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GENERAL STUDIES (TEST CODE : 1986)

Name of Candidate	Kanika		
Medium Eng./Hindi	English	**Registration Number**	1005490
Center		**Date**	

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
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9	10	
10	10	
11	15	
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15	15	
16	15	
17	15	
18	15	
19	15	
20	15	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
   उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न–पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI**
   इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**
   सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
   प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other that the authorized one.
   प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न–सह–उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
   प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
   उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

EVALUATION INDICATORS

1. **Contextual Competence**
2. **Content Competence**
3. **Language Competence**
4. **Introduction Competence**
5. **Structure - Presentation Competence**
6. **Conclusion Competence**

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

All the Best

1. Highlighting the conditions conducive to Karst Topography, discuss its distribution around the world.

Limestone or Calcium Carbonate topography is also known as Karst topography.

Conditions conducive to its formation

(1) Absence of surface drainage.

(2) Presence of huge, dense and massive soluble limestone, just above the non-porous bed rock.

(3) Presence of heavy rainfall, whose water seeps down through cracks. This water re-emerges at a point where water table reaches the surface

(4) Underground caves or Cavern are formed by water action.

(5) Presence of sink-holes which are funnel shaped depressions.

(6) Sink holes became large enough to be called pot-holes.

(7) Depositional forms ← Stalagmite, Stalactites, Pillars

Distribution around the world

Approximately 15% of worlds' land surface is karst.

Most extensive karst area → Limestones of Mississipian age in USA.

Other areas

- Appalachians
- west Texas
- eastern Mexico
- England and Ireland
- mediterranean region — Greece Turkey Israel are arid karst.
- Yugoslavia & Ukraine

Karst topography is formed by chemical erosion and weathering of carbonate rocks — limestone
— dolomites.

In India, Karst is present in Vindhya Region, the Himalayas, Pachmari and areas near Bastar Chattisgarh.

U.P.S.C.

2. Exaction of groundwater in India has reached a level that is threatening the water security in the country. Analyse the guidelines issued by Central Ground water Authority in this regard.

India is the largest user of groundwater in the world (25% of total).

Severity of the problem

(1) 90% of groundwater is used for irrigation and agriculture:

(2) Excessive extraction of groundwater for irrigation has led to problems of salinity in northern states of Punjab Haryana

(3) The water table in some regions have gone down beyond reach.

(4) Acute water crises may come up if groundwater recharge remains far behind than groundwater usage.

(5) Along with unsustainable usage, groundwater in India is also polluted by presence of heavy metals like fluoride & Arsenic.

Guidelines by Central Ground water Authority

(1) Mandatory obtaining No-Objection-Certificate by users of ground water. Exception — agriculture, defence units, private houses etc.

(2) Registration of drilling units.

(3) No extraction of ground water around wetland regions (exception: MSMEs)

(4) Group housing societies to pay compensation and fees.

(5) Strict punishment for violators etc

challenges

(1) Irrigation is exempted from rules even though it utilises maximum ground water

(2) Clause for payment of fees for violation undermines the overall cause.

way ahead

Jal Shakti Abhiyan of GOI, which revolves around restoration and reconstruction of water harvesting units, ~~like~~ along with sustainable water management must be taken up along with conservation of groundwater

3. Challenges that lie in harnessing the potential of ~~the~~ Hydroelectricity in N.E. India.

~~North~~ Hydro-electricity refers to electricity generated by running water. The method includes various forms like :-

- Impoundment
- Pumped Storage
- Rung the river

Potential of Hydroelectricity in North East

① North East Indian rivers account for 40% of the total potential of rivers in India.

② Barak and Brahmputra rivers ~~system~~ along with their tributaries have vast reach and potential.

③ Can address the energy shortage of N.E. region ~~with~~.

④ Alternate / renewable source of energy so no environmental pollution. ~~to~~

Challenging in harnessing the potential

(1) Ecological
- obstructing the natural flow of rivers may cause rivers to change its course. This may lead to floods & disaster.

(2) Environmental
- Constructing dams would require deforestation of pristine tropical ever green vegetation covers.

