

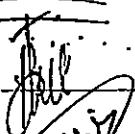
GEOGRAPHY & DISASTER MANAGEMENT

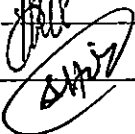
Time Allowed: 3 hrs.

Max. Marks: 250

Q.	Marks	Instructions to Candidate
1.	5.5	<ul style="list-style-type: none"> • There are 20 questions. • All questions are compulsory • The number of marks carried by a question is indicated against it. • Answer the questions in NOT MORE THAN 200 words each. Contents of the answer is more important than its length. • Answers must be written within the space provided. • Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.
2.	2.5	
3.	1.5	
4.	3.5	
5.	3	
6.	3.5	
7.	3.5	
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12.	5.5	
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14.	4.5	
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16.	6.5	
17.	5.5	
18.	5.5	
19.	5.5	
20.	5.5	


27/8/2017

1. Invigilator Signature 

2. Invigilator Signature 

Name JASROOP KAUR

Roll No. JAS-16411

Mobile No. 

Date 26-7-2017

Signature 26-7-2017

REMARKS

Hi Jastoop,

↳ Overall your answers are quite impressive & you have decent chances this year.

↳ However, some issues which I have noticed are,

1) Lack of precise points in some answers

2) Lack of consistent good answers

3) Add some facts, data, committee recommendation, constitutional articles, International organisation etc to substantiate your arguments

4) Some answers are bit vague with very general info for example questⁿ no. 3, 4 & 5.

5) Try to add more points in your answer.

All the Best !!

Q1. What do you understand by biological disaster? While listing the workplace and occupations prone to biological hazards, discuss the preventive and control measures that are required to be taken at these places. (12.5 Marks)

Disaster
epidemiology
to monitor
to detect
to control

Ans-

A biological disaster is an event which threatens the lives and wellbeing of thousands or millions of people due to outbreaks of diseases, accidental or intentional release of deadly viruses, bacteria, protozoans etc.

~~A biological disaster, by its very name, signifies a disaster spread due to a living organism. Such~~

Not needed

Workplaces and occupations prone to biological hazards.

- Medicine factories and industrial units that deal with live & cultivated viruses, bacteria etc.

- Places carrying on research and development regarding pathogens

- WUC centres which store old viruses such as the facility in the USA which had stored live samples of small pox & anthrax viruses

- Hospitals, gene pools, etc.

- Govt. & private R. & D. centres and some biological weapons.

Remarks

Preventive and control measures required -

- Viruses that have been eliminated from populations such as the small pox virus should be destroyed from all medical, R&D facilities.
- Destruction of biological weapons in a phased manner & under the auspices of the UNO.
- Prevention of build up of such biological weapons by ensuring strict adherence to the UN Convention on Biological Weapons.
- Strict measures to be practised as R&D facilities that deal with live & dangerous pathogens.
- Medicine factories should have strict quality control measures with regular checks.

5.5

Biological weapons, due to their contagious nature are potentially more dangerous than nuclear weapons & thus only careful control on facilities handling pathogens & destruction of biological weapons

Remarks can help prevent disaster.

Q2. Community based disaster management processes build local resilience, strengthen existing coping strategies and enhance security of lives and livelihoods. Examine. (12.5 Marks)

Ans.

Disaster management is the process of minimizing disasters and their effects through prevention, mitigation, relief and rehabilitation plans.

Community disaster management is one of the most important facets of disaster management.

⇒ It involves

- Increasing awareness of disaster risks of the area.
- Preventing disasters, especially man made by sustainable practices.
 - eg. Keeping forest lines in areas prone to forest fires.
 - eg. afforestation to ensure
 - eg. Not building big dams in seismically active zones.
- Mitigating & minimizing effects of a disaster.
 - eg. afforestation to minimize impact of floods.
- Preparing in event of a disaster.
 - eg. Keeping food supplies available & strong shelters ready to help protect against cyclones.

Very General point

Disaster
D.M.
Disaster
relief
Question
about CBDM
try to give
precise
introduction

Remarks

- Effective communication & warning of disasters
eg. Giving cyclone & forest fire warning over community radio.

- Immediate relief

eg. Distributing food packets, fire services, looking for missing people by groups of volunteers

Community disaster management thus helps by -

- Building local resilience

Through enhanced awareness, regular drills enacting disaster hit scenarios & minimizing risks

- Strengthening existing coping strategies

This is done by awareness eg. building resistant buildings in seismically active areas.

Local strategies to cope with disaster are practised

regularly & citizen initiative of communicating through radio, fire trucks helps cope with disasters.

- Security of lives is enhanced by increased awareness, mitigation etc

Remarks

↳ The answer is very general & mostly talks about general disaster mgmt.
↳ Answer should be more focussed on community based disaster mgmt

Q3. There is a need to move away from disaster management to disaster risk management which requires us to pursue all developmental activity in a manner that lead to reduction of disaster risk. Discuss. (12.5 Marks)

Ans. Disaster management mainly deals with taking steps that minimize the effects of a disaster and taking relief and rehabilitation steps once a disaster has struck.

