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GENERAL STUDIES (TEST CODE : 1022)

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Medium Eng./Hindi	English	Registration Number	95371
Center	ORN	Date	31 July 2017

INDEX TABLE			INSTRUCTIONS
Q. No.	Maximum Marks	Marks Obtained	
1	12.5		<ol style="list-style-type: none">Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code). उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)।There are TWENTY questions printed in ENGLISH & HINDI इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।All questions are compulsory. सभी प्रश्न अनिवार्य हैं।The number of marks carried by a question/part is indicated against it. प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other than the authorized one. प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।Word limit in questions, if specified, should be adhered to. प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off. उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।
2	12.5		
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19	12.5		
20	12.5		
Total Marks Obtained:			
Remarks:			

75, 3rd Floor, Old Rajinder Nagar Market, Near Axis Bank, New Delhi – 110060

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.

All the Best

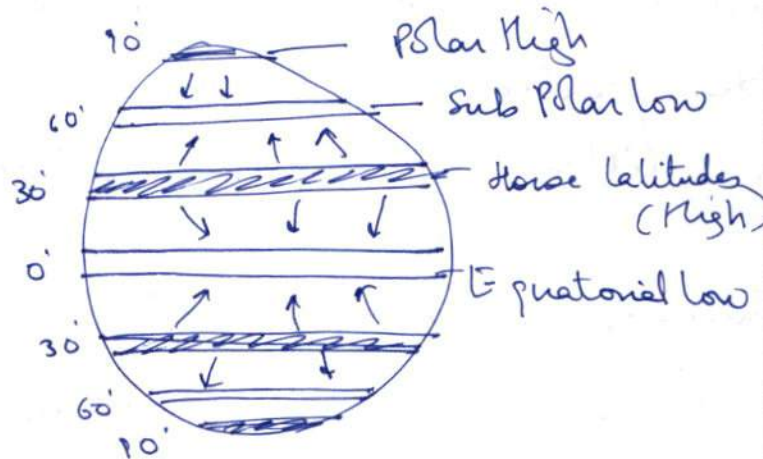
Answer all the questions in NOT MORE THAN 200 WORDS each. Content of the answers is more important than its length. All questions carry equal marks.

12.5X20=250

1. What do you understand by seasonal shifting of pressure belts? What impact does it have on the formation of various climatic regions across the globe? Discuss its socio-economic significance.

वायुदाब पेटियों के मौसमी स्थानांतरण से आप क्या समझते हैं? विश्व भर में विभिन्न जलवायु प्रदेशों के निर्माण पर इसका क्या प्रभाव पड़ता है? इसके सामाजिक-आर्थिक महत्व की चर्चा कीजिए।

The Earth can be divided into various zones of high & low pressure. The wind from high pressure zones rushes into the low pressure zones



This gives rise to winds such as
- Polar Easterlies
- Easterly trade winds.

However, the position of these pressure belts is not rigid.

- The belts shift, apparent to the motion of the midday sun.

The Inter Tropical Convergence Zone (ICTZ) forms as a low pressure trough, and follows the movement of the mid day sun.

- This shifting of the sun up north in the summer^(June-July) and a little south during north hemisphere winter (November - December) shifts the position of the pressure belts a little by 5° - 10° latitude.

Impact on various climatic regions:-

① Rain in mediterranean climate

- In summer (June - July), the upward shift of the pressure belts causes the rain bearing westerly winds to shift up, leaving the mediterranean

climatic regions dry. When the belts shift south during north hemisphere winter, mediterranean region experiences rain in winter.

② Monsoon in India

- The shift of the low pressure trough over India attracts south east & south west trade winds from around Australia, causing monsoon.

Socio Economic Significance

- Horticulture industry in mediterranean flourishes because of winter rain
- Monsoon and other rains: Most beneficial for agriculture
- The pressure induced winds help in sailing through sea lanes of commerce
- Keeps the water supply going in rivers
- Influences the direction of ocean currents, which play a moderating climate role

2. Explain the reasons for the formation of Sargasso Sea. Also, examine the factors for it being a region with one of the highest ocean salinity.

सारगोसो सागर के निर्माण के कारणों की व्याख्या कीजिए। साथ ही, उन कारकों का भी परीक्षण कीजिए जिनके कारण यह उच्चतम महासागरीय लवणता के क्षेत्रों में से एक है।



Formation:

- The Sargasso Sea is the only sea in the world bound by no land.
- Instead, it occupies the gyre formed by 4 north atlantic ocean currents:
 - North Atlantic Drift
 - Canary Current
 - North Eq. Current
 - Gulf Stream

- A gyre refers to a system of bound by circulating water currents

- It is a ^{region} system of utmost calm waters, surrounded on all sides by fast moving ocean currents.

Distinct features :-

- The 4 currents deposit seaweed, and other material that they bring with them in this sea.

- The salts that are deposited here, coupled with the lack of any ocean currents, ensures that it is a region of high ocean salinity,

as there is no movement of water and intermixing.

- The sea also receives almost no winds, being a region of

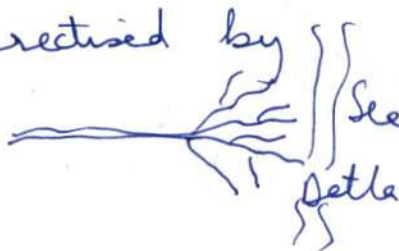
utmost stillness.

- This leads to the water of the
Sargasso sea being ^{very} saline &
dense.

3. Why are river deltas important? Discuss the existing threats to river deltas and the measures needed to overcome these threats.

