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GENERAL STUDIES (TEST CODE : 2213)

Name of Candidate	POURUSH SOOD	Registration Number	1175138
Medium Eng./Hindi	ENGLISH	Date	23 July '22
Center	ONLINE		

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
2	10	
3	10	
4	10	
5	10	
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9	10	
10	10	
11	15	
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14	15	
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16	15	
17	15	
18	15	
19	15	
20	15	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

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

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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.

1. An effective approach to green budgeting is underpinned by strong strategic framework, tools for evidence generation and an enabling budgetary governance framework. Discuss. (150 words) 10

हरित बजट के लिए एक प्रभावी दृष्टिकोण को मजबूत गणितीय ढाँचे, माध्य निर्माण हेतु उपकरण और एक मजबूत वजतीय शासन ढाँचे द्वारा मजबूती प्रदान की जाती है। विवेचना कीजिए।

Green Budgeting refers to the inclusion of environmental needs and outcomes in the

budgeting process. Eg. Setting Green GDP targets.

What will make Green Budgeting Effective?

- 1) A strong strategic framework : Which involves preparation of vision/mission documents, inclusion of environmental aspects in all components (gender, revenue, etc.) budgets, dividing long and short term plans for the role of environment in the regions developmental process.

- 2) Tools for evidence generation

- For outcome management
- Data driven goal setting in budget
- Eg. Impact of government schemes on the Environment : Through EIA

3) An enabling budgetary governance framework

- Sufficient funds allocated to environmental needs
- Avenues of resource generation for Green Projects eg. through Green Bonds
- Cooperation with other federal units eg. states and decentralized local bodies

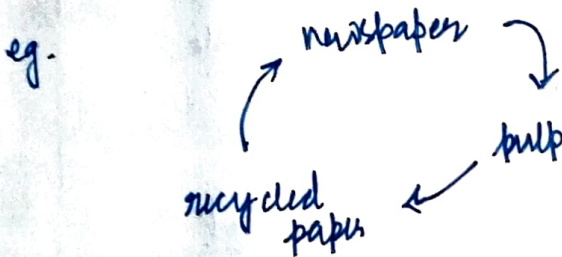
Uttarakhand recently decided to introduce Green GDP as an indicator of its development.

Our state and the entire country must include environment as an inseparable part of the budgeting process.

2. State the need for circular economy in India and the challenges associated with it. Also, discuss the measures that are required to build a circular economy in India. (150 words) 10

भारत में चक्रीय अर्थव्यवस्था की आवश्यकता और इससे जुड़ी चुनौतियों का उल्लेख कीजिए। साथ ही, भारत में एक चक्रीय अर्थव्यवस्था के निर्माण के लिए आवश्यक उपायों पर चर्चा कीजिए।

Circular economy refers to the system of production and consumption where the outputs of a previous stage can be ^{re-}used as the input of a subsequent stage.



Need for circular economy in India

- Burgeoning waste, especially e-waste : India is the 3rd largest e-waste producer in the world. A lot of waste consists of precious metals, etc. which can be reused.
- Job creation : Circular economy can result in tremendous job creation in recycling, reusing, etc. facilities

- Will result in cheaper raw material (especially Gold, Platinum, etc. used in electronics and reduces India's import bill).

Challenges associated

- Informal economy: At present, the recycling sector is mostly informal
- uses primitive methods of extraction
 - exposure to toxic elements and gases
- logistical difficulties: Transportation, collection, etc.

Measures

- Onus on companies: Through stricter Extended Producer Responsibility Rules, etc.
- Formalisation of circular economy: Through loans, Production Linked Incentive, etc.
- Awareness campaigns: For segregation of garbage, etc.

India has historically been an economy that encourages recycling and reuse. It is time to formally endorse circular economics.

Write
in this
margin
(इस भाग में
कुछ ना लिखें)

3. The Major Port Authorities Act, 2021, seeks to grant greater autonomy and flexibility to the major ports and professionalise their governance. Discuss. (150 words) 10

प्रमुख बंदरगाह प्राधिकरण अधिनियम, 2021, प्रमुख बंदरगाहों को अधिक स्वायत्तता और लचीलापन प्रदान करने तथा उनके शासन को पेशेवर बनाने का प्रयास करता है। विवेचना कीजिए।

The Major Port Authorities Act, 2021 aims to regulate the administration of Major Ports (which come under the purview of centre) in India.

Features

- Major Port Authority to be set up by the centre in consultation with stakeholders, to handle administration of each major port.
- Greater autonomy to the Port Authority in decision making without having to take approvals for every minor decision from the centre.
- Flexibility to the port authority in terms of

budget utilization, modernization,
day to day administration of the port,
etc.

How does the Act aim to professionalize
governance?

- Inclusion of industry professionals in the
port authority.
- Reduced role of bureaucracy in decision
making for major ports.
- Financial autonomy can result in more
efficient and productive operations.
- Flexibility in decision making will reduce
red tapism and delays.

