GSSCORE

An Institute for Civil Services

# IAS TOPPER'S

# TEST COPY

# VIDUSHI SINGH

## AIR - 13

## (CSE 2022)

# GENERAL STUDIES

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(443)

GS SCORE

GS MAINS TEST SERIES 2022

TEST - 27

# ENVIRONMENT - 2

*Time Allowed: 90 min.* *Max. Marks: 150*

| Q. | Marks |
|---|---|
| 1. | |
| 2. | |
| 3. | |
| 4. | |
| 5. | |
| 6. | |
| 7. | |
| 8. | |
| 9. | |
| 10. | |
| | 67.2 |

## *Instructions to Candidate*

- There are **10 questions.**
- All questions are compulsory.
- The number of marks carried by a question is indicated against it.
- Answer the questions in 250 words each. All questions carry equal marks. 15 x 10 = 150 Marks
- Keep the word limit indicated in the questions in mind.
- 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.

*Name* Vidushi Singh

*Roll No.* 40666

*Mobile No.* _____

*Date* _____

*Signature* _____

*1. Invigilator Signature* _____

*2. Invigilator Signature* _____

Q1. Carrying capacity, a touchstone for hill planning, has been blatantly ignored by authorities, unleashing the tourism industry unsustainably. Analyse the impact of growing tourism in hill stations on its ecological carrying capacity.

(15 Marks) (250 Words)

CARRYING CAPACITY of an ecosystem refers to the maximum level of ecological services that an ecosystem can offer sustainably. Understanding carrying capacity of hilly regions is important for sustainable resource ~~ab~~ extraction.

good introduction addressing the keyword in question

Impact of growing tourism on ecological carrying capacity of hill stations:

Growing tourism is one of the most profitable revenue sources for hilly stations. It provides an alternative livelihood source to the people and additional economic incentives in terms of high GSDP growth rate and increase in state exchequer.

* properly analysed on scope of tourism in hilly states

* also few more positive impacts should be added.

* Command of "Analyse".

Remarks

However, growing tourism negatively impacts the carrying capacity of the ecosystem as:

1. Stress on existing resources:
   eg: clearing forests for resorts and hotels impacts the underlying resources.

2. Affects Biodiversity: human encroachment in sensitive areas is impacting vulnerable populations of animals like snow leopards.

3. Deforestation and associated problems: increased forest clearing negatively affects the physical parameters such as topsoil, carbon-sink and affects the biodiversity negatively.

4. Agroecosystems of hilly areas are adversely affected by growing tourism as ↑ human interference leads to animal-man conflicts, eg: Rhesus monkeys in Uttarakhand.

* relevant points
* also add specific concerns of tourism in specific hill states, for example:- discuss stresses caused because of Tourism in Shimla ⇒ pollution issues, etc

Remarks

5. Industrial Projects are affected with increasing service sector (tourism) in terms of increasing disaster vulnerability of the area due to higher resource stress.

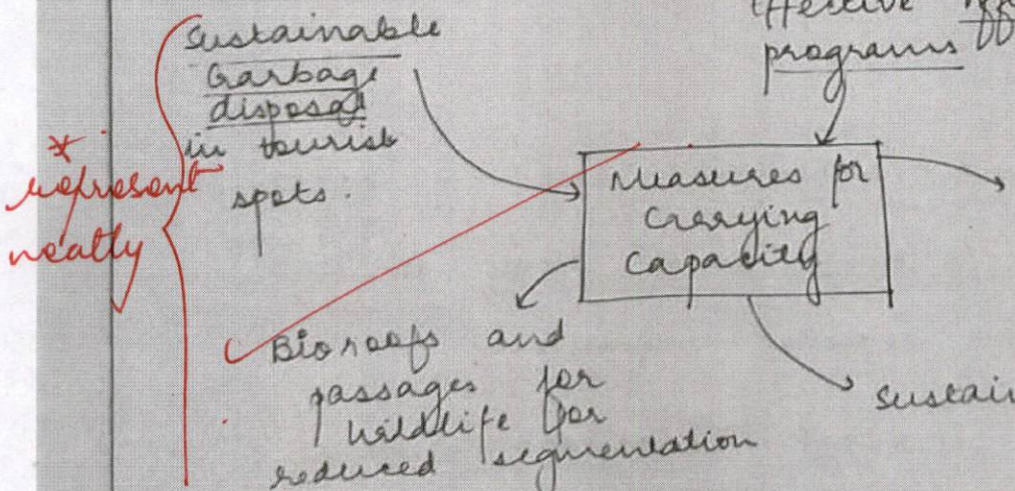
→ discuss specific region in this context.

