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GENERAL STUDIES (TEST CODE : 704)

Name of Candidate	MUDIT JAIN	Registration Number	6713
Medium Hindi/Eng.	English	Date	20/09/2015
Center	Home		

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:

Signature of Examiner

INSTRUCTIONS

- Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)।
- There are TWENTY questions printed in HINDI and ENGLISH.
इसमें बीस प्रश्न हिन्दी और अंग्रेजी दोनों 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।

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103, 1st Floor, B/1-2, Ansal Building, Behind UCO Bank, Dr. Mukherjee Nagar, Delhi – 110009

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.

Mudit Jain

All the Best

All the questions are compulsory and carry 12.5 marks each. NOT MORE THAN 200 WORDS.

1. Even though the equatorial regions have great potential in timber resources, the lumbering industry has not developed properly in these regions. What could be the possible reasons behind this? Discuss the suitability of the equatorial regions for plantation agriculture.

यद्यपि विषुवतीय क्षेत्रों में इमारती लकड़ी संसाधनों की वृहत संभावना है, फिर भी इन क्षेत्रों में इमारती लकड़ी संबंधी उद्योग ठीक प्रकार से विकसित नहीं हुए हैं। इसके पीछे संभावित कारण क्या हो सकते हैं? रोपण कृषि हेतु विषुवतीय क्षेत्रों की उपयुक्तता पर चर्चा करें।

Equatorial regions of world, spanning global 10°N & 10°S from equator have high potential for timber due to equatorial rain forests found in these regions.

Lumbering industry has not developed in these regions because:-

- ① Equatorial forests produce hardwood trees like Ebony, Mahogany etc.
- ② Lack of easy transportation of wooden logs, unlike ice cover used as transportation agent in temperates.

- (3) These regions have high tree density with huge variety making it unviable to cut old growth forests & produce economic challenges.
- (4) Areas are rather used for plantation crops hence not well developed for lumbering.
- (5) Economies in these regions are largely developing & poor hence activity not well developed



Plantation crops include oil palm, coconut, cashew, coffee, tea, rubber etc.

Equatorial regions have huge potential for plantations as :-

- ① oil palm is grown in Malaysia & other S/E Asian nations.
 - ② Coffee is grown in Indian subcontinent & Ethiopian highlands
 - ③ Tea is grown in China, India, Africa
 - ④ Rubber is largely confined to South American countries like Brazil & also in Indian subcontinent
- Similar coconut and cashew etc find occurrence in equatorial regions.



2. Transport linkages and government policies are the two most important factors influencing the establishment of Footloose industries. What are the other factors, which influence the location of these industries? Discuss in the context of India.

परिवहन लिंकेज और सरकारी नीतियां फुटलूज उद्योगों की स्थापना को प्रभावित करने वाले दो सबसे महत्वपूर्ण कारक हैं। इन उद्योगों की अवस्थिति को प्रभावित करने वाले अन्य कारक कौन-से हैं? भारतीय संदर्भ में चर्चा करें।

Footloose Industries are those which can be set at a location without considering the costs associated with raw materials & transportation.

Important factors for their establishment:-

① Transport linkages
Multi modal transport system,
Industrial corridors (golden quadrilateral, Delhi-mumbai corridor etc) are important so that transportation cost is not a factor.

② Government policies
Formation of SEZs, Industrial parks,
norms relaxation, ease of business

etc are important governmental policies.

③ Skilled workers

They are needed to run the industry as these require high work efficiency. In Indian context this will be fulfilled by national skill development mission, Kaushal Vikas, skill loan scheme etc.

④ Environment

These industries face environmental challenges of waste disposal, e-waste, hazardous waste etc. Hence the location is affected by choice of pollution free area.

⑤ Land availability

Land acquisition is a challenge in India hence it influences locational settings of these industries.

(6) Economic challenges & infrastructural bottlenecks are other structural factors deciding the locations.

(7) Cultural setting of India i.e. ~~between~~ urban-rural divide, large rural expanse etc affects set-up of industry as setting up industry in rural areas is not profitable.

other factors are :

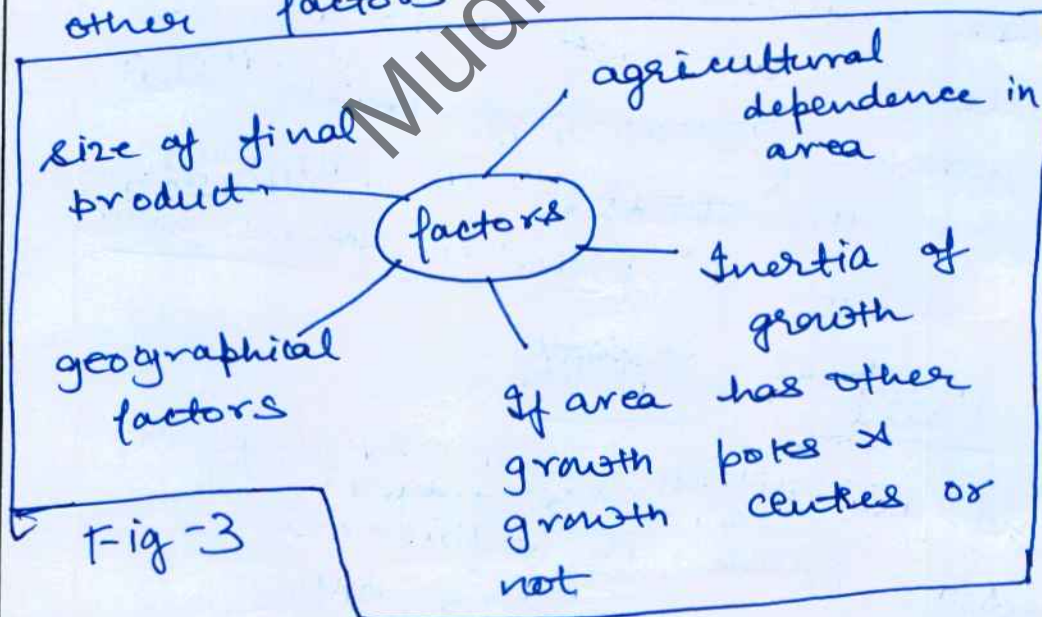


Fig-3

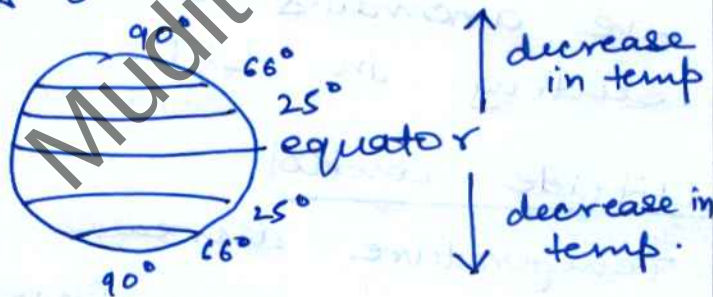
3. "Change in latitude and altitude leads to variation in temperature and vegetation". Analyze.

"अक्षांश और ऊंचाई में परिवर्तन तापमान और वनस्पति में परिवर्तन उत्पन्न करता है।" विश्लेषण करें।

Climate of area is influenced by its latitude & altitude and is denoted by phrase "Latitudinal control of temperature" (LCT).

As vegetation is index of climate or product of climatic conditions, it is also affected by altitude & latitude change.