But just as important to disaster management is also the disaster risk management component.

It involves steps with reduce the risks of a disaster, or in other words prevent a disaster to the extent possible.

This is mainly applicable to man made disasters.

Reducing disaster risk

This mainly deals with carrying on development in a manner that is sustainable & doesn't mean nature with exacerbates the risk of a disaster.

- eg: Not building large dams in seismically active zones

Remarks

Demand of the question is to mention the overall impact of disaster mgmt. & how it can be improved by disaster risk mgmt. Give examples in this regard

Irrelevant

1.5

Disaster
Management
Steps
Dams
- India
- Japan
- USA

eg The Tehri Dam has increased the seismicity of Western Himalayas
 eg Numerous dams in Arunachal Pradesh risk more number of earthquakes in the region.

- To reduce risk of floods

- Afforestation to be practised.
- Not building on the flood plains of a river in a hilly region
- Not leaving fields & slopes fallow & practising mulching.

- To reduce the risk of forest fires

- Old Oak & other broad leaf forests of the Himalayas which have been replaced by pine forests have the forest floor littered with pine needles. This needs to be reversed.
- Keeping forest fire lines - a patch of forest cleared away to provide discontinuity to forest fires.
- Forest dwellers shouldn't burn crop residue.

These sustainable & environment friendly practices can ensure a better world.

Remarks

Q4. Examine the cause of frequent forest fires in Indian hilly states in recent years. Also, suggest strategy to control this problem? (12.5 Marks)

Ans- Forest fires have increased in number in recent years which threatens to reduce our forest cover, kill many animals & destroy the natural flora of the region. Also, which big animals can run away, the smaller animals are worst affected.

Intra is not relevant w.r.t demand of the question

Fires have increased both in hilly areas & forests of Central India although their causes are different.

Cause of fires in hilly areas.

BROADLEAF TO PINE

Forests, especially of Western Himalayas, that consisted of Broadleaf Oak forests were replaced by the British by China Pine forests due to their commercial value.

Make it short

Pine trees drop their dry pine needle leaves which cover the forest floor. These needles are highly flammable & cause forest fires to spread rapidly.

Remarks

- Another cause of forest fires is the labourers and forest dwellers setting fire to small plants & forest litter so that new undergrowth can occur.

These fires rage out of control.

- Farmers living on edge of forests also cause fire by

- Burning crop residue which may spread to forest.

- Burning trees to expand agricultural area.

- Spread of weeds such as Lantana have increased forest fire spreads as they catch fire easily.

- Climate change which has lead to drier weather & hotter summers lead to more forest fires.

3.5

could have written this much earlier

Forest fires can thus be dealt with by keeping fire lines (clean patch of land to stop spread of fire), planting more oak trees, clearing away pine needles by forest dwellers & villagers not burning crop residue & forest litter. By these steps, fires can be controlled.

Remarks

Q5. The advances in science and technology lend themselves to greater possibilities for more efficient disaster management worldwide. Elaborate. (12.5 Marks)

Ans-

Disaster management is today attracting widespread attention due to increased disasters as a result of climate change (extreme weather events such as cloud burst, hurricanes, polar vortex etc) as well as due to unsustainable developmental practices by man leading to increased risk of both natural and man made disasters (eg 3 Dam burst, nuclear leakages etc)

But science & technology can help deal with disasters & their hazard as well as by reducing risk-

Prediction

Science can be used to predict disasters before they occur.

eg Doppler radars can give a 3 day advance warning of a cyclone.

eg - Cloud bursts can be predicted a few hours before it occurs by weather stations

eg - Indian GPS system NAVIC can be used to warn

Remarks

NAVIC for forest fire / How

3
no need

→ p/100
- NAVIC
- Terrain
- water
- Forests
- cloud
- Dam
- gas
- Disaster
- ...
- ...
- ...

of approaching forest fires.

Prevention

Some disasters, natural & man-made can be prevented by technology

eg - Cloud seeding to prevent cloud burst - by making a cloud rain when it has smaller water droplets & lesser water content.

Minimize & mitigate

eg - Using new & latest technology of civil engineering to design houses, dams, bridges & buildings that can withstand even strong earthquakes.

Relief & rehabilitation

eg - Drones can be used to drop food packets to flood affected areas.

eg - Drones can be used to lift rubble of buildings that collapsed due to an earthquake to look for survivors.

Thus science & technology, can help in all areas of disaster management from prevention & mitigation to relief & rehabilitation.