नदी डेल्टा क्यों महत्वपूर्ण होते हैं? नदी डेल्टाओं के समक्ष विद्यमान खतरों एवं इन खतरों से निपटने के लिए आवश्यक उपायों पर चर्चा कीजिए।

River Deltas:

- When a river empties into the sea or a lake, it usually forms a delta unless the gradient of fall is too steep.
- As the river matures, its speed reduces. It deposits all its sediment near the mouth.
- The coarser load is dropped first. The finer sediments are the last to be dropped, and they end up forming new land when dropped.
- The delta is characterised by braiding of streams 

Importance-

- ① Fertile alluvium for agriculture
- ② Rich biodiversity, including mangroves
- ③ Mangroves form barriers against

high waves and coastal erosion.

- ④ Supports civilisations
- ⑤ Provides multiple ecological services
- ⑥ Provides rich fishing & aquaculture grounds
- ⑦ The vegetation surrounding delta is a source of honey, wax.

Threats:

- ① Sand Mining
→ The sediment load discharged at the deltas is used ~~to~~ to mine sand used in construction.
This destroys the delta.
- ② Human habitation
→ The delicate balance is affected by the presence of high density of population
- ③ Loss of mangroves from delta leading to coastal erosion
- ④ Over fishing
④A Discharge of effluents

⑤ Dredging

- By fishing boats / miners

⑥ Inorganic farming in rich alluvium
Measures to tackle threats:-

① Creating buffer zones around the delta to cut down human impact

② Awareness generation of the population surrounding delta on the importance of the deltaic lobe and the services it provides

③ Banning the mining of sand from the delta

④ Prohibiting industries from discharging untreated effluents near delta.

⑤ Protecting the delicate biodiversity by declaring area as national park / wildlife sanctuary
Example: Sunderbans National Park.

4. Give an account of the different types of earthquakes based on their zone of occurrence. Identify the earthquake prone regions of the world with special reference to India. Also explain the reasons for the occurrence of earthquakes in geologically inactive regions like Peninsular India.

घटित होने वाले क्षेत्र के आधार पर विभिन्न प्रकार के भूकंपों का विवरण प्रदान कीजिए। भारत के विशेष संदर्भ में विश्व के भूकंप प्रवण क्षेत्रों की पहचान कीजिए। साथ ही, प्रायद्वीपीय भारत जैसे भूवैज्ञानिक रूप से निष्क्रिय/स्थिर क्षेत्रों में भूकंपीय घटनाओं के कारणों की भी व्याख्या कीजिए।

Earthquake refers to a sudden movement in the Earth's crust. It is to be distinguished from the tremors that happen almost everyday.

Based on their zone of occurrence we have two types of Earthquakes:-

(A) Zone of Convergence in Continental Crust

- Where two plates push into each other, earthquakes are common around the region of their collision.

Eg: Indo Australian plate pushing into continental Eurasian plate makes Himalayas earthquake prone

(B) Ocean-Continental Collision

- As the oceanic crust comprising

of SIMA is denser, it subducts under the continental crust & an earthquake may result.

(C) Ocean - Ocean Crust Collision

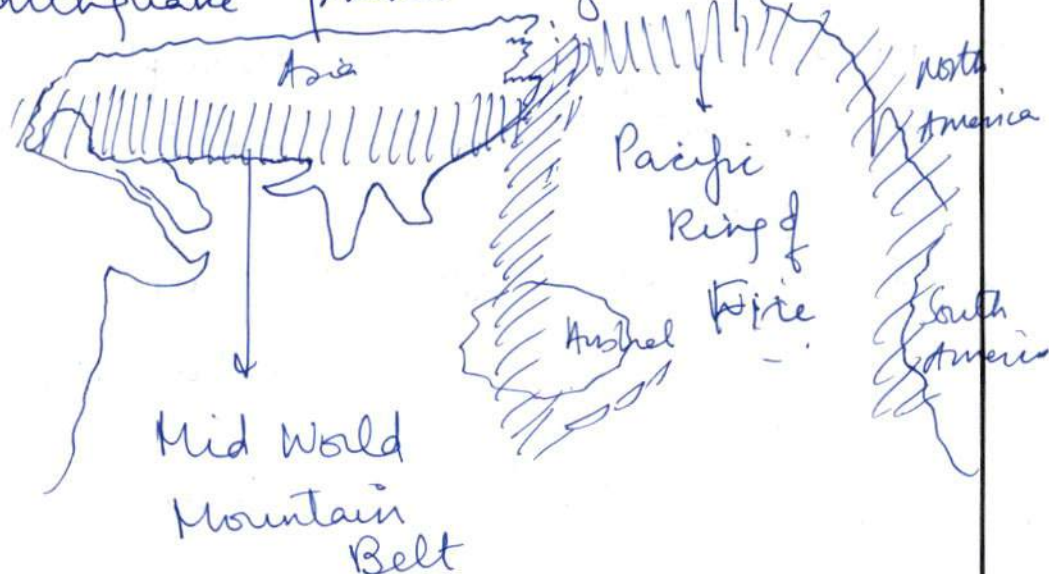
- It may also lead to tsunamis.

