

NEXT IAS

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Prelims to Mains ☒

MTS CSE 2023-2024 (TEST-10)

GENERAL INSTRUCTIONS

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SUBJECT/PAPER
GENERAL STUDIES

Invigilator's Sign. :

[To be filled by the STUDENT]

Student's Queries for the Evaluator (if any write them below)

[To be filled by the EXAMINER]

Evaluator's response

(For filling by Examiners only)

Evaluator Code :

Q.No	Pg No.	Maximum Marks	Marks	Total
1	1			
2	3			
3	5			
4	7			
5	9			
6	11			
7	13			
8	15			
9	17			
10	19			
Grand Total				

Signature

MACRO COMMENTS

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2. Write your registration number and other particulars, in the space provided on the cover of QCA Booklet.
3. Write legibly and neatly. Do not write in bad/illegible handwritings.
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1. "Green hydrogen can be the silver bullet in our quest to tackle climate change and pollution". Critically analyze the statement in light of India's National Green Hydrogen mission.
(Answer in 150 words) 10 Marks

Green Hydrogen refers to the kind of hydrogen ~~then~~ produced wherein the source of electricity used for electrolysis comes from renewable sources.

National Green Hydrogen Mission

It is a program to incentivise the commercial production of green hydrogen and make India a net exporter of the fuel.

Components

SIGHT Program

fund domestic manufacturing of electrolyzers & produce green hydrogen

Green Hydrogen Hubs

states & regions that can support large scale production

Objective

- Develop 5 MMT per annum of Green Hydrogen
- Adding of renewable energy capacity 125 GW by 2030

Green Hydrogen as silver bullet to tackle

Climate Change

- 1) Reduce dependence on fossil fuels & feedstock
- 2) Green Hydrogen - cleanest source of energy with zero emission
- 3) Abatement of nearly 50MMT of annual greenhouse gas emission

Pollution

- 1) Development of new technologies like pollution free fuels
- 2) Higher efficiency of hydrogen fuel results in lower pollution

However, Challenges exist

- 1) Green Hydrogen, like any other hydrogen, also emits nitrous oxide in small quantity
- 2) India lacks necessary infrastructure to manufacture it.
- 3) Question over economic sustainability with high cost of production of green hydrogen

Therefore, with necessary steps like supply chain network creation, skill development, R & D efforts, etc achieving the target isn't distant dream

2. Explain the purpose of the Mangrove Alliance for Climate launched at the COP27 UN Climate Change Conference in Egypt in November 2022. Elaborate on the importance of mangroves in maintaining the coastal ecology of tropical nations.

(Answer in 150 words) 10 Marks

During COP 27 Climate Summit in Egypt, UAE & Indonesia announced 'Mangrove Alliance for Climate' (MAC) including India

Purpose of MAC

- 1) MAC is the intergovernmental alliance that seeks to educate & spread awareness worldwide on the role of mangroves in mitigating climate change.
- 2) Each member country on voluntary basis decide their own commitments & deadlines wrt planting & restoring mangroves.
- 3) Members also share expertise & support each other in researching & managing coastal areas.
- 4) Provide Nature based solution to climate change

Importance of mangroves

- 1) Mangroves trap & cycle various organic chemicals & nutrients useful in coastal ecosystem
- 2) Provide Basic food chain resources for marine organisms.
- 3) Provide Physical habitat & nursery ground for variety of marine biodiversity
- 4) Serve as storm buffers - by reducing wind & wave action
- 5) Buffers against coastal erosion & shoreline
stabilisation
- 6) Called as 'kidneys' of coastal ecosystem because help in removal of heavy metals & other pollutants.

With emerging challenges like shrimp farms, excessive human intervention, global warming, etc, Global Initiatives & their strict implementation is imperative.

3. What are the key lessons for disaster management and environmental conservation in the Himalayan region, in light of the recent disaster in Joshimath, Uttarakhand?