Remarks

Q6. Water resource augmentation, conservation, efficient utilization will be very important determiner of India's future development. What is the status of water resource in India and discuss needs for its conservation and efficient utilization. (12.5 Marks)

Ans. India has 2.7% of the total land area of the world but has 4.0% of the total water resources. Yet in 2011, India was declared as a water scarce nation.

Status of water resources in India.

Rivers

India has large transnational rivers such as Indus, Ganga, Brahmaputra, Godavari & Krishna that carry enormous amounts of fresh water.

These are not transnational

But these face challenges

• Increasing polluted water because of industrial effluents, sewage, human excreta etc.

• Decreased flow in rivers, especially of south India because of erratic monsoon.

• Northern perennial rivers may disappear because of climate change & disappearing glaciers.

• Over exploitation, especially in south India due to water intensive crops & demand by urban centres. eg. Bengaluru takes 30% of Karnataka's share of fresh water.

• Groundwater

Remarks

You have mostly answered need for conservation of water resources

Northern plains have a rich groundwater table & also in the coastal plains of Peninsular India. But,

- Groundwater is ~~supplied~~ rapidly decreasing due to use for crops such as ~~rice~~ in Punjab.
- Pollution of groundwater eg. Release being by industries of ~~UP~~ Bihar due to which it is poisoned.
- Arsenic contaminated groundwater in West Bengal, Bihar, parts of ~~Uttaranchal~~ & Punjab causing cancer.

• Wetlands

India has a rich variety of wetlands such as lakes, lagoons, backwaters etc.

- But India has lost ~~some~~ of wetlands since 1950 to urbanization, industries etc.

Conservation of these water resources is important because:

- Water sustain all our economic activities - agriculture & industries & we need it to live.
- Climate change threatens both the monsoon & glaciers which will lead to water scarcity.
- Our activities has lead to polluted & diminishing water resources.

These activities are thought constant except agriculture.

Remarks / Invention can help protect water.

Q7. What factors are behind the growth and present location pattern of automobile industry in India? (12.5 Marks)

Delhi
Gurgaon
Bangalore
Chennai

Ans- General Motors was one of the first companies to have set shop in independent India. Since then, we have come a long way & at present, India is the 5th largest exporter of automobiles in the world.



↳ Diagrams should always value add some value in your answer

↳ Here this program is not adding much input

↳ You could have just enlisted the cities

3.5

Factors behind location of automobile industry

India

Automobile

Automobile industry is usually located in regions that have a lot of industries.

Remarks

as this provides the skilled labours, expertise, capital etc to set up an automobile unit.

• Markets & seaports

Mumbai & Pune ^{& Kolkata} provides seaport access for export of vehicles and ~~Delhi~~ ^{Bangalore} provides proximity to markets.

• Historical reasons & Government effort

Historical reasons eg manufacturing of defence vehicles at Jabalpur as well as governmental effort has even lead to automobile industry coming up in relatively isolated areas.

• Growth of automobile industry

Growth of the industry was slow to begin with but gradually picked pace as a result of

• Liberalization - Privatization - Globalization of world
 increasing FDI allowed in automobile sector over the years.

• Increased availability of cheap skilled labour.
 • India with its growing GDP offers a huge market

Remarks

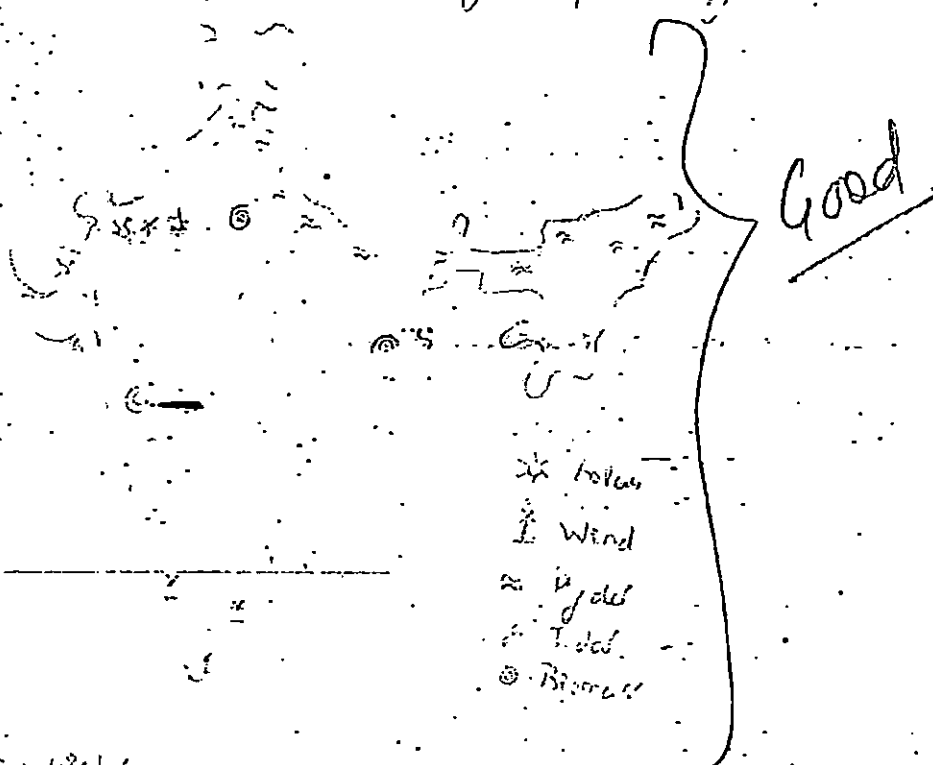
Q8. Renewable energy is emerging as anchor of Indian economic development. What is the spatial distribution of renewable energy resources in India? What efforts have been made to augment these resources? (12.5 Marks)