They may also be characterised as:-

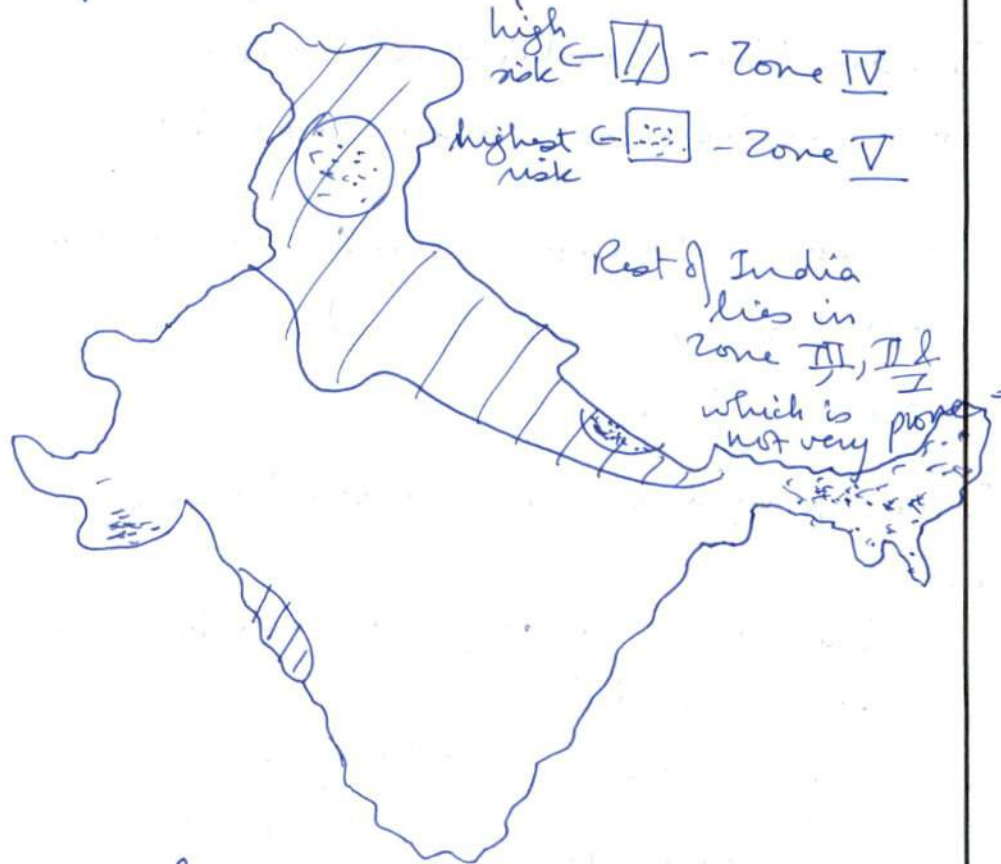
- 1) Shallow focus earthquakes
- 2) Intermediate focus
- 3) Deep focus earthquakes

Depending on how deep within the Earth's crust they occur.

Earthquake prone regions of world:



Earthquake prone zones of India.



Reasons for earthquakes in Peninsular India:-

- ① Reservoir induced
- ② Rock displacement disrupting the equilibrium may lead to earthquakes
- ③ Induced by mining, drilling
- ④ Induced by other construction work
- ⑤ Thermal & Nuclear power plant induced

5. Explain the reasons for the following: (a) Erosional forms dominate in the west coast while depositional forms dominate in the east coast of India. (b) Western Ghats in Karnataka receive more monsoon rainfall than Maharashtra and Kerala.

निम्नलिखित के कारणों की व्याख्या कीजिए: (a) भारत के पश्चिमी तट में अपरदनजन्य रूपों की अधिकता या बाहुल्य पाया जाता है, जबकि पूर्वी तट पर निक्षेपण रूपों का बाहुल्य पाया जाता है। (b) कर्नाटक में पश्चिमी घाट महाराष्ट्र और केरल की तुलना में अधिक मानसूनी वर्षा प्राप्त करते हैं।

a) .- The West Coast of India is a submerged coast.

- This means that the sea rose while land subsided.

- Due to this, there is an abrupt fall in the coastline from land to sea. There is no smooth gradient.

This leads to domination of erosional landforms:-

(A) Erosion by sea towards coast
→ The waves lack any gradient to deposit their sediments, so they end up cutting the coast forming landforms of erosion.

(B) Erosion by river towards sea
→ Instead of forming deltas, the rivers flow fast into the

sea, thus cutting across the coast with their speed.

So in the western coast, ~~waves~~ ^{caves}, stumps, bays are very common.

The East Coast, on other hand is a low coast of emergence i.e. the land rises against the sea. This leads to a smooth gradient, forming landforms of deposition. Such as:-

- ① Long beaches. Eg: Chandipur beach upto 5km long
- ② Deltas of rivers -> KG Basin
- ③ Spits, sandbars and lagoons
- ④ Coastal lakes.

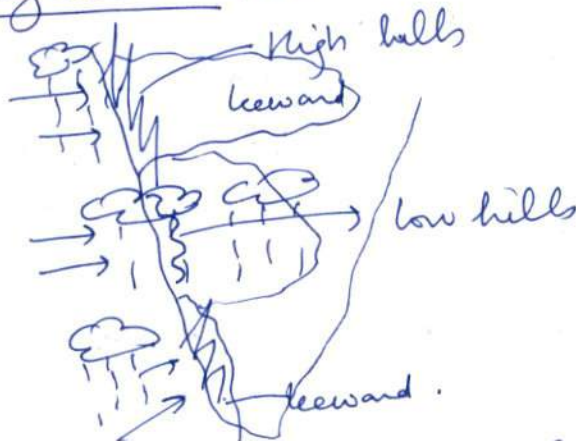


b) In Maharashtra and Kerala, the western ghats are high and steep, with very few passes.

- This leads to the monsoon winds causing orographic rainfall on their sudden collision

with the hills.

- Since passes are few, eg: Palghat pass and Belaghat pass, very few of these monsoon laden winds reach to the other side.
- This leads to a largely dry leeward side of the western ghats.
Eg: Marathwada & Vidarba regions, while Mumbai is flooded.
- on the other hand, the western ghats are smoother and less high in Karnataka, with more passes. This allows them to cross over and cause rainfall throughout the state.



- In addition, Karnataka's few parts also come under influence of winter North East Monsoon.

