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GENERAL STUDIES (TEST CODE : 2213)

Name of Candidate	KASTURI PANDA		
Medium Eng./Hindi	ENGLISH	Registration Number	721089
Center	ONLINE	Date	30-07

INDEX TABLE			INSTRUCTIONS
Q. No.	Maximum Marks	Marks Obtained	
1	10		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	10		2. There are TWENTY questions printed in ENGLISH & HINDI इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3	10		3. All questions are compulsory. सभी प्रश्न अनिवार्य हैं।
4	10		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	10		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 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।
6	10		
7	10		
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16	15		
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19	15		
20	15		
Total Marks Obtained:			
Remarks:			

16-B, 2nd Floor, Above National Trust Building, Bada Bazar Marg, Old Rajinder Nagar, Delhi-110060

Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar
Delhi- 110009

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.

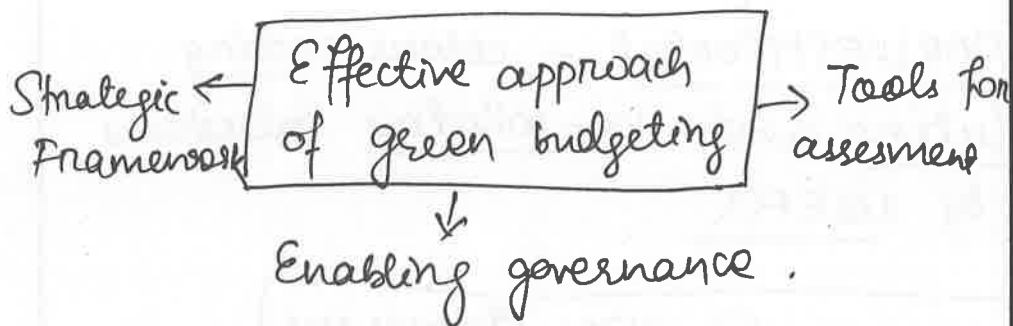
5.

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 सुदृढ़ रणनीतिक ढांचे, साक्ष्य निर्माण हेतु उपकरण और एक सक्षम बजटीय शासन ढांचे द्वारा सुदृढ़ता प्रदान की जाती है। विवेचना कीजिए।

Green budgeting refers to the exercise of accounting for social and environmental externalities in the annual receipts and expenditures of budget.



Strategic framework for Green Budgeting

- ① waste disposal and treatment
E.g. Fly Ash Utilisation Policy for coal sectors
- ② penalty taxes on demerit goods
E.g. Higher duties on petroleum - 5% extra cess on unblended petrol, highest - 18% GST on tobacco.

- ③ Renewable Purchasing certificates and obligations - coupled with incentives to fuel cells under PLI scheme.

Tools for assessment

- ① setting targets E.g. Reducing carbon emissions by 40-45% compared to 2005.
- ② PARIVESH Portal - colour coding polluting and non-polluting industries by MOEFCC.

Governance-Enabling Framework

- ① International cooperation on green energy, electric vehicles E.g. USAID, Japan, Australia EPCA et.
- ② Ease of Doing Business - labour code, Global Minimum Tax, C-PACE for startups
- Better environmental outcomes are part of basic human rights and bare necessities for Swasth Bharat using green budgeting.

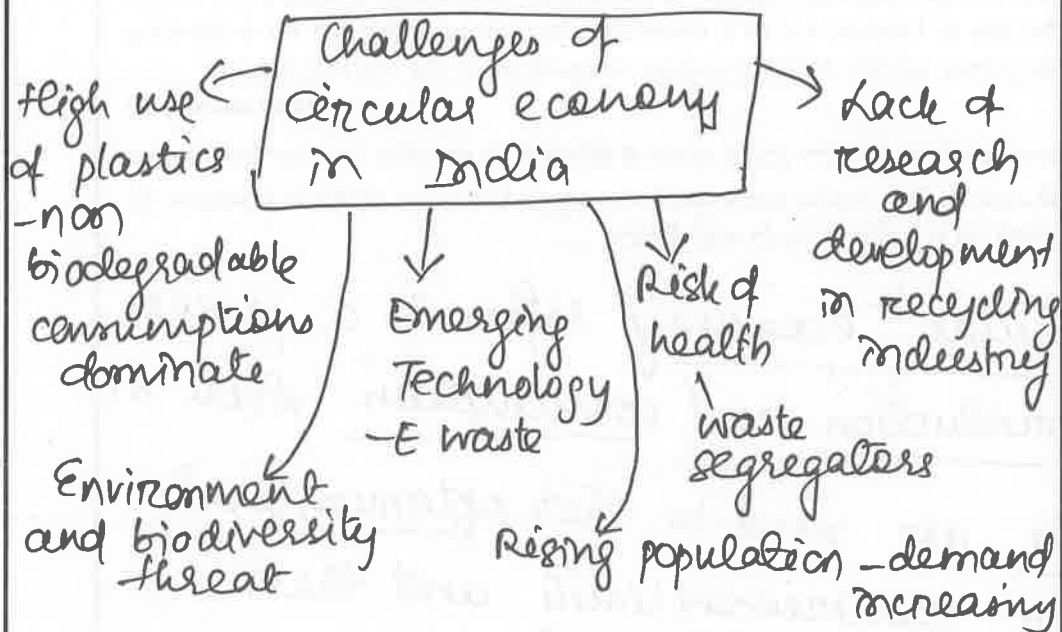
2. State the need for circular economy in India and the challenges associated with it. Also, discuss the measures that are required to build a circular economy in India. **(150 words) 10**