(3) Wildlife
Various National Parks of North East may get submerged or flooded which might lead to loss of wildlife.
eg: Nameri, Manas, Dehing Patkai, Kaziranga etc.

(4) Social
Existence of various tribal groups who have sacred relations with land & water & forests.

Recently Etalin project in Assam was stayed by Supreme Court on grounds of inadequate Environmental Impact Assessment.

Instead of large dams, small hydro & run-of the river projects seem more sustainable as of now.

4. In light of various recent studies, discuss how climate change is affecting the jet streams.

Jet stream refer to a narrow band of fast and strong winds blowing in the upper atmosphere, horizontally, generally from west to East.

Types → Sub Tropical Jet Streams
→ Tropical Easterly " "
→ Polar Night Jet Streams

Climate change & Jet Streams

(1) Recent studies have shown that Climate change is causing the Jet Streams to meander up & down more strongly. This can make weather system extreme.

(2) Arctic warming and unstable polar vortex is also causing Jet streams to fluctuate from their normal paths, thus causing situation of floods & draught simultaneously.

(3) When movements of Jet streams coincide with climate driven extremes - heat, drought intense rainfall - the consequences can be catastrophic.

(4) Global warming can lead to slower summer jet stream. This can allow regional weather system like fronts and air mass to persist in same location for longer periods of time.

(5) Jet streams are responsible for having moderating affect on global climate. Climate change and warming due to GHGs is said to be having affect on speed, force & direction of Jet streams. This has led to incidents of Heat Domes, marine and terrestrial heat wave.

Jet Streams have strong connection with India's South west summer monsoon, which is the backbone of Indian economy. Global efforts towards COP 26 at Glasgow and Paris agreement can definately slow down the pace of global warming.

5. Highlight the distribution of coal in India, discuss the issues associated with coal mining.

Coal in India is found in two main geographic zones viz Gondwana Coal and Tertiary Coal.

Gondwana Coal → makes 98% of total reserves
- → carbon content is less compared to the Carboniferous Coal.
- → metallurgical grade high quality Coal.
- → is moisture free But contains Sulphur & phosphorous.
- → found in → Damodar valley (Jharkhand & W. Bengal)
  - → Mahanadi valley (Chattisgarh Odisha)
  - → Son (Madhya Pradesh)
- → some coalfields → Raniganj
  - → Korba
  - → Hazaribagh
  - → Jharia
  - → Dhanbad
  - etc.

Tertiary Coal → extra Peninsular
- → low carbon + high moisture
- → Assam (Makum coalfield)
- → Arunachal Pradesh
- → Meghalaya Plateau etc.
- → J&K

Issues associated with coal mining

(1) Obsolete technology and heavy dependence on human labour.

(2) Environmental - high ash content of Indian coal leads to heavy pollution of particulate matter, Sulphur & phosphorus.

(3) Problem associated with coal block auctioning.

(4) Delayed environment and forest clearances

(5) Land acquisition problems.

(6) Issues related to illegal coal mining and use of child labour in mining

(7) Heavy dependence on imports for coking coal.

Recent initiative like UTTAM application for coal quality monitoring, coal linkage policy, CAMS (coal allocation monitoring system), opening up of commercial coal mining etc are steps in right direction

6 Assess the efforts India has taken towards achieving the goal of Strategic Plan for Biodiversity (2021-2020).

The COP-10 of Convention of Biodiversity adopted a 10 year framework, also known as "Strategic Plan for Biodiversity 2011-20". It provided a set of 20 ambitious yet achievable targets @ Aichi Targets for biodiversity

Efforts made by India to achieve the goal

(1) India's forest policy ~~is~~ aims at achieving the target of 33% of land under forest. (Currently ~ 25%)

(2) More than 20% of India's total geographical area is under biodiversity conservation.

(3) Population of Lion and One-horned Indian Rhino has substantially increases.

(4) measures for sustainable management of agriculture, fisheries & forests have been put in place.

(5) mechanism for preservation of genetic diversity and traditional knowledge relating to biodiversity have also been adopted.

(6) The National Biodiversity Act 2002 has been implemented for conservation of plant & animal biodiversity.