(Answer in 150 words) 10 Marks

Joshimath, a town in Uttarakhand
faced disaster of Land Subsidence
recently. Warning us about the criticality
of maintaining 'Himalayan ecosystem'

Key lesson for disaster management

- 1) Recommendation of expert committee,
scientist, geologists & environmentalists
must be considered
(ix) Mishra Committee Report
- 2) Complete Impact Assessment must be carried
out before commencing new projects
- 3) No more negligence of Disaster Management
Plan (ix) CAG Report → State Government
had neglected to frame guidelines
- 4) Incorporation of framework of disaster management
like
 - Risk Reduction
 - Relief
 - Recovery
 - Reconstruction measures

- 5) Need for Good Institutional & Community based organisation for mitigating disasters

Key lessons for environmental Conservation

- 1) Carrying capacity of the given region must be prioritised before developmental projects

- 2) Mountain specificity & fragility must be better studied & included in developmental policies

- 3) - Climate change acts as force multiplier -
 hence (ex) High rainfall events, landslides, etc
 & hence holistic & sustainable development must be focused

- 4) Conservation of existing trees, plantation of more trees & other himalayan vegetation is crucial for health of ecosystem

- 5) No more ill conceived infrastructural projects like hydroelectric projects, tunnelling, etc without defining the limits

Therefore, Jashmath incidence can act as warning to be Disaster proof & Environmental damage proof in order to avoid such disasters.

4. The COVID-19 pandemic has highlighted the importance of disaster management in public health. Discuss the key strategies and challenges for managing pandemics and other infectious disease outbreaks.
(Answer in 150 words) 10 Marks

Pandemic refers to significant increase in the number of cases of a particular infectious disease across the globe. (ex) Covid 19
Covid 19 like pandemic have brought highlighted the need to integrate disaster management & public health practices.

Key Strategies for managing Pandemic

1) Legal basis :

↳ Epidemic Disease Act → provisions for better prevention of the spread of disease by empowering governments to take special measures

↳ Some sections of IPC invoked

(ex) Sec 188 - punishment for disobedience

2) Central Ministry of Health & Family Welfare takes the responsibility of giving binding directive although Health is state list item

- 3) Screening of passengers on different modes of transportation
- 4) 'Quarantine' or short term housing of those believed to be infected
- 5) Government has authority to detain anyone as well as inspect any ship
- 6) Implementing officers acting in accordance with the act also get legal protection.

Challenges of managing

- 1) Need to upscale production of testing or diagnostic equipments
- 2) Logistical & operational issues wrt vaccination drive
- 3) Non adherence to Covid appropriate behaviour
(iv) Not wearing masks, No social distancing, etc
- 4) spread of false information leading to panic among people

Hence, 'Biological disaster' & could be handled ^{only} with convergence of aspects of Good Governance, Research & Development & responsible citizenry.

5.

Discuss in detail the photochemical smog emphasizing its formation, effects and mitigation. Explain the 1999 Gothenburg Protocol. (Answer in 150 words) 10 marks

Photochemical Smog is type of air pollution that generally occurs in Urban areas with high levels of vehicle emissions & industrial activities.

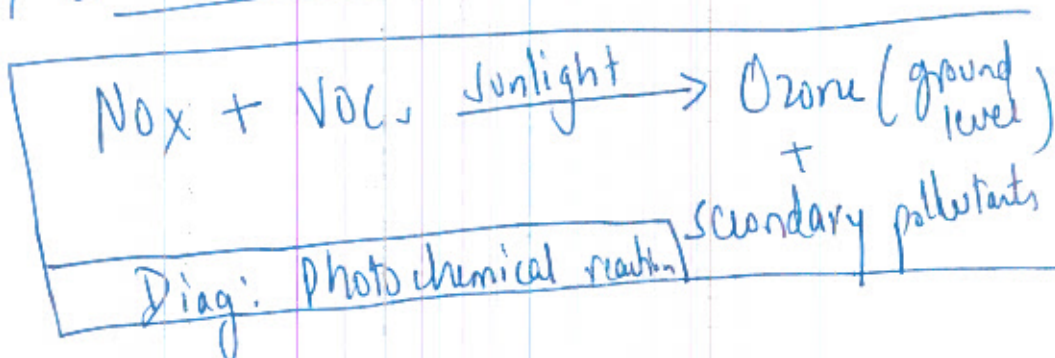
(ex) Metro^{politan} cities like Delhi, Mumbai, etc