10.00
10.00
10.00
10.00
10.00

Ans- Renewable energy is that energy derived from sources that are available in an unlimited supply & hence, unlike fossil fuels, don't run out.

Source: Solar, Wind, Hydel, Tidal, Biomass energies

These also don't release carbon dioxide or other greenhouse gases in a big quantity, are thus clean.



A

India is richly endowed with renewable energy.

• Solar

There is abundance of sun shine across the nation, but especially in Rajasthan, Gujarat, Andhra Pradesh, Karnataka, Tamil Nadu, West Bengal, Kerala, etc.

Remarks

Hydel energy

Immense hydroelectric potential exists in Northern plains & Northeast due to perennial fast flowing rivers such as the Chenab, Beas, Ganga, Brahmaputra.

Big hydel rivers such as Krishna, Godavari also have hydroelectric potential.

Tidal energy

Potential exists mainly at the Gulf of Kambhat & at the coast of Tamil Nadu & Karnataka.

Wind energy

Huge potential exists in Thar Desert & Coastal states. Tamil Nadu has developed the most potential followed by Rajasthan.

Steps taken by government

Pledge in the Paris Pact

Renewable energy potential 60 GW wind, 10 GW small

to create 175 GW of by 2020 (100 GW solar, hydro, 5 GW biomass)

International Solar Alliance to promote use of solar energy.

Remarks

Write more
Precise regions

Q9. Environmental concerns have emerged as major area of Urbanization and urban planning in India. What are the reasons behind this? What effective steps must be taken to ensure that Indian urbanization is environment friendly? (12.5 Marks)

• Identify
• Define
• Measure
• Evaluate
• Analyze

Ans. Cities are expanding at a rapid rate. According to the 2011 census, 31% of Indians lived in cities. This number will increase by another 40 crore by 2050.

Urbanization & environmental concerns

• Urbanization has lead to a number of environmental concerns.

Pollution

• Cities are inherently polluting as
- large number of vehicles emit toxic CO_2 , N_2O , SO_2 (carbon, nitrogen & sulphur oxides)
that cause air pollution

- leakage & untreated municipal & industrial wastes are dump ~~into~~ rivers & lakes causing water pollution.

- Landfills & large garbage dumps cause metals, plastic residues to seach into the soil causing soil pollution & contaminating ground water.

• Deforestation is part of urban expansion & part of

Remarks

trees leads to increased air pollution.

• Also Wetlands such as lakes, ponds & marshes are being destroyed to make way for buildings. eg Pallikanni marsh outside Chennai was reclaimed to build houses.

• Destruction of wetlands along with deforestation causes a number of other environmental problems.

- Heat island effect - where temperature of city is more than that of surrounding areas because of no trees & concrete & glass. ^{very} little absorb heat.

- This in turn creates low pressure thus leading to rainier rains.

- The rains in turn cause floods because wetlands where the flood water collects have been destroyed.

Steps to be taken

Afforestation

Plant lots of trees. eg Chandigarh has 1-1.5 lakh trees.

• Preserve wetlands to reduce heat island effect & floods.

• Use battery operated bikes, carpooling & expand public ~~to~~ travel eg using metro to decrease pollution.

• huge generation of garbage, composting & sanitary landfills

Remarks

HP

Public transport

Q10. What do you understand by energy security? How India should develop its energy mix to assure sustainable energy access to its people? Also discuss the steps taken by government in this direction. (12.5 Marks)

Ans.
Energy security can be defined as access to energy at all times. A situation where energy supply (be it of electricity or cooking fuel) is consistent in terms of quantity, quality and price.

Good

It should be regularly supplied, easy to access and affordable for the population of a country.

Do not repeat

HOW INDIA SHOULD DEVELOP ENERGY MIX

The first point to keep in mind is that reliance should be placed on a basket of different sources of energy instead of promoting just 1 or 2.

eg- Renewable energies like solar, small hydel (less than 25 MW), tidal, wind & biogas should be developed alongside.

Because solar, wind & tidal energy supplies suffer from supply inconsistency when the weather is cloudy, or winds subside & hence produce no electricity.