6. With increasing urbanisation in India, the land usage pattern is undergoing major changes. Comment.

भारत में बढ़ते शहरीकरण के साथ ही भू-उपयोग प्रतिरूप में भी महत्वपूर्ण परिवर्तन हो रहे हैं। टिप्पणी कीजिए।

The recent records released by the government show that the land usage pattern in India is undergoing changes, with net sown area, wasteland area, area under pastures all declining.

① Decrease in net sown area

→ As more land is being acquired for public purpose under the Land Acquisition Act, and more expansion in need for living space is in place, the causality is net sown area.

While the net sown area is declining, the cropping intensity is increasing leading to low yield per hectare.

② Increase in wasteland area

→ Being taken up for constructing industries, townships, schools.

③ Area under pastures & forests

is also similarly declining due to needs of urbanization.

The positives :-

- More productive use of wasteland
- Shift in population demographic, with people shifting from rural to urban.
- Increasing industry presence, in line with objectives of Make In India.

The negatives :-

- The urbanisation is happening unplanned, and in a haphazard manner leading to urban sprawls instead of well developed cities
- There is no proper sanitation & waste treatment facilities
- As the urban population increases, the amount of grain required to feed them increases too. Yet, with decreasing net sown area, the land gets exhausted

- soon due to increased crop intensity
- Excess pollution; and harm to soil → leading to ultimate desertification
 - Not reaching the forest cover target of around 30%.

Way ahead:

- As urbanization proliferates due to rise in aspirations, it is important to have a far reaching, all-expansive policy in place to determine how much land can be allowed to be used and for what purpose. A cap must be put on the amount of land use pattern that can be changed.
- Development and urbanisation must be in line with Sustainable Development Goals.

7. How is the coal bearing strata of India classified in geological terms? Why does coal remain the most important source of energy in India and what are its implications?

भूवैज्ञानिक शब्दावली में भारत के कोयला धारण करने वाले संस्तर को किस प्रकार वर्गीकृत किया जाता है? कोयला भारत में ऊर्जा का सबसे महत्वपूर्ण स्रोत क्यों बना हुआ है एवं इसके निहितार्थ क्या हैं?

In India, all ^{four} ~~three~~ varieties of coal are found: Anthracite, Bituminous, lignite & Peat.

Depending on their geological occurrence, in India we have:-

- (A) Anthracite is the oldest, found in pre cambrian rocks. It is found only in Jammu & Kashmir. Has high carbon content and low moisture.
- (B) Gondwana Coal
- Here, Bituminous coal is found in areas of Jharkhand, Chhattisgarh. It is also old and high grade, but not as good as anthracite.
- (C) Tertiary Coal
- lignite / Peat. It is the youngest coal. Found in North East plateau, Tamil Nadu.

Despite there being strides in the field of renewable energy, coal remains the most important source. Reasons are: -

① Low cost of operations

- Coal is easy to mine, cost of power is low as the licenses are existing, industry is already set up for many years leading to economy of scale.

② Uses of coal in other fields

- Coal when used in thermal power plants also gives secondary material which is used in other industries.
Eg: Coking coal

③ Use of coal in traditional stoves - societal attitudes & poverty is also a leading cause for the widespread use of coal.

Implications -

- ① Pollution (Air Pollution)
- Thermal power plants release PM 2.5, PM10 and a number of noxious gases in addition to release of heavy, toxic metals.
- ② Thermal Water Pollution
- The hot water released by the power plants causes thermal pollution which kills fish.
- ③ Health issues due to pollution
- ④ Depletion of coal reserves: As happened post industrialization in Europe
- ⑤ Mining related deaths of workers.
- ⑥ Loss of competitive advantage to renewable clean sources of energy due to low cost of coal.
- ⑦ Affect on fulfillment of SDGs.

8. Forest fires have become a regular feature during summers in the Western Himalayas. What are the causes behind this phenomenon? Critically examine the efforts made by authorities in countering this problem. Do periodic forest fires have any benefits associated with them?

पश्चिमी हिमालय में ग्रीष्म ऋतु के दौरान दावानल/वनाग्नि (फॉरेस्ट फायर) एक नियमित घटना बन गयी है। इस परिघटना के पीछे क्या कारण हैं? इस समस्या से निबटने के लिए प्राधिकरणों द्वारा किए गए प्रयासों का आलोचनात्मक परीक्षण कीजिए। क्या समय-समय पर होने वाली दानावल की घटनाओं के कुछ लाभ भी हैं?

→ Forest fires are a natural phenomenon caused by intense heating and drying of forest land in summer time, leading to a small blaze which quickly spreads & decimates the forest. On other times, they may be caused anthropologically by camp fires left behind, or by subsistence agriculture.

— The authorities generally treat forest fires as a disaster. Efforts are made to curb fires.

The population living around forests is moved out.

— Yet, as has been argued by experts, the way officials deal with forest fires is a result

of colonial experience, wherein forests contained important timber resources which had to be safeguarded.

- It has been argued that forest fires have many benefits:-

- ① Help in renewing the soil and increasing its fertility by the ash.
- ② Kills all diseased plants, helps in preventing spread of deadly virus and bacteria.
- ③ Natural way to maintain soil fertility and ecosystem.

Way ahead:

- A shift in the policy of forest department is required.
- Forest fires must be seen as a

natural, self regulating phenomenon -

- local communities must be involved and traditional knowledge can be obtained in knowing how to deal with forest fires -
- While adequate prevention & protection efforts for the communities must be carried out, forest fires should not be treated as a negative thing.

9. What are sunrise industries? Elaborate on the potential of these industries in India with a special focus on the food processing industry.

सनराइज उद्योग क्या है? खाद्य प्रसंस्करण उद्योग पर विशेष बल देते हुए भारत में इन उद्योगों की संभावना के संबंध में विस्तार से बताइए।

Sunrise industries refer to industries that are new, not very common, and which have a huge potential to grow and boost economy.