The Major Port Authorities Act, 2021 has given
major ports sufficient autonomy so as to
grow, develop, modernize and improve the
Ease of Doing Business in the country.

4. Analyse the need for shifting from presumptive land titling to conclusive land titling system in India. Also, highlight the hurdles in its implementation. (150 words) 10

भारत में अनुमानित भूमि स्वामित्व से निर्णायक भूमि स्वामित्व प्रणाली में स्थानांतरण की आवश्यकता का विश्लेषण कीजिए। साथ ही, इसके क्रियान्वयन में आने वाली बाधाओं को रेखांकित कीजिए।

land titling refers to the formal
identification of ownership of land of
an individual.

→ Presumptive land titling: where land titling
is done through historical land records,
without clear demarcations, satellite
imagery, etc.

→ Conclusive land titling: land titling that
involves proper surveillance, observation,
surveying and demarcation of land. This
can be done through the use of drones,
satellite imagery, etc.

Need for conclusive land titling

- Easier to use the land as collateral, also improves EoDB for banks.
- Easier to resolve land conflicts due to digitized, comprehensive records.
- Better data collection by the government
↳ for targeted scheme delivery
- Easier process of transfer of rights to children
- Easier land acquisition and consolidation process with enumerative pencils for landholders.
- Safer and easier buying / selling of lands

The PM SVAMITVA scheme, encouraging digitization of land records, is a positive step in this direction.

5. What do you understand by methanol economy? Critically discuss its role in achieving India's energy security and economic prosperity. (150 words) 10

मेथनॉल अर्थव्यवस्था से आप क्या समझते हैं? भारत की ऊर्जा सुरक्षा और आर्थिक समृद्धि प्राप्त करने में इसकी भूमिका की समालोचनात्मक विवेचना कीजिए।

Methanol economy refers to the mainstream usage of methanol (CH_3OH) to meet the energy and economic needs of the country as an alternative fuel.

Methanol Economy

- Use of Methanol as a fuel, alternative to / or used in combination with petrol, diesel, etc, in cars, buses, etc.
- Using methanol as an alternative to coal due to its cleaner nature.

Role of Methanol Economy

- Combating Climate Change
 - ↳ Reducing the use of fossil fuels
 - ↳ Generating methanol using renewable means

- Methanol provides much lower SO_x, NO_x, etc. emissions.
- Promoting Methanol conversion to Green Hydrogen
- Energy security
 - India imports >80% of its crude oil requirement
 - Methanol usage can cause
 - Reduction in import bill
 - More policy certainty due to less fuel price fluctuation
 - Combat inflation
- Economic prosperity
 - One to reduced import bill and inflation
 - Cheaper alternative to crude oil
 - Methanol production will generate employment opportunities.

Methanol economy, along with alternative fuels like Green Hydrogen, Ethanol, etc. can usher in economic prosperity and energy security and accelerate India's growth towards \$5 trillion economy.

6. Discuss the role of geospatial technologies in developing effective approaches for disaster risk reduction and disaster management.

(150 words) 10

आपदा जोखिम न्यूनीकरण और आपदा प्रबंधन के लिए प्रभावी दृष्टिकोण विकसित करने में भू-स्थानिक प्रौद्योगिकियों की भूमिका की विवेचना कीजिए।

Geospatial technologies involve the application of technology to study geospatial data, i.e., data dealing with the demographics, physical structures, etc. of a location.

Geospatial Technologies for Disaster Risk Reduction

→ Early Warning Systems: Geospatial mapping and monitoring of landslide prone areas, weather forecasting through doppler radars, etc., river water monitoring, etc.

→ Location-specific Action Plans: Geospatial mapping and mitigation strategy development in heat-wave, cold-wave prone areas, earthquake and cyclone prone areas, etc. Eg. based on geospatial data, preparedness and evacuation plans have

reduced loss of life in Cyclones Amphan and Fani.

- In line with the Sendai Framework for Disaster Risk Reduction.

Geospatial Technologies for Disaster Management

- Real time analysis of evacuation routes and plans (useful during earthquakes and floods)
- Damage estimation using GPS and drone technologies
- Rebuilding climate and disaster resilient infrastructure.

Geospatial technologies can play a major role in disaster mitigation and response. The liberalised geospatial technology rules are a positive step in this direction.

7. The focus of Environmental Impact Assessment (EIA) needs to shift from utilization and exploitation of natural resources to conservation of natural resources. Discuss. (150 words) 10

पर्यावरणीय प्रभाव आकलन (EIA) का मुख्य ध्यान प्राकृतिक संसाधनों के उपयोग और दोहन से हटाकर प्राकृतिक संसाधनों के संरक्षण पर केंद्रित होना चाहिए। विवेचना कीजिए।

Environmental Impact Assessment refers to the ^{consultative} process of assessing the risks, impacts and alternatives to any project with respect to the environment.