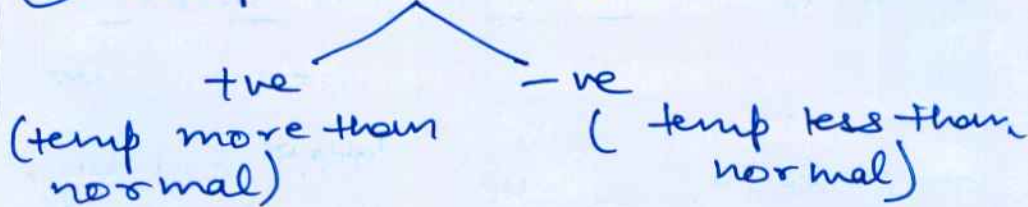
Fig-4



Temperature variation with latitude

- ① It decreases from equator to poles.
- ② But as equator has high albedo, the tropics are warmer than equatorial regions.

③ Temperature anomalies

+ve anomalies

- ① Temperature of areas away from sea (intermontane plateaus, tibetan plateau, land locked nations)
- ② warm ocean currents like Norwegian current keeps arctic coast warm.
- ③ -ve anomalies are similarly resulting in LCT.

Altitude control

- ① Temperature decreases with altitude
- ② This is as atmosphere is heated from below and not top.



- ③ ex: Mount Kilimanjaro, Quito etc are cooler than other places at same latitude.

Vegetation control by Latitude

- ① Matches climatic control patterns
- ② Equatorial regions have higher rainfall leading to equatorial rain forests, tropical regions have deciduous teak & sal while mid & high mid latitudes have coniferous trees (pine, spruce, fir) etc.

Vegetation control by Altitude

- ① At higher heights conditions match those of higher latitudes.
- ② ex Andes mountains have modified plantations though they lie at subtropical latitudes largely.

Hence variations occur due to Altitude & Latitude.

4. Jute, "The Golden Fibre" enjoys significant ecological and economic advantages over other fibres yet it has been struggling to survive. In this context, discuss the problems associated with the Jute Industry in India. To what extent can the Jute Technology Mission address the same?

जूट, जिसे "गोल्डन फाइबर" के नाम से जाना जाता है, अन्य तंतुओं से अधिक महत्वपूर्ण पारिस्थितिकी और आर्थिक लाभ प्राप्त करता है, फिर भी यह अस्तित्व बचाने हेतु संघर्षरत है। इस संदर्भ में भारत में जूट उद्योग से जुड़ी समस्याओं पर चर्चा करें। जूट प्रौद्योगिकी मिशन किस हद तक इन समस्याओं का समाधान कर सकता है?

Jute industry in India is largely restricted to Assam & West Bengal. It is termed as "golden fibre" for its high growth. Golden revolution was launched.

Pros

- ① Ecologically sustainable as it requires only ~~the~~ water as a resource for its development.
- ② economic advantage as it was believed to be highest foreign earning crop once, also its farmers were given areas under constitution.

Problems

- ① competition for other countries like Bangladesh.
- ② Synthetic development largely in

Western nations has led to decrease in Jute demand & exports.

③ Lack of skilled labour to harness modern designs as recognized recently by the PM of India.

④ Trade Unions pose a challenge

⑤ Mills are largely very old and machinery is not up to date.

⑥ Governmental support is present in form of compulsory usage for packaging of sugar but more needs to be done.

Fig-6



Jute Technology Mission started
by government aims at :-

- ① Increase exports of jute
- ② Increase quality of product
- ③ Increase production & productivity
- ④ Decreasing cost of production
- ⑤ provisions of backward and forward linkages.
- ⑥ Providing skilled labour.
- ⑦ Helping jute producing states.

Hence JTM can address the
challenges & boost the sector.

other needs :-

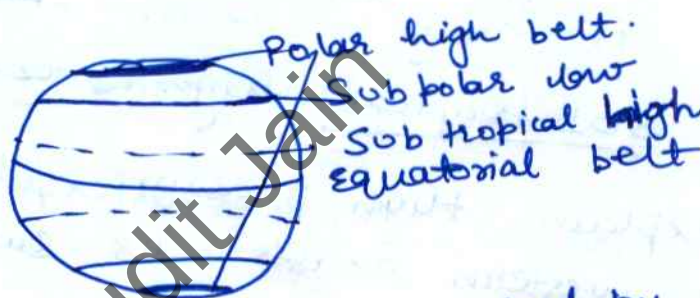
- ① Creating innovative products.
- ② Harness designs.
- ③ Promoting jute handlooms.
- ④ Implementing government policies
like TOFS etc.

5. How do global pressure belts explain the formation of climatic regions across the world?

वैश्विक दाब पेटियाँ किस प्रकार विश्व भर में जलवायु क्षेत्रों के निर्माण की व्याख्या करती हैं?

Global pressure belts are discontinuous & continuous pressure belts explained by Hadley, Ferrel & their modifications later on.

Fig-7



Overall 7 belts are recognized by Ferrel. They explain climatic regions as follows :-

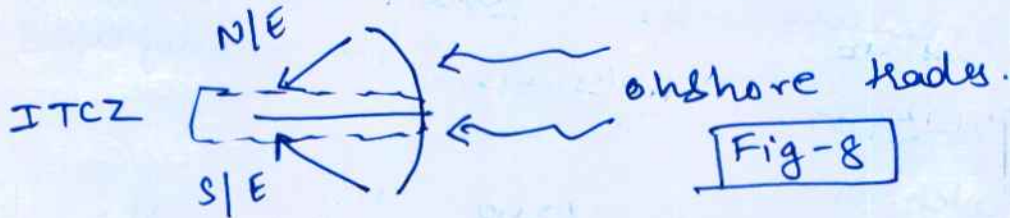
① Equatorial low pressure belt

- This creates low pressure zone leading to high rainfall with temperature getting moderated due to heavy clouds formation.

- Trade winds blow in these regions as N/E & S/E trades bringing

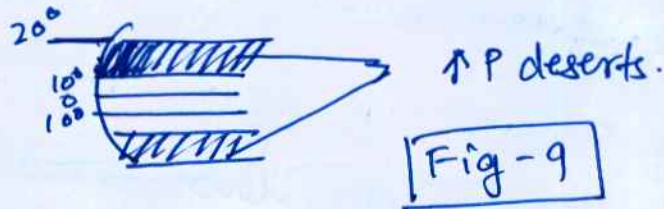
Rains to east coast of continents.

- ITCZ & doldrums are also explained thus explaining presence of convergence zones & areas of calm air respectively.



② Sub tropical high pressure belts

- explain high pressure / hot deserts on western coasts ex Sahara, Australian outbacks.
- These explain presence of aridity conditions.



③ Subpolar low

- Marked by westerlies
- These are due to converging winds & hence unstable weather leading to high coastal rains.
- explain fronts, air masses too.

ex Mediterranean climatic zones
of Auckland, capetown, italy etc

④ High polar polar belt

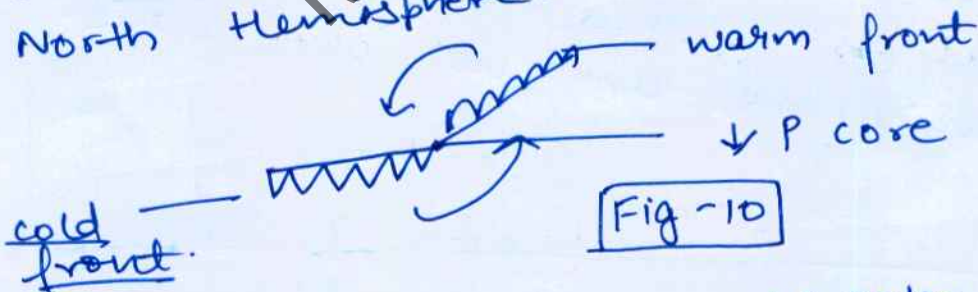
• These high pressure belts
lead to stable conditions leading
to low precipitation.