Potential :

① Electronics Industry

- It is commonly seen as a sunrise sector. Japan's growth due to strides in electronics can be replicated in India. The government's Zero Effect and Zero Defect

② ~~Other~~ scheme is to this end.

② other Fast Moving Consumer Goods industry. (FMCG)

- FMCG industries offer a huge growth potential.

- Food Processing industry is a major component of FMCG.

- Food processing can refer to

- Preliminary processing - Eg: Turning wheat to flour, which is already common in India.

- The other kind of processing needs to be made popular for fast growth. Eg:

→ Cut vegetables, packed & sealed

→ Milk into good quality butter and cheese → Need for more Amul like industries.

→ Jams, Preservatives & Pickles from Fruits

→ Meat & poultry products

- These have a huge growth potential, which can be realised by the following steps: -

① Better cold storage facilities to ensure product does not perish

② Need to introduce standards for all products like uniform

fat percentage in different varieties of cheese. This will give our products respect & advantage in export market

③ Promoting contract farming for direct farm-to-fork models and better farm income.

④ Better transport & logistics linkages → Boosting inland water transport.

⑤ Giving credit and encouraging more cooperatives to diversify beyond the prevalent papad-pickle model & moving to other sectors.

10. Scientific and technological advancements have removed the constraints posed by geographical factors which determine the location of industries. Comment. Giving examples, discuss the new factors that have come into play as a result.

वैज्ञानिक और प्रौद्योगिकीय प्रगति ने उद्योगों की अवस्थिति को निर्धारित करने वाले भौगोलिक कारकों द्वारा प्रस्तुत की जाने वाली बाधाओं को समाप्त कर दिया है। टिप्पणी कीजिए। इनके परिणाम स्वरूप उभरने वाले नए कारकों पर भी सोदाहरण चर्चा कीजिए।

The location of industries depends on many factors. Such as -

- 1) Availability of raw material
- 2) labour
- 3) Costs involved
- 4) Appropriate weather conditions
- 5) Government policies
- 6) Availability of water.

Earlier, industries were set up only where raw material was found, especially in case of weight losing industries.

Eg: Tata steel plant in Bhilai gets Iron & Coal from nearby, cheap labour and water from Subarnarekha

Similarly, sometimes industries could not be set up at all due to lack of raw material.

Eg: Sweden has immense iron but no coal, so no industries.

Yet, over time science has made significant advancements allowing for removal of constraints posed by geography.

This can be best illustrated by example of Cotton industry.

↳ Cotton does not lose weight, so it can be transported easily.

→ Yet, for the spinning of yarn, humidity is a sine qua non.

→ So earlier, Manchester, Osaka, Ahmedabad became spinning & cotton textile centers due to availability of sufficient moisture.

which did not allow the threads to break.

- With science, artificial humidity can be generated which allows for yarn to be spun anywhere.

- Similarly, mushroom processing & pharmaceutical industries were traditionally based in hills due to cool cold climate.

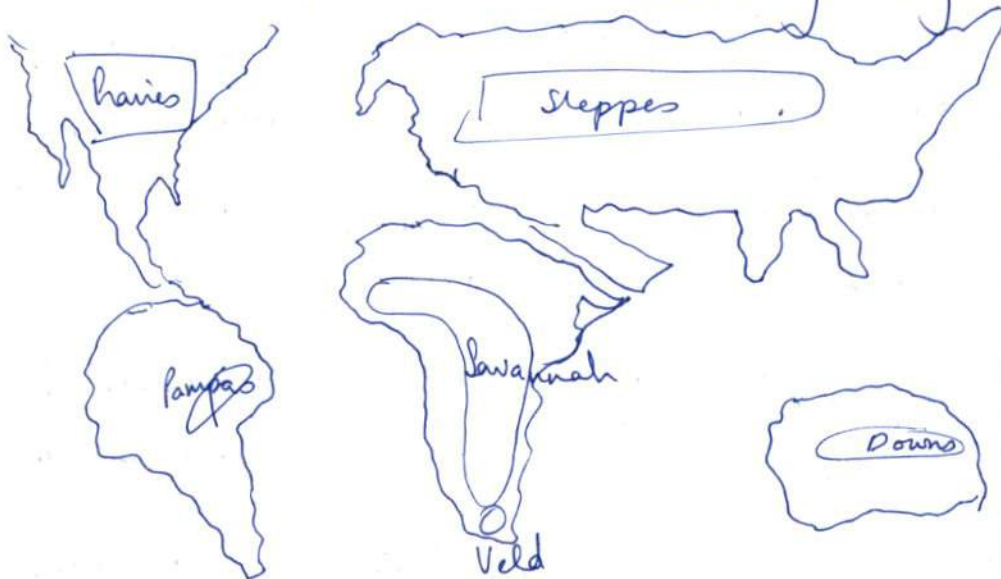
But now,
due to ACs, temperature setters, better transport of raw materials, even these industries have proliferated throughout.

Therefore, science has removed many impediments posed by geography although not all. Science still cannot replicate the advantage posed by mineral & oil rich areas.

11. Give a brief distribution of major grasslands of the world. Discuss the reasons behind the temperate grasslands becoming the grain baskets of the world. Also compare their performance vis-a-vis tropical grasslands in this regard.

विश्व के प्रमुख घासस्थलों के वितरण का एक संक्षिप्त विवरण प्रस्तुत कीजिए। शीतोष्ण घासस्थलों के विश्व की खाद्यान्न टोकरी बनने के निहित कारणों की चर्चा कीजिए। इस संबंध में उष्णकटिबंधीय घासस्थलों की तुलना में उनके प्रदर्शन की चर्चा भी कीजिए।

- Grasslands are large expanses with tall grasses and few, scattered trees. They do not receive a lot of rain fall, and climate is usually dry.