EIA-2006 : The Focus

→ At present, the various stages of EIA, viz. screening, scoping, etc. mostly concentrate on the utilization and exploitation of natural resources. We answer questions like:

- What will resources of the environment will the project exploit? (like forests, etc.)
- What will the impact of the project be on the natural resources?
- What compensations must be given by the stakeholders against this exploitation?

→ There is a need to adopt a more conservation oriented approach to the EIA.

We need to answer questions like

- What can be done by the project to conserve the surrounding environment?

↳ Eg. through green belting, joint forest management, etc.

- How can the project's stakeholders and the people living in this area minimize the project's impact and encourage conservation in the area?

→ Such a positive approach towards EIA would result in a joint approach of both the people as well as the project stakeholders in conservation.

While EIA is an important tool to balance development with environment, we must ask the right questions and move towards 'Environmental Resource Management'.

8. What do you understand by hybrid warfare? Discuss India's preparedness in this context. (150 words) 10

हाइब्रिड वारफेयर से आप क्या समझते हैं? इस संदर्भ में, भारत की तैयारियों की विवेचना कीजिए।

Hybrid warfare refers to a multidimensional aspect of warfare, where hostility takes various shapes and forms, like direct combat, proxy war, terror funding, etc. all at the same time.

Characteristics of Hybrid Warfare

- Creation of internal instability: through terror funding, separatists, misinformation, etc.
eg. Pakistan's terror funding in Kashmir.
- Use of technology: To carry out cybercrime, tap intelligence, etc.
- Narco Terrorism: Which is imperative for India to control, since it is surrounded by 'Golden Triangle' and 'Golden Crescent'.

India's Preparedness towards hybrid warfare

- Superior intelligence agencies: The Intelligence Bureau, Research and Analysis Wing, etc. -
use state of the art techniques to manage intelligence and security.
- Use of technology: Through drones, X-Ray scanners to prevent smuggling, etc.
- Improvement of border infrastructure: Especially North-east Border with Pakistan, through CCTVs, etc.
- Investigation Agencies: Eg. NIA, which is capable of handling hybrid warfare cases since acts like UAPA, NDPS etc. fall under its jurisdiction.

While India is somewhat prepared to handle hybrid warfare, more steps must be taken to prevent hisco terrorism. Identify in-state terror syndicates, enforce PMLA/FEMA effectively, etc.

9. Discuss the challenges associated with inclusion of women in armed forces, particularly in combat roles in India. How can these challenges be addressed? (150 words) 10

सशस्त्र बलों, विशेष रूप से भारत में युद्धक भूमिकाओं में महिलाओं को शामिल करने से संबंधित चुनौतियों पर चर्चा कीजिए। इन चुनौतियों का समाधान कैसे किया जा सकता है?

The Indian Armed Forces have largely been male-dominated, with women taking up roles mainly secondary, like doctors, cooks, etc.

Challenges to inclusion of women in armed forces

→ Societal challenges

→ Patriarchal Indian society where women are considered the non-combatative 'weaker sex'.

→ Concerns with safety and security due to rising crimes against women.

→ Early marriages and child bearing age which hinders female participation.

→ Logistical challenges

↳ Poor/unsupported infrastructure for women in army areas, including barracks, toilets, etc.

↳ lack of training / sensitization among the present armed forces

How these challenges can be addressed

- ↳ creation of female-friendly infrastructure in the armed forces on war-footing.
- ↳ encouraging and upgrading awareness about the role armed forces can play for women's lives upon their participation
- ↳ Having a robust and fair recruitment process with reservation for women

→ The recent Supreme Court judgement allowing Permanent Commission for women in armed forces is a positive step.

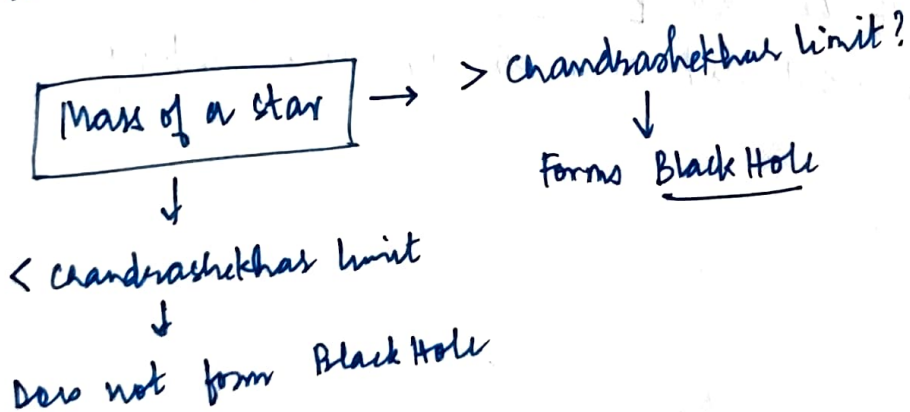
The INA had a 'Rani Thansi Regiment' which gave us brilliant fighters like Apt. Laxmi Sehgal. If women's participation was encouraged back then, why stop now?