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 a process of production and consumption where goods are used to their optimum levels within requirement limits and then repurposed to reduce waste.

Need for circular economy in India

- ① NITI Aayog estimate - 62MT of waste produced in a day - less than 50% treated.
- ② Air and water pollution - 21/30 most polluted cities in India (IQAir), 70% ground water - unfit for consumption.
- ③ Lifestyle diseases - ~~non~~ cause of 65% premature deaths - due to unhealthy surrounding and food chain eutrophication.



Measures to build circular economy

- ① Facilitating regulatory framework
E.g. Vehicle scrappage policy - automobiles.
- ② Startup India E.g. Ekokaari makes bags from chips packets, Neemans shoes from single use water bottles
- ③ Higher allocation to research - food preservation techniques
- ④ Use of fly ash - construction - artificial bricks.
- ⑤ Producer Responsibility - Bulbs, electronic appliances.

Circular economy is an essentiality in India as it holds the key to Aatma Nirbhar Bharat with lifestyle resilience.

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 has been enacted to improve functioning of the 12 major container ports in India that manage about 80% of international freight.

Providing greater autonomy leading to professionalism in governance of ports

- ① Faster clearance of shipments - which is among highest ^{delays} for India compared to Japan, China, Singapore, USA - Economic survey 2021
- ② Introduction of new technologies - flexibility in decision-making and innovation like startups
- ③ Improve corporate governance & - reduce bureaucratic hassles and corruption.

- ④ Reduce political interferences
- autonomy in process-upgradation
- ⑤ Adopt world's best practices
- especially important for strategic ports
like Mumbai, Haldia, Mangalore,
Tuticorin, Chennai, Paradip
- world recognition
- ⑥ Best to exports - 1 trillion USD by 2030

Challenges

- ① Inertia from traditional leadership
- bureaucratic job security reducing.
- ② Backlash from trade unions.
- ③ Allegation of more powers given to
central government.
- ④ Automation may lead to job loss
- manual labour unemployment
- ⑤ Poor incentives to importers

The Major Ports professionalising by the act is along the larger agenda of minimum government, maximum governance.

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।

Presumptive Land Titling is the process of assigning land parcels based on historical occupancy and transactions.

conclusive land titling system, instead relies on allotting land titles by land records data.

Need to shift from presumptive to conclusive land titling -

- ① Reduce title disputes - land record modernisation
- ② Faster clearance of judicial pendancy related to land
- ③ Spur economic activities - agriculture, industry, office spaces.
- ④ Ensure better rehabilitation and eases compensation process.
- ⑤ Release degrading land from disputes - essential for land reclamation.

⑥ Land Monetisation - by government
Hurdles in implementation - revenue generation

- ① Absence of evidences - lack of records to assign titles
- ② Diversion of agriculture lands to homestead/industries - during land reforms.
- ③ Casteism and dominant groups - involved in land grabs - marginalised groups like dalit, tribals denied land titles.
- ④ Encroachments and unauthorised habitations in government lands E.g. slums in cities, nearby railway tracks etc.
- ⑤ Women hold less than 5% of ownership rights.
- ⑥ Appeals - No reduction in judicial cases.

An efficient conclusive land titling process has been suggested by NITI Aayog for sabka saath sabka vikas in sectors of land as the most deficient natural resource.

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 all primary, secondary and tertiary sectors of economic activities functioning on methanol-energy power systems.

Role in achieving India's energy security

- ① Reverse the future crisis - India to grow as ~~3rd~~ 3rd largest energy consumer by 2030 - as per International Energy Agency (currently 3rd).
- ② Lowering import dependance.
- ③ Increased reliance on clean energy - no harmful emissions on methanol burning.