Challenges that remain

(1) Illegal encroachment of eco sensitive zones around protected areas.

(2) Animals living outside protected areas and increasing cases of human wildlife conflicts.

(3) Preservation of plant & genetic variety and acknowledgement of rights of biodiversity farmers has not been appropriate.

(4) Illegal ~~ac~~ fishing and mining activities in ecological fragile areas are leading to species loss.

The recently adopted Kunming declaration at COP 15 of UNCBD sets ambitious targets for countries to be achieved with a collective effort for the Collective Good.

7. Ecosystem Restoration ? Challenges & opportunities associated with this concept

Ecosystem restoration (ER) refers to a sustainable ~~method~~ of method of environment conservation which involves assisting in the recovery of ecosystem that have been degraded & conserving those that are intact.

India's Ecosystem Restoration Initiatives

- National Afforestation Programme
- National mission for Green India
- National Action Plan on Climate change
- MGNREGA also recognises natural resources restoration & links it with rural livelihood.

Opportunities associated with ER

(1) ~~He~~ ER shall help improve the health of forests, biodiversity, environment and carbon sinks.

(2) ER can help India adhere to its ~~promise~~ goals under Bonn challenge and Paris agreement.

(3) Economic → ER costs much less than new ecosystem setup and compensatory forestation.

(4) Productivity → ER can help increase:

- economic productivity
- Ecological "
- human & labour "
- social & psychological "

Challenges associated with ER

- Encroachment & grazing is linked with livelihood but degrades forests.
- Link between poverty and environmental degradation
- Planting without considering local ecology can be wrongful and disastrous for biodiversity
- Lack of adequate financing
- centre-state conflicts and conflicts between other stakeholders is challenging.

An inclusive approach of active engagement of local communities, NGOs, awareness and capacity building of stakeholders is need of the hour.

8. Challenges associated with rapidly increasing Biomed. waste in India - Also state the key features of the Bio Med waste management (Amend) Rules 2018.

Biomedical waste refers to waste that is generated during medical treatment of humans and animals. During the covID-pandamic generation of Biomedical waste increased manifold, more than its usual rate of disposal.

Challenges associated with Biomedical waste

(1) Challenges to health → If disposed inadequately such waste can cause severe infections and ailments.

(2) Superbugs → Inappropriate disposal can lead to increase in chances of evolution of micro anti-microbial resistant bugs.

(3) Soil & Environmental health → can cause toxicity of soil soil health and soil and water pollution.

(4) One health approach → Infections arising out of improper waste disposal can cause a threat of zoonotic diseases and vice versa.

(5) Economic & social → The disposal cost is far less than the cost that might arise due to reckless biomedical waste generation

Bio. medical waste management Rules 2018

(1) Segregation of waste into 4 categories viz human anatomical waste, animal waste etc

(2) Waste segregation at source and bar-coding of sites of generation.

(3) Training of human resources and seperate staff to handle such waste.

(4) Specific biomedical waste disposal sites.

(5) Immunisation & vaccination of the staff involved.

(6) NO bio-med waste shall be mixed with waste of any other kind.

Even though the rules put in place must be necessarily put to implementation at ground level, however still mass awareness and household biomedical waste ~~incineration~~ management should also be given simultaneous considerations.

9. Role played by local bodies in various phases of DM.

Disaster management involves various steps pertaining to things to be done pre & post disaster. Role of communities is essential at every stage of disaster management cycle.

(1) Mapping and documenting the locations of disasters, time & duration, impact and vulnerability etc.

(2) Mitigation and preparedness: which involves short term and long term planning, suggesting measures to reduce socio-economic vulnerability. eg: local communities have expertise in building traditional & disaster resiliant infrastructure eg: Dhajji diwari, upraised houses etc.

(3) Communication & coordination during the disaster phase

(4) Relief operations during and after the disaster occurance.

(5) Volunteer to assist the administration

(6) Long term relief and build back measures like livelihood creation, recovery (both social & economic) etc.

Hence community led disaster management planning at local bodies level can give real-time results both in planning and implementation.