10. S. Chandrasekhar was one of the greatest scientists of the 20th century whose prolific contributions spanned across astrophysics, space and mathematics. Elaborate. (150 words) 10

एस. चंद्रशेखर 20वीं सदी के महानतम वैज्ञानिकों में से एक थे, जिनका खगोल भौतिकी (एस्ट्रोफिजिक्स), अंतरिक्ष और गणित के क्षेत्र में विपुल योगदान था। सविस्तार वर्णन कीजिए।

Subramaniam Chandrasekhar's contributions to the field of astrophysics, science and mathematics have been instrumental in our current understandings of stars and black holes.

→ Chandrasekhar limit : considered his most important contribution, it talks about a star in the final stage of its life.



→ Study of evolution of stars

S. Chandrasekhar provided immense research on the formation, evolution and death of stars. ~~that~~

→ Apart from astrophysics, S Chandrasekhar ~~he~~ contributed to the field of science through his ~~physics~~ and mathematics as well.

Sir S Chandrasekhar can be considered to the likes of Albert Einstein in his contribution to the field of astrophysics. He truly was one of the most prolific scientists the modern world had seen in the 20th century.

11. State finances in India present a worrying picture, with debt sustainability being a major concern. Discuss in context of the recent RBI report on state finances. (250 words) 15

भारत में राज्य वित्त एक चिंताजनक स्थिति प्रस्तुत करता है, जिसमें कण संघारणीयता एक प्रमुख चिंता का विषय है। राज्य वित्त पर आर. बी. आई. की हालिया रिपोर्ट के संदर्भ में विवेचना कीजिए।

COVID-19 pandemic has put a deep strain on ~~state~~ the account books of states, and debt sustainability has become a major concern.

Overall Picture and Reasons

- The Debt to GDP ratio for many states has exceeded 50%.
- States are increasingly resorting to borrowings, some of which are extra budgetary in nature, eg. Telangana.
- Populist schemes and freebie culture are putting immense strain on state finances
 - ↳ Eg. Free electricity upto a limit: A Campaign promise in Punjab
 - ↳ Eg. Free rides for women in buses in Delhi

- low tax collections: Due to COVID-19 related lockdowns. only recently have the GST collections stabilized.
- GST Compensation issue: While the Centre used an escape clause to reduce payments to the states.
- Delayed payments by centre for centrally sponsored schemes like MGNREGA.
- Rising inflation: Especially imported inflation in crude oil which is forcing centre and states to cut taxes on fuel stressing their fiscal capabilities.

Way Forward

- The centre must clear the state dues as soon as possible.
- The GST compensation to states must be continued for a few more years to

help with states finances.

- Extra budgetary borrowings must be discouraged and must be adequately scrutinized through audits.
- the centre must disallow states from taking external loans beyond a limit.
- Friction culture must be discouraged.
- Tax net should be widened and tax evasion must be curtailed further.

the stressed fiscal capacity of states can result in crowding out of investment, thus creating a vicious cycle. The aforementioned steps are must to move back to the path of fiscal prudence.

12. The Indian experience provides several lessons of an inclusive digital economy model that enables formal digital governance structure at a low cost and with easier access. Discuss. (250 words) 15

भारतीय अनुभव एक समावेशी डिजिटल अर्थव्यवस्था मॉडल के कई सबक प्रदान करता है जो कम लागत पर और आसान पहुंच के साथ औपचारिक डिजिटल शासन संरचना को सक्षम बनाता है। विवेचना कीजिए।

Since the Digital India Mission, India has seen huge strides towards digitization and an inclusive digital economy, with efficient e-governance delivered at a low cost.

India's Digital Economy Model

→ Conducive Telecom Policy: The push towards digitization by the Digital Communications Policy: made the commercial environment conducive for growth of telecom industry: resulted in cheap and accessible data rates.

→ Push towards last mile connectivity: through Digital India Mission's components:
↳ Increasing fiber optic connectivity

- Network infrastructure in rural areas
- eKranti mission
- PM WANI's principle

→ Promoting eGovernance :

- Digitization of Land Records (SVAMITVA)
- UMANG App
- Corporate governance : ~~the~~ MCA21 portal
- Electronic generation of way Bill, etc.

→ Encouraging digital payments

- UPI Model
- Proposed ONDC for Digital Commerce
- RBI's Digital Payments Index

→ Encouraging financial inclusion

- PM Jan Dhan Yojana
- Aadhar Enabled Payment System
- JAN - Aadhaar Mobile Trinity

Issues with India's digital economy model

- Financial inclusion : Not 100%, and many users are switching back to old ways.
- Digital illiteracy
- Rising cybercrime
- Lack of access to smartphones
- Poor internet connectivity, especially in rural areas.