Remarks

- Secondly, different forms of renewable energy should be developed across different states of India so all states are self sufficient.

eg - Wind energy in Rajasthan & coastal India, solar & small hydel in northern states & Central India - etc.

- All India renewable energy grid connectivity should be provided so that energy can be transferred from energy surplus to energy deficit regions.

- Cooking fuel in the form of LPG should be provided at cheap rates which is encouraging cooking stoves & wood burning as they are polluting & unhealthy.
- Solar water heaters & solar cookers should be provided where LPG can't be provided.

⇒ Steps by government.

- Target of 175 GW of renewable energy set under the Paris Pact.
- Subsidized / Free of cost LPG cylinders provided under Ujjwala Yojana.
- 100 grids set up for renewable energy in rural areas.

Remarks: while ensuring energy security.

Q11. Ganga river system has been the lifeline of northern plains, however, this lifeline is threatened by anthropogenic activities, discuss. Also suggest what should be done to make Namami Ganga a success to develop a sustainable river ecosystem? (12.5 Marks)

Ans.

The Ganga, the largest river system of India serves nearly 50% of the Indian population. It is also considered 'holy' & is equated with a Goddess.

However, today Ganga suffers from a number of challenges

• Pollution

This is caused due to man-made ~~pollution~~ ^{pollution}

- Toxicous chemical & effluents from industries eg. chemicals from leather industry in Ludhiana
→ Kanpur

- Flow of pesticides, insecticides & fertilizers from farms

- Dumping of garbage of cities into rivers.

- Sewage & human excreta from towns flows into rivers.

• Reduced flow

- Due to damming of Ganga & its tributaries at many places, its flow has reduced considerably.

Remarks

in turn affects the flora & fauna of rivers
 (eg Ganges Dolphin has become endangered)
 and also affects the Sundarbans mangroves
 which need a steady supply of fresh water.

• Over fishing, illegal trade

- Over fishing & illegal trade in eg Turtles
 has depleted fish stock.

- Other fishes like Tilapia and it difficult to
 travel upstream to lay eggs because of dams.

⇒ Steps to make Namami Gange a success

- There should be better inter state coordination.
- Relocate polluting factories away from river banks as suggested by National Green Tribunal, NGT.
- Follow Zero liquid discharge norms for industries.
- Sewage treatment plants should treat all municipal sewage before it flows into Ganga.
- Spread awareness among citizens about pollution of Ganga.
- Allow NGOs, community policing to monitor dumping at river Ganga.

Plans to be made with planning cell & citizen participation
 Remarks: Can ensure clean rivers.

⇒ Brief introduction of Namami Gange is expected

Q12. India is the largest user of groundwater resources, which is unsustainable with visible signs emerging. Elaborate. How should India manage its groundwater resources with sustainable use? (12.5 Marks)

Ans.

Ground water is the water found under the ground in the form of aquifers which can be extracted using wells, pumps etc.

Ground water extraction in India has greatly increased due to

- Population increase
- Increased use in agriculture for eg in water guzzling crops such as rice.
- Increased urbanization which increases water demand.
- Ground water level has also fallen due to less recharge as a result of concrete surfaces in cities (where water can't seep into soil), surface run off due to deforestation.

⇒ Groundwater has thus fallen very low eg in Punjab its depth has decreased to 200 feet at places.

⇒ How to manage ground water

- The level to be maintained etc.

Remarks

aquifers throughout India in order to have a better India as water levels are very low.

- Make rainwater harvesting compulsory in both urban & rural areas.

eg Delhi government has made rainwater harvesting mandatory at all flyovers.

- Encourage revival of village ponds & building farm tanks where rainwater can be stored & used for agriculture.

- Spread awareness among people about depleting ground water levels & ask them to use water judiciously.

- Ground water extraction for agriculture should be tracked by meters.

- Pricing of water in both rural & urban areas must be high to discourage wasting.

Thus ground water, a precious resource can be saved & replenished through awareness, water harvesting & high pricing.

Good

Remarks

Q13. Ports are not just the facilitator of trade, but could be inclusive centers of economic development. In this light discuss the significance of Sagarmala project and its objectives. (12.5 Marks)

Ans.

The Sagarmala Project is a central government initiative to promote Port led development.

Hence ports and associated structures such as

- Waterways
- Railways & Dedicated freight corridors
- Transshipment points

- Cyclonics
- Logistics facilities

will be developed to encourage development of the coastal areas & the hinter land.

First discuss importance of ports.

Significance of Sagarmala

- Development of ports will increase cargo handling facility of Indian ports which will in turn increase trade.

- It will also allow Indian ports to develop as transshipment points where ships can be reloaded from one port to another.

Remarks

to another, a function that is now served by ports of Sri Lanka (eg Colombo) while India misses out.