Role in economic prosperity

- ① As per UNDP - India requires 18% more per-capita energy consumption for 8% rise in Human Development.

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① Industrial Revolution 4.0 - methanol dependance - reduce emissions and lower pollution - lower expenditure on waste management

② Hybrid/Electric mobility - ts per NITI Aayog

- 15% methal blending can reduce sulphur and nitrogen emissions by 35-40%.

③ less inflammable - less disasters (Industrial)

Challenges to methanol economy

① poorer energy density than petrol and diesel - lower mileage - reduces life of automobiles.

② Nascent research stage - difficulties in transport and storage - requires low temperature and pressure.

③ Reducing energy technology transfer from developed nations - geopolitical tension

Methanol economy can help in achieving SDG Goal No 7 - efficient energy systems in India with better standards of living and higher GDP

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

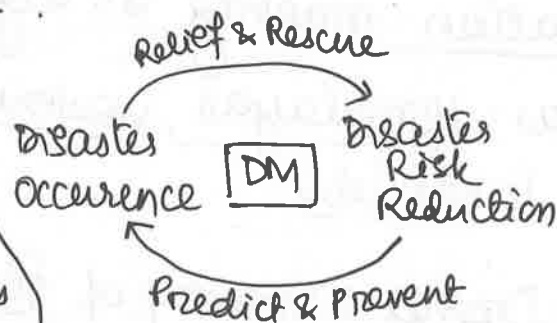
(150 words) 10

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

Disaster Risk Reduction is the exercise of predicting, mitigating and reducing the effects of a disaster.

It is a part of disaster management ^(DM) strategy both before and after occurrence.

Role of geo-spatial technologies in approaches



① GPS tracking systems - with ISRO's NAVIC - tracing life and property at risk

② ISRO Bhuwan app - land identification and assess vulnerability.

③ Assessing lemonous intensity (Economic Survey 2022) - identify high risk hotspots E.g. High population density
- more lighting - Greater chance of electricity faults and circuiting during cyclones.

④ Resource imaging satellites - disaster zonation mapping in high altitude areas - Himalayas, western Ghats - prone to landslides.

⑤ Drones - survey of flood, drought sights - useful in transportation of relief material - in remote areas.

⑥ weather modeling based on geography
disaster intelligence prediction

Geospatial Technologies coupled with SENDAI framework and adhering to NDM guidelines can assist better disaster management.

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।

Environment Impact Assessment ^(EIA) is a detailed study undertaken to assess the effects of developmental projects on the environment.

Importance of EIAs to conserve natural resources

- ① Development leading to large-scale displacements - E.g. Saxena committee report - 85 lakh STs displaced post 1991 industrialisation - but only 25% rehabilitated
- ② Threat to biodiversity of region
E.g. Narmada Bachao Andolan - Fresh water crocodiles
Save Silent Valley Movement - lion Tailed macaque in western Ghats
- ③ Large scale deforestation - hazy forests for metro

④ loss of forest produce, depletion of minerals E.g. Singhbhum, Panchamatpalli
- also air pollution from mining

However, recent amendments of EIA Act 2006 is aimed at utilisation of natural resources more -

- ① Coal Exploration allowances
- without use of District Mineral Funds
- ② debaral hydrocarbon exploration - CO₂ emissions
- ③ deverage of Neutrino Observatory
- despite proximity to TN Bird reserve
- ④ Construction of Dams like Hirakud
- curb natural river flow - flooding.
- ⑤ POCSO Issue 2015 - Niyamgiri hills
coal mining - Dongria Kondh revolts.

The environment impact assessment must ensure a balance of development over exploitation of natural resources to abide by DPSP Art 48 - protect forests and wildlife.

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 is a technique of using both physical and virtual methods to advance wars.

E.g. Russia intercepting ukraine government records along with using of missiles in the 2022 conflict.

Preparedness of India to hybrid warfare

- ① Defence system - upgradation of armed forces - intelligence by National Investigation Agency coupled with Integrated Theatre commands.
- ② Financial intelligence gathering - by FIU in Ministry of Finance.

- ③ Use of digital technologies
- Cyberdome in Kerala
- ④ International cooperation with
Financial Action Task Force, BRICS
Anti-Terror Structure
- ⑤ Cyber Infrastructure like CSK,
Strategic protection of high value
targets like ocean vessels, ports,
nuclear plants
- ⑥ IoT - intercepting measures and
Drone Rules 2021
- ⑦ Research of 5G - faster communication
- cooperation at level of D10
- ⑧ Public-Private Partnership - defence
procurement
India has aligned with Jeevan Reddy
and Shekhar committee recommendation
of improving defence through indigenisation
to tackle risks of hybrid warfare.