Formation of Photochemical Smog

1) Emission: NO_x & VOCs (Volatile organic compounds) are released into atmosphere from various sources like vehicles, factories, etc

2) Sunlight: It provides the energy required for chemical reactions to occur

3) Chemical reactions:



Effects

1) Environmental damage: Smog can harm plants & crops, leading to reduced

- agricultural yields.
- 2) Damage to monuments - causing corrosion & discoloration
 - 3) Respiratory issues - coughing, wheezing & respiratory/pulmonary diseases

Mitigation of Smog

- 1) Emission reduction: Strict emission standards for vehicles, industries, etc. to reduce NO_x & VOCs, etc.
- 2) Vehicular regulations: - use of cleaner fuels, & promotion of public transportation
- 3) Industrial Controls: Advanced pollution control technologies like converters, scrubbers, etc.
- 4) Urban Planning: Promotion of 'Green-cities'

Gothenburg Protocol

It is an international agreement to reduce transboundary air pollution, including the formation of photochemical smog.
 It sets emission standards for NO_x , NH_3 , VOCs, etc.
 Supreme Court in Mithu case has declared 'pollution is a civil wrong' & needs to be controlled.

6. What is the Global Methane Pledge? Do you think the Global Methane Pledge is a positive step toward mitigating methane emissions? Explain India's stance on this issue.
(Answer in 250 words) 15 Marks

Global Methane Pledge was launched in COP 26 to catalyse action to reduce methane emissions.

The initiative is led by US & European Union & the member countries commit to reduce methane emissions by at least 30% below 2020 levels by 2030.

Global Methane Pledge as positive step

- 1) If implemented globally, this would minimise Global warming by 0.2°C by 2040s.
- 2) Methane is 2nd most abundant greenhouse gas in atmosphere after carbon dioxide.
- 3) 60% of methane emissions comes from Anthropological sources like landfills, agriculture, livestock, etc & hence needs regulation.

4/ It would lead to better global level monitoring & collaboration in reducing its emissions

India's stance on this issue

1/ Indian Government has refused to sign the methane pledge

2/ Methane emissions are survival emissions & not 'luxury' emissions as in case of West

(ex) Enteric fermentation & Paddy cultivation } 2 major sources of methane in India

3/ Agriculture is crucial for food security of billion of Indian & hence kept out side of emission targets of India.

4/ Pledge shifts the burden of CO₂ reduction to methane reduction although methane has lifetime of just 12 years.

5/ Low global contribution to methane emissions by Indian livestock

However, it doesn't mean India
has not taken any action

India's efforts towards Methane Emission

1/ National Action Plan on Climate Change
includes methane emission control

2/ ICAR Initiatives

- System for Rice Intensification
↳ enhances yield with less water consumption
- Direct Seeded Rice
+
No standing water → Reduces methane
- Crop Diversification program
↳ from paddy to pulses, oilseeds, maize, etc.

Therefore, mitigation of climate change &
green house gas emissions must be based on
principles of climate justice.

7. Trace the evolution of the Loss and Damage fund. What are the major developments related to loss and damage funds in COP 27? What are the commitments made by India in this conference? (Answer in 250 words) 15 Marks

'Loss and Damage Fund' refers to the fund to compensate the irreversible consequences of climate change that can't be avoided through adaptation or mitigation efforts.

Evolution of Loss & Damage Fund

✶ The movement of Loss & Damage Fund (LDF) was 3 decades old movement, which was initiated by island nation of Vanuatu.

