. → faulting

Folding → refers to the compressive forces operating linear manner resulting into fold mountains (Himalayas, Andes)

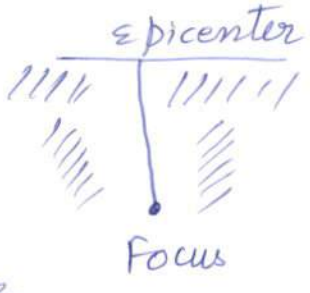
Faulting → The tangential stress operating along a weak zone of fault line causing subsistence. (Horst mountains - Vindhaya, Satpura)

(B) Epeirogentic forces are the radial forces operating along the continental margins

that results into the downwarping and upwarping of the crust.
(Western Ghats : downwarped
Eastern Ghats : upwarping)

© Earthquakes :

Sudden movement along the fault line due to increase in the stresses beyond the rupture strength (HF Reid Hypothesis)



- Tectonic
- Volcanic

(d) Plate Tectonics

Horizontal movement of the crustal plates moving over the asthenosphere.

- Continental Plate
- Oceanic Plate
- Partly Continental and oceanic.

4. Despite continuous incidence of solar energy, earth's average temperature remains almost constant. Explain the reasons behind this. In this regard, discuss the heat budget of earth and enumerate the factors that control the distribution of temperature on earth's surface.

सौर ऊर्जा के अनवरत आपतन के बावजूद, पृथ्वी का औसत तापमान लगभग स्थिर रहता है। इसके पीछे उत्तरदायी कारणों की व्याख्या कीजिए। इस संबंध में, पृथ्वी के उष्मा बजट की चर्चा कीजिए और पृथ्वी की सतह पर तापमान के वितरण को नियंत्रित करने वाले कारकों को सूचीबद्ध कीजिए।

Earth receives incoming short-length waved (insolation) and radiates back long wave radiations. The difference between the two can be termed as Heat Budget of the earth.

Reasons behind the earth's Constant Average temp.

① There's a redistribution of the surplus heat within the tropics to the polar and temperate Zones. Thus,

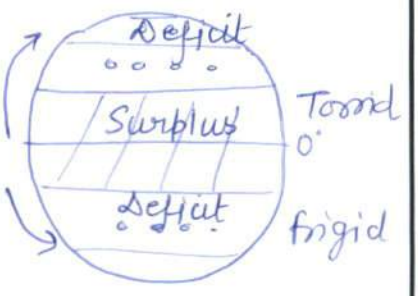
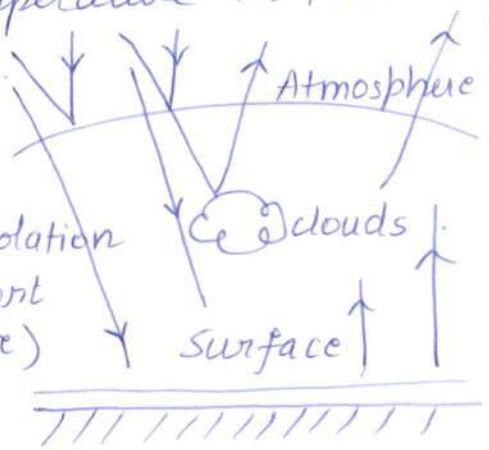


Fig: Thermal heat Redistribution on earth.

maintaing thermal equilibrium.

(2) Also, the incoming solar radiation is reflected, scattered and absorbed by the earth which results into constant heat budget and temperature in the end.



(3) Processes of conduction, convection and advection (horizontal transfer of heat) coupled with albedo over ice surface helps in neutralising the heat budget.

Factors controlling distribution of the temperature

(1) Latitude : The axial orientation and inclination at 66½°

affects the insolation at various latitudes

② Altitude : The elevated terrestrial land is records lower temperature than sea level

③ Moderating influence of the coastal areas near oceans and seas

④ Air masses and the ocean current (warm and cold) also influence. Eg: London port is warm and navigable even is summers due to NAD current

⑤ Temperature : Isotherms tend to deviate north in winters and south in summers clipicting differences in the temperature distribution.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

5. Explain the concept of Biogeochemical cycles and their significance in the functioning of ecosystems. What are the challenges that they face because of anthropogenic factors?

जैव रासायनिक चक्रण की अवधारणा और पारिस्थितिकी तंत्र की कार्यशीलता में उनके महत्व की व्याख्या कीजिए। मानवजनित कारकों के कारण उन्हें किन चुनौतियों का सामना करना पड़ता है?

The nutrient flow on the earth is sustained through a cyclic balance of the chemicals compounds absorbed, returned and decomposed by organisms. This process is called a biogeochemical cycle.

Significance in ecosystem

(1) Maintain the cyclical flow of the nutrients sustaining the ecological balance

(2) Also helps in maintaining the heat budget of the earth by returning the energy absorbed for the formulation of compounds (photosynthesis)

(3) The hydrological cycle enables the evapotranspiration of H_2O

which supports the rains on earth and sustaining the life.

(4) Carbon cycle the basic element in all living organisms is utilised to form carbohydrates a source of energy.

(5) Nitrogen cycle helps in the nitrogen fixation and circulation of Nitrogen in atmosphere through denitrification.

(6) There are mineral cycles such as phosphorus, sulphur, oxygen which replenish and utilise the mauro-nutrient circulation in ecosystem.

Anthropogenic challenges faced are

(1) The surface run offs from the agricultural fields containing harmful chemicals disturb.

the natural process of oxidation and respiration.

(2) Deforestation is the major issue which impairs the gaseous and sedimentary cycles resulting into land degradation.

(3) fossil fuel based power generation interfere with the climatic processes to increase the warming of earth unsually (0.5°C above pre-industrial levels already - IPCC special report 2018).

(4) The Blind pursuit of the economic growth coupled with uncontrolled expansion of urbanisation has put pressure on the resources.

Thus, sustainable development is the need of the hour.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

6. Which are the major iron ore producing regions in the world? With examples, discuss the factors that influence the location of Iron and Steel industry.

विश्व में प्रमुख लौह अयस्क उत्पादक क्षेत्र कौन-से हैं? उदाहरणों के साथ, लौह एवं इस्पात उद्योग की अवस्थिति को प्रभावित करने वाले कारकों की चर्चा कीजिए।

Iron ore is the sedimentary formations found in the ancient rock systems such as Cuddapah (India). It forms the basic industry (primary) to other industries and requires smelting to produce end products.