6. Increased Garbage pollutes the underlying ecosystem Carrying capacity and its role in hill planning can be highlighted by ~~increasing~~

* increase in occurrences of cloudbursts and flash floods in hilly regions, the recent one in February 2021. ~~Some~~

→ give names of such regions also.

Measures that can be adopted are:




* represent neatly

Thus, it is imperative to take measures to ensure carrying capacity of hilly regions is not breached.

* add good conclusion.

Remarks

06

Q2. "Marine and coastal biodiversity is an important component of maintaining ocean and coastal ecosystem function, yet they are subject to multiple stressors that can impact their sustainability". Discuss. Suggest remedial measures for protecting and conserving coastal and marine biodiversity. (15 Marks) (250 Words)

discuss significance of Marine biodiversity to give effective introduction

MARINE and COASTAL BIODIVERSITY are important for maintaining balance in coastal ecosystem function. Estuaries and Mangroves are one of the most productive ecosystems with varied functions.

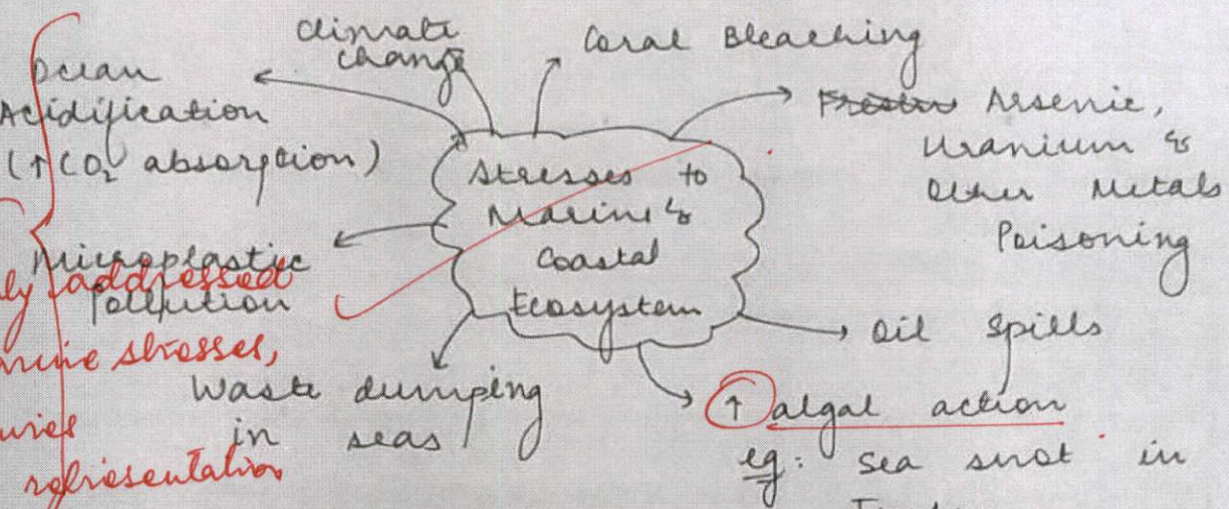
Importance of marine and coastal biodiversity:

* make it bold, discuss main crux of question

1. Corals Reefs are rainforests of the oceans and support several marine species in the oceans.
2. Wetlands and estuaries are important sources of carbon sink and prevent flooding in coastal ecosystem
3. Marine and coastal ecosystem have high economic importance.