⑤ considering land-water
differential tells that pressure
belts across globe are not
continuous (not all). ex sub-
tropical low pressure belts &
sub polar low belt in northern
hemisphere are not continuous.

6. What are extra tropical cyclones? How are they different from tropical cyclones? Why do the tropical cyclones weaken over the land after landfall? बहिरुष्णकटिबंधीय चक्रवात क्या होते हैं? ये उष्ण कटिबंधीय चक्रवात से कैसे भिन्न होते हैं? उष्णकटिबंधीय चक्रवात लैंडफाल के पश्चात् कमजोर क्यों हो जाते हैं?

Extra tropical cyclones are temperate cyclones which are generated differently from tropical cyclones. These are basically produced due to two warm & cold fronts rotating around a low pressure core.

These are also called depressions or temperate cyclones which move anti clock wise in North Hemisphere.

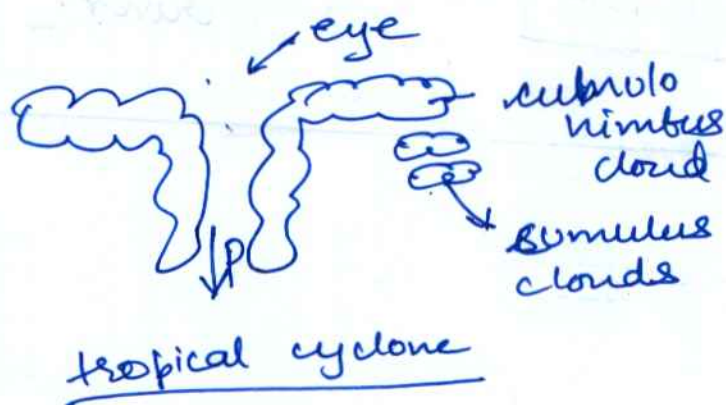


Difference between tropical & extra tropical cyclones :-

- ① tropical cyclones are warm core cyclones while extra-tropical are cold core.

- ② Temperate cyclones have more diameter.
- ③ Temperate cyclones can form over land (explain Siberian rains) while tropical cyclones form over water only.
- ④ Temperate cyclones have longer lifecycle span.
- ⑤ Temperate cyclones are less destructive than tropical ones.
- ⑥ Temperate cyclones form due to dynamic frontal reasons while tropical cyclones have thermal origin.

Fig-11



Tropical cyclones weaken over land after landfall as:-

- ① These are formed over oceans
- ② They require warmer waters constantly as they are powered by latent heat of condensation that is not available over land.
- ③ Hence if coastal inundations are present, these travel over river waters like in odisha & cause more destruction.



coastal inundation

cyclone moves to land & then over river.

Fig-12

7. Describe the different types of earthquake waves and their modes of propagation. How do the earthquakes occurring in the Fold Mountain regions differ from those occurring at large reservoirs/dams? What is the difference between Shallow-focus and deep-focus earthquakes?

विभिन्न प्रकार की भूकम्पीय तरंगों और उनके संचरण के प्रकारों का वर्णन करें। वलित पर्वतीय क्षेत्रों में आने वाले भूकम्प बड़े जलाशयों/बांधों के क्षेत्र में आने वाले भूकम्प से कैसे भिन्न होते हैं? छिछले केन्द्र और गहरे केन्द्र वाले भूकम्पों में क्या अन्तर है।

Earthquake is sudden quacking of earth crust due to release of energy from deformed rocks due to sudden endogenic movements. These energy travel as seismic waves which are of following types:-

- P waves (Body waves)
- Fastest moving 7 km/hr .
 - These are compressional waves and compress & expand alternatively in direction of wave.
 - Change the volume of rocks
 - Pass through all mediums.
 - Slowed down in liquid medium due to refraction.
 - Has shadow zone w.r.t $1/4^{\text{th}}$ earth circumference.

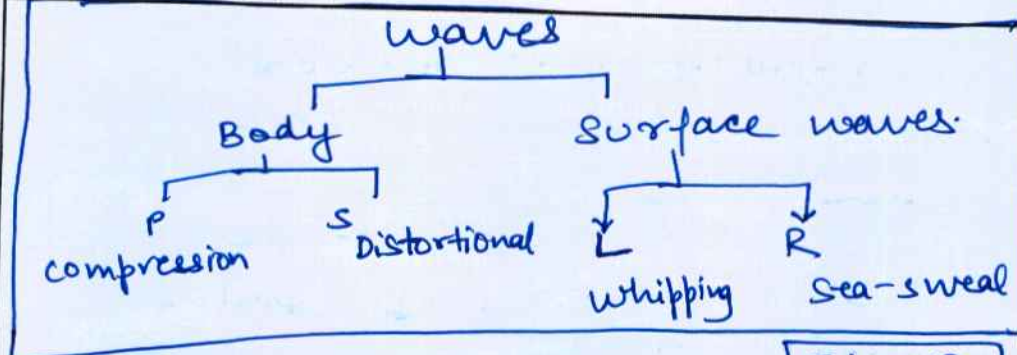


Fig-13

S waves

- 2nd fastest 3.5 km/hr
- Do not pass through liquids
- Move up & down in direction of wave.
- change shape of rocks
- larger shadow zone.

L wave

(Love wave)

- Recorded 3rd on seismograph (2.5 km/hr)

- Move in whipping motion
- Have geo-morphic effects on earth

R-wave (Rayleigh)

- Last on graph (< 2.5 km/sec)
- Move in sea-swell motion
- causes ground shift, liquefaction etc

Earthquakes of fold mountain systems are due to two converging plates (O-O, O-C, or C-C). This is due to subduction of one plate under other.

While reservoir related quakes are not on plate levels but due to large scale pressure & compaction applied by these structures over the rocks which gradually deform triggering quake.

Shallow focus earthquake are those whose focus (point of rock deformation) is not deep in the crust unlike deep focus earthquakes.

Shallow focus quakes are more pronounced over continental crust, unlike deep focus in oceanic, leading to more destruction.

8. Which are the prominent monsoon regions other than the Indian sub-continent? Elucidate the crucial role played by the Tibetan Plateau in regulating monsoons over the sub-continent.

भारतीय उपमहाद्वीप से भिन्न अन्य प्रमुख मानसून क्षेत्र कौन से हैं? उपमहाद्वीप के ऊपर मानसून को विनियमित करने में तिब्बत के पठार द्वारा निभायी जाने वाली महत्वपूर्ण भूमिका को स्पष्ट करें।

Monsoon are wind-reversals leading to a dry-wet period of rainfall.

Locations except Indian Subcontinent

- ① Gulf of Mexico.
- ② Natal.
- ③ China type monsoon.
- ④ West Guinea coast of Africa.
- ⑤ Somalia.
- ⑥ South East Asia.



Fig-14

/ : monsoonal regions
of world.

Role of tibetian plateau :-

- ① The tibetian plateau is heated gradually to high temperatures in summers leading to development of tibetian low pressure cell.
- ② This is also called tropical easterly jet stream.

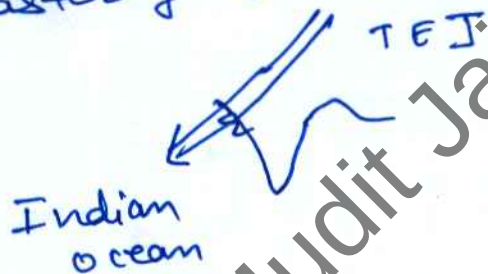


Fig-15

- ③ This is blows towards the Indian ocean and meets the mascarene high.

- ④ This intensifies the south west monsoon winds & hence leads to sudden "fall" at kerala coast.