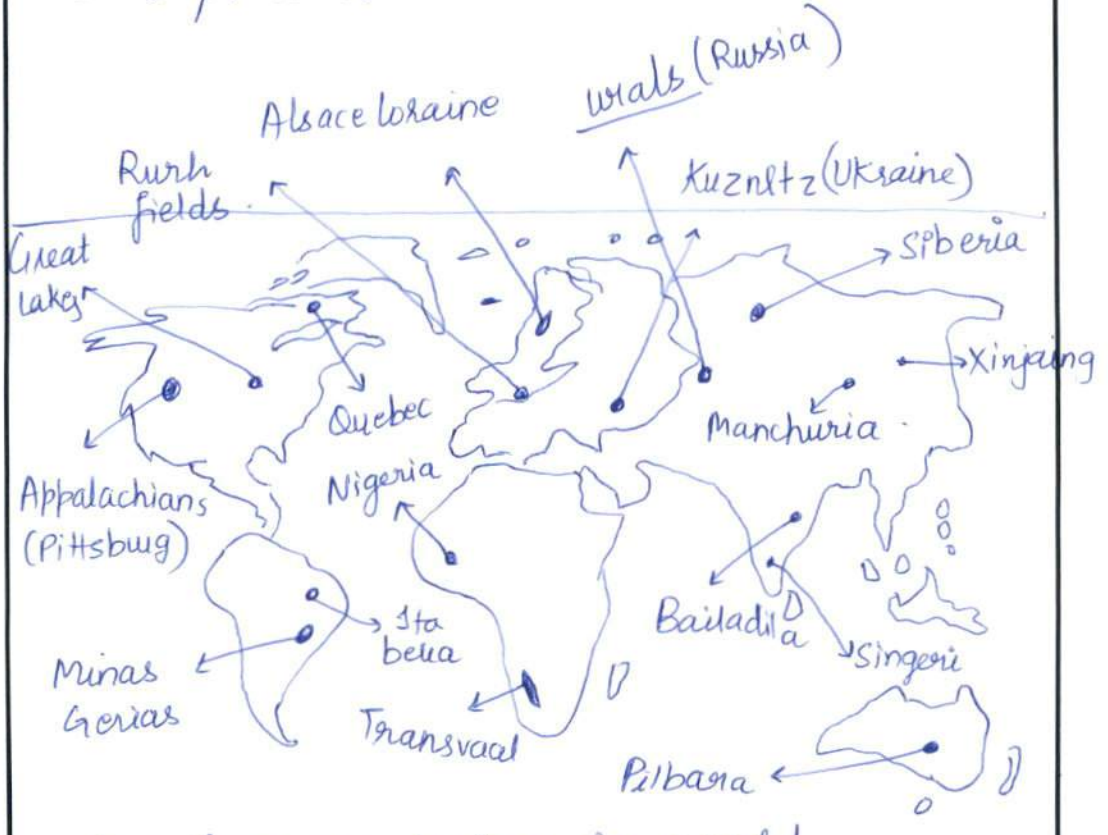


Fig: Iron ore regions in world.

Factors influencing the location are :-

① Raw material availability :
Minerals such as Silicon, coal, manganese, tin, phosphorous, etc are need to form various iron products and also in blast furnace smelting (Brezzmer's converter)

② Weightlosing nature of the iron-ore makes it necessary for industry to be located near the fields. (TISCO iron and steel plant near Bailadila mines)
– Webber's theory of transportation

③ Labour availability : Near crowded areas of Bengal, Chottanagpur, Manchuria low cost mining labour.

④ Proximity to markets : Near the coastal areas such as in

Vishakhapatnam, Japan (Osaka) close to the exim sea trade.

(5) Favourable policy regime : Greater FDI investment, infrastructural support also enables the location. Eg: Siang region China, Kochi in India.

(6) Energy Supply : Power plants in the proximity with uninterupted power supply.

GOI has recently undertaken National Mineral Policy to double the mining area potential to 20% from the existing 10% (NITI@75). with the goal to utilise abundant quality iron ores in the country. (Karnataka, M.P, Orissa)

Don't write anything this margin (इस भाग में कुछ ना लिखें)

7. Identify the characteristics of commercial livestock rearing and mark the regions practicing it on a world map. Also, discuss its challenges and opportunities in context of India.

वाणिज्यिक पशुधन पालन की विशेषताओं की पहचान कीजिए और वैश्विक मानचित्र पर इसके व्यावसायिक क्षेत्रों को चिन्हित कीजिए। साथ ही, भारत के संदर्भ में इसकी चुनौतियों और अवसरों की चर्चा कीजिए।

Commercial Livestock rearing is the process of animal rearing undertaken to produce the animal produce of the economic value on a large scale.

Ex: Sheep in Western Australia for wool.
Cattle rearing for meat industry in Canada and Europe.
Milk Production in the USA.