Remarks

However, they are subject to multiple stresses such as:




These stresses to the coastal and marine ecosystem impacts their sustainability by:

1. Reducing Productivity of the ecosystem
2. Submerging coastal ecosystem due to rising mean sea level.
3. Biodiversity of the area is adversely affected, disturbing the balance
4. Resources are adversely affected, eg: Seagrass reduction due to increased trawling, affecting populations of DUGONGS.

* C. properly addressed on Marine stresses, requires neat representation.

* discuss in the light of reasons leading to these impacts; don't simply mention.

Remarks

5. Carrying capacity of the ecosystem is affected due to stresses mentioned above.

**Measures for conserving marine and coastal biodiversity:**

1. Resource mapping of seabeds through missions like Deep sea mission for effective resource extraction
2. Adopting climate friendly practices to ensure reduction in Climate change activities → i.e., rise in mean sea level & ocean acidification.
3. Clearing water in oceans to ensure no coral bleaching
4. Bioremediation techniques for oil spills.

It is important to take action now to ensure sustainability of marine & coastal ecosystem.

* very Superficial point
* discuss issue specific remedies

give effective, long term conclusion

Remarks

06

Q3. Indian cities continue to top the air pollution rankings year after year. Analyze the causes and harmful effects of air pollution in the environment. Also, enumerate the steps taken by the government in curbing air pollution. (15 Marks) (250 Words)

According to a report released by IQAir, 22 out of top 30 most polluted cities globally are from India. Air Pollution is the presence of any solid, liquid or gaseous substance in the atmosphere in hazardous volumes.

good introduction but keywords of question.

**Causes of Air Pollution:**

1. **Vehicular and Industrial Emissions:** emissions of $CO_2$, $SO_x$, $NO_x$, PM 2.5 & 10, CO, $CH_4$, etc. lead to severe air quality in Indian cities.

good! but important points could be addressed.

2. **Stubble Burning:** ~~dusta~~ particularly during months of October, negatively impacts air quality of Delhi-NCR and adjoining states.

Remarks

3. Emissions from Agricultural activities and Biomass Burning release $NH_3$, $CH_4$ in hazardous volumes.

4. Household Air pollution by excessive use of coolants like ACs & refridgerators release harmful gases.

5. Acid Rain, Ozone Reduction and other associated phenomena.

relevant points, can give some explore, data to make it more effective

## Harmful effects of air pollution:

1. Environmental Effects: air pollution affects environmental quality and daily lives of animals and humans. Air quality deterioration makes way for associated health hazards.

2. Health Effects: Hazardous volumes of

need to add few case studies to make it more effective

Remarks

polluting elements in air affects people, particularly elderly and may harm the cognitive function of children.

3. Socio-economic Effect: by ↑ the cost of curbing air pollution. ~~and~~ Smog disrupts daily economic activity

need to discuss in detail.

Steps taken by government to curb air pollution:

1. Setting up of CAQM - Commission for air quality management specifically for NCR regions.
2. CPCB, SPCB ~~under~~ ~~EPA~~ under Water Act to monitor pollution levels.
3. Green India Mission under NAPCC to combat air pollution in India
4. Smart cities Mission, AMRUT, PMAY-U for effective curb on air pollution.
5. FAME scheme for promotion of EVs
6. Ethanol Blended Program

Thus, the measures should further be compounded strategically to curb air pollution in Indian cities.

* good explorant initiatives covered

Remarks: give good conclusion

06

**Q4. Discuss how drought is more of a man-made disaster than a mere deficiency of rainfall. Elaborating the consequences of drought induced desertification, bring out the preventive steps required to curb desertification.** (15 Marks) (250 Words)

IMD defines DROUGHT as a consequence of natural reduction in amount of precipitation for a long period of time. However, drought is not only a natural phenomenon, but induced by anthropogenic factors as well.