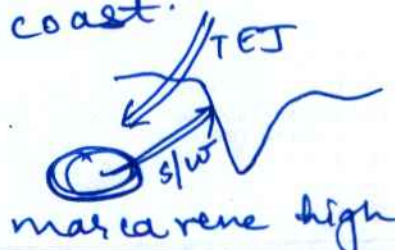


Fig-16

Hence role played is monsoon intensification.

Absence of tibetian low leads to:-

- ① Delay in monsoon
- ② Break in monsoon
- ③ Temporal variation in monsoon.

Mudit Jain

9. What are Rare Earth Elements? What are their uses? How is India positioned in the global distribution of these resources?

दुर्लभ मृदा तत्व कौन से हैं? उनके उपयोग क्या हैं? इन संसाधनों के वैश्विक वितरण के हिसाब से भारत की स्थिति कैसी है?

Rare earth metals are group of 17 metals or (lanthanides + 3) found in earth crust.

These are otherwise found in good amounts but called rare earth metals as they rarely occur in economically viable extractable concentrations.
ex: strontium, monazite etc.

Uses

- ① Defence (night view, sensors, target weapons)
- ② In mobile devices
- ③ In rechargeable batteries
- ④ In computer chips
- ⑤ DVDs
- ⑥ Lighting appliances etc.

India's position

- ① India is the 2nd largest producer of rare earth metals after china.
- ② India produced some 3000 tonnes of rare earth metals while china produces 1 lakh tonnes annually.
- ③ Recently India & other nations pitched for their increased production & exports to counter monopoly of china.
- ④ India has potential of reserves of 30 lakh tonnes as per Indian rare earth metals limited.

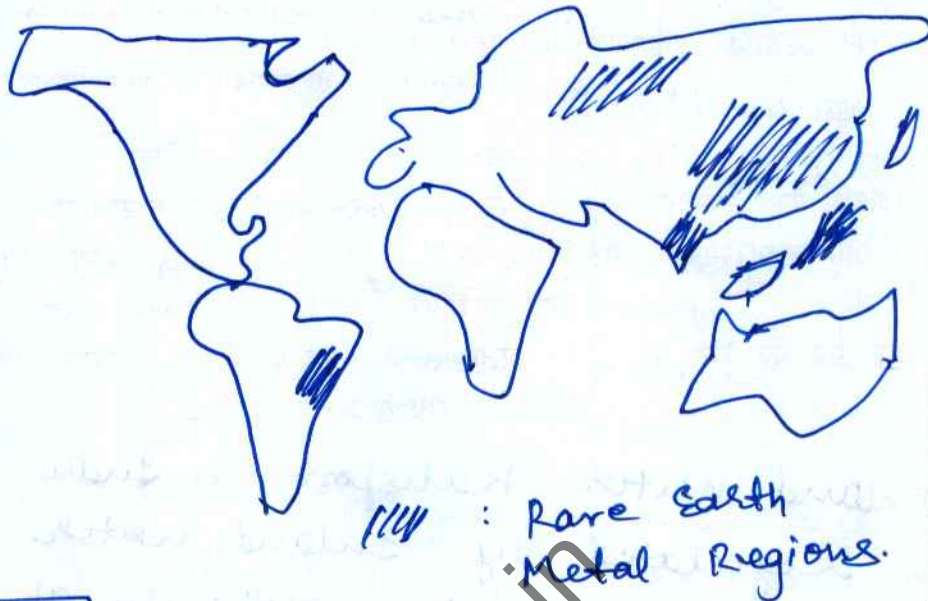


Fig-17

Mudit Jain

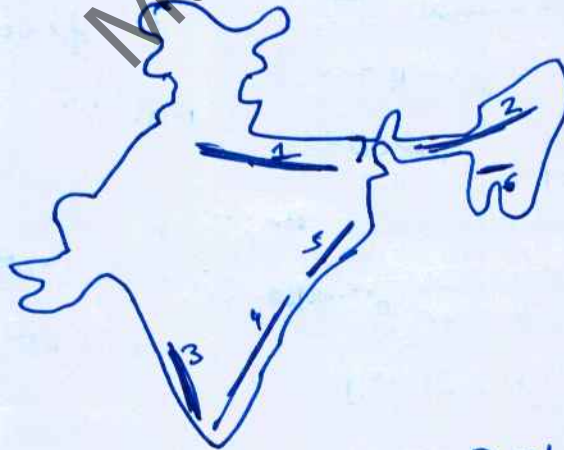
10. "The potential of Inland Water transport (IWT) to encourage and support increased economic and social development is enormous". Discuss the factors responsible for the slow growth of IWT in India with special emphasis on geographical limitations. Enumerate some steps taken by the government in order to make this form of transportation competitive with respect to rail and road.

“अंतर्देशीय जल परिवहन (आई. डब्ल्यू. टी.) में वर्धित आर्थिक व सामाजिक विकास को प्रोत्साहित एवं समर्थन प्रदान करने की अत्यधिक संभाव्यता है।” भौगोलिक परिसीमाओं पर विशेष बल देते हुए भारत में आई. डब्ल्यू. टी. की धीमी गति से विकास के लिए उत्तरदायी कारकों पर चर्चा करें। परिवहन के इस रूप को रेल और सड़क यातायात के साथ प्रतिस्पर्धी परिवहन साधन बनाने के क्रम में सरकार द्वारा उठाए गए कुछ कदमों का उल्लेख करें।

Inland water transport in India is regulated by inland water transport regulation authority of India.

India has 6 national waterways.

Fig-18



- 1: Ganga waterway
3: Kerala coast
5: Godavari

- 2 - Brahmaputra
4 - Pondicherry to Kakinada
6: Lakshadweep to Bhangar.

This has led to enormous social & economic development in regions.

Factors for slow growth:

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graph TD
    A[Factors for slow growth] --> B[geographic]
    A --> C[others]
  
```

Geographic reasons:

- ① Undulating topography
- ② Need to make canals across plateaus, rivers, mountains etc
- ③ The river courses are not navigable to large extents ex lower gangetic basin.
- ④ Alternate periods of floods & droughts create challenges.
- ⑤ Inter-state challenges
- ⑥ cultural settings vary widely thus inhibiting cooperation.

Others:-

- ① Peak electricity deficit is high.
- ② govern mental redtapes.

- ③ Inter-state water disputes.
- ④ Lack of proper infrastructure to traverse the river courses
- ⑤ Lack of awareness about its ecological & economical benefits over rail & road transport etc.

Governmental actions:-

- ① Development of 6 National waterways
- ② 6th is latest, developed over barak river of manipur.
- ③ IWAI regulates usage for transportation.
- ④ Generating awareness.
- ⑤ Recent surge in development of Hanga NW-1 to support ferries & boats so that NW develops & become competitive w.r.t rail & road.
- ⑥

11. Lakshadweep has been facing a drastic decline in coral cover in recent years. Discuss various environmental and anthropogenic factors behind this phenomenon. How can El Nino be disastrous for the world's coral reefs? Illustrate.

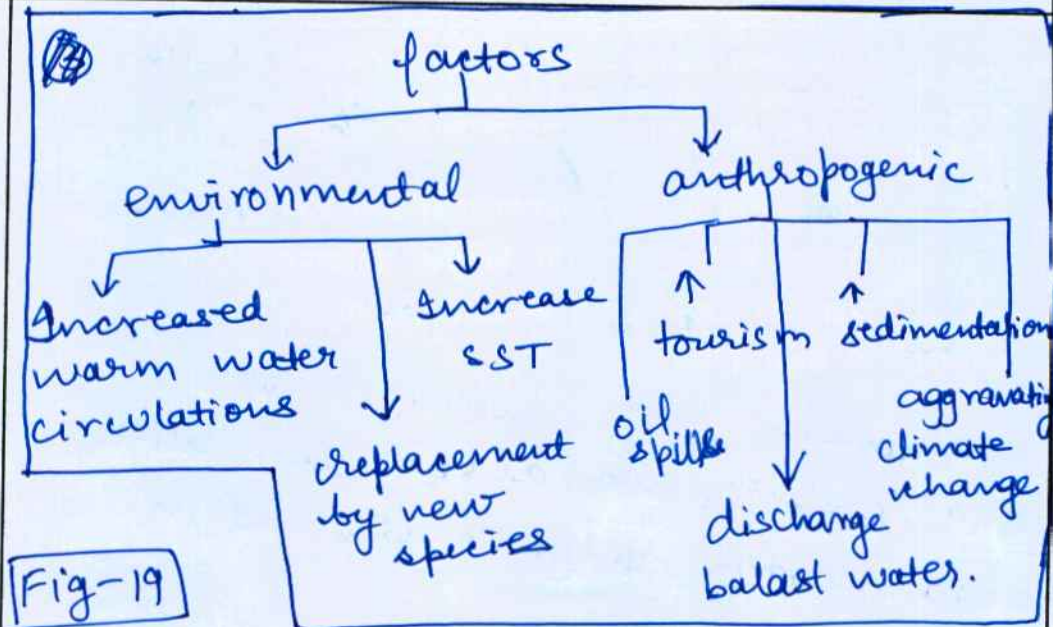
हाल के वर्षों में लक्षद्वीप के प्रवाल आच्छादन में भारी क्षय देखने को मिला है। इस परिघटना के लिए उत्तरदायी विभिन्न पर्यावरणीय एवं मानवीय कारकों पर चर्चा करें। अलनीनो विश्व की प्रवाल भित्तियों के लिए किस प्रकार विनाशकारी हो सकता है? वर्णन करें।

coral reefs are remains of coral polyps in association with zooxanthellae algae formed in tropical waters.

Lakshadweep coral decline factors:

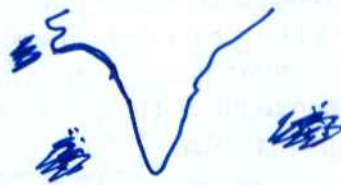
- ① Increased coral tourism has had negative impact due to poor waste management that increased sedimentation of corals leading to their death.

- ② Increased global warming This has affected the sea-surface temperature (from normal 27°C to about $29^{\circ}\text{--}30^{\circ}\text{C}$) which has affected corals.



- ③ Discharge of ballast water into sea has raised habitable temperature for algae.
- ④ changing teleconnections like el-nino bring increased water supply, increasing salinity across arabian sea & hence affecting corals.
- ⑤ replacement by few invasive species & other new species has also led to decline.

Fig-20

Main
coral
regions of
India.El-nino affect on corals of world

El-nino is change in the latitudinal walker cell in Pacific ocean bringing cold water to Australian coast.

Effects :-

- ① Decreased sea surface temperature in W. Pacific affecting Australia's great barrier reefs.
- ② Teleconnections affected in Indian ocean & atlantic oceans & hence affected Lakshadweep, andaman reefs and also reefs on Brazilian coast

Fig 21

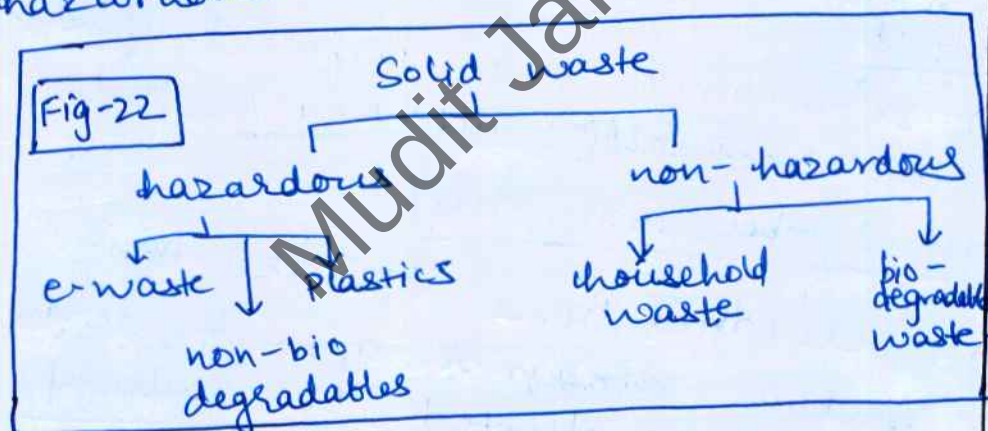


Affected Reefs.

12. Municipal Solid waste management is fast becoming a nightmare for citizens and local authorities in cities across India. Enumerate the steps taken by various municipal bodies to tackle this enormous problem in India. Can WtE (Waste to Energy) be a feasible solution to this fast growing problem?

सम्पूर्ण भारत के शहरों में नगरपालिका ठोस अपशिष्ट प्रबंधन तेजी से नागरिकों और स्थानीय अधिकारियों के लिए दुःस्वप्न बनता जा रहा है। भारत की इस वृहत समस्या से निपटने के लिए विभिन्न नगर निकायों द्वारा उठाए गए कदमों की गणना करें। क्या डब्ल्यू.टी.ई. (अपशिष्ट से ऊर्जा) इस तेजी से बढ़ती समस्या हेतु एक व्यवहार्य समाधान हो सकता है?

Solid waste is waste generated from residential buildings, offices & workplaces etc & consists of hazardous & non-hazardous wastes



Nightmare because:-

- ① Lack of proper collection
- ② Lack of proper disposal
- ③ Producing insects & diseases like water borne diseases.
- ④ Spoil look & feel of city
- ⑤ Ground water contamination etc.

Steps taken :-① Land fills

These are areas where wastes are disposed & are regulated for heap height & quantity of waste that goes into a site
ex: gazipur landfill of delhi

② Incineration

Burning of solid waste & disposing off ashes

③ Bio-sparging, Bio-venting, Phyto remediation etc are being looked into by municipal bodies④ Bio-degradation using bacteria⑤ Setting of bio-toilets to manage human excreta waste.⑥ Waste to energy plants set ex at gazipur land fill⑦ For hazardous category, e-waste management regulations are