- Out of these, Prairies, ~~Steppes~~, Savannah and Downs are Temperate Grasslands.
- Their climate allows them to be reared as grain baskets of the world, especially of wheat.

The reasons are:-

- 1) Wheat requires cool, dry climate for growing, which temperate grasslands have
- 2) low rainfall conducive for wheat
- 3) large areas of farms due to low population density in these interior regions allows for large scale mechanisation using tractors in 40-50 hectare large farms
- 4) Quality of grain is maintained giving the product reputability
- 5) Presence of conducive government policies
- 6) Top notch storage facilities in the form of silos

All these factors have contributed.

→ The tropical grasslands, on the

Other hand, have not fared well
due to :-

- ① Hot temperate - not conducive
for wheat
- ② High population
- ③ Poor investment by government
& private sector
- ④ High temperature causing
outbreak of diseases in plants
- ⑤ Presence of browsers and
grazers which can damage
the biodiversity

All these are responsible for
seeming backward condition of
tropical grasslands.

12. Weather and climate information plays a significant role in increasing agricultural productivity as well as minimising crop losses. Comment. Also examine the ways in which forecasting system can be made more effective and inclusive.

मौसम और जलवायु संबंधी सूचना कृषि उत्पादकता को बढ़ाने एवं साथ ही साथ फसल के नुकसान को कम करने में महत्वपूर्ण भूमिका निभाती है। टिप्पणी कीजिए। इसके साथ ही उन उपायों का परीक्षण कीजिए जिससे पूर्वानुमान प्रणाली को और अधिक प्रभावी एवं समावेशी बनाया जा सकता है।

Weather & Climate Information
is important as:-

- ① It tells the farmer whether planting ^{high water intensity} crops in the upcoming season is a good decision
- ② Gives prior information on floods, cyclones which can damage livestock & crop.
- ③ Gives information of drought indicators

It therefore affects -

- what kind of crop to plant →
eg: water stress tolerating millets or whether water intensive rice.
- whether to depend on rains for irrigation of tubewell

- All this ensures the kind of crop and its quantity, along with providing farmers enough time to prepare for any losses.

- The Indian Meteorological Department recently introduced a weather forecasting system that can give information 9 months prior to the happening of weather event. This is made for benefit of farmers.

→ Other initiatives to make it effective & inclusive :-

① Providing radios/ phone based updates to even small & poor farmers who do not have access to latest technology

② Providing weather information to fishermen who can then avoid venturing into choppy seas.

- ③ Using LIDAR and Remote Sensing Data to map losses caused by drought & changes in soil profile.
- ④ Educating the poor farmer on how to read the forecasting and understand it.
- ⑤ Strengthening Kisshi Vikas Kendra as one stop solutions for all information on use of weather updates in reducing losses
- ⑥ Providing information on the appropriate soil parameters required for a particular crop.

13. The Paris Climate agreement sets ambitious goals but does not go far enough in mechanisms to achieve the aims. Comment. Also highlight the challenges which a developing country like India faces to achieve the targets it has set for itself.

पेरिस जलवायु समझौता महत्वाकांक्षी लक्ष्यों को तो निर्धारित करता है किन्तु इन लक्ष्यों को प्राप्त करने के लिए पर्याप्त प्रावधानों की व्यवस्था नहीं करता है। टिप्पणी कीजिए। साथ ही, भारत जैसे विकासशील देश द्वारा अपने लिए निर्धारित किए गए लक्ष्यों को प्राप्त करने में सामना की जाने वाली चुनौतियों पर भी प्रकाश डालिए।

The Paris Climate Agreement is deemed as a gamechanger in environment conservation. It sets an ambitious target to prevent temperature rise above 1.5°C or in any case 2°C over pre-industrialisation levels.

The positives: -

- Consensus based agreement on importance of climate change & global warming.
- Participation of NGOs and civil society in Negotiations.

Yet, it has a few drawbacks: -

- It does not have any binding targets, unlike the Kyoto protocol.

- It has no way to ensure that the country will adhere to its Individually Determined Targets (INDCs).
- It seems to have a top down approach - as was revealed when USA pulled out. It depends on contributions of governments without acting towards ensuring change in practices of citizens.

Challenges faced by India -

- The developing countries do not even have a fraction of historical contribution to the rising temperatures, as the developed ones do. Yet, India too has targets. The challenges:

① Renewable energy

- India's ambitious renewable Energy plan suffers from setbacks, most important of which is cost constraints. Renewable energy

is not as cost effective yet.

② Balancing industrialisation with climate change

- This requires planning & adherence to norms, which becomes more difficult as industries scramble to compete

③ Growing population

- Is bound to increase the carbon footprint, making it difficult to achieve target

④ Water sharing issues

- Inter states & inter community - bound to intensify as global warming accelerates

⑤ Burden on agriculture

- With decreasing land available, low water & high risk of disease, the pressure on land will intensify.

14. Describe the factors responsible for increase in marine pollution in the past few decades. What impact does marine pollution have on the ocean ecosystem? Discuss the measures taken by the international community to deal with it.

पिछले कुछ दशकों में समुद्री प्रदूषण में हुई वृद्धि के लिए जिम्मेदार कारकों का वर्णन कीजिए। महासागरीय पारिस्थितिकी तंत्र पर समुद्री प्रदूषण का क्या प्रभाव पड़ता है? इससे निपटने के लिए अंतरराष्ट्रीय समुदाय द्वारा किए गए उपायों की चर्चा कीजिए।

Marine Pollution refers to addition of foreign, dangerous elements in a water body such as ocean or sea.

Factors responsible:

① Industrial Discharge

- Toxic water which is sometimes hot affects marine population, leading to fish kill

② Human waste

- Is directly dumped into the ocean. Plastics float around and are ingested by animals & fish.