*Good!

**Drought: man-made disaster:**

Flash Droughts have been a recurrent phenomenon in India, which is often conducive to anthropogenic activities like:

Good.

(1) Extraction of Groundwater: according to report, India alone accounts for 25% of total annual Water extraction, while it comprises of a mere

Remarks

2.5% of global surface area.

(2) Climate change activities due to higher carbon emissions, disrupt the natural cycle of monsoons in India thus leading to simultaneous floods and droughts.

(3) Soil Degradation and soil erosion due to unhealthy agricultural practices pave way for Agricultural Droughts especially observed in states under Green Revolution.

(4) Unsustainable land management and excessive deforestation leads to severe drought like conditions. Prolonged droughts lead to DESERTIFICATION.

According to WMO, Thar Desert in India has been expanding by 25 m / year, hinting at ↑ Desertification.

good! relevant reasons for drought have been shared!

good point!

Remarks

**Consequences of drought induced desertification:**

- (1) Infertility in lands and reduced agricultural productivity
- (2) Soil erosion and frequent dust storms
- (3) Socio - economic consequences → poverty and livelihood reduction
- (4) Increased diurnal Temperature Range

**Preventive steps to curb desertification:**

- (1) Judicious use of surface and groundwater
- (2) Cloud seeding for artificial rain in drought prone areas
- (3) use of micro-irrigation methods for water conservation
- (4) Afforestation programs
- (5) Traditional conservation techniques & Rainwater Harvesting.

It is imperative to curb the growth of desertification to preserve environmental integrity

* relevant points, discuss how these factors will impact society at large.

* good measures, explain briefly how these factors can contain desertification

Improve

Remarks

06½

Q5. **Despite possessing immense wind energy potential, India is far from tapping it. Examine the necessary interventions which are required to overcome the challenges of the wind energy sector.**
**(15 Marks) (250 Words)**

India ranks 4th globally in terms of installed capacity of wind Energy. Wind Energy is the kinetic energy associated with the movement of atmospheric air.

→ relevant introduc°

**Wind Energy potential in India:**

MNRE has set a target of installing 30GW of wind energy/power by 2030.

→ properly described on w.e. potential of India.

·) According to MNRE, India can generate 127 GW of offshore wind energy with its vast coastline of >7500 km.

However, wind energy in India has still not utilised its potential due to several structural challenges.

Remarks

Challenges of the wind sector:

→ (1) Administrative challenges: in terms of land acquisition and environmental clearances. Windmills near shore affect regional biodiversity and ecosystem adversely.

→ (2) Distribution and Generation (Technical challenges): since wind energy is a highly region-specific source of energy, aggregation and distribution of the same remain as huge challenges.

→ (3) High Capital Investment requirement

→ (4) High maintenance cost

Good analysis.

explain these points.

Necessary Interventions to overcome these challenges:

Remarks

Interventions →

1. For optimum exploitation of wind energy, it is imperative to reduce administrative bottlenecks through a National Wind Power Programme.

2. PLI scheme and other interest subvention schemes can initiate huge capital investment in the sector

3. Grid connectivity enhancement through achieving economies of scale in Wind sector.

4. PPP mode for installation to cover up maintenance costs

Thus, structural reforms in wind sector can lead to its optimum utilisation.