Program was made in various UNFCCC conference of parties (COP) as

COP 19, 2013 → Warsaw → Representatives of member countries of Alliance of small island states formally agreed to establish LDF

COP 25, 2019 → Santiago Network for LDF was set up - but developed countries didn't commit any fund

COP 26, 2021 → Glasgow dialogue on finance

for LDF was established
COP 27, 2022 — Members agreed to set up
LDF through breakthrough agreement

Major developments related to LDF
in COP 27

- 1) Loss & Damage fund is added to official agenda & adopted for first time
- 2) Governments also agreed to establish
'Transnational committee' to make
recommendation on how to operationalise
- 3) Parties also agreed on institutional arrangements
to operationalise Santiago network for L&D
- 4) Catalyse technical assistance to developing
countries that are vulnerable to climate
change

Commitments made by India in this conference

- 1) India announced LT-LEDS, (Long Term
-low Emission Development Strategy), a roadmap
to achieve net zero emissions by 2070.

- 2) 'In our LIFE time' campaign - jointly launched by India & UNDP to foster responsible consumption & lifestyle choices.
- 3) Lead IT Summit - Leadership for Industry Transition summit - cohosted by India & Sweden - focus on low carbon transition of the hard to abate industrial sector.
- 4) BASIC Ministerial Meet - BASIC countries pledged their full support for substantial progress towards the establishment of LDF.
- 5) Mangrove Alliance for Climate - led by India, UAE & others - to educate worldwide on role of mangroves as solution for climate change.
- 6) India also updated its Nationally Determined Contribution
 - (a) Reduce Emission intensity of its GDP by 45% by 2030

Therefore, LDF is the 'cornerstone of Climate Justice' & India rightly is taking leadership role in it.

8. The Formation of the Coalition for Disaster Resilient Infrastructure brings more robustness to the Disaster Management approach in India. Comment and justify the need for a new strategy to tackle Disasters in India. (Answer in 250 words) 15 Marks

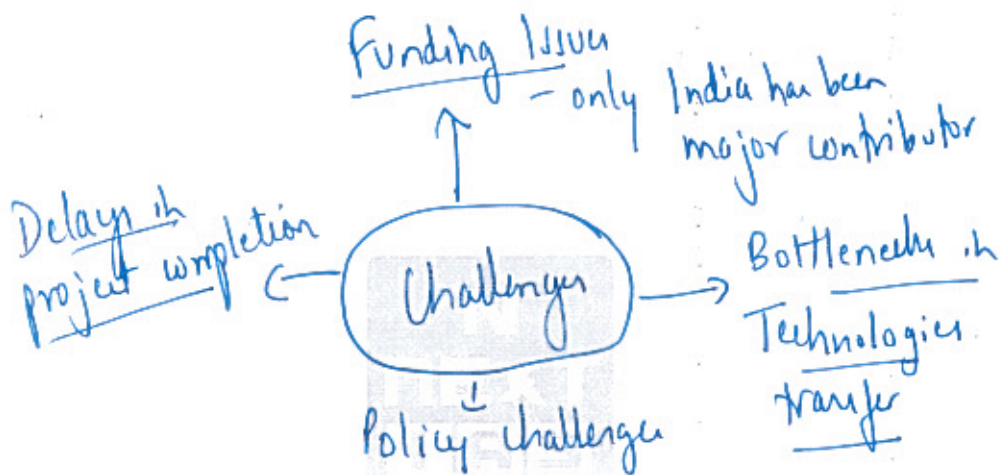
Recently, Coalition for Disaster Resilient Infrastructure (CDRI) was approved by Union Cabinet as 'International organisation'

CDRI brings more robustness to Disaster management

- 1) It is 'global partnership' of governments, UN Agencies, private sector, etc that act as 'Knowledge platform'
- 2) It will help develop 'country specific' as well as 'global plan for disaster management'
- 3) Aim to increase 'resilience of infrastructure systems' to ultimate & disaster risks
- 4) 'Infrastructure for Resilient Island States (IRIS)' initiative → focus on capacity building of SIDS (Small Island Developing States)

- 5) Infrastructure Resilience Accelerator Fund
 → helps in improving the ability of infrastructural system to withstand disasters.

However, certain challenges exist



Need for New strategy like CDRE

- 1) Modern Infrastructure is also web of networked systems & hence not always confined to National boundaries
- 2) Devise region specific disaster management strategy → each nation & region faces disasters of different kind
 (Ex) India → prone to cyclones

- 3) Inclusive Infrastructure is the need of hour especially in social & digital infrastructure field
- 4) Integrated Response & Global Vision helps in tackling disaster holistically
- 5) Multistakeholder platform helps in sharing & learning from global best practices.