- Development of waterways & dedicated freight corridors connecting the port will -
- Increase connectivity with inland manufacturing centres & markets

Also discuss promotion of fishing

- Develop transport which will decrease Indian logistics costs which are presently very high.

- Provide employment for construction.

• Development of godowns, cold storages & silos will also provide employment both in manufacturing & services.

Substantiate with examples

Ports will lead to development of townships around them & also concentrate industries which will promote economic growth.

Ports thus by providing connectivity, employment & spawning trade can help in economic growth.

Remarks

Q14. Sustainability of India's forest cover lies in adoption of social forestry, examine. Also discuss what factors are hampering the growth of social forestry in India? (12.5 Marks)

Ans- The Indian forest cover currently stands at about 23% of the country's area. But the minimum forest cover required is that of 33%

In order to increase forest area, the National Forest Policy of 1988 promoted the concept of social forestry under which the inhabitants of villages would help in by planting trees on common lands (shambhat), along fields and government would plant along Highways.

Social forestry can result in sustainable forest cover as

- People of the area village will have direct stake & involvement of the forest plantings which will ensure its protection & that no one cuts trees without participation
- People will plant only native trees & those that

The term social forestry was first used in India in 1976

Remarks: The answer to it would need to be...

practice of planting in native alien species.

- Due to direct involvement, trees will be better taken care of.
- It will provide employment to village locals.
- It will provide sustenance to villagers as they can use minor forest produce eg Tendu leaves, gum, lac etc.

=> Further: Improving growth of social forestry

4.5

- The process has been a top-down one instead of a bottom-up approach.
- The government officials often dictate villagers what to do & allow no local initiative.
- Fast maturing but water guzzling trees like Eucalyptus are planted which lead to fall in water table. Local varieties not planted.
- People are given no stake in the project & no incentive for protection of trees.
- Strict laws against cutting even a single tree.

Thus only if people are involved & given a

Remarks in the health of ~~country~~ ^{social} forestry.

You did not write need of social forestry in current scenario.

Q15. Discuss the origin, movement and characteristic of air masses and explain how air masses influence the world climate? (12.5 Marks)

Ans- Air masses are huge masses of air, about 1500 km long, 500 km wide & several km thick. An air mass has uniform physical properties at any given altitude. Thus at any height, the temperature, humidity, and pressure is uniform.

Air masses are formed in Homogenous featureless source regions which may be wide areas where the air mass gets its characteristics.

The North Pacific ocean gives rise to cold & moist air mass.

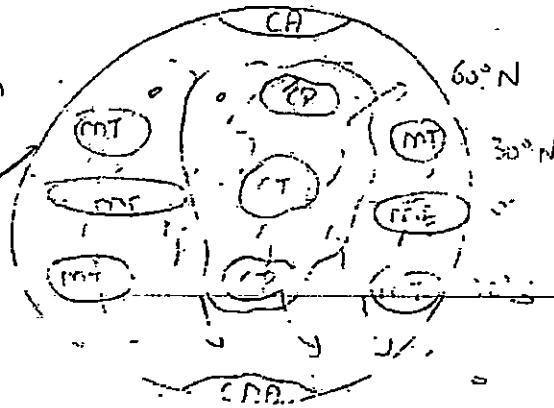
Air masses can be classified as

- ME - Maritime equatorial - It is moist & warm & very unstable & rises to cause rain. (10°S to 10°N of equator)
- MT - Maritime tropical - warm & moist & unstable
- CT - Continental tropical - found over land in tropics warm & dry.
- MP - Maritime polar - found over mid latitude ocean.

Remarks

- CP - Continental Polar. - found over mid latitude lands cool & dry.
- CAZ
CAA - Continental arctic & Antarctic - very cold & very dry.

You didn't discuss the movement & characteristics of air mass



How air masses influence climates.

- Air masses are helpful in demarcation of pressure, rain fall & vegetation belts.
- The air masses over the equatorial oceans are warm & moist & thus result in regular rain of the equatorial areas.
- The hot deserts of the Tropical latitudes (30°-35°N) are formed due to the continental tropical air mass which is hot & dry & thus causes very less rain.
- Temperate cyclones originate in the areas of mid-latitude polar air masses.

H.S.

Remarks

air mass very dry means less precipitation.

Q16. Explain the geographical factors responsible for the growth of mangrove vegetation in India and discuss its role in coastal ecology. (12.5 Marks)

Ans. Mangrove vegetation is a special kind of vegetation that grows in shallow coastal waters.

It requires -

- Brackish waters
- Steady supply of fresh water (of rivers)
- Muddy water
- Abundant sunshine
- High temperatures ($27^{\circ}\text{C} - 35^{\circ}\text{C}$)

In India Mangroves are found at the delta of Ganga; in West Bengal - called Sundarbans

- They are also found in Odisha (delta of Mahanadi, Brahamani), Andhra Pradesh (Godavari delta) & Tamil Nadu (Kaveri delta) etc.