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 Babita Punia judgement by honorable Supreme court has enabled inclusion of women in permanent commission in Indian army recently.

Women in
Indian Army
historically

less than 10% of forces
temporary roles
highly patriarchal
training regime
glass ceiling

Challenges with inclusion of women in
combat roles of armed forces

- ① Traditionalism in the army structure
- SC identified gender biased recruitment process.
- ② Recognised as women-unfriendly
workplace - presence in minority with poor enabling hygiene

- ③ Patriarchal training process - modules devised keeping in mind - physical masculinity.
- ④ Age of professional growth is the child bearing period for women - 25 to 35 yrs
- career breaks - loss of promotions
- ⑤ Social perception - women unfit for physical endurance.

Addressing the challenges

- ① Gender inclusive recruitment and training modules
- ② Empathy and sensitization of male colleagues.
- ③ Healthy workplace - inclusion of POSH guidelines.
- ④ Maternity benefit and creche facilities for women in army.
- ⑤ Paternity leave - changing social biasness as men and women different.

Inclusion of women in combat roles will help in diversifying our armed forces and achieving SDG Goal No 5.

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।

S Chandrasekhar was an Indian mathematician and astrophysicist who received the Nobel Prize for his ground-breaking work in study of black holes and decay of stars.

Concept of Chandrasekhar Limit

- ① Stars ^{mass} lower than size of sun - Brown Star
- ② Sun - gradual decay of H₂ and He and reduction of fusion process.
-but it will not become black hole.
- ③ Less than 1044 tons mass of sun
- Chandrasekhar limit - Red Star
- ④ Beyond Chandrasekhar limit → Red

Giant stars → white dwarf

⑤ Only stars size/mass greater than
3 times sun becomes black hole

E.g. Ultimate Thule, Sagittarius A*

Contributions

- ① Insights into rise of universe
- ② Potential of sun to hold the
solar system
- ③ Possibility of black holes nearby
Milky way.
- ④ Efficient utilisation of energy
from stars.
- ⑤ Make predictions of future of universe

↳ Chandrasekhar was thus greatest
scientists of 20th century and India
needs more like him by creating
enabling environment for more Nobel
winners.

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 ऋण संधारणीयता एक प्रमुख चिंता का विषय है। राज्य वित्त पर आर. बी. आई. की हालिया रिपोर्ट के संदर्भ में विवेचना कीजिए।

States in India have combined debt to GDP ratio at 60% while desired level suggested by NK Singh panel is 40%.

Debt sustainability is a major concern for state finances

- ① Excessive borrowing with shifting repayment deadlines and evergreening of loans - poor credit ratings.
- ② Dependence on devolution - poor self generation of revenue due to local politics.
- ③ Proximity to regional voters - corporate handings and vote banks

- frequent loan write offs.

④ Opportunistic politics - Reliance on freebies culture - high expenditure but low investment - free electricity by Delhi govt.
E.g. SF Anna canteens.

⑤ Poor data collection and evidence
- unrealistic targets leading to scheme failures E.g. Odisha KALIA scheme merged with PMKISAN as 10000 per farmer per year - beyond state capacity.

⑥ High corruption and collusion - unhealthy nexus between fixed politicians and private sector - substandard capital assets and misuse of taxpayers income

Remedies for state finances

① Reform linked fiscal responsibility

and Budget Management (FRBM)
target - Reduced from 50% to 3% and
reversed gradually - based on power
sector reforms, implement one Nation
one Ration Card, health upgradation.

② RBI relaxation on consolidated sinking
fund guidelines.

③ Rewarding best practices E.g. NITI Aayog
indices on energy preparedness,
drinking water, school education,
innovation, healthy states etc.

④ encouraging participation in central
sector schemes - by allowing states to
retain publicity E.g. National Social
Assistance Program.

⑤ International tie ups . E.g. World
Bank STARS program for education

⑥ special state status - North East.

Sustainable state finances are a major
part of our road to Azadi Ka Amrit Mah
① 100 years of independence.

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।

Digital Governance is defined by NITI Aayog as inclusion of modern information and communication technologies for better delivery for public services

Low cost digital governance by digital economy & easy access

① mass based internet service provider
- PM WAN | - wifi at public places

② Online governance portals through smartphones - jeevanpraman, data.gov.in, all departmental websites.

③ Online Tax Filing - eGST, eIncome Tax, faceless appeals scheme, Reduce middlemen and tax hassles -

pre filled forms.

④ Financial inclusion - PAISA portal for urban subsidies, JAM-DBT for LPG, PAHAL, Kisan credit card updates on mKisan app.