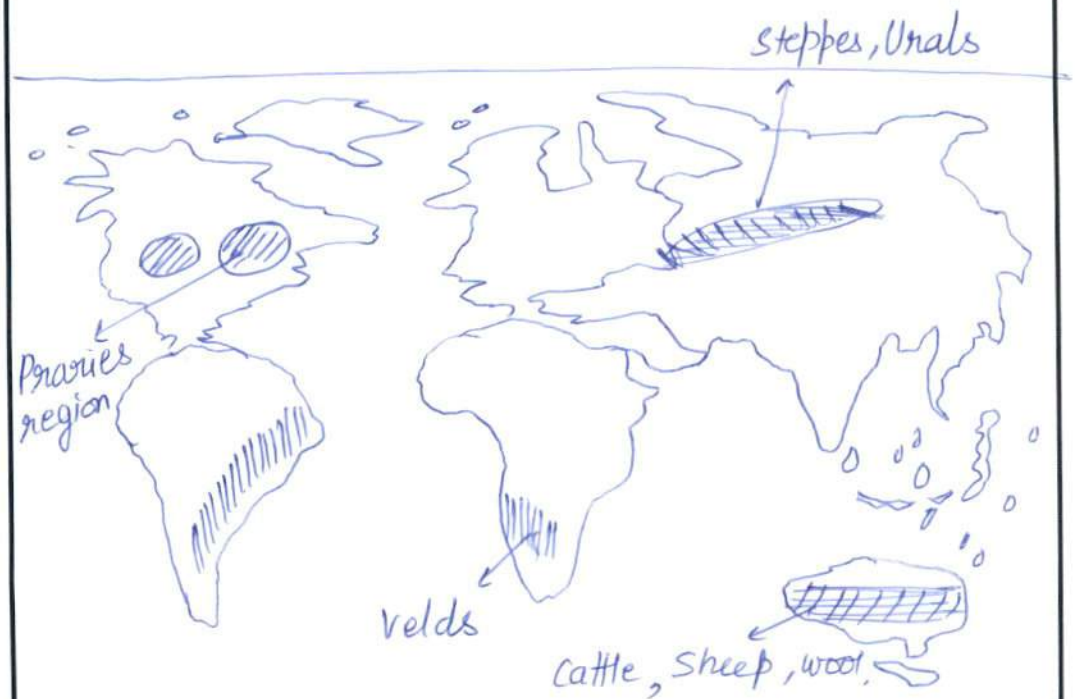
Characteristics of Livestock Rearing

(1) Extensive agricultural practiced on a large tracts of land.
(2) Availability of the nutritious and abundant fora and the fodder (Alfa Alfa grass in Africa, Brazil).

(3) Highly mechanised and usage of advanced technology. (Chillers, culling machines and integrated machinery)

(4) Investment and contractual farming too. FDI investment and rearing to produce economic value.

(5) usually practiced in the temperate regions of the globe.



Commercial Livestock Regions.

INDIA | Livestock Census 2019 = 1.3 Bn population

Challenges
- 64% area under Subsistence primitive technology of agri.
- Lack of artificial insemination, genetic improvement tech.
- GHG (methane gas) productions contributions
- Absence of fodder quality
- Diseases - tropical - such as FMD, Diarrhoea, etc
- fragmentation of land holdings (Agri Census 2015-16)

Opportunities
- Presence of largest livestock population in the world.
- Increasing penetration of Lab to farm connect through KVKs, VRCs.
- Growing practice of the mixed farming (Crops + livestock).
- Schemes such as National Livestock mission, Bovine Productivity etc.

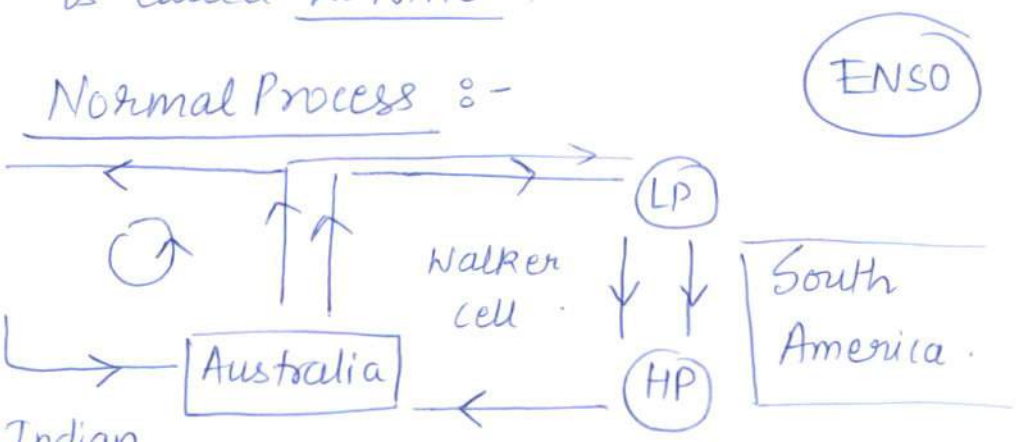
Don't write anything this margin (इस भाग में कुछ ना लिखें)

8. Explain the phenomenon of El Nino and La Nina. How do they affect the weather system in various parts of the world?

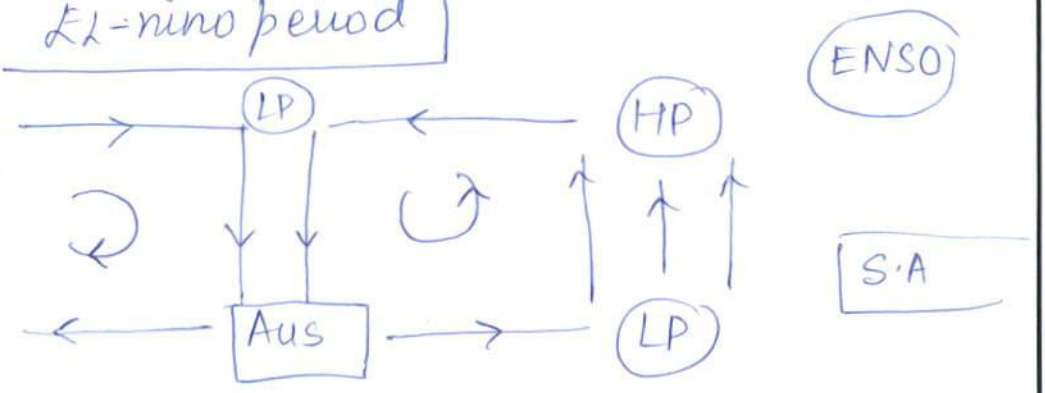
एल नीनो और ला नीना परिघटना की व्याख्या कीजिए। वे विश्व के विभिन्न हिस्सों में मौसम प्रणाली को कैसे प्रभावित करते हैं?