* good points * nice suggestions

* can quote experiences of few countries, and subsequent model for India to harness its W.E capacity

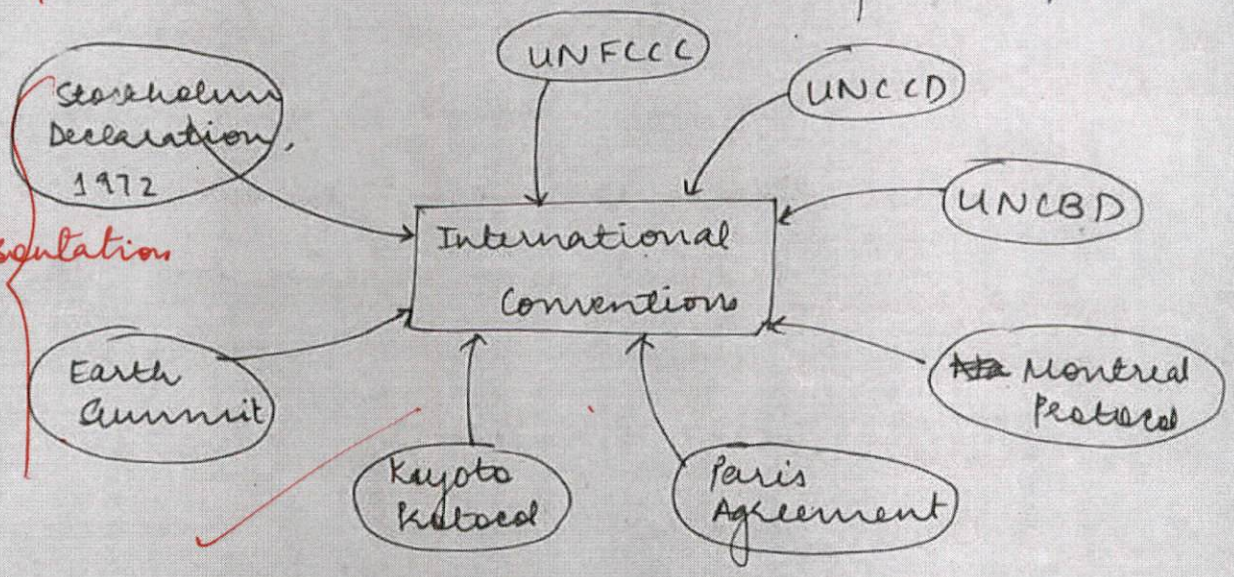
emphasis

Remarks

07

Q6. "Nation states face certain challenges in implementing International obligations related to environmental protection". Comment. Also, discuss the challenges faced by institutional bodies in dealing with environmental protection.
(15 Marks) (250 Words)

There are several environmental conventions, laws and treaties in place to be fulfilled by member states to ensure sustainable development practices.




These conventions and agreements require consolidated steps by nation states to curb environmental hazards. However, Nation states face certain

Remarks

challenges in implementing International Obligations as:

(1) Legislative challenges: in terms of fulfilling obligations is often not met objectively.

(2) Climate Finance: India is 9th largest investor in climate-friendly technologies yet it still needs additional $1 trillion to fulfil its global climate commitments.

(3) Technological Gap and IPR rigidities often restricts innovative options for developing states.

(4) Institutional mechanisms lack structural congruence globally, leading to erratic developments.

× relevant points

Remarks

(5) Several climate benefits are distortionary in nature, eg: climate Tax.

Challenges faced by institutional bodies in dealing with environmental protection

(1) Development Vs. sustainability debate in front of institutional bodies.

(2) NGT vs. Power sector Developments often leads to prolonged delays.

Conflict among institutions due to multiplicity, eg: CPCB and CAQM on air quality & pollution in Delhi NCR.

(4) Infrastructural, administrative and institutional deficiencies restrict the fulfillment of international obligations.

Therefore, there is a need to bring convergence in terms of policies to achieve the objective of sustainable development.

Remarks

07½

Scanned by Scanner Go

Q7. What do you understand by biological disaster? Enlist some workplaces and occupations prone to biological hazards and discuss the preventive and control measures that are required to be taken at these places. (15 Marks) (250 Words)

NDMA defines Biological disasters as natural scenarios involving disease, disability or death on a large scal among humans, plants, animals due to microorganism action. The ongoing COVID-19 Pandemic is an example of a Biological disaster.

=> good intro

some workplaces and occupations prone to biological disasters are:

(1) Laboratories : working on cultivating microorganisms to study their disruptive patterns.