India has led the way in the world's transition to digital governance. It is imperative that we also include the left-out population on our next train to digitization.

13. Dairying is a viable livelihood option for a large section of the population. In this context, discuss the significance, challenges faced and associated government initiatives for the dairy sector in India. (250 words) 15

डेयरी व्यवसाय, आबादी के एक बड़े हिस्से के लिए आजीविका का एक व्यवहार्य विकल्प है। इस संदर्भ में, इसके महत्व, विद्यमान चुनौतियों और भारत में डेयरी क्षेत्र के लिए सरकार द्वारा की गयी पहलों की विवेचना कीजिए।

India is the largest producer, consumer and exporter of milk, with over 25% of world's milk supply coming from India. Dairying has historically been, and continues to be a viable livelihood option in India.

Significance

- Improving farmer's income: Helps in additional income generation towards our goal of doubling farmer's income.
- Risk offset: Acts as an insurance against crop related risks since it is an additional source of income.
- Nutrition: In line with POSHAN 2.0 which aims in improving nutrition capacity, since milk, curd etc. is a good source of calcium and Vitamin A.

- Cooperatives: like Amul, have ushered in the white revolution and increased the per capita availability of milk.
- Export industry is encouraged.
- Food processing industry (milk powder, curd, paneer, etc.) gets a much needed push.

Challenges

- Inadequate infrastructure: Cold storage facilities, poor Cold-chains, etc. which is harmful because dairy products are perishable.
- Lack of private participation: Most of the dairy industry is subsistence-based.
- Use of antibiotics: leading to antimicrobial resistance.
- Use of growth hormones
- Diseases like anthrax, brucellosis, Foot and mouth disease
- inhuman treatment to animals

- Desi breeds losing shine to foreign breeds
- Government Initiatives
- Rashtriya Gokul Mission (For scientific breeding/welfare)
- PLI Scheme for food processing industry
- Agricultural Infrastructure Fund (For warehousing/
cold storage)
- eGopala App, Gobar Dhan Scheme
 - ↳ For semen samples, artificial insemination,
etc.
- PM Kisan Sampada Yojana for food parks (including
dairy)

The recent steps by the government indicate that we are moving in the right direction in promoting and modernising the dairy industry, a step that can be instrumental in improving farmers income.

14. The imperative to increase farmers' income must shift to creating value chains and must not be reliant on the MSP regime and subsidy bias prevalent in the current Indian agricultural system. Examine. (250 words) 15

किसानों की आय बढ़ाने की अनिवार्यता को मूल्य श्रृंखलाओं के सृजन से जोड़ा जाना चाहिए और इसे वर्तमान भारतीय कृषि प्रणाली में प्रचलित एम. एस. पी. व्यवस्था एवं पूर्वाग्रहयुक्त सब्सिडी पर कतई निर्भर नहीं होना चाहिए। परीक्षण कीजिए।

The recently repealed Farm Acts have once again brought the issue of utility of Minimum Support Price (MSP) regime and subsidy bias in limelight.

MSP Regime and Subsidy Bias: Issues

→ Discourages diversification

↳ Farmers tend to grow more rice, wheat, etc which are procured by the state.

↳ Results in shortage / inflation of fruits, vegetables, etc.

↳ Hampers India's nutritional security

→ Stress on resources

↳ Rice requires huge quantities of water

↳ MSP encourages growth of such

Water intensive crops

→ Stress on state's fiscal capacity

↳ Huge procurement costs

↳ Results in lack of funds for supply chain improvement and management

→ Used as a populist tool

→ Reduces market's role in price discovery and ultimately reduces India's export competitiveness.

→ Fertilizer subsidy: Harmful for soil and environment.

What steps can government take instead?

We need to truly empower the farmer by creating value chains:

→ Improving farm gate infrastructure: Better and cheaper transportation / warehousing facilities.

Eg. Kisan Rail

Agriculture Infrastructure Fund

- Encouraging Farmer Producer Companies: Through soft loans and capital. Also improving their linkages with markets.
- Encouraging food processing industry
 - ↳ Creation of food parks
 - ↳ Encouraging secure contract farming
- Eg. PM Kisan Sampada Yojana: Mega Food Parks, Forward and Backward linkages, etc.
- Diversifying farmer income sources: By Encouraging animal husbandry and rearing, cottage industry through cooperatives, self help groups etc. (eg DAY-NRLM).

While there has clearly been a shift in the government's stance from subsidy bias ~~and~~ to value chain improvement, the aforementioned steps are important to empower farmers and double their income.