During the COVID pandemic, role of local bodies in helping the administration was very actively visible.

eg → setting up quarantine camps
↳ vaccine availability
↳ awareness generation
↳ providing food & water security
↳ retaining youth and immigrants in local jobs
↳ sustaining on limited resources etc.

Hence decentralised planning and coordinated effort can help reduce the fatalities caused by disaster and its after math.

10. Impact based forecasting in Dis. Management? How can such forecasting strengthen the DM preparedness?

Impact Based Forecasting (IBF) refers to weather monitoring and meteorological predictions which take into account ~~both~~ Vulnerability & Hazard to forecast Impact in a region specific approach.

How can IBF strengthen DM preparedness

(1) Takes into account both social & economic vulnerabilities and ecological vulnerability of an area to estimate the impact of a disaster.

(2) Can help the local community in preparedness + mitigation efforts.

(3) Can assist the administration to better plan the relief and rescue operations based on estimated impact

(4) Can help in taking up planning at short term, medium term and long term to reduce the vulnerability.
eg: Taking up nature based solutions like planting shelter belts, magrooves etc for future preparedness.

(5) Can ease communication and data dissemination at both pre & all stages of disaster management viz, → pre / ↘ during / ↗ post

Recently, Indian Meteorological Dept came up with Impact Based Cyclone warning system for states most affected by tropical cyclones.

Impact Based Forecast is a step ahead from the conventional weather based forecasting. It can help the administration to better utilize the capacities of National Disaster Relief Force & other paramilitary forces well on time.

11. Plate tectonics is a unifying theory combining the continental drift and seafloor spreading theories, explain many features and processes that we find on the Earth. Discuss.

Earli Plate Tectonic Theory came as an improvisation over continental drift and sea floor spreading.

Continental Drift	Sea Floor Spreading	Plate Tectonic Theory
explained formation of continents only	explained formation of oceanic beds only	explained formation of both oceanic & continental. ~~bed~~
polar fleeing force, gravitational force, tidal force etc.	polar fleeing, gravitational force etc.	Convectional current in mantle drive overlying crust.
evidence - zig zag formation, presence of tittille deposits, fossils etc.	presence of mid oceanic ridges, trenches etc. paleomagnetism etc	presence of volcanoes, earthquakes etc. on plate interaction margins.

Plate-Tectonic theories explains formation of features of earth due to interaction of 7 major and several minor plates viz. North american plate, eurasian plate, african plate etc.

Type of interaction and associated features

① Continental - continental

Convergence → gives rise to mountains
↳ eg: Himalayas are formed due to convergence of Eurasian and Indo-Australian plate

→ earthquake zones.

→ various types of folds are formed. formation of synclines and anticlines.

② Oceanic - continent convergence

↳ gives rises to formation of volcanoes
eg: ~~Ring~~ Ring of fire at the boundary of Pacific plate and continental plate.

→ subduction zones

③ Oceanic - oceanic - divergence
leds to formation of mid-oceanic ridges and trenches.

④
Plate tectonic theory also explain existance of → seismic zones
→ faults
→ geysers and hot springs
→ oceanic bed's features
→ Benioff zones etc.

⑤ Plate tectonic theory also gives precise explanation to processes and phenomena like paleomagnetism, formation of igneous rocks, earth's axial theory, gravitational anomalies etc.

Hence pt. sea-floor spreading theory paved the way for plate tectonic theory which explained various features and processes associated with earth's formation and its topography.

12. Pattern of Indian monsoon has been witnessing changes in recent decades. Examine in the light of recent studies linking the phenomenon to climate change.

Monsoon refers to the seasonal reversal of winds that occurs over the Indian subcontinent and brings along with it rainfall ↔ South west summer monsoon & north east winter monsoon.

Recent changes in monsoon pattern due to Climate change

(1) Climate change is making the monsoon more erratic and violent.

(2) Low pressure area builds up over Arabian sea (due to global warming). This causes heavy rainfall in western Ghats.

(3) Climate change is leading to more instances of cloud burst in Himalayan states.

(4) Changes occuring in arrival and retreat of mansoon is causing delay overall delay in onset of all other seasons.

(5) The recent Assessment of climate change over Indian Ocean Region (by M/o ES) lays out that state of mansoon circulations has weakened in western Ghats and Indo-Gangetic plains.