In all these places, rivers bring fresh water & the muddy, warm & anaerobic coastal waters provide perfect conditions for mangroves.

Remarks

Role of mangroves in coastal ecology -

• They are rich reservoirs of CO_2 (Carbon-dioxide).
 On per unit area basis, they sequester more CO_2 than even tropical forests.

• They also store carbon for long periods in the soil. Due to anaerobic nature of soil, decomposition of plants and animals is very slow because of which carbon remains stored for hundreds of years.

• They help prevent soil erosion by binding soil particles.

• They protect the coasts from storm surges, cyclones, tsunamis etc.

• They provide home to many kinds of fishes, crabs, turtles etc. because of which they offer rich fish catch.

• They help purify water by binding heavy metals with their root nodules.

Mangroves thus offer lots of ecological benefits. Their rapid destruction by humans is a cause

Remarks

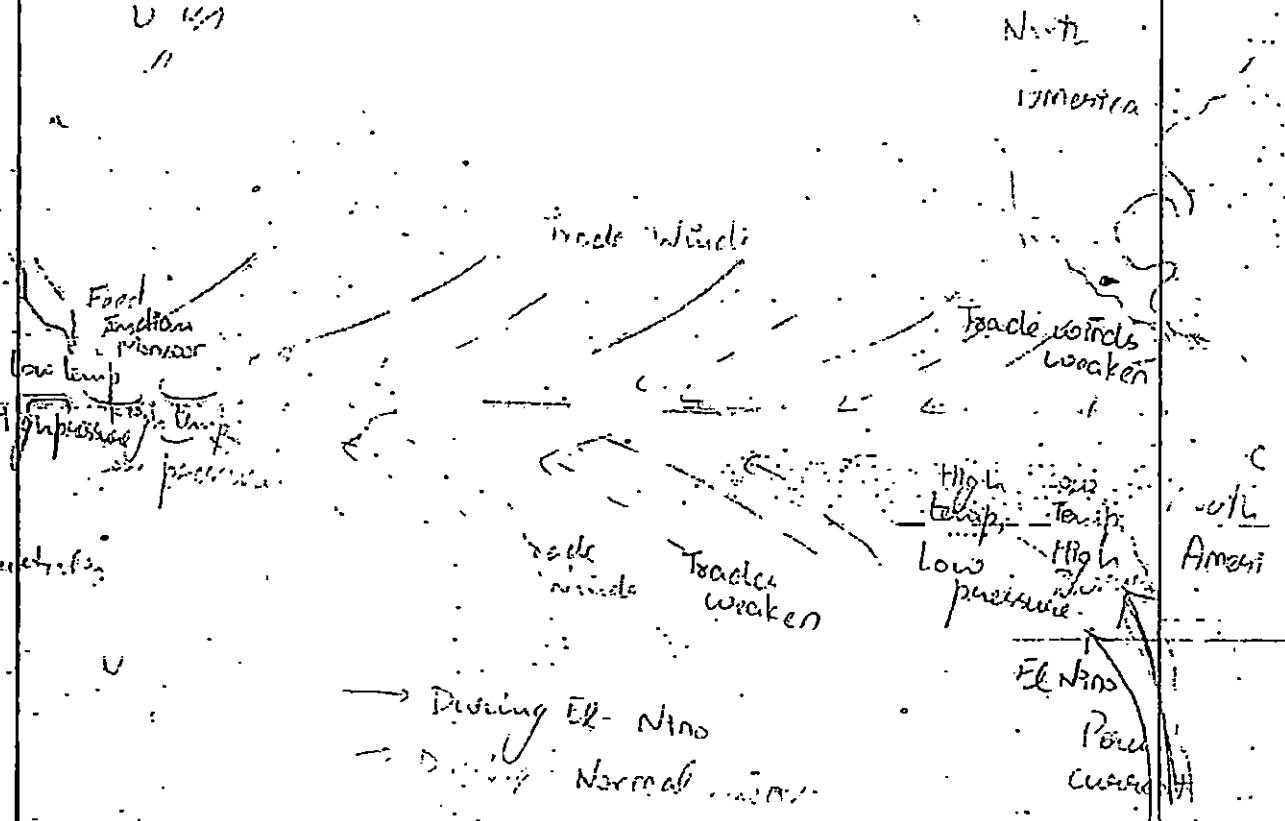
6.5

Very good

Q17. Describe, how EL-Nino affects the Indian Monsoon? Also, analyze its economic impact on India and world? (12.5 Marks)

Ans- El. Nino (child Christ in Spanish) is a warm water current that some times replaces the cold water Peruvian current, off the West Coast of South America along Peru & Chile.

As: A



How El. Nino affects Indian monsoon.

- During normal monsoon years, the Eastern Pacific (due to Peru current) has low temperatures & thus the air over it has high pressure.