(2) Slaughterhouses : lead to zoonotic outbreaks, eg: swine flu, avian flu, etc.

=> relevant examples.

Remarks

(3) Cattle rearing: can also lead to zoonotic outbreaks, eg: small pox, african swine fever.

(4) Industrial hubs: which dump toxic effluents irresponsibly can lead to outbreaks. eg: Mercury poisoning.

(5) Medical Hubs: can expose medical waste infected with some disease.

Good example. It can add few case studies to substantiate

Preventive and Control measures required at these places:

Preventive & Control Measures

1. Elimination of hazard at source by effectively treating industrial, chemical and medical wastes.

2. Vaccination of cattles

Remarks

Preventive & Control measures

3. Adopting ethical practices while dealing with chemical & biological laboratories

4. Personal hygiene measures to be promoted.

5. Technological deficiencies to be fulfilled to ensure proper compliance.

* discuss specific control measures.

COVID-19 Pandemic has highlighted the importance of healthy hygiene practices to be adopted effectively to counter the global threat. ONE-HEALTH policies should be formulated and implemented to ensure healthy interaction among people, animals & environment to curb the menace of Zoonotic outbreaks.

good conclusion make it brief

Remarks

07

Q8. Highlighting India's vulnerability to tsunami, explain the causal factors for formation of Tsunami. How far is the Tsunami Early Warning System (ITEWS) helping in managing Tsunami disasters in India? (15 Marks) (250 Words)

TSUNAMI is a series of waves in a water body caused by displacement of large volume of water.

* good definition, can quote various instances of Tsunami to make it more effective

INDIA's vulnerability to Tsunami :

India has a vast coastline of ~7600 km and an activate North-moving Indian Tectonic plate, creates high chances of tsunami striking the Indian coastal regions and islands. Indian Ocean Tsunami of 2004 wreaked havoc in states of Tamil Nadu and submerged Indira Point in

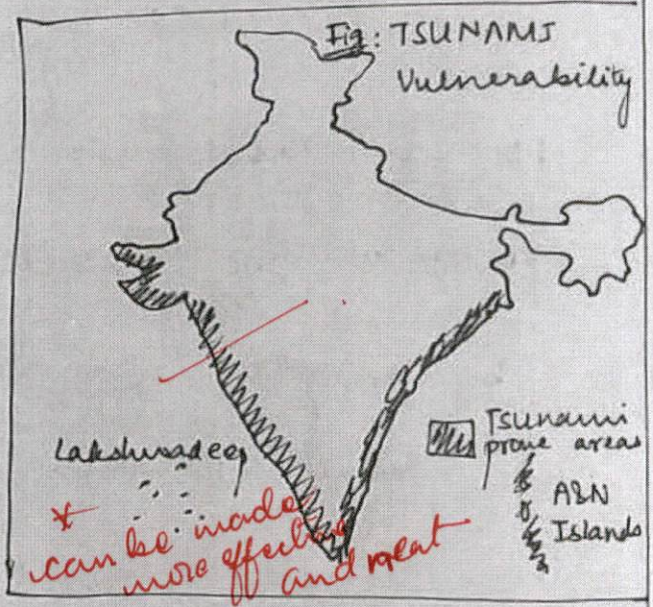



Fig: TSUNAMI Vulnerability

* can be made more effective and exact

good

Remarks

Andaman and Nicobar islands.

## Causal Factors of formation of Tsunami:

- (1) Seismicity / Earthquakes : can be a potent source of tsunami in Indian Ocean.
- (2) Landslides : can displace large volumes of water leading to Tsunami.
- (3) Meteorological Reasons : like pressure changes and ocean current changes
- (4) Anthropogenic Causes : like induced earthquakes
- (5) Volcanism under water.

Relevant factors quoted responsible for formation of Tsunami.