The phenomenon of unusual warming of the western Pacific waters along the Peruvian-Chile coast and subsequent cooling of the eastern Indian ocean area is called El-Nino

Normal Process :-



El-nino period



Effect :

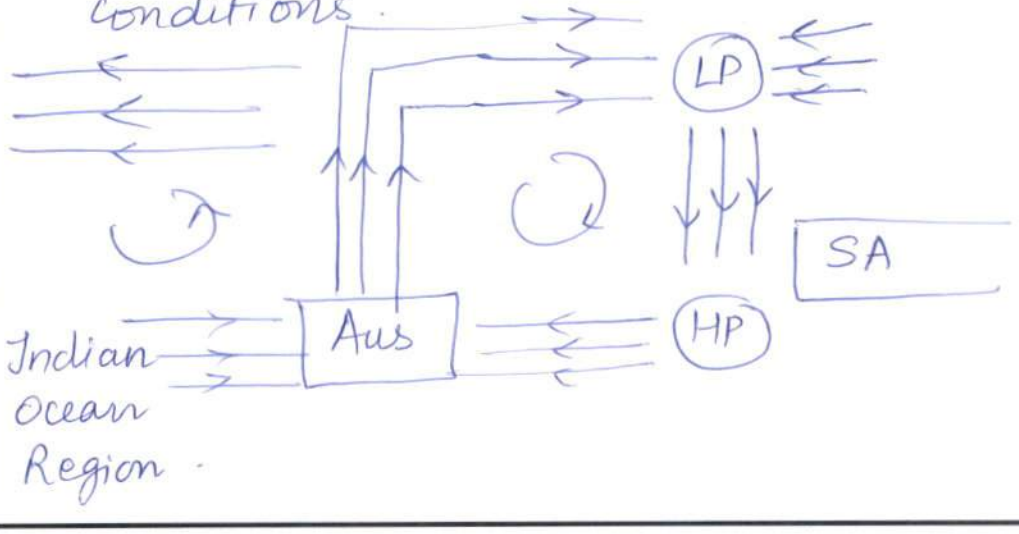
(a) As against normal conditions, the monsoon witnesses a drop in Indian subcontinent

(b) Australian continent high pressure area is created which witnesses drawlights.

(c) Indonesia witnesses the forest fires

(d) Decrease in the upwelling along western American coast impacts fishing grounds.

La Lina is the opposite phenomenon where the walker cell gets strengthened in the same conditions.



Effects are :-

(1) Augments the wind system to strengthen monsoon and ~~below~~ above average rainfall in Indian subcontinents

(2) Enhanced fishing along Chile-Peru

(3) Rainfall along the Australian and Indonesia.

(4) Suppressing of storms and hurricanes in the western Pacific.

(5) cold winter along California, Alaska and Canada.

Don't write anything this margin (इस भाग में कुछ ना लिखें)

9. What are air masses? Highlight their role in affecting the local climate.

वायु राशियाँ क्या हैं? स्थानीय जलवायु को प्रभावित करने में उनकी भूमिका पर प्रकाश डालिए।

Airmass is a homogenous horizontal mass of air over a uniform area which has little variations in moisture and temperature

Globally, since the Zones of the earth are diverse, we see the presence of multiple air masses throughout

Example :

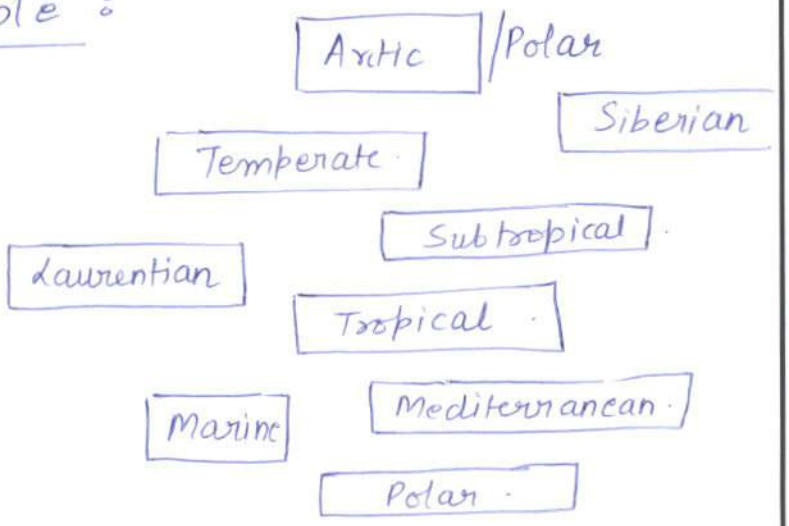


Fig: Spatial presence of air masses on earth.

Role in the climate change is as following :-

① Convective rainfall localised within an area. Eg: the monsoon airmass which brings seasonal rainfall to Indian subcontinent.

② Moderating effect over an area. Eg: Chinook winds which blow over USA are called 'snow eaters'

③ Laurentian or British marine climate is due to presence of warm airmass due to warm currents that keeps the western coast and ports navigable.

④ Local climate during the frontogensis of two opposing airmasses create conditions for

rich fishing grounds (Ex: Oyashio, Kuroshio, Peruvian coast current)

(5) Continental air mass such as Siberian creates high pressure, non-habitable polar winds.

(6) Polar masses enable the stable, dry winds to ensure the formation of anti-cyclonic conditions.

(7) The tropical airmasses witness cyclonic conditions (eg: Ockhi along the eastern Odisha coast)

10. Giving an account of the spatial distribution of different types of forests in India, discuss the economic utility of each of them.

भारत में विभिन्न प्रकार के वनों के स्थानिक वितरण का विवरण प्रस्तुत करते हुए, इनमें से प्रत्येक की आर्थिक उपयोगिता की चर्चा कीजिए।

India State of Forest Report (ISFR) 2017 has highlighted 24.37% of geographical area under tree cover. India aims to increase the same to 33% as per its global commitment and National Forest Policy (1980).

Forests Type.	Spatial Distribution	Economic Utility
(1) Tropical Evergreen and Semi evergreen forests (>200 cm rainfall)	Western Ghats, Northeastern hills, Andaman and Nicobar.	Timber high quality. Species of rosewood, mahagony, white cedar, ebony, etc Tea, rubber and coffee plantations.

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(2) Tropical Decidous forests (70-200 cm) rainfall	Moist in odhisha, Himalayan foothills. Dry in Peninsula Eastern Ghats, Central India.	• Sources of Teak, Sal, Shisham, Tendu, neem, amalas, arkewood, etc. • Life patterns shaped on alternate shedding of leaves.
(3) Tropical Thorn forests	Haryana Rajasthan, Gujarat, MP, Deccan (Maratha-ada)	• Species of neem, Babool, ber, wild date palm, Khair. → Livelihood to poor (Bidi-Tendu leaves)
(4) Montane forests	Himalayan Hills, North east ranges,	Evergreen broad leaf chestnut, oak.