Way forward

- 1) Nature based solutions : Using 'Green Infrastructure' to enhance resilience
- 2) Smart Grids & Energy systems - deployment of advanced technologies for energy efficiency
- 3) Community engagement & Social resilience must also be pursued

CDRI here not only help in Disaster preparedness & response but also in Rehabilitation of communities.

9. Disaster management is not just about responding to emergencies but also about building resilient communities. Discuss the key strategies that can be used to build community resilience and reduce the impact of disasters. (Answer in 250 words) 15 Marks

Building of Resilient communities is crucial aspect of Disaster preparedness as recognised in the idea of CBDM i.e. Community Based Disaster Management.

Significance of Building Resilient Communities

- ↳ Communities act as 'First Responder' for any kind of disaster
- ↳ leads to optimal utilisation of local resources & knowledge
- ↳ reduces the burden on government

(ex) Kerala local community during floods showed resilience

Key strategies that can be used to build community resilience

- 1) Planning, implementation & management - must all be led & owned by communities themselves

- 2) Intervention in disaster management based on local resources, capacity & partnerships
- 3) Community empowered to take decisions & consider choices
- 4) Local communities capacity building with adequate provision of funds, resources, etc.
- 5) Disaster Preparedness must be approached from development perspective
 - (i) lead to livelihood creation
- 6) Sustainability and special vulnerable groups of the locality must be prioritised.

~~Moreover,~~ Case Study

Gujarat State → Sustainable Community Initiative
for disaster recovery & Preparedness
↳ It adopted an approach

that built the capacity of local
champion: called 'Champion individuals' &
champion communities (ex) School teachers as
agents of change → played role in
building disaster resilience at local level.

However, Certain challenges exist

- 1) Scaling up of strategies is difficult
- 2) Social cleavages like caste system, class inequality, etc hinder unity
- 3) Unavailability of local resource person to take leadership role
- 4) Imposition of pre conceived agenda i.e. Top-to bottom approach by officials

Various experiences across
the world have noted the successful
impacts of community based disaster management
& hence must be integrated at all
levels of disaster management.

10. Account for the huge flooding of million cities in India including the smart ones like Hyderabad and Pune. Suggest lasting remedial measures. (Answer in 250 words) 15 marks

As the Climate variability & extreme weather events increases every year, Urban flooding has become a recurrent phenomenon even in smart cities like Hyderabad, etc.

Factors Causing Urban Floods

1) Meteorological Factors

i) IMD data: Rise in widespread extreme rainfall went across Indian subcontinent by three fold

2) Hydrological Factors

Surface runoff is more than infiltration rate during precipitation

(ii) Overbank flow of channel networks, etc

3) Anthropogenic factors

i) Unplanned Urbanization:

- Blocking of natural drainage

pathways through construction activities.

ii) Encroachments : of lakes, river beds, etc
has increased the risk of flood

iii) Impervious Cities : Nature of the
material used like hard, non porous
construction materials → make soil impervious

iv) Lack of community participation
in flood control measures

4) Poor Implementation of EIA

Although provisions like rain water
harvesting, sustainable drainage system, etc
available but not enforced strictly.

Remedial Measures

1) International Best practices must be adopted

(1x) Germany → 'Mobile walls'

China → 'Sponge Cities'

porous pavements to ensure better filtration

2) Water Sensitive Urban design

taking into consideration the topography,

Types of surfaces, natural drainage, etc
in making Urban Planning

3) Sustainable Use of land: Restriction
of encroachments, clearance of river beds,
planting of flood resistant trees, etc

4) Convergent Approach: Convergent implementation
of various schemes like

- ATAMPUT Mission
- NRIDAY scheme
- Smart Cities Mission, etc

5) Holistic engagement of all stakeholders
including Metropolitan authorities, NDMA,
Irrigation departments & civil society
organisation.

Urban flooding calls for
city united climate change adaptation &
mitigation plans as was discussed during
COP 28 Climate Summit in UAE.

Space for Rough Work

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