- Plastics in water are extremely slow to degrade due to lack of sunlight.

③ Dead bodies in the ocean causes pollution.

- (4) oil spills
- causing slick & chocolate
mouse formation which cause
undesired damage to population
- (5) Various other non point sources
cause eutrophication and
harmful algal blooms.

Impact:

- Marine population dies / gets sick.
- Water increases in turbidity.
- Excess stench in water
- Heavy metals in fish - transfer
to humans through diet. Eg:

Minamata Disease in Japan

- Aesthetic beauty of seaface is ruined.
- Difficulty in navigation

Measures taken:

- Treaties & agreement to put
onus of responsibility in case of
oil spills

- Sustainable development goals
- ~~set~~ Paris Agreement calling for preserving ocean's capacity as a natural sink.
- Declaration of pristine water areas as off limits - Eg: Ross Sea Marine National Park in Antarctica.
- Efforts on national level in form of legislation providing for treatment of effluent before discharging in ocean.

15. Discuss the environmental impact of electronic waste and the best practices for its handling in the context of the E-waste (Management) Rules, 2016. Also suggest some ways to incentivise consumers to utilise and dispose-off the e-waste properly.

इलेक्ट्रॉनिक अपशिष्ट के पर्यावरणीय प्रभावों एवं ई-अपशिष्ट (प्रबंधन) नियम, 2016 के संदर्भ में इसके निष्पादन के लिए सर्वोत्तम तरीकों पर चर्चा कीजिए। ई-अपशिष्ट के उचित उपयोग और निपटान के लिए उपभोक्ताओं को प्रोत्साहन प्रदान करने हेतु कुछ उपाय भी सुझाइए।

Impact of e-waste, that is waste from old computers, mobiles, silicon chips is not felt immediately but is equally harmful.

Impact:-

- ① Release of harmful dioxins & furans
- ② Release of heavy metals in air which are potentially carcinogenic
- ③ Occupation of large space when not utilised properly, leading to wastage.

E waste management rules :-

- The rules give a wide definition of e-waste, including CFLs.
- Easy procedure for

Collection → Segregation →
Dismantling → Recycling
Responsibility on consumers &
collectors to recycle and
dispose the waste appropriately.

The ~~simple~~ rules provide for
penalty in case of violation as
well.

However, like all government reforms,
its effectiveness depends on
the willingness of consumers to
adopt them.

Way to incentivise :-

- ① Providing consumer with a
manual of disposing the gadget
at the time of purchase itself
- ② Spreading awareness of
the e-waste collection points.

- ③ Regulating scrap dealers
- ④ Regulating the second hand gadget market
- ⑤ Spreading campaigns on harmful effects of e-waste
- ⑥ Punishing violators with penalty under rules to deter others

16. An emissions-reduction approach to fighting global warming is not enough. Alternative solutions involving climate engineering might have to be deployed sooner than we think. Defining climate engineering, critically examine the statement.

ग्लोबल वार्मिंग से निपटने के लिए केवल उत्सर्जन-न्यूनीकरण उपागम (दृष्टिकोण) पर्याप्त नहीं है। संभवतः हमें अनुमानित समय से पूर्व ही, क्लाइमेट इंजीनियरिंग को सम्मिलित करने वाले वैकल्पिक समाधान को अपनाने की आवश्यकता पड़ सकती है। क्लाइमेट इंजीनियरिंग को परिभाषित करते हुए, इस कथन का आलोचनात्मक परीक्षण कीजिए।

- Emissions reductions can only go a certain extent in reducing climate change.
- Many studies are unequivocal that capping temperature rise @ 2°C is an almost impossible goal with present methods.
- Climate Engineering can be used. It is a process of using artificial means to generate effects caused by natural processes.

Positives of Climate Engineering

- ① Inducing rainfall by spraying silver iodide on clouds
- Practiced by China for long, it

saves agriculture from vagaries of drought

② Spraying aerosols in the air that have a cooling effect, such as ammonia.

- This seeks to replicate the cooling effect of volcanoes.

③ Spraying water from helicopters as rain

④ Using large mirrors to reflect sunlight.

Negatives / Threats of Climate Engineering

① No guarantee on efficiency

② No information if the process of cooling once started, can be stopped. If not, we might be responsible for another ice age.

③ Ethical concerns of interfering

with nature.

(4) High cost of operations
making process impractical.

Way ahead:

- limited climate engineering can be done to effectively reduce global warming.
- Yet, it may only be done after enough RnD and only upon being sure of the impacts of the process.
- Alternate technologies which are safe need to be developed.

17. Discuss how drought is more of a man-made disaster than a mere deficiency of rainfall. (Elaborate on the consequences of desertification that drought prone regions face). Also, bring out the preventive steps to be taken in light of targets to curb desertification as mentioned under the SDGs.

चर्चा कीजिए कि किस प्रकार सूखा केवल वर्षा की कमी से पैदा आपदा न हो कर मुख्य रूप से एक मानव-निर्मित आपदा है। सूखा प्रवण क्षेत्रों द्वारा सामना किए जाने वाले मरुस्थलीकरण के परिणामों को विस्तार से बताइए। साथ ही, मरुस्थलीकरण पर अंकुश लगाने के लिए SDGs के अंतर्गत उल्लिखित लक्ष्यों के प्रकाश में उठाए जाने वाले निवारक कदमों को स्पष्ट कीजिए।

- Drought is not always caused due to poor rainfall / soil moisture.
- Many a times, it is the consequence of poor soil management and poor water management.

① Improper water division; allowing rainwater runoff are responsible for why the same region floods during monsoon & is dry in summer.

② Poor cropping practices

- Sowing water intensive crops due to economic benefits, even when the soil & climate do not support it.

Eg: Paddy cultivation in semi arid Punjab.