(6) Simultaneously, incidents of localised heavy rainfall have increased.

(7) Duration of dryspells between rain in mansoon season have also increased

(8) Various studies have predicted an increase of 14% in mansoon rainfall by the end of century if GHG remain high.

(9) Global warming is also leading to changes in Sea Surface Temperature. This has strong links with mansoon patterns. The land sea temperature gradiant weakens thus drying mansoon circulations.

(10) Cases of ~~making~~ marine and terrestrial heat wave also weaken Monsoon circulations.

- In this regard, India's commitment to Paris agreement, her efforts towards attaining net neutrality, reducing green house gases and commitment to Bonn challenge are promising.

- COP26 at Glasgow and efforts of ~~global~~ global community towards sustainable development and climate financing must be sincerely pursued..

The recently brought out "Vulnerability Index" for every district by M/o ES brings out vulnerability due to climate linked hazards. Accordingly state and community coordinate efforts must be put in place to reduce rainfall dependence for agriculture and resorting to nature based solutions.

13. Highlighting the reasons for high concentration of plantations in South India. Give an account of significance & challenges that the plantation sector of S India is confronted with.

Plantation refers to agricultural practise of growing single crops mostly of commercial importance like Sugarcane, coffee, tea, palm banana etc.

Reasons for high concentration in S. India

(1) Weather – The sub-tropical climate of south India states provides suitable conditions for plantation crops.

(2) Hill slopes – Both high altitude hills and also hill slopes prevent rain water to stagnate. Thus providing conditions for coffee and tea cultivation.

(3) Rainfall → adequate orographic rain on western ghats, and winter rainfall in Tamil Nadu coast.

(5) Long growing season available for perennial growth.

(6) Cooperative societies play an active role in providing forward & backward linkage to market.

(7) Government policies support the plantation sector in south Indian states. eg: Oil palm, Coconut, banana, sugarcane

(8) Proximity to ports like Kochi, Ennore etc

Significance of plantation sector in S. India

- South India states contribute approximately 60% to the total share of plantation sector in India.
- Gives employment to around 13 lakh small and marginal farmers and an equal number of labourers.
- States like Karnataka hold near monopoly in coffee production of exquisite variety eg Arabica coffee, wayanad coffee etc. which forms part of exports from India

- Cardomom and rubber plantations are also concentrated in south Indian states like Kerala & Tamil Nadu.

Challenges faced by plantation Sector

(1) Climatic hazards - mainly tropical cyclones and drought conditions.

(2) Un-renumerative prices : eg Natural Rubber has been severly affected and farmers are abandoning rubber plantation.

(3) Diseases and infections - eg: Cardomom is highly suseptible to fungal damage and high rainfall conditions happening due to climate change.

(4) Poor infrastructure, obsolete technology & inadequate investment in R&D.

Plantation sector in India has huge potential in generating export income, employment and input for food processing industry in India. Therefore investment in Food Processing Parks, Technology & R&D is need of the hour.

U.P.S.C.

14. Industrial Inertia? Bring out the factors that contribute to the industrial inertia and also give a few examples from Indian context.

When industries dont move away from an area, despite the locational disadvantage, the phenomena is called Industrial Inertia.

Factors that Contribute to Industrial Inertia

(1) Labour → existance of large pool of skilled & experienced workers, support services.

(2) Transport → well developed rail-road network. ∴ even if raw material supply is exhausted, it can be imported from other areas.

(3) Capital → Heavy Industry espicially requires lot of capital to start with. It is always cheaper to modernise or expand an existing location rather than moving to a new site.

eg: when cotton textile industry of Lakechris declined, they converted

to light engineering goods instead of moving out.

(4) Market eg: Iron & Steel industry provide raw material for secondary manufacturing industries such as automobile, heavy engineering etc. ie existance of secondary market comes into play for primary industry.

(5) Government Policies pertaining to industries at a particular region also play a role. Example, govt gives various subsidies on land acquisition in certain states to boost industrial growth and development.

Examples from Indian Context

(1) Beedi Industry in Jabalpur due to supply chain of tendu leaves.

