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MGP 2025

Time Allowed : Three Hours
समय : तीन घंटे

ForumIAS

Maximum Marks : 250
अधिकतम अंक : 250

GENERAL STUDIES / सामान्य अध्ययन

Name Of Candidate परीक्षार्थी का नाम	Ritu Goyal		
Roll No./अनुक्रमांक	1910101974	Medium/माध्यम	English <input checked="" type="checkbox"/> हिंदी <input type="checkbox"/>
Center Code/परीक्षा केंद्र	1900	Date/दिनांक	24/03/25

*Center Code : For Online - 1900 / Delhi : Karol bagh - 1901, ORN - 1902, Mukharji Nagar - 1903 / Patna : Boring Rd. - 2001 / Hyderabad : Jawahar Nagar - 2101

INDEX TABLE / अनुक्रमणिका			INSTRUCTION / अनुदेश		
Q. No. प्र.सं.	Max. Marks अधिकतम अंक	Marks Obtained प्राप्तांक	1. Please do furnish Name, Email, Roll No and Mobile in the answer sheet. कृपया उत्तर-पुस्तिका में नाम, ईमेल, रोल नंबर और मोबाइल नंबर भरें।		
1			2. There are TWENTY questions printed in ENGLISH & HINDI, all questions are compulsory. उत्तर पुस्तिका में अंग्रेजी/हिंदी में बीस प्रश्न दिए गए हैं, सभी प्रश्न अनिवार्य हैं।		
2			3. The number of marks carried by a question/part is indicated against it. प्रत्येक प्रश्न/भाग के लिए निर्धारित अंक उसके सामने अंकित किए गए हैं।		
3			4. 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. उत्तर प्रवेश पत्र में अधिकृत माध्यम में लिखे जाने चाहिए, जो कि दिए गए स्थान में इस प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के कवर पर स्पष्ट रूप से लिखा जाना चाहिए।		
4			5. Word limit in questions, if specified, should be adhered to. Any page or portion of the page left blank in the Question-Cum Answer Booklet must be clearly Struck off. प्रश्नों में शब्द सीमा, यदि निर्दिष्ट हो, का पालन किया जाए। प्रश्न-सह-उत्तर पुस्तिका में खाली छोड़े गये किसी भी पृष्ठ या पृष्ठ के भाग को स्पष्ट रूप से काट दें।		
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Examiner's Discretion/मूल्यांकन कर्ता का विवेक :			Start Time/प्रारंभ करने का समय :	End Time/समाप्त करने का समय :	
			3:30 PM	6:43 PM	
Total Marks/कुल अंक :			Mode Of Examination/ परीक्षा की विधि :	Online/ऑनलाइन <input checked="" type="checkbox"/>	
				Offline/ऑफलाइन <input type="checkbox"/>	
*Examiner's Discretion is the marks awarded at the discretion of the examiner based on your overall impression, on the basis of (but not limited to) your handwriting, presentation, use of diagrams, flowcharts, facts and figures or absolutely anything that he/she liked in your copy. मूल्यांकन कर्ता का विवेक अंक, आपकी लिखावट, प्रस्तुति, आरेखों के उपयोग, फ्लोचार्ट, तथ्यों और आंकड़ों या समग्र रूप किसी अन्य विषय वस्तु, जो मूल्यांकन कर्ता को आपकी कॉपी में पसंद आयी के आधार पर (लेकिन इन्हीं तक सीमित नहीं) पर दिए गए अंक हैं।			For Office Use Only / केवल कार्यालय प्रयोग हेतु		
			ECN CODE/ ईसीएन कोड :	EG/ईजी :	Evaluation Date/ मूल्यांकन तिथि :
			① ② ③ ④ ⑤	① ② ③ ④ ⑤	

Note: Students are expected to incorporate suggestions from the feedback provided in the answers. Discussion classes for the tests are also available online in your portal to aid in your preparation. Further, students are requested to see the good copies of the tests and learn from them. You can also discuss your copy with a Mentor and discover ways and means to improve your answers, or if you have any issues with this test / copy. Ask specific questions, to get specific answers.

EXAMINER'S REMARKS

CRITERIA FOR THE FEEDBACK SECTION AT THE END OF EACH QUESTION

1. **AWIS = Answered What is Asked.** This means whether you have addressed the core demand of the question or not. Addressing the core demand of the question gets you an objectively fair score. It is examiner's perception if you have understood the question and if you know the answer in the first place. Creative answer writing, sometimes missing the core demand, may fetch very high or very low scores, and exposes your answer to the subjectivity of the examiner.
2. **CD & VA = Content Density & Value Addition.** Examiner will evaluate the quality and quantity of your content in the answer. In the same word limit and space limit have you (a) written what is asked (b) gone beyond what is asked (c) enriched answers through combination of (but not all!) suggestions, ideas, quotes, flowcharts, diagrams, facts and figures, data etc. This affects objective components of assessment.
3. **S & F = Structure & Flow =** Whether you have structured your answer properly or not. Whether the answer has been broken into parts and sub-parts and each part has been addressed appropriately or not. Whether the flow of the answer is maintained. Affects both subjective and objective components of assessment.
4. **P & R =** How your answer performs on the criteria of **presentation, ease of read, clarity and apparent effort** in writing the answer. This affects the subjective components of assessment.