implemented.

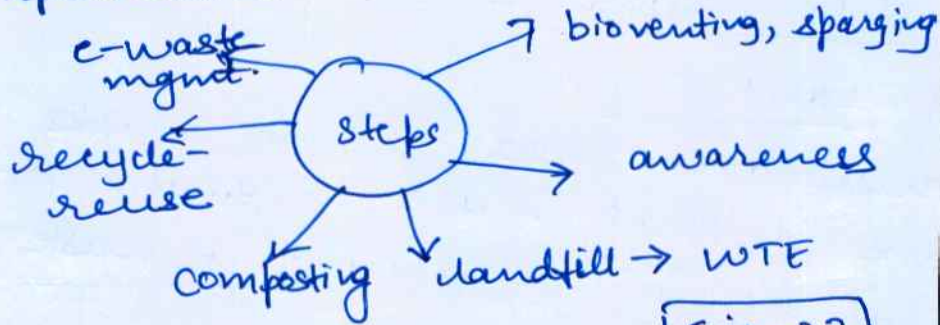


Fig-23

WTE

These convert waste to produce gases & hence energy to produce electricity.

This is feasible solution in long run when the efficiency of WTE is increased, when they are opted through out municipal bodies, by creating awareness.
ex: nazipur WTE plant.

Present Challenges:-

- ① Low output
- ② Not used everywhere
- ③ In experimental phase largely due to economic challenges.

13. It has been observed that the ozone hole develops over Antarctica, and not over manufacturing centers where chlorofluorocarbons are released prodigiously. How can you explain this phenomenon? Examine the possible health and environmental impacts of ozone depletion.

ऐसा दृष्टिगत हुआ है कि ओजोन छिद्र अंटार्कटिका के ऊपर विकसित होता है, न कि उत्पादन केन्द्रों के ऊपर जहां से क्लोरोफ्लोरोकार्बन वृहद मात्रा में मुक्त होता है। इस परिघटना की व्याख्या आप कैसे कर सकते हैं? ओजोन क्षरण से संभावित स्वास्थ्य एवं पर्यावरणीय प्रभावों का परीक्षण कीजिए।

Ozone hole is shrinking or thinning of ozone layer in stratosphere.

It is formed more over Antarctica as :-

- ① Ozone thinning is facilitated by presence of stratospheric clouds.
- ② These clouds are present largely over Antarctica region.
- ③ These clouds provide substrate for chemical reactions between chlorine and ozone to give radical oxygen.



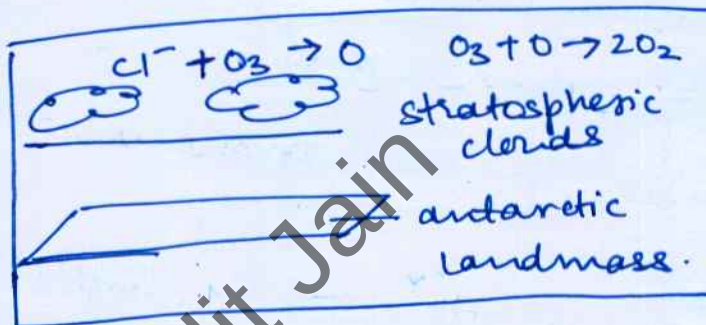
This radical O reacts with

ozone to form oxygen



Hence stratospheric clouds lead to more ozone thinning. There absence in other areas except antarctic means lower ozone depletion

Fig-24



Possible health & environmental impacts

Health impacts

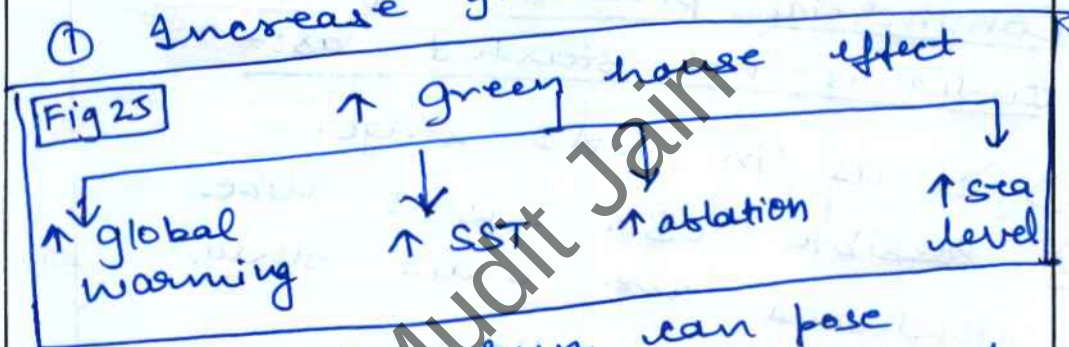
- ① More UV penetration to earth's surface causes skin cancer, cataract & other diseases.
- ② Leads to skin irritation, breathing problems.
- ③ Increase in global temperature & there of increase in

epidemic diseases.

- ① shift of epidemic zones from tropical to mid & high mid latitudes & there associated health issues.

Environment

- ① Increase green house effect



- ② It in long run can pose danger to low lying plains & island regions. etc.

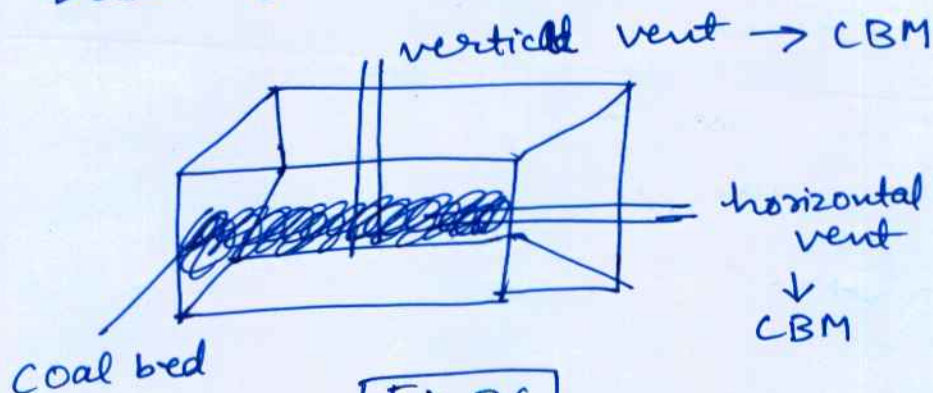
14. India is the 3rd largest producer of coal in the world but commercial production of Coal Bed Methane has not yet started. What are the environmental and economic constraints associated with the production of coal bed methane in India?

भारत दुनिया में कोयले का तीसरा सबसे बड़ा उत्पादक है, लेकिन कोल बेड मीथेन का वाणिज्यिक उत्पादन अब तक आरंभ नहीं हुआ है। भारत में कोल बेड मीथेन के उत्पादन से जुड़ी पर्यावरणीय एवं आर्थिक बाधाएं क्या हैं?

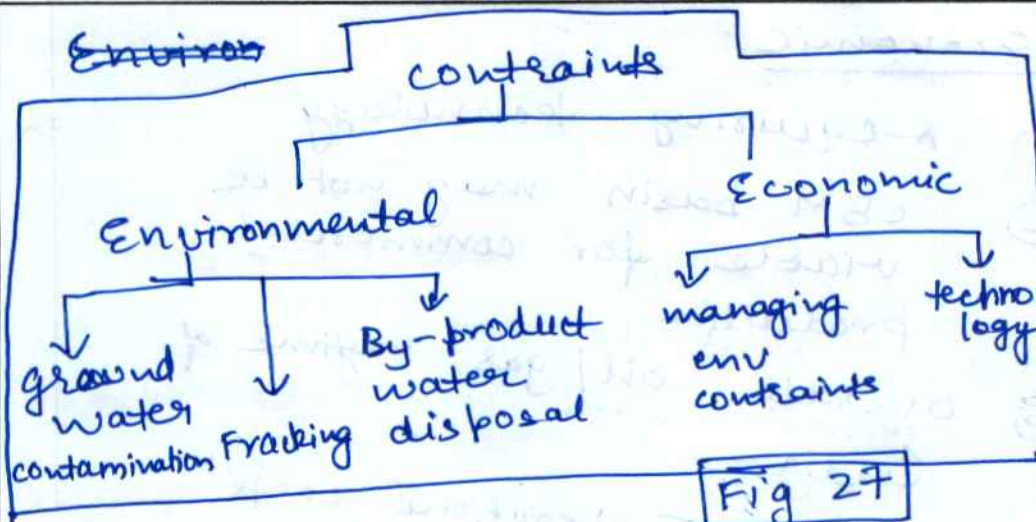
Coal Bed Methane is gas associated with coal seams or coal beds.

Commercial production of CBM in India is not started as:-

- ① It is in R & D stage.
- ② Possible CBM basins like Gondwana are under study.
- ③ Economic challenges.
- ④ Environmental challenges.
- ⑤ Less governmental awareness.



[Fig 26]



Environmental

- ① ground water contamination due to possible contact between coal bed seam & ground water
- ② Fracking process loosens rock surfaces and may aggravate rock falls, landslides & ground water contamination.
- ③ By-product water disposal is ~~like~~ a challenge as it is contaminated.

Economic

- ① Acquiring technology
- ② CBM basin may not be viable for commercial production.
- ③ Overall oil/gas regime of India
- ④ Managing operational costs
- ⑤ Maintenance cost of environment damage.
- ⑥ R & D costs etc.

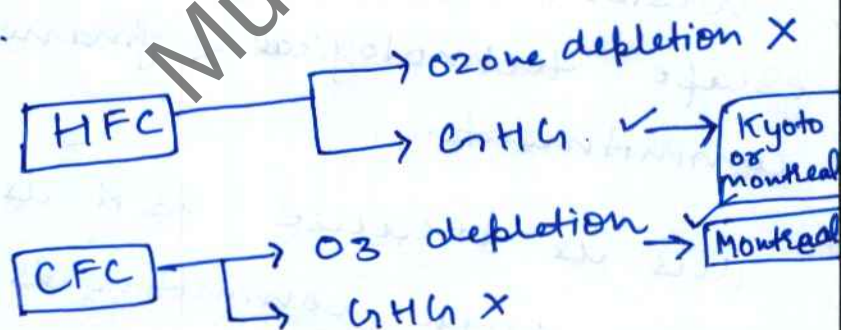
15. Hydrofluorocarbons have emerged as contentious issue in climate talks. Discuss whether HFCs should be dealt with under Montreal or Kyoto Protocol.

हाइड्रोफ्लोरोकार्बन जलवायु वार्ताओं में विवादास्पद मुद्दे के रूप में उभरा है। क्या हाइड्रोफ्लोरोकार्बन से मॉन्ट्रियल या क्योटो प्रोटोकॉल के तहत निपटा जाना चाहिए, चर्चा करें।

HFCs are substitutes of CFCs used in refrigerants, sprays, aerosols etc as these are not ozone depleting like CFCs.

Contention :- HFC are green house gas agent & more effective than CO₂ & other GHGs is this effect.

Fig 28



HFC under Montreal stance is taken by western nations while developing nations, including India, want it under Kyoto.

Why Kyoto