⑤ social causes - Education - SWAYAM portal | - Health - Telemedicine portal by MEITY

Skill Training - iGOT for Kaermapoj,
COVID healthcare training

⑥ Monetary Policy Transmission - RBI Eklites

Challenges to Indian experience of digital economy

① Digital divide - Digital illiteracy and low accessibility E.g. NISSO survey - 48% urban population have access to internet - 15% for rural in 2015.

② Individual privacy - data thefts,

identity manipulation and financial frauds.

③ Unregulated free speech - challenges to governance - fake news and hate speech - vidence, riots, radicalisation
E.g. Udaipur blasphemy

④ Threat to strategic assets for national security E.g. compromise compromise in numbers electric grids.

Lessons of inclusive digital economy in India

- ① Poverty alleviation - PM Jan Dhan accounts, women empowerment
- ② Nutritional Tracking - POSHAN portal
- ③ COVID resilience - videoconferencing, Mann Ki Baat Telecast, ₹500 DBT transfer to poor.
- ④ Criminal tracking - CCTNS.

Digital economy is a new backbone for India's ambition of 5 trillion GDP with inclusive growth and governance.

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।

Animal husbandry contributes 25% of agriculture GDP in India with about 20% of milk production of the world.

Dairying as a livelihood option - Significance

- ① Employment alternative - NABARD survey predicted 30% loss in farm income due to climate change
- ② women empowerment - Self Help Groups E.g. AMUL - in Gujarat - milk federations - employ women majorly.
- ③ Highest livestock population in India - Dairying is a high potential sector.
- ④ Fighting malnutrition - milk as an essential nutrient requirement for women and children.
- ⑤ Feed on pests, insects - produce organic manure.

Challenges faced to dairy sector

- ① Lower wages and income - mostly a primary activity in India - with manual labour.
- ② Milk processing - Butter, curd, Ready-to-eats - contributes less than 10% - poor value addition.
- ③ Cattle diseases - Foot and mouth disease, Glanders - sometimes zoonotic - reduces productivity.
- ④ Less research and development on high yielding breeds - less per capita produce.
- ⑤ Livestock - high carbon emissions - cows produce high CH₄.

Government initiatives

- ① National Disease Control Program - vaccines on cattle diseases.
- ② Rastriya Gokul Mission - artificial

Insemination, genomics for higher yield

③ Incentives for organic farming
- zero Budget Natural farming and
Paramparagat Krishi Vikas - income from
cattle dung.

④ Mega Food Parks - Food Processing
infrastructure for milk pasteurisation,
treatment, marketing, packaging.

⑤ KISAN credit card extended to dairy
farmers - with cheaper loans and
interest subvention.

⑥ Animal Husbandry Infrastructure
Development Fund announced.

⑦ Ministry of cooperation formed
- encourage milk cooperatives

⑧ Small ruminants promotion - integrated
farming with dairy.

The article 48A DPSP of Indian constitution
directs state to promote animal husbandry
including dairy on modern scientific lines.

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 recent demands from farmer pressure groups for legalisation of MSP regime highlights India's dependance on subsidies rather than value chains for agrarian development.

Reliance on MSP regime and Subsidy Bias - Issues in the systems

- ① Unscientific agriculture - growth of water-intensive crops like rice in dry regions of North west - Punjab, due to high MSP / Haryana
- ② Depletion on ground water - due to free electricity on pumps and tubewell revolution
- ③ Result of fertiliser subsidy - soil average of NPK is 8:3:1 in India

while requirement is 4:2:1.

-pollution of soil and groundwater.

④ Excessive reliance on cropping

-poor diversification of farm income

-crop failures leading farmers suicides.

⑤ Race to multiple cycles of same crop

-poor soil health - no time to replenish

-stubble burning - pollution

⑥ Assurity on MSP income - moral hazard

-dependancy culture - lack of modernisation

and mechanisation

⑦ Negligence of pulses, oilseeds - leading
to high current account deficit - imports

Necessity to shifting for better value
chains

① India achieved 290MT grain production
in 2020 - but hardly 10% of it is
processed - no value addition - (Arjun
Sengupta).

② In reality MSP benefits only 6% of farmers - MS-Swaminathan committee report.

③ Thrust on agri infrastructure - corpus funds and PSU priority sector lending

④ TOP scheme - Kisan Sampada Yojana for food processing - export promotion (CAPEDA)

⑤ Clusters based development - saffron in J&K, exotic fruits & flowers in North East (Purple Revolution), tribal products - ONE district one product scheme.