Q.1) What factors have expedited the digitalization of the economy in the recent past? Explain with suitable examples. (10 marks, 150 words)

हाल के दिनों में किन कारकों ने अर्थव्यवस्था के डिजिटलीकरण को गति दी है? उपयुक्त उदाहरणों के साथ वर्णन कीजिए। (10 अंक, 150 शब्द)

Digitisation refers to increasing use of information technology services in day to day economic activities

(Reasons for digitisation of economy)

- e-governance initiatives and National Digital Program: Ex establishment of Common Services Centres (CSC) at panchayats, PM-WANI public wifi, mobile towers, data.gov.in, my.gov, various online portals, online procurement by govt.
- Agriculture: agri stack, e-NAM for selling of agricultural produce

- COVID-19 induced lockdown: reduction in contact intensive services
- financial digitisation: Jan Dhan accounts for poor, increasing penetration and ease of use of UPI in payments.
- Internet Penetration: $> 50\%$ in India. bringing internet to Panchayats.
- Mobile Penetration $> 80\%$ in India.

Areas where digitisation is still behind.

- universal internet penetration not achieved
- lack of digital literacy in old aged citizens, rural population.
- growth of cyber crimes & fraud. India needs effective implementation of Digital Personal Data Protection Act 2023 to protect citizen data & privacy (A21)

Feedback

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Please put tick marks in the above table.

Here G is Good, A is Average and P is Poor.

TOTAL MARKS	
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Q.2) Why has there been an increased focus on negotiating, renegotiating and concluding Free Trade Agreements (FTAs) by India in recent years? (10 marks, 150 words)

हाल के वर्षों में भारत द्वारा मुक्त व्यापार समझौतों (FTAs) पर बातचीत, पुनर्वार्ता और समापन पर ध्यान क्यों दिया जा रहा है? (10 अंक, 150 शब्द)

f. India has recently concluded ECTA with EFTA countries (European Free Trade Area), ~~the~~ UAE, interim agreement with Australia, actively negotiating with EU, Canada & UK, renegotiating with ASEAN and discussing bilateral trade agreement with USA.

Reasons

→ death of multilateralism:
WTO's dispute settlement body has been dysfunctional for a long time.

→ USA: fear of additional tariffs under trump's regime on India's exports to US.

- encourage FDI and investments to create jobs. Ex EFTA promised \$100 bn FDI & jobs.
- Inability to join RCEP due to Chinese threat of flooding the country with cheap goods has led India to renegotiate FTA with ASEAN.
- UK: improve trade, immigration conditions and FDI post Brexit, taking advantage of UK's independent trade conditions.
- EU: ~~aims~~ to reduce restrictions imposed by EU's such as sanitary & phytosanitary measures, carbon border adjustment ~~tax~~ (CBAM) on steel exports.
- FTAs provide India an opportunity to reduce its trade deficit and current account deficit thus boosting the GDP.

Feedback
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Q.3) The Horticulture sector offers opportunities to transform the agricultural landscape of the country but is constrained by various factors. Elaborate. (10 marks, 150 words)

बागवानी क्षेत्र देश के कृषि परिदृश्य को बदलने के अवसर प्रदान कर सकता है, लेकिन यह विभिन्न कारकों से बाधित है। सविस्तार वर्णन कीजिए। (10 अंक, 150 शब्द)

Horticulture sector refers to the cultivation of fruits and vegetables by farmers.

opportunities

- increasing farmer income due to higher prices and profits
- ^{greater} Demand among urban affluent consumers who are health conscious
- truck farming and market gardening : to supply horticulture produce to urban centres.
- Food processing and value add :
ex. JAMS, pickles
- Indigenous cultivation of Dragon fruit, Avocado, berries

Challenges

- Inadequate, cold storage and transportation infrastructure.
- lack of food processing industries around horticulture.
- ~~Excessive~~ Knee-jerk government policies on export bans for onions discourage farmers.
- lack of MSP procurement
- ~~Issues~~ issues with marketing and sale: excessive fees at APMC, exploitation under contract farming ex PEPSICO over potato farmers.
- Farmer lack knowledge and are hesitant to shift from rice/wheat to agriculture.

Government's initiatives like National Mission on Horticulture (NHM), Kisan Sampada Yojna for cold storage infra development will address some of these issues.

Feedback

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.4) What is AgriStack? How will it benefit the agricultural sector?