(2) Lock Industry in Aligarh.

Industrial inertia has both cons and pros. While it helps in development of manufacturing and industrial hubs which ~~d~~ boosts regional development, it also skews down development to only certain regions.

way ahead

(1) Promotion of Ease of Doing Business across states and regions.

(2) Boosting one nation one market

(3) Integrating industrial policy and export policy.

(4) This must also be supplemented by development of backward, remote and areas.

(5) Transportation and logistical network must be boosted to enhance reach to all places.

(6) While industry inertia holds its own importance, efforts must also be made to boost MSMEs and and stand alone industries to promote more holistic growth environment.

प्रश्न संख्या (Question No.) 15.

Rare earth elements ? Industrial applications ? Distribution across the world ?

Rare earth elements are a group of 17 metallic elements like 15 lanthanoids & Yttrium, Scandium. ~~etc~~.

These are heavy density, pure elements with multiple usage.

Industrial applications

(1) They have unique ~~metal~~ magnetic, luminescent, and electrochemical properties and are thus used in consumer electronics, computers & networks, communications, Health care, etc.

(2) Find usage in futuristic technologies like high temperature superconductivity, safe storage of hydrogen

(3) Addition of REEs to metallurgy, alloying and steel increases strength and thermal stability.

(4) Also usable in ceramic and glass industry for coating, colouring etc.

(5) REEs have extensive usage in permanent magnets, X ray tubes, fluorescent lamps etc.

Distribution across the world

(1) China produces 90% of rare earth elements as of today. REEs are found in Chinese province of Xinjiang, Maanduping etc.

(2) Also found in mountain passes of USA and in regions of Texas and Mexico.

(3) Some reserves of REE are also found in Australia and Japan.

(4) India → REE are found in monazite sand on beaches of Kerela. India imports most of its needs from China.

(5) US imports 80% of its needs from China &
EU " 98% of its needs from China

India's current policy on Rare Earths

(1) Exploration has been conducted by Bureau of Mines & Department of Atomic Energy.

(2) IREL India Limited has a monopoly over primary mineral that contains REEs: monazite beaches sand found in coastal states.

way-ahead.

Ra Rare earth elements are not so rare, rather their extraction is difficult. Therefore technology development capacity shall determine the future of REE, which is currently dominated by China.

India should also coordinate with other players like Quad and build up a strategic reserve as a buffer against global supply crises.

16. Causes behind various forms of human-wild life conflict in India; steps taken by Govt, with emphasis on 'Landscape Approach to address Human-Elephant Conflicts'.

According to estimates, approximately 90 elephants die annually in India due to incidents of human-wildlife conflict. Other categories include →
- Monkey menace
- wolf attacks
- Leopards & sloths entering urban spaces etc.
- Neelgai & Rose entering farms.

Causes for Human-wildlife conflict

(1) Animals outside protected Areas (PAs) → Almost 100% wolfs, 50% Blackbucks, 30% elephants, 10% monkeys live outside the boundries of PAs and enter into conflict with humans

(2) Encroachment - in and around PAs, eco-sensitive zones often brings humans in contact with animals.

(3) Even after restrictions, human settlements remain in National Parks

and wildlife sanctuaries.

(4) Scarcity of food & water drive animals outside their habitats and they wander out in human spaces.

(5) States of Chota Nagpur Plateau like Jharkhand, Chattisgarh, Odisha, W. Bengal have forest areas outside the reserve forest etc. This makes residential areas common for both human & animals.

Steps taken by Govt

(1) Landscape approach to manage human-elephant conflict → wherein management of land and water areas is looked at with a landscape approach for avoidance of human-wildlife conflict.

Adequate measures are taken up at landscape level to ensure elephants have access to adequate food, so that they do not wander out in plantation areas.

It involves → building elephant corridors
→ making eco bridges
→ making keeping elephants away from rail tracks etc.

(2) Forest Department of states work actively to capture and relocate animals who accidently enter human settlements.

(3) Ecological Bridges are being encouraged to ensure connectivity between protected areas

(4) Elephant corridors, tiger corridors & more & more national parks & wildlife sancturies are being earmarked.