- ① It is allow developing nations to access technology from west to control HFCs.
- ② It will provide for financial SOPs to developing nations.
- ③ will provide a cooling-off period to shift to other products.

Why Montreal

- ① western nations want it to escape technological & financial commitments.
- ② This is because as it is a GTHG, such commitments will be mandatory under Kyoto but not under Montreal
- ③ Montreal fund would be used in this case.

Hence the demand of developing nations to tackle HFCs under Kyoto, established under UNFCCC to manage GHGs, is a just one.

Montreal protocol is for ozone reduction substances & as HFC is not reducing ozone, western demand to tackle it under montreal is not in spirit of protocol.

16. "Wetlands provide ecosystem services essential to people and the environment, valued at billions of dollars". Explain briefly. Enumerate the causes for wetland losses across India. Further, elaborate on some international and national measures taken to protect them.

"आर्द्रभूमि लोगों और पर्यावरण के लिए आवश्यक पारिस्थितिकीय सेवाएं अपलब्ध कराती है," जिनका मूल्य अरबों डॉलर में आंका गया है। संक्षेप में व्याख्या करें। भारत भर में आर्द्रभूमियों के लोप के कारणों का उल्लेख करें। इसके अतिरिक्त, इनके संरक्षण के लिए उठाए गए अन्तर्राष्ट्रीय और राष्ट्रीय कदमों की विस्तार से चर्चा करें।

Wetland provide ecosystem services to people like:-

- ① Recreational activities like boating, rafting, wetland dive tourism
- ② It allows research & development & hence fulfill education purposes.
- ③ Wetlands provide people with fisheries & other wetland food thus becoming part of foodchain
- ④ Wetlands thus integrate with man & environment to become part of geology.
- ⑤ Help farming activity diversification.

services to environment include:-

- ① Homeostasis
- ② Maintaining food chains & food webs
- ③ Regulating services (Biogeochemical cycles)
- ④ Prevent excess runoff to different fields.
- ⑤ If wetland is large it acts as carbon sink.

Causes of wetland loss in India

- ① Human encroachments for building houses.
- ② Lack of implementation of guidelines.
- ③ Low awareness about importance of wetland - ecosystem.
- ④ Over exploitation of tourism.
- ⑤ Over exploitation for fisheries.
- ⑥ Lack of sustainable development.

International Measures:-

- ① wetland international conserve & preserves them.
- ② Ramsar convention lists world's important wetland sites.
- ③ International watch by lakes commissions.
- ④ Increasing awareness.

Indians Measures

- ① Adopted Ramsar convention.
- ② member of wetland international.
- ③ conservation programmes.
- ④ sustainable development like of clam fisheries in Ashtanudi wetland.
- ⑤ government's awareness to implement holistic policies.

17. What do you understand by the phenomenon of Cloud Burst? How is it related to flash floods? Why are hilly areas more prone to the ill effects of cloud burst?

बादल फटने की परिघटना से आप क्या समझते हैं? यह फ्लैश फ्लड से कैसे सम्बन्धित है? पर्वतीय क्षेत्र बादल फटने के दुष्प्रभावों से सबसे ज्यादा ग्रसित क्यों होते हैं?

cloud Burst is phenomenon of sudden torrential outburst of rain in a concentrated area, in a short time.

cloud burst if takes place in urban areas with high rises, compaction, high density of buildings & populations etc leads to flooding of area. This process is called flash-flood as water floods the area in a flash.

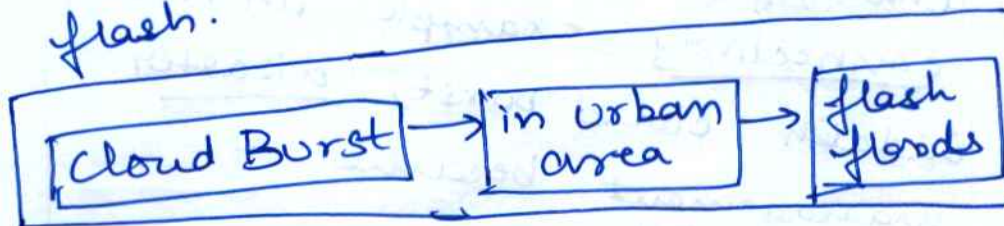
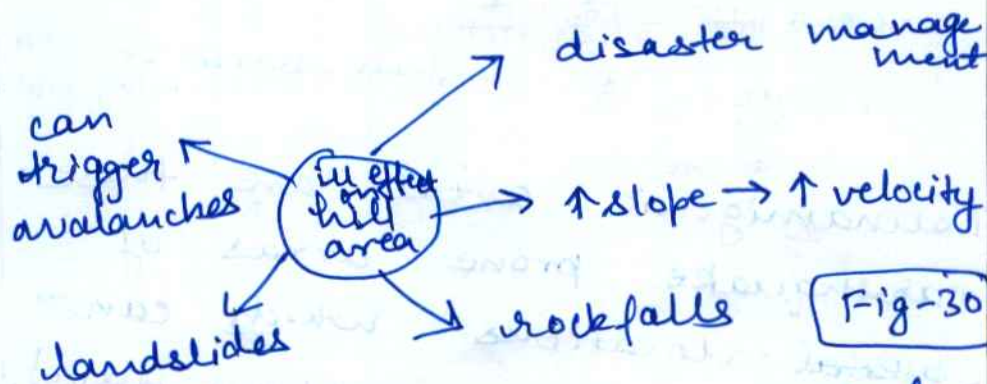


Fig 29

hilly areas have more occurrences of cloud bursts and their associated ill effects because:-

- ① Region is vulnerable due to its topography which can increase surface run off velocity.
- ② It can cause landslides & rockfalls in these areas
- ③ These are generally tourist sites of world & thus have more vulnerability to life loss.
- ④ Cloud burst in hilly areas challenges already poor connectivity example in recent Ladakh cloud burst, disaster management became a challenge.



- ⑤ can cause avalanches and it's associated loss to life & property.

Mudit Jain

18. What are Tsunamigenic zones? Give examples of such zones in the vicinity of Indian Coastal regions. Examine the preparedness level of India to minimize the impact of Tsunamis.

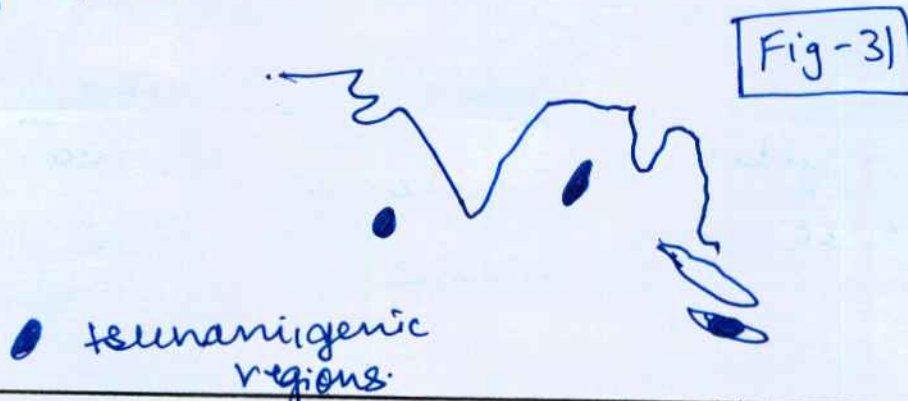
सुनामीजेनिक मण्डल क्या है? भारतीय तटीय क्षेत्रों के आसपास ऐसे मण्डलों का उदाहरण दें। सुनामी के प्रभावों को कम करने के लिए भारत की तैयारियों के स्तर का परीक्षण करें।