	Aravali, Vindhyas, Sholas, Anamalai	Pine, deodar wood species. Rhododendron and silver firs. Transhumance by Bugyals
(5) Littoral and Swamp. (Peaty areas)	The Sunderbans delta, Kathiawar coast, Chilika Lake Odisha.	Mangroves highly diverse (Sundeii) Trees, high productive value. salt tolerant euryhaline species, huge diversity

11. Describing the process of their formation, explain the difference between meanders and braided channels.

विसर्प और गुम्फित नदी की निर्माण प्रक्रिया का वर्णन करते हुए, इनके बीच अंतर की व्याख्या कीजिए।

Himalayan rivers during their drainage patterns in mature and old stages tend to form the meanders and the braided channels.

Meander formation

① A meander is a bend in the river course which has both erosional and depositional features.

② During middle

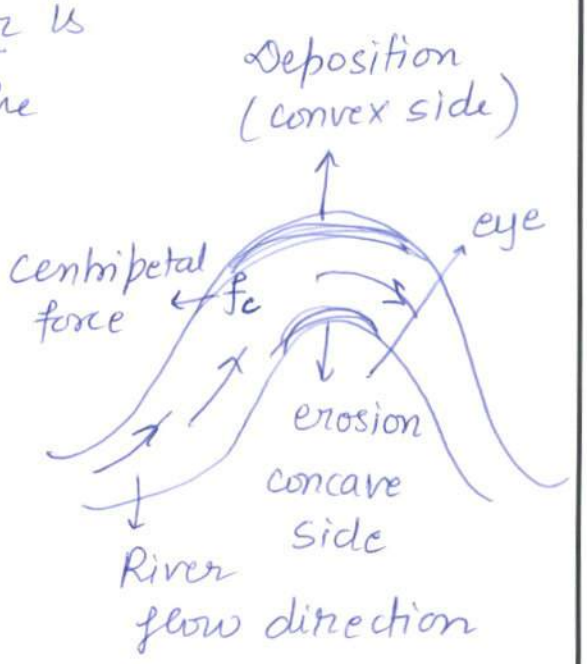
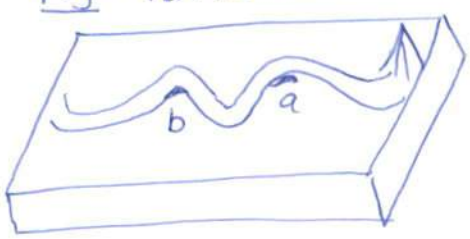


Fig: formation of meanders.

course of the river flow, there is huge meander formations.

Fig: River Basin



(2) Continued erosion on both sides of the horse-shoe shaped figure can result into the formation of entrenched meanders (recumbent, nappe)

(3) These can be symmetric with both sides equal or an assymetric bend.

(4) In mature stage of deposition it is drifted away from main stream to form an oxbow Lake.

Braided channel - formation

(1) In gentler river slopes, there

exists a deposition of coarse materials, alluvium or boulders which the stream carries along its course. Due to this the river diverges into various streams and master streams which look like the den braided pattern or a dendritic form which converge later.

Eg: the Yamuna - Ganga, Indus river system.

(2) A soft underlying rockbed would result into easy braiding of the river channels.

(3) The upstream, youth stage is usually filled with braided patterns with huge eroding capacity.

12. The consequences of India's megacities producing tonnes of waste are troubling. Elaborate the statement and also discuss the significance of Solid Waste Management Rules 2016 in this regard.

भारत के मेगा नगर जो अत्यधिक मात्रा में अपशिष्ट उत्पन्न कर रहे हैं, के परिणाम चिंताजनक हैं। इस कथन का सविस्तार वर्णन कीजिए और इस संबंध में ठोस अपशिष्ट प्रबंधन नियम, 2016 के महत्व की चर्चा कीजिए।

MNRE highlighted the presence of millions tonnes of garbage and municipal solid waste (MSW) generated of which 60-75% is collected and 22-28% is processed in reality in WtE plants.

Consequences of the MSW

1. Increase in the huge landfills heights and dumping (Okhla in Delhi) causing environmental issues.
2. The leachate of the dumping area seeps into the water bodies, grounds and surrounding area causing health problems.
3. Poor hygenic conditions, and foul smell generated.

(4) The disposal has become a huge challenge with non-segregation of the waste collected.

(5) Landfill capping is largely ineffective and unscientific.

(6) Not all the waste can be processed in waste to energy plants (wte) with huge moisture content and low calorific value.

(7) Presence of the e-waste and toxic waste which harms the animals, birds feeding on it.

Significance of SWM Rules 2016

(1) GOI has initiated instructions to segregate the waste under 3 heads - wet, dry and e-waste to ensure proper processing.

(2) Clear instructions to all stakeholders including EPR

(Extend Producer Responsibility) to the owner.

(3) Involvement of the RWA (Resident Welfare Associations) and civil society.

(4) Promotion of Bioming, composting, methanation and pyrolysis.

(5) Safe treatment of Biomedical and e-wastes.

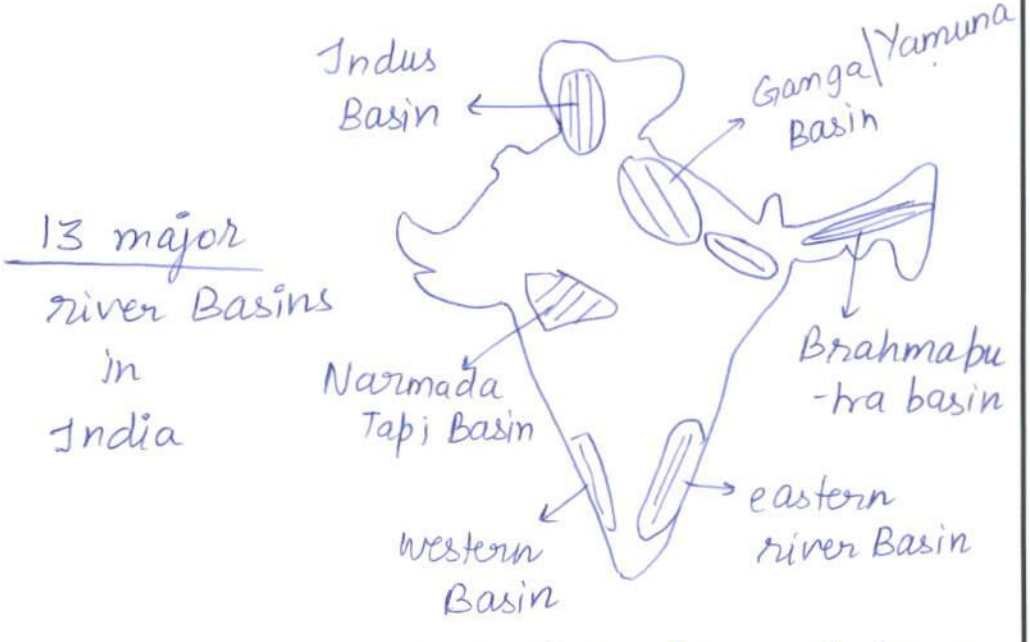
Art 51 mandates Govt to ensure the protection of environment. A decentralised system of waste collection (Chennai Municipal Corporation, Ambikapur Chhatisgarh) along with integration of informal (90%) of the ragpickers in the system is a step ahead (Kasturirangan committee)