15. What are the challenges in ensuring sustainable river management in urban areas? Highlight the remedial measures that can be taken for river management with a special focus on the recently launched River Cities Alliance. (250 words) 15

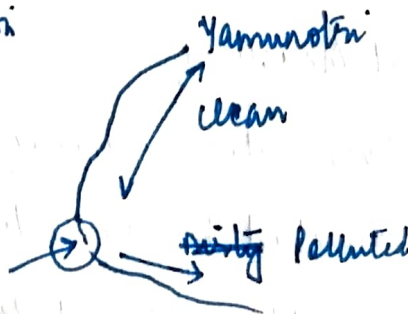
शहरी क्षेत्रों में संधारणीय नदी प्रबंधन को सुनिश्चित करने में कौन-सी चुनौतियाँ विद्यमान हैं? हाल ही में प्रारंभ रिवर सिटीज एलायंस पर विशेष ध्यान देते हुए नदी प्रबंधन के लिए किए जा सकने वाले उपचारात्मक उपायों को रेखांकित कीजिए।

History shows that civilizations have formed around rivers. Today, many of these regions have developed into expanding urban areas with overpolluted and shrinking rivers.

Challenges in Sustainable River Management in Urban Areas

- Inadequate monitoring : of pollution levels, BOD, COD, etc.
- Pollution from industry : Especially garment, pharmaceutical industry that result in heavy river pollution

Yamuna faces severe pollution from Delhi



↳ untreated antibiotics from pharma companies and animal waste causes growth of antimicrobial resistant bacteria.

↳ Hot water and untreated chemicals from textile industry cause damage to aquatic life.

→ Unsustainable human practices

↳ Leachant from garbage dumps enters rivers

↳ Unsanitary drains meet the rivers

↳ Religious practices like throwing of ashes into the sea, etc.

↳ Washing of clothes, defecation near river bodies, etc.

→ Remedial Measures

The River Cities Alliance has recently been launched by the central government as a coalition of waterfront (riverfront)

cities that jointly would aim to improve sustainable river management and promote tourism, etc.

• Joint approach to management

Cities along a river eg. Varanasi, Prayagraj etc. (and its tributaries) must jointly aim

to:

- impose industrial restrictions
- encourage sustainable ~~river~~ religious practices
- carry out riverfront management and development
- Enforce heavy fines for violation

Cleanup and revival of drains eg. Najafgarh Drain in Delhi, which meets the Yamuna.

The Namami Gange Programme with

components like 'Nirmal Dhara', 'Aviral Dhara' etc.; along with 'River Cities Alliance' are essential for our joint effort towards Sustainable River Management.

16. Haphazard growth and poor management make the Indian cities the locus of disasters, both large and small. Comment. Also, discuss the current gaps in policies in addressing these challenges. (250 words) 15

अव्यवस्थित विकास तथा निम्न स्तरीय प्रबंधन ने बड़े और छोटे दोनों प्रकार के भारतीय शहरों को आपदाओं का केंद्र बना दिया है। टिप्पणी कीजिए। साथ ही, इन चुनौतियों का समाधान करने में नीतियों में विद्यमान वर्तमान अंतराल पर चर्चा कीजिए।

Indian cities have long-suffered from challenges like pollution, over population, unplanned development, etc. These have aggravated to result in disasters in the 21st century.

Haphazard growth and ^{poor} management resulting in disasters

→ Huge influx of migrants : Resulting in slum formation (>30% of Delhi's population lives in slums) and unsanitary living conditions, resulting in disasters like dengue outbreaks, unequal impact of urban flooding, etc.

→ lack of implementation of building codes : Resulting in unsafe construction, fire prone buildings, etc. Eg. a recent fire in a building in Delhi's Mundka killed score of people : there was lack

- of fire safety provisions in the building.
- Poor management of drainage: Rains in Mumbai bring the city to a standstill every year, Urban flooding in Hyderabad, Chennai, etc.
- No proper rehabilitation plans for slum residents.
- Lack of increasing crime rates and insecurity due to overpopulation.
- Lack of proper pollution management plans resulting in large pollution spikes in winter in cities like Delhi

Examples of Recent Disasters

- Fire in coaching centre in Hyderabad, hotel in Delhi, etc resulting in many deaths.
- Urban flooding: Hyderabad, Chennai
- Floods in Mumbai due to incessant rains
- Gas leak in Styrene Plant (Vizag)
- Air pollution in October in Delhi.

Current Gaps

→ Inadequate finances to urban local bodies for

- ↳ Improving fire response / safety
- ↳ Implementing building code
- ↳ Rehabilitation of slum dwellers
- ↳ Revamping the drainage system
- ↳ Improving pandemic preparedness

→ Inadequate steps by centre and state governments for

- ↳ Pollution management (requires inter-state coordination)
- ↳ Urban mobility enhancement
- ↳ Reducing migration to urban areas