(5) National Board of wildlife works actively to safeguard the interest of both animals and humans.

(6) Eco-sensitive zones around protected areas also act as buffer zones to avoid human-animal conflict.

Though enough policy measures are put in place but due to inadequate implementation empathy towards animals tends to decrease.

Therefore, community involvement and participation of forest dwelling people at Gram Sabha level is must for better coordination & results.

17. India's vulnerability to flash floods. Assess. Also suggest measures for better resilience to flash floods. In this context also briefly highlight the significance of recently launched Flash Flood Guidance system operated by IMD.

Flash Floods refer to heavy inundation (caused by factors like rainfall/cloud burst etc) in a relatively shorter time. IMD defines flash floods as 100mm rainfall in a span of 24 hours in very small region.

India's vulnerability

(1) Geographic location → Being a Himalayan country India is prone to heavy orographic and convential rainfall patterns.

(2) Monsoon → Most of India's rainfall (~80%) is received during four month south West monsoon season.

(3) Urban planning → Inadequate and

unplanned urban space, slums, ghetto culture and concrete islands are more vulnerable.

(4) Watershed landscape → not followed for water management. So, water absorption capacity of land is obstructed.

(5) Coastline → Vast coastline and vulnerability to cyclones in both Bay of Bengal and Arabian Sea.

measures for better resilience

(1) Early warning system and impact based forecasting must be put in place in flash flood prone areas.

(2) Community led Disaster management in all stages viz mitigation, preparedness relief and rescue.

(3) Nature based solutions → watershed development, wetland restoration, demarcation of green landscapes, flood plain areas etc.

(4) Planned Urbanisation → pre monsoon cleaning of drainage pipes, separation of sewage & storm water pipes, water harvesting systems etc must be put in place.

Flash Flood Guidance System of IMD

(1) It involves early warning and forecast of flash flood events.

(2) The system ~~serve~~ shall generate impact based ~~wo~~ weather forecast

Hazard + Vulnerability = Impact

(3) Accordingly, warning and to-do guidelines shall be generated in a region-specific approach.

(4) Active involvement of volunteers has also been planned.

(5) Real-time monitoring of all events both pre-during-post flash floods shall be carried out and real time information shall be provided to civilians & administration.

Adequate and timely implementation of NDMA guidelines can definitely help reduce loss of resources & life during flash floods.

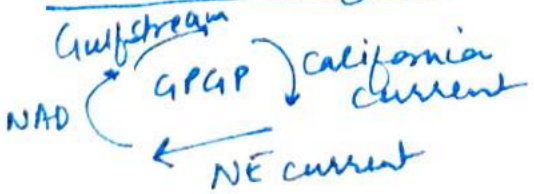
18. Marine litter is not just an env. prob. but poses a socio-eco-challenge as well. Discuss. Also, enumerate the initiatives taken by the global community to reduce marine litter.

Globally 8 million tons of litter is dumped in water bodies every day. Marine litter refers to all the non-biodegrable waste like plastic which is dumped in water bodies and remains in there for hundreds of years.

Marine litter as environmental problem

(1) Today there does not exist any ocean which is devoid of plastic waste.

(2) This waste gets in ocean currents cycle and keeps forms garbage patches like Great Pacific Garbage patch (GPGP)



(3) Biodiversity: Plastic breaks further into microplastic and causes havoc

for marine biodiversity.

(4) The waste in water bodies also releases toxins which enter the food chain via bioaccumulation & biomagnification.

(5) Loss of marine life due to such non-biodegrable waste also is also linked with oceanic warming and decreasing carbon sequestration properties of oceanic gyres.

Socio-economic problems

(1) Every year billions of dollars are spent on removal of marine litter.

(2) The fish industry is heavily affected

(3) Unequal contribution but equal sufferings of all countries (debate between differentiated responsibilities of East & West)

(4) Cultural and tourism industry is also heavily affected.

U.P.S.C.

Steps taken by Global Community

(1) The ~~Mar~~ MARPOL convention of WMO pertains to controlling the pollution caused by marine transportation ships etc.

(2) LONDON convention for conservation of marine health.

(3) Basel Convention ~~which~~ on transborder movement of Razardous waste.