13. List the different flood prone regions in India and identify the reasons behind their frequent flooding. What are the NDMA guidelines for management of floods?

भारत के विभिन्न बाढ़ प्रवण क्षेत्रों को सूचीबद्ध कीजिए और उन क्षेत्रों में बार-बार बाढ़ आने के कारणों की पहचान कीजिए। बाढ़ प्रबंधन हेतु NDMA के क्या दिशा-निर्देश हैं?

Floods are the conditions where water level in the bodies breach their normal levels to cause inundation of the land. All 13 major river basins in India are vulnerable to flooding in one form or another

Flood prone Regions and Reasons of the flooding :-



13 major river Basins in India

Fig: River Basins India

① Ganga Basin

ⓐ Glacial Lake outburst floods phenomenon due to melting of ice caps.

ⓑ Decreasing albedo causing melting of glaciers which further affect drainage Basins

ⓒ Frequent river course changes by upstream rivers – siltation, alluvium deposition. Eg: Kosi called 'sorrow of Bihar'.

ⓓ Man made barrages such as Farakkha Barrage

② Brahmaputra Basin

ⓐ Hydro electric projects affecting the Loktak lake, indundation and loss of 10% of the island (Majuli)

ⓑ Soil erosion and upstream issues of Siang river due to the large multipupose projects by China

(c) Mismanagement of Basin and dams (floods in Assam)

(3) Peninsular Basins

(a) The western Ghat rivers including the inland/Backwaters of Kerala have siltation and above normal monsoon (57% in Kerala floods)

(b) Dredging and siltation issues.

(c) Dam Reservoir Mismanagement operating above capacity (Idukki dam 142%)

(d) River pollution and encroachment along the coastal areas causing urban floods phenomenon (Eastern Ghats)

(4) Narmada Tapi Basin

(a) old dams (100 years) old facing accumulation of silt.

(b) Improper watershed management along the peripheries.

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14. What are the priorities for action identified under the Sendai Framework for Disaster Risk Reduction? Elaborate how India's National Plan for Disaster Management has tried to integrate Sendai Framework.

आपदा जोखिम न्यूनीकरण के लिए सेंडाई फ्रेमवर्क के अंतर्गत चिन्हित कार्यवाही हेतु प्राथमिकताएं क्या हैं? सविस्तार वर्णन कीजिए कि किस प्रकार आपदा प्रबंधन के लिए भारत की राष्ट्रीय योजना ने सेंडाई फ्रेमवर्क को समाहित करने का प्रयास किया है।

III UN Conference on DRR (Disaster Risk Reduction) in Japan proposed Sendai Framework in 2015. It is a successor of the Hyogo Framework (2005-15).

Sendai (2015-30) Priorities
- Understanding Risk
- Risk Governance
- Capacity Building at all levels
- Disaster resilience and response building
- Targets to reduce the fatalities, losses and critical infrastructure impact
- A multi Hazard warning System
- Including DRR in every level of National Developmental agenda.

India's National Plan on Disaster Management has find conguence with the Sendai framework as follows :-

(1) Recently adopted New Delhi Declaration at Asian Ministerial conference on DRR (AMDRR) 2016.

(2) NIDM has signed MOU with JNU for COE in disaster risk assessment and management.

(3) Psiority inculcated by strengthening NDRF and SDRF and ERPs at all levels.

(4) Assisting State to meet the policy targets as evident in the Kerala Floods catastrophe.

(5) Innovative financing instruments in the form of the Catastrophic Bonds for the ULBs

(6) I annual DM exercise in NCR with BIMSTEC group 2017.

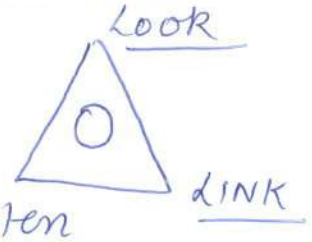
(7) Capacity Building with SCO Earthquake preparedness exercise 2019

(8) I Indo-Japan workshop on on DRR.

(9) PM Modi's 10 point agenda under AMCDRR

(10) Strengthening the institutional framework in metropolitan cities for crisis management.

India should thus follow the trinity of for the disaster efficient response



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15. Define the term invasive species and provide examples from flora and fauna in India. What are the threats associated with the expansion of invasive species? In this context also discuss measures to address these threats.

आक्रामक प्रजातियों को परिभाषित कीजिए और भारत में वनस्पति एवं जंतु जगत से उदाहरण प्रस्तुत कीजिए। आक्रामक प्रजातियों के विस्तार से जुड़े खतरे क्या हैं? इस संदर्भ में इन खतरों को दूर करने के उपायों की भी चर्चा कीजिए।

Invasive species are the organisms which aren't native to an ecosystem and cause harm by competing with indigenous population for resources.

Examples : (Flora) Water Hyacinth in the fields of paddy in West Bengal and Kerala.
. Lantana Camara grass.

Fauna : . African Giant Snail
. Papaya Mealy Bug
. Pink Bollworm in the Bt-cotton field

Various threats are associated with such species examples:

(1) Threaten the cultivable lands

such as Kuttanad Below sea farming in Kerala by Water Hyacinth menace colonising the paddy fields.