Tsunamigenic areas are those earthquake prone areas of coastal locations which can trigger tsunami (harbour waves).

These are hence areas where earthquake generates tsunami or has high potential of it.

example in vicinity of Indian coastal regions.

- ① Andaman nicobar,
- ② Indonesian coast.
- ③ Reunion Island & deago garcia.



Preparedness level

- ① Indian tsunami warning centre collaborates with world tsunami monitoring centres.
- ② Recently India & Australia conducted joint drills.
- ③ Early warning systems have been installed in Andaman coast.
- ④ Research & development is being carried out to develop better early warning system to reduce false alarms.
- ⑤ NDMA conducts disaster drills in coastal areas.
- ⑥ Indian navy, P-8I maritime reconnaissance aircraft etc can evacuate citizens in case of disaster.

- ⑦ generation of awareness among coastal cities.
- ⑧ Development of "tsunami-walls" like that in Japan can be looked into.

Hence India is managing various on field & off field aspects.

Mudit Jain

19. "Community based disaster management, which seeks to empower community directly to enhance their indigenous coping mechanisms, is a must". Elaborate.

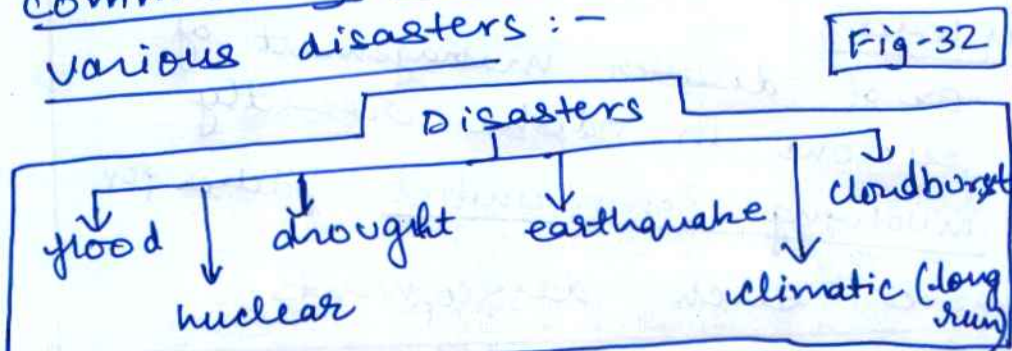
"समुदाय आधारित आपदा प्रबन्धन जो आपदा से मुकाबला करने के स्थानीय तरीकों को बढ़ावा देने के लिए सीधे समुदाय का सशक्तिकरण करना चाहती है, अत्यावश्यक है।" व्याख्या करें।

Disaster is a natural hazard turned into a life & property threatening phenomenon.

~~community~~
limitations of top-down approach

- ① Lack of knowledge about ground realities
- ② Lack of traditional coping mechanisms.
- ③ It is hardly well implemented.
- ④ In long run such solutions can aggravate problem.

community based management of various disasters :-



Floods:-

- ① communities of flood prone areas know traditional methods to prevent disasters.
- ② They have water-harvesting structures, recharge pits, recharge vents etc that are non-engineering solutions.
- ③ Afforestation mechanisms etc.

Droughts

- ① Building Johads to reclaim arvari areas is prime example of community knowledge to handle disaster.
- ② While top-down approach would focus on statistical parameters.

Cyclones

- ① ex of disaster management of cyclone in odisha recently involving communities pitches for more such developments.

Thus Benefits of community involvement are:

- ① More ground level knowledge.
- ② More acceptance of disaster management plan.
- ③ Facilitate shift from reactive approach to prevent, mitigate and prepare.
- ④ Building on indigenous coping mechanisms along with governmental solutions.

20. National Disaster Management Authority was set up to give effect to the provisions of Disaster Management Act, 2005. Critically examine its functioning with respect to the management of recent natural hazards.

राष्ट्रीय आपदा प्रबन्धन प्राधिकरण की स्थापना आपदा प्रबन्धन अधिनियम, 2005 के प्रावधानों को प्रभावी बनाने के लिए की गयी थी। हाल की प्राकृतिक आपदाओं के प्रबन्धन के सम्बन्ध में इसके कार्यों का गम्भीरतापूर्वक परीक्षण करें।

NDMA (2005) was formed post 2004 Indian ocean tsunami & is overarching body in India to prevent, mitigate & prepare for disasters.

Functioning

① Cyclone Management

- NDMA has done well to mitigate & prepare for cyclonic disasters example on Odisha, Gujarat (Nilops) cyclones.
- Drills, evacuation of people, building of infrastructure etc is done.
- It has implemented costal zone regulation guidelines.

(2) Cloud Bursts & floods

- NDMA has largely failed to mitigate the effects.
- It has been restricted in its efforts to prevention of life loss due to floods.
- Evacuation of victims to safe sites, provision of food, medicines, blankets etc is carried out well. ex Kashmir floods

(3) Earthquake

- NDMA carries out regular drills in zone II & zone IV areas.
- Early warning systems being developed. ex: Kerala
- It participated in Nepal relief & rehabilitation

(C) Landslides

- NDMA collaborated with SDMA for rehab in Malin landslides
- There functioning in landslide prevention is poor & restricted to post disaster relief.
- Need to implement guidelines of Hill area development programme.

Hence
Overall their functioning has been good in cyclone management while limited success in other disasters.