(4) GloLitter campaign on marine pollution.

(5) Efforts by countries to ~~dog~~ designate Marine Protected Areas.

India being signatory ~~of~~ to most of the above conventions and also being a major player in the vast Indian Ocean has an active role to play in global awareness generation towards marine litter.

Dedicated implementation, access to finance and ~~com~~ adherance to common but differentiated responsibility is the need of the hour!

19. India's response to Covid 19 pandemic has brought to the fore several inadequacies and ambiguities in India's disaster management framework. Discuss.

The Covid 19 pandemic brought upon India a sudden lockdown which slowed down the country in various dimensions.

Inadequacies in India's response

(1) Sudden and unplanned lockdown brought along with it miseries to the poor and vulnerable especially the migrants.

(2) Inadequacies in managing Biological disaster were brought out.

(3) Disaster management problem turned into a law and order problem (Lockdown & Quarantine violations)

(4) Loss of livelihood was largescale complemented with absence of social security measures in place.

Ambiguities in disaster management

(1) Since there is no specific provision of handling with "biological disasters" in NDMA 2005. Therefore simultaneous & invoking of provisions of both NDMA and Epidemic diseases Act, brought out confusion & chaos.

(2) Centre - state issues and discoordination was exposed

(3) Vulnerability of the socio-economic fabric of the country were brought out.

(4) Law & order & administration problem caused due to crises of disaster management were unforseen & unexpected

(5) Inadequacies of healthcare system to deal with casualty casualties were catastrophic.

(6) Disaster and its fallout led bolt to supply chain both within & outside the country were such had cascading effect on economy.

Way-ahead

(1) Strict guidelines to deal with biological and chemical disasters must be put in place.

(2) Long-term measures like boosting the healthcare system's capacity - both infrastructure and human resource.

(3) Strict adherance ~~to~~ to Biomedical waste management (Amendment) Rules 2018.

(4) Strengthening the institutional capacity of National Disaster management authority.

(5) Coordination between centre-state and local ~~Bo~~ Govt must be enhanced.

Covid19 pandemic brought out short-term, medium term and long term affects on society. ~~Has~~ a Strict measures need to be put in place as a preparedness and mitigation towards any future disaster of this sort.

प्रश्न संख्या (Question No.) 20

इस भाग में कुछ न लिखें (Don't write anything in this part)

In light of increasing Indus. disasters in India, examine the reasons for their occurance. Discuss the steps that have been taken to deal with industrial disasters

Industrial disasters refer to disasters that are linked with the functioning of industrial plants, laxity in which causes loss of life and property.

Types → Fire incidents
→ Gas likage (Styrene gas at Vishakhapatnam)
→ Mining disasters
→ Building collapes
→ Boiler
→ Chemical Industry disasters
etc.

Reasons for occurance of Industrial Disasters

(1) Inefficiency in compliance towards safety regulations.

(2) Inefficiency in implementation of Acts like
→ Workers Compensation Act.
→ Indian Boilers Act
→ Indian Fatal Accidents Act etc.

(3) Incompetency of staff → inadequately trained

(4) Lack of compliance towards periodic safety checks and maintainance.

(5) Technical causes like use of defective equipments, machines, inadequate lighting and ventilation etc.

(6) Working conditions: psychological reasons like monotony of work, tiredness, overtime also contribute to such disasters.

Existing safeguards against Industrial disasters

(1) Environment Protection Act 1986
(2) Factories Act
(3) Public Liability Insurance Act 1991
(4) NGT Act 2010
(5) Doctrine of Absolute Responsibility which evolved after 1985 Delhi oleum gas leak.
It provided that the enterprise must make sure that no harm comes from hazardous materials used by enterprise

Despite various laws to tackle Industrial Disasters in India, there is need to reassess their effectiveness.

(1) There is need to set up buffer zones around factories handling hazardous substances.

(2) The compensation must be proportional to the capacity of offering enterprise and must have a deterrance

(3) Specialised taskforce to tackle CBRN accidents etc.

In the light of India attracting industries from both within and around the world, it is imperative that strict measures are put in place to avoid the occurance of Industrial Disasters.