(2) Transform the soil structure due to allogenity and adaptability.

(3) They've phenotype plasticity ability to develop resilience to the stress thereby reducing the efforts to eradicate them.

(4) They could lastly spread to the entire area depleting the limited natural resources and threat to biodiversity (eg: Kanyili, Ropar wetland)

(5) Monocroppings of cotton, rubber are particularly susceptible leading to economic loss and food insecurity, farm stress.

Steps to address the issue

(1) An updated National Database

conducing extensive field surveys and risk assessment.

(2) Strengthening the plant quarantine efforts with community participation at all levels.

(3) Collaborating with international platforms such as IUCN to include in the Global database of invasive species

(4) Increase the R&D in ZSI, BSI with allocation of funds.

(5) Strengthening wetland conservation rules (Ramsar convention)

(6) Culling of the invasive animals by State Govt under Schedule V of WP Act 1972.

Thus, a multifaceted, dedicated and collaborative effort is needed.

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16. What is Environment Impact Assessment? Identifying the different processes involved in the exercise, highlight the purpose of carrying out this assessment. Further, mention in brief the status of EIA in India.

पर्यावरण प्रभाव मूल्यांकन (EIA) क्या है? इस कवायद में सम्मिलित विभिन्न प्रक्रियाओं की पहचान करते हुए, इस मूल्यांकन को पूरा करने के उद्देश्यों पर प्रकाश डालिए। इसके अतिरिक्त, भारत में EIA की स्थिति का संक्षेप में उल्लेख कीजिए।

To integrate economic development with sustainability EIA was introduced in 1978 and notifications are issued under Environment (Protection Act) 1986.

Steps in EIA process

Screening (Expert Committee)
↓
Scoping
↓
Collecting Baseline Data
↓
Impact Prediction
↓
Mitigation Measures
EIA report
↓
Public Hearing → Decision Making (EMP) Appraisal
↑
Monitoring Implementation
↑
Mitigation Report
↑
Risk Assessment.

Purpose of EIA

(a) Primary environmental tool for assessment

(b) study proposals and encourage scientific practices.

(c) Address short, long, small scale effects and mitigation measures.

(d) Involvement of public and strengthening the local self Govt.

(e) Follow up and feedback mechanism for sound developmental plan.

(f) Adaptation of mitigation strategies in development plan.

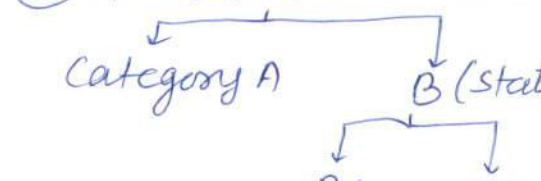
(g) To have a cost effective, all-inclusive, environmentally safe and sustainable development. (SDGs and Aichi Targets)

Status of EIA in India

Merits	Demerits
(a) A sound framework under 2006	(a) The composition of the Expert

amendment.

(b) Decentralised EIA.



A and B1 Strict EIA whereas B2 do not require EIA.

(c) Public hearing in 2 languages notification and one month to include suggestions. 120 days for final decision.

Committee is non-transparent

(b) States tend to dilute laws to escape EIA, public scrutiny under B2 category

(c) Public Hearing is the weakest link (eg: Sand mining projects).

(d) Quality of EIA reports aren't up to the mark.

WGEEP By Kasturirangan and Madhav Gadgil have highlighted the need to strengthen ESAs and EIAs to converge the growth, development with SDGs.

17. Identify and explain the importance of key elements of action in disaster management cycle during the post-disaster phase.

आपदा पश्चात चरण के दौरान आपदा प्रबंधन चक्र में कार्यवाही के प्रमुख तत्वों के महत्व की पहचान और व्याख्या कीजिए।

Disaster Management Cycle under the Sendai Framework is the ongoing process by which all stake-holders (Govt, Business, CSO) plan and reduce the impact of an hazard.

DM Cycle

- Pre-disaster Phase.
  - Prevention
  - ↳ Mitigation
  - ↳ Preparedness
- During disaster
  - → Response
  - → Survey assessment
  - → ERPs
- Post disaster.
  - → Recovery
  - → Reconstruction
  - → Development.

(A) Pre disaster : It is said that every 1$ spent on the disaster hazard mitigation results into $4 savings in future.

(a) Prevention is to impede the occurence of disaster to save losses.

(b) Mitigation includes reducing physical, economic and social vulnerability of the hazard.

Eg: the Building construction code in Japan for the Earthquakes.

(c) Preparedness : Govt, individuals and communities to respond in an effective manner using ERPs, mock drills.

Eg : The mock drill of a fire incident in a building.

(B) During Disaster

Response : Activating counter-disaster SOP.

- Search and response
- coordination amongst the forces
- Disaster proof telecommunication
- Law and order.

- fund the activities (PMRF contributions)

(c) **Post Disaster**

(a) Recovery Plans : Emergency relief, rehabilitation of the victims.

(b) Reconstruction : Adequate provisions of funds and support to restore pre-disaster conditions.

- work on the Resilience of the disaster Infrastructure (Delhi Conference 2019)
- Disaster reduction measures in the long run following the principle of 'Build Back Better'.

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18. Identify the areas affected by and the causes of landslides in India. Mention different steps that need to be taken to mitigate the effects of landslides.

भारत में भूस्खलन से प्रभावित क्षेत्रों और इसके कारणों की पहचान कीजिए। भूस्खलन का प्रभाव कम करने के लिए उठाए जा सकने वाले विभिन्न कदमों का उल्लेख कीजिए।

Landslides are caused due to the downward movement of the unconsolidated materials under the influence of gravity downhill slopes.

Areas affected by Landslides

(1) Global Fatal Landslide Database highlighted South Asia as one of most affected hotspots.