Such improper soil & water management is the reason behind majority of droughts.

This very often leads to desertification, marked by a gradual degradation of soil when it turns from fertile to semi arid and arid.

Consequences of desertification

- out migration
- Reduction of once fertile deltas into marshes / swamps
- Economic instability
- Nutrition deficit due to lack of foodgrain
- Excess erosion & dust storms
- low rainfall as water drops do not coalesce.

Desertification of the Mesopotamian Tigris - Euphrates valley caused the decline of Babylonian civilization.

This same desertification, ^{has} extended now to as far wide as India.

Preventive Steps :

- ① Adherence to the Convention against Desertification [the most popularly signed treaty]
- ② Sensible water use
- ③ Waste water reuse & recycling
- ④ Better agricultural practices, cropping as per soil type and not as per ~~agricultural~~ economic benefits
- ⑤ Better soil management. Eg:
The recent issue of soil health cards
- ⑥ Reducing fertiliser subsidy & consequent use which degrades soil & causes alkalinization

18. India's first National Disaster Management Plan may fulfill the legal requirement of having a plan but it may not be very effective in achieving its objective of building resilience. Critically analyse.

भारत की प्रथम राष्ट्रीय आपदा प्रबंधन योजना, भले ही एक योजना होने की विधिक आवश्यकता को पूर्ण कर सकती है किन्तु यह प्रत्यास्थता निर्माण करने के अपने उद्देश्य को प्राप्त करने में अधिक प्रभावी नहीं हो सकती। आलोचनात्मक विश्लेषण कीजिए।

The ~~National~~ Disaster Management Act mandates the release of a Disaster Management Plan.

The government released the Plan in May 2016.

The Positives :-

- The plan is expansive, and covers all disasters including nuclear & industrial accidents.

- It is in line with the Sendai Action Framework, revolving around the need for resilience and risk management rather than relief & rehabilitation as the focus.

- It gives a lid of structural

reforms required to be made to buildings and other engineering requirements, along with drills & information generation to build resilience.

The Drawbacks :

- Despite its tall objectives & comprehensive provisions, it is feared that the plan will remain just on paper.
- There are no timelines to achieve risk building, further there is no enforcement mechanism.
- It ~~is~~ continues the approach of segmenting & separating disaster management of different disasters with different authorities, instead of promoting a holistic approach.

Way forward :-

- ① Need to bring in enforcement mechanism
- ② Social audit of the progress made can be done.
- ③ Need to improve coordination between different agencies for a holistic approach at disaster resilience building.
- ④ Need for a bottoms up approach involving local community

19. A better prepared community is key to effective disaster risk reduction. Citing specific examples, examine the importance of the role of local government and community in dealing with disasters.

प्रभावी आपदा जोखिम न्यूनीकरण के लिए एक बेहतर रूप से तैयार समुदाय महत्वपूर्ण है। विशिष्ट उदाहरण देते हुए आपदाओं से निपटने में स्थानीय सरकार एवं समुदाय की भूमिका के महत्व का परीक्षण कीजिए।

- When a first disaster strikes,
the first ones to provide support are

→ The community

→ local police

→ local tehsildar/ Patwari

- The National Disaster Response Force, the army and directions from top functionaries only come at a later stage.

- Therefore, the most important way to prevent a hazard from turning into a disaster is by building the capacity of the community to respond to the risk.

- The following steps should be taken
① Involving the community in

preparation of the district plan
and local plan.

- ② Training the policemen of lower levels.
- ③ Training the community through appropriate campaigns
- ④ Having designated local leaders who will guide the community in time of ~~conflict~~ disaster when it strikes and relaying information to the rest of the community.

Examples:

- In Maharashtra, many a times certain pockets have zero casualty in floods while the neighboring districts have hundreds dead.

This is because of better planning & preparation of the

local community in dealing with the disaster when it strikes -

- The same is the reason why even though Japan faces multiple earthquakes, hardly anyone dies.

This is because of internalisation of building norms & evacuation procedures.

Way ahead:

- Such global best practices must be imbibed in the Indian experience to prepare the community better & save lives

20. What is the role of NDRF in managing disasters in the country? Highlighting the challenges that NDRF has been facing, discuss why it is still the armed forces which end up being the most visible force at hand during disasters.

देश में आपदाओं के प्रबंधन में NDRF की क्या भूमिका है? NDRF द्वारा सामना की जाती रही चुनौतियों पर प्रकाश डालते हुए चर्चा कीजिए कि आपदाओं के दौरान केवल सशस्त्र बल ही क्यों अभी भी सहज और सर्वाधिक उपलब्ध बल के रूप में दृष्टिगोचर होते हैं।

The National Disaster Response Force is the designated authority under the Disaster Management Act, 2005 in dealing with disasters.

Its role is:

- Evacuation, search & rescue operations.
- Providing specialist response to the disaster
- Undertaking workshops and awareness generation campaigns

NDRF has saved many lives in its operations. Yet, it is plagued by many problems

- ① Delayed directions &

deployment of troops in affected areas

- ② Poor managerial structure leading to lack of co-ordination
 - ③ lack of motivation to join due to poor pay
 - ④ Substandard training.
 - ⑤ Lack of airforce which is most vital in search and rescue operations.
 - ⑥ No localised State Disaster Response Force
- These, among others are the reasons the army has to invariably step in.
- ↳ ① The army is always deployed nearby to towns & villages.
 - ② Easier to mobilise and quicker to Act
 - ③ presence of army fills in the lacuna caused by the lack of State Disaster

Response Force

- ④ Presence of helicopters & pilots which are most vital for search operations.

Way ahead :

- The States must constitute their own disaster response forces to cut down the burden on army
- The NDRF & SDRF should be given most power.
- Funding must be increased,
- Air wing must be provided to these forces to ease the burden on the army.