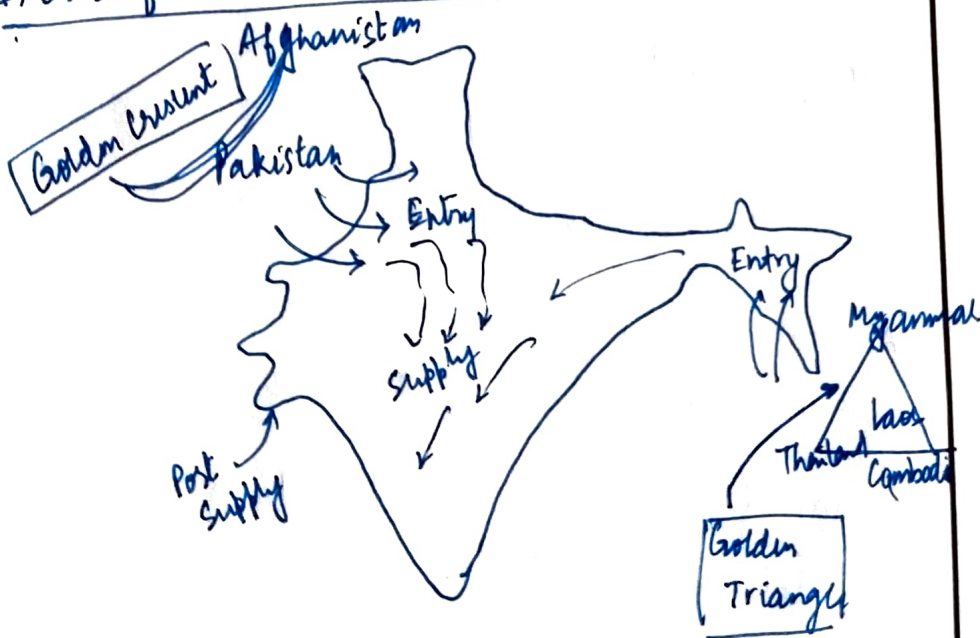
With over 50% of India's population expected to be living in cities by 2050, India must fill gaps in its urban management policies and promote decentralization in urban local bodies.

17. Discuss the extent of the problem of narco-terrorism in India. What measures have been taken by the government to counter and control this problem? (250 words) 15

भारत में नार्को-आतंकवाद की समस्या के प्रसार पर चर्चा कीजिए। इस समस्या से निपटने और नियंत्रित करने के लिए सरकार द्वारा क्या उपाय किए गए हैं?

Narco terrorism refers to the smuggling and distribution of narcotic drugs in a region by external or internal elements hostile to the state, in order to launder money, fund terrorism and cause internal instability.

Extent of narco-terrorism in India



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- India is surrounded by the Golden Triangle (Myanmar, Laos, Cambodia) to the East which supplies drugs to the North Eastern Region.
- The Golden Crescent on the west (Pakistan, Afghanistan) ensures smuggled supply in Punjab-Rajasthan region.
- Hence the problem is disproportionately high in the Northern and North Eastern region, and drugs are then domestically supplied to the rest of the country.
- The money earned is used to fund terror activities and cause instability in the region by hostile elements like Pakistan.
- Ports: Are increasingly becoming entry points of drugs. Recently, cocaine worth 3000 crore surplus was found in a shipment entering a private port in Gujarat.

→ Target demographics: Youth from vulnerable backgrounds and rural areas are the major target in Punjab and Haryana. Urban areas too are a target.

Steps by the government

- Improved intelligence network through technology
eg. ^{Bellini} X Ray scanners at airports, CCTVs, etc.
- Strengthening of Narcotic Drugs and Psychotropic Substances Act
- NIA's jurisdiction: NDPS Act, UAPA Act, etc.
- Modernisation of technology used by RAW, IB, etc.
- Border infrastructure development (especially with Pakistan).
- Increased port-shipment scrutiny
- Narco terrorism destroys lives of lakhs of youth in the country. The government must address this issue on war footing and call for international cooperation for the same.

18. The dark web can be an ideal platform for several criminal and terrorist activities. Discuss with examples. Also, suggest measures to tackle the misuse of dark web. (250 words) 15

डार्क वेब कई आपराधिक और आतंकवादी गतिविधियों के लिए एक आदर्श मंच हो सकता है। उदाहरण सहित चर्चा कीजिए। साथ ही, डार्क वेब के दुरुपयोग से निपटने के उपायों का सुझाव दीजिए।

Dark web refers to the part of the internet that is not indexed by search engines and is placed under ~~many~~ multiple layers of encryption. It has become a hotbed of criminal activities.

How the Dark Web is the ideal platform ~~of~~ for criminal/terrorist activities

→ Difficult to track and maintain surveillance

Due to the layers of encryption, governments cannot track usage and activity on the dark web. It cannot identify the person behind the activities.

→ Can be internationally controlled: The government cannot ban access to these sites because users can access them through special means like

VPN and Tor Browser .

→ Examples of criminal activity on dark web

1. Drug Trafficking : 'Silk Road' Website
2. Child abuse and pornography
3. Illegal weapons stores
4. Personal information databases of people
5. Animal abuse

Measures to tackle misuse of dark web

→ Global Coordinated Effort

Through a consensus based regulation of dark web, especially in countries that are a hotbed of dark web activities, like Russia, Eastern European Countries, etc.