⑥ Rationalising agri-expenditure - umbrella Krishanati Yojana farm mechanisation, horticulture development

⑦ Extension services - Digital training and skill upgradation of farmers E.g. Apicary, Fishing etc. - Blue Revolution, Honey Mission

The traditional rice-wheat dominance has to be reduced by creating value chains over MSP regime for doubling farmers income as per Shree Dalwai comm.

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।

India is home to 18% world population with only 4% of fresh water resource of which 70% is polluted as per Water Aid Survey.

In the above light, sus-
tainable river management has become essential with rampant urbanisation.

Challenges to river management in urban areas

- ① Unscientific constructions - space deficiency for planned development.
- ② Diversion of water bodies - lost channels from river beds.
- ③ waste dumping - major rivers like

Ganga and Yamuna - high dumping
from nearby industrial areas like Okha
E.g. wastes froth in Yamuna.

④ High sedimentation in wide river
channels E.g. Brahmaputra - excessive
fodding in Assam, Kosi in Bihar.

⑤ Neighbouring habitations (houses)
and agriculture lands - maintain no
minimum distance - encroachments on
river beds.

⑥ Poor percolation in cement-concrete
structures - covering ground water
- waste reach to rivers.

Launch of River Cities Alliance

① collaboration between Ministry of
Urban & Home Affairs with Jal Shakti
Ministry.

② Facilitate deliberations on river basin

management in cities

② Sharing of best practices by states

E.g. organic restoration channels in Bengaluru

Remedial measures

① Previous treatment of solid and liquid waste under Environment Protection Act.

② Natural farming nearby by rivers
E.g. Budget 2022 - upto 5km from Ganga basin.

③ Watershed management - participation of locals - agroforestry, afforestation

④ Extension of Eco-sensitive mapping guidelines to both coastal and non-coastal cities

⑤ City Beautification - Creating percolation channels - green parks, restoring reduced water levels

Sustainable water management in cities can be further achieved by Likier Shah committee recommendation by including the C&WA, CWC and NGBRA.

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।

The urban population in India at 40% in census 2011 is set to rise by 50% by 2030 with about 75% contribution to GDP.

However, post independence urban sprawl in India has been quite

Haphazard and un-managed

- ① Unscientific housing - unplanned lanes, encroachment on roads and natural resources.
- ② Rampant afforestation for industrial setups - polluting highscapes.
- ③ Produce high waste load - untreated
- ④ Proliferation of slums and crimes.
- ⑤ Dilapidated buildings, difficult supply of water and electricity
- ⑥ Open defecation - poor sanitation.

Locus of small and large urban disasters

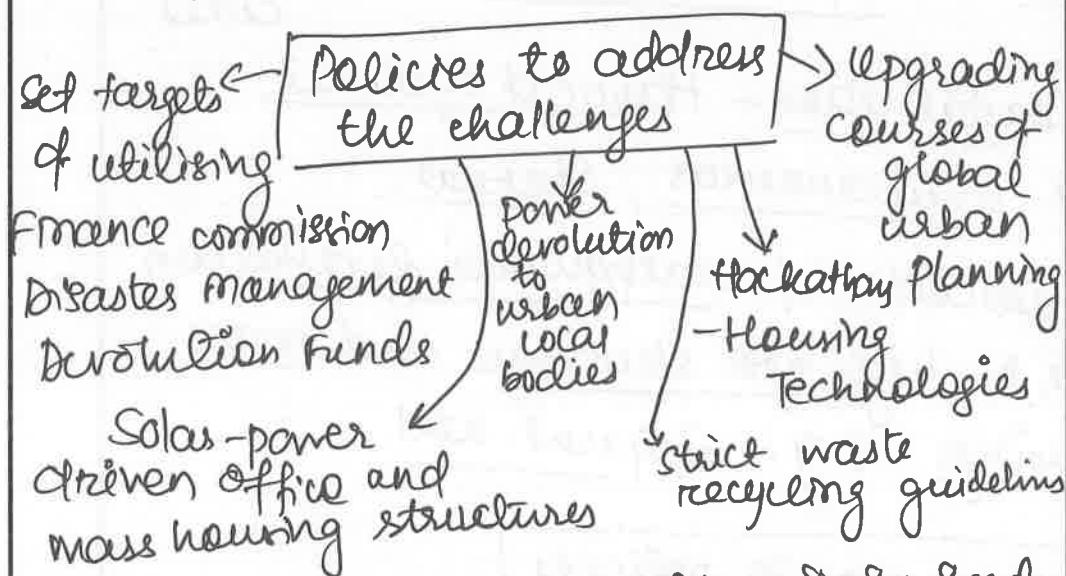
- ① Urban flooding due to congestion and no water flow channels in concrete
E.g. Mumbai, Bengaluru, Hyderabad.
- ② High GHG emissions - industry, automobile
 ↳ Urban Heat Island - Urban Pollution
 ↳ Plateau effect in Hyderabad ↳ Black atmosphere in Delhi winters.
- ③ Centre of epidemics and high disease load - 70% COVID19 case load in major cities
- ④ Coastal cities - Havoc of cyclones
E.g. Bhubaneswar, Chennai.
- ⑤ Epicentre of earthquakes' devastation due to high rise structures and mass housing E.g. Gujarat etc.