Remarks

Consequently, the Western Pacific has high temperature & low air pressure.

• These trade winds flow from East Pacific to West Pacific.

• These in turn move over to the Indian Ocean, where they feed the Indian monsoon as they are warm and moist.

• But during El-Nino, the temperature & air pressure in West & East Pacific gets reversed & the Trade Winds weaken.

• Also, monsoonal winds flow towards East Indian & Pacific, instead of Indian mainland.

Effect on World & Indian economy

• El-Nino causes heavy rain along coast of South & North America. As a consequence, agriculture suffers.

Also fish catch decreases.

• Rain also decrease along East Africa, South East Asia & India, decreasing agriculture output.

More rains in Australia is good for agriculture.

Remarks

EL-Nino leads to drought in Australia

5.5

Good attempt

Q18. With increasing population pressure on pastoral and agricultural economy, the importance of marine resources is certain to increase. In this context explain, how India has utilized its marine resources? (12.5 Marks)

Indian population, though slowed down but ^{increase} the population growth is still steadily increasing. We will have surpassed China by 2040. But already 44% of our land is under agriculture. The maximum for any nation & thus it can't increase any further.

This is bound to put pressure on land to produce more food.

In such a situation, ~~resources~~ ^{resources}, such as fishes, shrimps, prawns can provide an alternate to agriculture as food.

Development of marine resources

- With a 7516 km long coastline, India is richly endowed with marine resources.
- India is one of the largest producers of fish in the world.
- The catch of fish is high.

Remarks

47%

Also discuss disguised unemployment

with Andhra Pradesh & West Bengal producing the most fish in India.

- Kerala has the ~~highest~~ ^{most} fish processing facility in India & processes most of the fish for ~~rearing~~, freezing etc.

- Nellore is the capital of Andhra Pradesh is the shrimp capital of India. Shrimp farming is also popular in Tamil Nadu & Karnataka.

- On farm & ponds, ~~reservoirs~~ reservoirs, dams etc; fresh water fishes are reared in Jharkhand, Damodar valley dam etc.

- Off shore fishing harbours are available at Paradwip, Vishakhapatnam, Chennai etc.

Challenges-

- Bottom trawling of fishes along coasts has severely depleted the fish catch.
- More off shore fishing harbours needed as fish catch along coast decreases.
- Farmers don't have big boats with GPS facility to deep sea fishing.

Remarks

5.5
Good

Q19. While alluvial plains are rich for agriculture, the plateau regions are great for mining and resource exploration. Elaborate with suitable examples. (12.5 Marks)

Ans.

Indian land ~~is~~ presents a varied topography with a variety of soils, forest & mineral resources.

• In the Northern plains, big rivers such as the Satluj, Ganga, Yamuna, Kosi etc leave behind huge amounts of sedimented alluvium.

• This alluvium has ~~not~~ resulted in formation of Northern plains which are rich for agricultural use.

• But being sedimentary ~~is~~ deposits, they are poor in metallic minerals.

• The Peninsular plateau on the other hand, is an igneous formation of the Deccan plateau formed due to lava flows.

• This, along with the Chotanagpur plateau which is rich in metallic minerals such as iron,

Remarks

aluminium, lead, zinc, copper etc.

- The Damodar series, river valleys of Godavari, Krishna, Kaveri, are rich in coal deposits due to vegetation that got trapped under the soil as a result of crustal movements.

- Also, Volcanic fields of Karnataka & Rajasthan mines of Andhra Pradesh have gold deposits.

- Petroleum & Natural gas is also found in offshore locations of Bombay High, Krishna Godavari basin.

Thus due to different rock structures, minerals found in Peninsular & Northern plateau region.

You could also talk about marine transgression & resultant formation of petroleum & oil resources.

Remarks

5.5
Good

Q20. Discuss the problems of agro-based industries in India. Do you think agro-based industry could be a better option to absorb shift of labour force from agriculture. What steps has government taken to promote agro-based industries in India? (12.5 Marks)

Ans. Agro based industry is one which is involved in processing, storing, canning of products obtained from agricultural operations.

eg: Jam & pickles making, biscuits, bread making, cotton textile, jute & sugar making, milk products.

⇒ Problems of agro based industry

• Problem of subsistence agriculture has resulted in little surplus for investment in industrial enterprise.

• Most agro based industries are in informal sector which are small scale, little or no modern machinery & no access to institutional credit.

• Like government in future to set up agro based industry.

Remarks

Despite these problems, agro based industries can help

- By processing agricultural products - Now only 5% of agri products are processed,

- By providing employment to excess labour engaged in hidden unemployment on the farms

- It can provide good price to farmers for their produce.

- Pull up agricultural growth

→ Government has promoted it by:

Food parks scheme based on hub & spoke model to come up in different states

- Coop model to agro based industry.
- Agriculture processing zones

Remarks