(2) GSI shows 12.5% of surface under the threat

(3) Arunachal Pradesh followed by Sikkim is the most

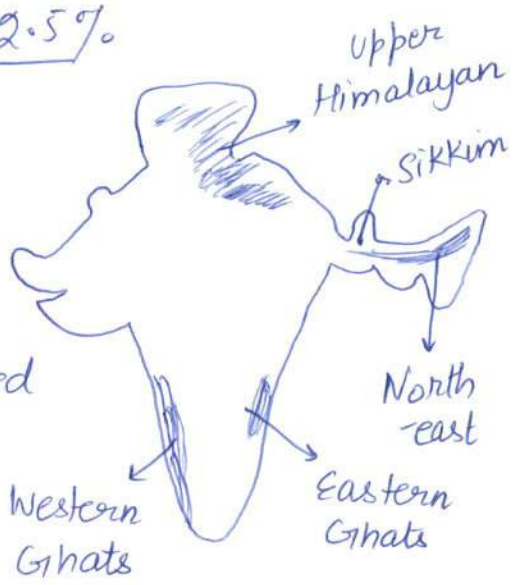

Fig: Landslide prone Areas

affected areas.

Reasons of the Landslides

Natural

- Seismic shifts
- Tectonic movements
- Earthquakes
- Above average monsoon (Ghats)
- Steep slopes along the Himalayan are specially the North-east.

Anthropogenic

- Deforestation
- Inappropriate agricultural practices.
- Absence of the scientific farming in hill slopes.
- Water erosion. (splash erosion)
- Development induced seismicity - construction of highways, roads, etc

Steps to mitigate effects

① The recently launched real time Landslide warning system in Sikkim-Arunachal Himalayas to save loss of lives and property.

(2) NDMA Guidelines on Landslides :-
- Landslide hazard Land Zoning
- Use to e-technology for the information dissemination.
- Vulnerability index to put dedicated concerted efforts to high prone areas.

(3) R&D in the sector along with education and capacity building of stakeholders.

(4) Hazard mapping and the implementation National Landslide Risk Mitigation Project.

(5) Putting hyco shelter belts and practice of agro forestry along with terrace farming to stop the soilification.

(6) Strengthening the institutional mechanisms and cooperation along verticals.

19. Discuss the reasons and implications of land degradation and desertification as major environmental challenges facing India. Suggest the measures needed to address them.

भारत द्वारा सामना की जा रही प्रमुख पर्यावरणीय चुनौतियों के रूप में भू-निम्नीकरण और मरुस्थलीकरण के कारणों और निहितार्थों की चर्चा कीजिए। उनसे निपटने के लिए आवश्यक उपायों का सुझाव दीजिए।

India State of Forests Report 2019 highlighted 30% of the geographical areas under the degradation.

Reasons of Land Degradation

(1) Agricultural run off (splash erosion) which uproots the sub surface soil cover.

(2) The formation of gullies, ravines on the downhill slopes due to the heavy monsoons and lack of the river harvesting in mountanious Himalayan and North east region.

(3) Growth vs Development where large tracts of forests are diverted (deforestation) without resultant increase in the CAMPA funds.

Implications

(1) Decline of the productivity of land under cultivation.
(2) climate change implications.
(3) Pressure on the agricultural land for food security of extensive 1.4 Bn population.
(4) Deterioration of the ecological value of environment
(5) Unplanned urbanisation which isn't sustainable.

Measures to address.

(1) Land Degradation Neutrality (LDN) which reduces the ecological footprint as envisaged under UNCCD
(2) The three principles of Avoid, Reduce and Reduce of the land resources.
(3) Drip and sprinkler irrigation with wise use of fertilisers,

pesticides as per the SHC scheme.

(4) Technological intervention GIS Based mapping by ISRO using the Global Land outlook parameters to create a nation wide inventory of degraded land.

(5) Multifunctional Landscape approach.

(6) A classic example of the reclamation of waste land and restoration with community participation - Jhabua, Himachal Pradesh

(7) Reversing the land degradation and desertification as done in Kubuqi desert, China (Mongolia).

TERI stated that it costs 2.5% of GDP annually to India so, urgent steps in line of Bonn challenge to be done with agro climatic regionalisation.

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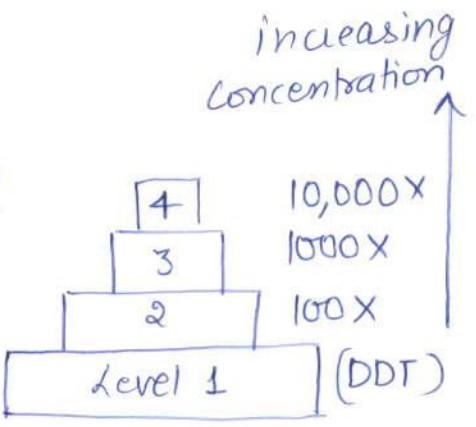
20. Explain the concepts of Bio-magnification and Bio-accumulation. Also, provide examples of the harmful impact of these two processes on the environment and human health.

जैव-आवर्धन और जैव-संचयन की अवधारणाओं की व्याख्या कीजिए। साथ ही, पर्यावरण और मानव स्वास्थ्य पर इन दोनों प्रक्रियाओं के हानिकारक प्रभावों का उदाहरण प्रस्तुत कीजिए।

The increasing use of the pesticides, fertilizers and harmful chemicals have led them to enter ecological pyramid. These chlorinated hydrocarbons (CHCs) are found to have adverse effects on entire food chain. Processes such as:—

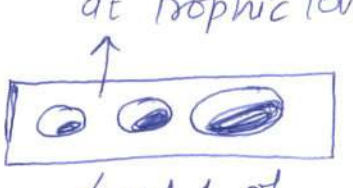
(A) Biomagnification : Refers to the process of increase in the concentration of the persistent chemicals along the food chain at each higher trophic level.

Example : DDT, endosulphan, phenols, diethyl polymers, etc.



(B) Bioaccumulation is the process of the accumulation of the poly chroline hydrocarbons along the same trophic level in the organisms.

Example : Dichlofenac in the vultures population causing extensive deaths.



Level 1 of ecological pyramid

Impacts

(1) Studies show that the presence of POPs (persistant organic pollutants) are found in the milk-producing mammals.

(2) They've a long half life (DDT eg) and take millions of years to leave the systems of living being resulting into deaths and respiratory tract and lungs damage.

(3) The presence of these chemicals in environment also leads to the land, and air pollution adversely impacting climate change

(4) The fat soluble substances such as (endosulphan, DDT) take longer time to excrete and are banned by the Anupam Verma committee recently.

India is signatory to the Stockholm convention of POP and CBD, Rio summit. It needs to take, strengthen the sustainable steps to agricultural practices promoting 'Health for All'.