Current gaps in policies

- ① Lack of data driven policies for

urbanisation - high population density
in few pockets

- ② very flexible implementation of
disasters guidelines - highly vulnerable
buildings - no disasters mitigation rescues
- ③ lack of manpower and low
capacity building of volunteers.
- ④ higher allocation to industrial sprawl
- negligence to waste collection activities.
- ⑤ No penalties in deviations



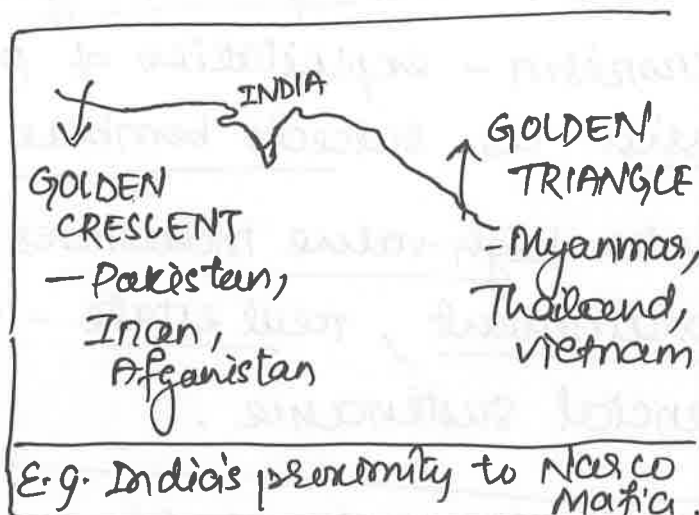
Resilient urban spaces with minimised
disasters effects is a vision to be
achieved by India under SDG 11.

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 organised terror systems that thrive on business of narcotics and psychotropic substances.

Extent of
problem of
narco
terrorism
in India



① Neighbours to both Golden crescent - Punjab and Golden Triangle - North East.

② Drug peddling syndicates work along with human trafficking.

③ Promote radicalisation of youth.

narco abuse facilitates easy recruitment
by manipulation through indoctrination

④ facilitate arms smuggling E.g.
Khalistan movement and secessionism
in Nagaland Manipur sector.

⑤ Provide over-ground systems of
terrorism - exploitation of poor locals
- assist as suicide bombers

⑥ Enter high-value industries like
entertainment, real estate - organised
financial sustenance.

Measures taken by government to
counter and control

① Powers of Narcotics Control Bureau

② International cooperation - UN
convention on Narcotics and
Psychotropic Substances (NPS).

③ Passing NPS act

- ④ Evidence based random searches in real estate spots, golf courses, cruises etc.
- ⑤ Intelligence gathering - digital analytics and modernisation of troops for combat
- ⑥ Good governance - impetus on health, nutrition, development, employment in affected areas like HIMAYAT in Jammu Kashmir, inclusion in PM Jan Aarogya. - reduce radicalisation.

Narco terrorism has a potential of pushing households to extreme ^{poverty} security with social evils and threat to national security - hence better counter-initiatives by government is essential.

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 10% of network based systems that work devoid of general public knowledge and beyond government regulations in virtual ecosystem.

Platform for ~~criminal~~ and ~~terror~~ activities

① Unauthorized access to cyber physical systems by malwares, Trojan horses to steal data
E.g. Petya, wannacry

② Denial of Access Attacks on Government machinery E.g. Hacking railway website.

- ③ comprise data records - theft of identity and financial frauds
E.g. diversion of public savings by fake calling and OTP acquiring.
- ④ Risk on strategic assets E.g.
compromise on Kundakulam Nuclear Plant Database
- ⑤ Spying on celebrities, resource persons, politicians E.g. Pegasus.
- ⑥ Organised drug peddling, money laundering, extortion softwares, human trafficking with centrally managed computers.

Measures to tackle issue of dark web

- ① New cyber security policy with a cyber army - offensive attacking on terror target websites.