→ Awareness and citizen-based policing

Citizens must be made aware of its vagaries of dark web and

should be encouraged to report any
instances of criminal activity freely
without any fear.

→ Intelligence Agencies : like RAW and
Intelligence Bureau should keep a check
on Dark Web activities and conduct
sting operations to thwart domestic
criminal activities.

→ Statutory backing :
The ^{illegal} use of Dark Web should be included
in Indian laws like the NAPA Act,
NDPS Act, Draft Personal Data Protection Bill,
etc.

Dark web based criminal activities are an
emerging challenge that have the potential to wreck
harms in the country. The government must
adapt to this increasingly real threat.

19. What is catalysis? Highlight the characteristics of catalysts. Also, elaborate why catalytic reactions are important for human beings. (250 words) 15

उत्प्रेरण क्या है? उत्प्रेरकों की विशेषताओं पर प्रकाश डालिए। साथ ही, उदाहरण प्रस्तुत करते हुए समझाएं कि मानव के लिए उत्प्रेरकी अभिक्रियाएं क्यों महत्वपूर्ण हैं।

A catalyst is a substance that can control the rate of a reaction without itself taking part in it. Catalysis refers to the process of reactions in the presence of a catalyst.

Characteristics of Catalysts

→ usually inert to the reactants: Catalysts

themselves are mostly unreactive. They do not combine with the reactants to form the final product. Eg. Platinum in Catalytic

converters

→ Provide substrate for reaction: sometimes catalysts

act as the substrate on which reaction takes place. They may aid in adsorption/absorption, etc. Eg. Activated charcoal is used as an

adsorbent catalyst in many places.

→ Usually accelerate or 'kick start' the reaction:
They alter the kinetics of the reaction.

→ Organocatalysis: Usually, metal catalysts are used for many reactions. They generally are precious metals like Platinum and Palladium.

However, metals generally do not react in an organic environment. Organocatalysis plays a role here and now organic compounds as catalysts. The Nobel Prize in Chemistry in 2021 was awarded to scientists who studied the process of organocatalysis.

[Importance for human beings]

Catalytic reactions are all around us.

→ Inside the human body: Various reactions involving transport of nutrients, digestion,

assimilation, etc. are catalysed, mostly by organic compounds.

→ Catalytic converters : use Pt to convert harmful gases into elemental gases in cars.

→ Plastics, organic compounds, polymers
Are all formed due to catalysed reactions.

→ Medicines : many pharmaceutical work on the principles of catalysis

→ Quick manufacturing of ~~with~~ organic compounds
through catalysts like Pt, Cu, Rh, etc.

~~It always needs cata~~

Catalysts have been in use since time immemorial. They have immense significance in our lives and call for extensive research in this field.

20. Electric mobility offers solutions to the problems associated with climate change, growing fuel prices, and urban transportation issues. Discuss in the context of India. **(250 words) 15**

इलेक्ट्रिक मोबिलिटी जलवायु परिवर्तन, ईंधन की बढ़ती कीमतों और शहरी परिवहन के मुद्दों में जुड़ी समस्याओं का समाधान प्रदान करती है। भारत के संदर्भ में चर्चा कीजिए।

Electric Mobility refers to the use of electricity as a fuel to power the transportation sector. It involves the use of electric cars, buses, rickshaws, etc.

Electric Mobility : A boon for India

→ Combating Climate Change

(i) Use of renewable energy to charge batteries eg. solar energy

↳ India is well endowed with renewable energy options (40% of India's energy basket)

(ii) Decreases fossil fuel usage

↳ Results in lower NO_x, SO_x pollution,
↳ Reduces CO₂ emissions

Good for India, which sees huge pollution

problems in cities (eg. Delhi, Kolkata) and is also suffering under the impact of climate change (eg. Heat waves in North India, 2022)

→ Growing Fuel Prices

- (i) Reduces import bill : Since India imports $\sim 80\%$ of its fuel needs.
- (ii) Reduces inflation : Since higher fuel prices cause an important increase in inflation.
- (iii) Reduces uncertainty in fuel prices : Due to the imported inflation and fluctuating fuel prices, India faces uncertainty in inflation and makes policy making more difficult.

→ Urban Transportation Issues

- (i) Pollution : Fossil fuel based transportation causes NO_x , SO_x , O_3 , NH_3 , etc. emissions causing
 - ↳ Pollution
 - ↳ Photochemical smog

EVs will help reduce air pollution and deaths due to lung related disease.

(ii) Sustainable Urban mobility: Through electric rickshaws, buses (as seen in Delhi), metro, etc.

~~###~~ Electric Mobility: Initiatives

- FAME-II Scheme
 - PLI Scheme for battery
 - Solar Energy Subsidies
 - Tax incentives on EVs
- etc.

The government has shown a great push towards electric mobility. With such initiatives, we might be able to phase out conventional engine vehicles altogether by 2050.