## Indian Tsunami Early Warning System (ITEWS) and management of Tsunamis:

- ) ITEWS was established in 2007 with

Remarks

joint efforts of DoS, CSIR, NIOT, etc.

•) It comprises of a real-time network of seismic stations and 24x7 operational tsunami warning centre to monitor tsunamis. It was created in the aftermath of 2004 Indian Ocean Tsunami.

•) It has high effectiveness in terms of warning and forecasting.

•) However, there are certain challenges towards its efficacy, such as: unpredictable anthropogenic induced earthquakes, lax mitigation efforts and infrastructural bottlenecks.

•) Therefore, there is a need to improve upon Tsunami readiness through programs like Tsunami Ready.

good analysis, quoting significance of ITEWS.

07½

Remarks

Q9. "Disaster management is nothing but management of information and resources, which is based on assessment of the disaster that occurred". In this context, explain the concept and significance of damage assessment. Also, highlight its role in managing disasters. (15 Marks) (250 Words)

DAMAGE ASSESSMENT refers to the process for determining the nature and extent of loss, suffering and harm arising from natural or human caused disaster.

⇒ good intro.

(Concept and significance of Damage assessment in Disaster Management (DM))

Disaster Management is a holistic process of disaster readiness, pre, during and post disaster. It is imperative to manage information and resources with utmost efficacy to measure damage assessment and formulate

⇒ addressed properly

Remarks

mitigation strategies effectively.

*) Damage Assessment provides situational awareness and critical information on:

- Type and severity of disaster,
- Impact on life and property,
- Mitigation measures,
- Rehabilitation measures, etc

* relevant analysis need to address with more points

*) It helps in formulating effective plans and gather estimates to tackle disaster effectively in terms of pre, during & post disaster managment

Role of Damage Assessment in DM:

→ (1) Identification of extent of damage

Remarks

→ (2) Identifying resource allocation during and after disaster

→ (3) Formulating mitigation strategies

→ (4) Awareness → to public, CSOs, NGOs for public assistance and smoother rehabilitation.

→ (5) Relief work and estimates allow the exchequer to not get tightened and plan beforehand.

→ relevant points.

Thus, Damage assessment is an essential exercise for effective DM so as to incorporate efficient measures for faster recovery after disaster. It is critical in terms of awaring the masses and formulating effective strategies.

→ give short conclusion

Remarks

**Q10. Analyse the importance of Global Facility for Disaster Risk Reduction (GFDRR) for the process of disaster management in India.** (15 Marks) (250 Words)

GLOBAL FACILITY for Disaster Risk Reduction (GFDRR) is a global partnership that helps developing countries better understand and reduce their vulnerability to natural Hazards.

* good introduction

Functions of GFDRR: ~~and its import~~

Disaster Risk Reduction (DRR) aims to reduce the damage caused by natural hazards.

- GFDRR helps builds effective tools and mechanisms to ensure that DRR strategies are incorporated in

good analysis

Remarks

developing economies.

•) It contributes to SENDAI FRAMEWORK for DRR by integrating DRR and climate change strategies.

good

## Importance of GFDRR for disaster Management in India:

GFDRR works on a grant-funding mechanism managed by WB and provides technical assistance and capacity building measures to India.

•) Recently, India was chosen as co-chair of consultative Group of GFDRR for year 2020.

→ good, nicely addressed on emp. fact

•) India started the coalition for Disaster Resilient Infrastructure (CDRI)

Remarks

and GFDRR will play an important role in these same.

•) GFDRR is primarily a global partnership overlooking the adoption of SENDAI FRAMEWORK for DRR. India has adopted several measures to ensure DRR → eg: management during cyclone Fani and Amphan in recent years.

•) GFDRR provides technical and financial assistance to India during pressing times.

Thus, India needs to adopt further holistic strategies in consonance with Sendai Framework for a disaster resilient economy.

* ↓ upto the mark
* addressed significance with relevant points
* however more specific points can be given

→ what can be done?

Remarks

07½