- ② Use of emerging technology - AI, Blockchain, quantum computing to assess cryptographic criminal data.
- ③ Intelligence gathering by upgrading CCTNS and online crime coordination
- ④ Strengthening defensive methods for restoring like cyber swachata kendras. ⑤ Regulate fake news, rumor mongering
- ⑥ Skill training of National Information Centre, CSDT, CDAC
- ⑦ Border systems - Thermal scanners, digital drones, sensors to identify suspicious ^{cyber} activities across borders.

Gulshan Rai committee recommendation
on upgradation of Indian cyber security ecosystem is need of the hour to regulate Dark web

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 समझाइए कि मानव के लिए उत्प्रेरकी अभिक्रियाएं क्यों महत्वपूर्ण हैं।

Catalysis is a chemical process which directs a reaction to produce a desired product by assistance through a catalyst.

E.g. Haemoglobin for purification of blood.

Characteristics of catalysts

- ① Inert in nature - do not directly affect the inputs.
- ② Themselves remain unutilised in reaction.
- ③ Role of maintaining desired temperature and pressure.
- ④ aim to produce specific result - absence leads to separate reaction.
- ⑤ often they are non-polluting - no harmful emissions.

Importance of catalytic reactions for human beings

- ① Food - chlorophyll required by plants in food production.
- ② Utilisation of atmospheric oxygen in lungs.
- ③ Digestion - HCl used to break down complex vitamins, minerals, proteins in stomach.
- ④ Water purification - Palladium used
- ⑤ Production of energy - Platinum, copper help in breakdown of water to produce hydrogen energy.
- ⑥ Bone ~~strength~~ strength - use of ~~sunlight based~~ calcium only possible

through vitamin-D from sunlight.

⑦ Hormones play the role of catalysts in child development and nutrition of fetus.

⑧ Drug Delivery and Vaccine Response
-catalysts essential for targeted interventions like blocking histamines or fighting viral infections.

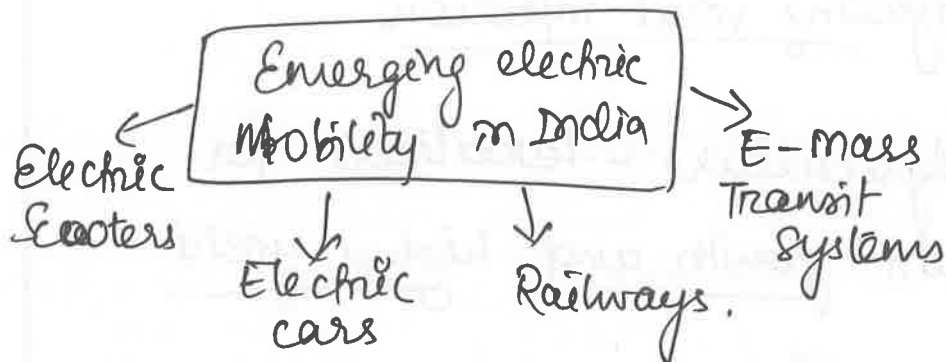
⑨ Agriculture - fertilizers for plant growth and higher yield.

Catalysis is an essential part of biospheric sustenance, and research in this field has been awarded the Nobel Prize in 2021.

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 से जुड़ी समस्याओं का समाधान प्रदान करती है। भारत के संदर्भ में चर्चा कीजिए।

Electric mobility refers to the technique of automobile functioning through rechargeable chemical energy stored in batteries rather than conventional fuels.



So Problems associated with climate change, growing fuel prices and urban transports

- ① Increasing carbon emissions - rising extreme events of heat islands,

lung diseases, biodiversity loss.

- ② Higher GHG emissions - disasters.
- ③ Poor air quality in non-attainment cities identified in National Air Pollution Control Program - especially Delhi NCR region
- ④ High taxes on fuels - post oil bonds, lower govt. revenue due to lockdown, energy crisis all over the world, cess on unblended fuel, nascent stage of technology in cleaner energy.
- ⑤ Rising urban population - peri urban areas and satellite cities, higher labour force participation, traffic congestion

Solutions offered by electric mobility

- ① Almost zero emissions - relatively clean energy from lithium cell, Sodium, solid metal batteries.

- ② Rechargeable - lower waste and circular economy.
- ③ Cheaper and higher energy density.
- ④ Electric buses, Electric Metro - Neelika for faster mobility.
- ⑤ Railway modernisation - E Traction by 2030.

⑥

Challenges to electric mobility in India

- ① Li reserves - extremely low, dependence on imports, Sodium batteries - no rechargeable technology.
- ② Absence of charging infrastructure.
- ③ Tropical country - heating deteriorates battery life.
- ④ low R&D - Electric vehicles higher price - recession in automobile industry.

Electric mobility is an emerging technology that can help attain Panchajit goal of Net zero 2070 but requires government support through PLI and PPP.