(10 marks, 150 words)

एग्रीस्टैक क्या है? यह कृषि क्षेत्र को कैसे लाभान्वित करेगा?

(10 अंक, 150 शब्द)

AgriStack is an information database that integrates the data about land ownership records, Crops grown, weather patterns, Address of scheme beneficiaries etc.

Benefits

- weeding out bogus / ~~non~~ duplicate beneficiaries from agricultural schemes.
- Informed supp decision making by government by accurately forecasting agricultural output, crop losses etc.

- prevent leakage of subsidies
~~from~~ through DBI with help of
Adhar ∴ help in fiscal consolidation
- Predict crop losses | accurate
assessments for PM Fasal Bima
Yojna
- Equitable distribution of
scheme benefits across regions
to reduce regional imbalances
like East & North East
- settling court cases on land disputes
AgriStack is a step in right
direction to increase digitisation in
Agriculture to support informed
decision making and improve
farmer livelihoods.

Feedback

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TOTAL MARKS			



Q.5) Explain the concept of Brain-Computer Interface (BCI) technology and discuss its potential applications in diverse fields. (10 marks, 150 words)

ब्रेन-कंप्यूटर इंटरफेस (BCI) तकनीक की अवधारणा का वर्णन करें और विविध क्षेत्रों में इसके संभावित अनुप्रयोगों पर चर्चा करें। (10 अंक, 150 शब्द)

BCI technology refers to the use of electrical signals transmitted in brain which are detected using sensors and interpreted on computers to extract information about a persons thoughts and emotions.

Potential Applications

- Crime Investigations : poly graph, lie detector test.
- Physical Communication Aids for physically challenged.

- persons .
- Body suits that can move based on brain signals for persons with spinal cord injuries
 - Datasets for Artificial Intelligence
 - Curing / ~~words~~ into identifying people with depression and other mental illness ex Alzheimer's .

BCI technology can also have adverse unintended consequences if not regulated by the government ex profiling of persons, privacy invasion, this requires an appropriate consent mechanism for its use .

Feedback

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TOTAL MARKS			

Q.6) What do you understand by nanotechnology and how is it helping in environmental remediation?
(10 marks, 150 words)

नैनो तकनीक से आप क्या समझते हैं और यह तकनीक पर्यावरण सुधार में कैसे मददगार हो सकती है? (10 अंक, 150 शब्द)

Nanotechnology refers to the use of particles which are less than 100 nm in size. Smaller size of particles provide unique benefits in various applications like faster absorption, deeper penetration etc.

Applications in Environmental Remediation

→ Nano fertilizers ex Nano urea & Nano DAP to reduce the excessive use of traditional fertilisers which lead to soil pollution & harm water bodies. Nano fertilisers are required in

small quantity and have better absorption potential by plants.

→ To ~~prevent~~ remediate oil spills in oceans : greater adsorption by nano materials can cure oil spills effectively.

→ Carbon nano tubes : have better strength compared to traditional materials and are also biodegradable.

Nanotechnology also has applications in various other fields apart from environment remediation such as drug delivery to ~~sep~~ specific organs, faster computing, high tech clothing for security agencies

Feedback

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TOTAL MARKS			



Q.7) While oceans are considered among mankind's best allies in the fight against climate change, they are themselves heavily impacted by the same. Discuss. (10 marks, 150 words)

जबकि महासागरों को जलवायु परिवर्तन के खिलाफ लड़ाई में मानव जाति के सबसे अच्छे सहयोगियों में से एक माना जाता है, वे स्वयं भी इससे बहुत प्रभावित हैं। चर्चा करें। (10 अंक, 150 शब्द)

Oceans comprise > 70% of surface area on earth and play an important role in fighting climate change.

Role in Climate change

→ Oceans are biggest carbon sink on earth ... help in preventing global warming.

→ Reducing day time temperature due to sea breeze

→ bring rainfall through winds blowing over seas ex Monsoon

Impact of climate change on oceans

- Coral Bleaching: Rise in sea surface ~~se~~ ~~sw~~ temperature has caused massive bleaching events destroying corals.
- Sea level rise: due to melting of glaciers, water expansion due to rise in surface temperature.
- Ocean Acidification: excessive absorption of CO₂ from air.
- Impact on marine species due to Algal Blooms

SDG 15: requires countries to protect life under water. BBNJ treaty on high seas to declare marine protected areas aims to fulfil this goal.

Feedback

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TOTAL MARKS			



Q.8) "Disasters cannot be managed by a single agency, department, or ministry on its own. It requires a whole-of-government and whole-of-society approach." Elucidate. (10 marks, 150 words)

"आपदाओं का प्रबंधन किसी एक एजेंसी, विभाग या मंत्रालय द्वारा अकेले नहीं किया जा सकता। इसके लिए संपूर्ण सरकार और संपूर्ण समाज के दृष्टिकोण की आवश्यकता होती है।" स्पष्ट करें। (10 अंक, 150 शब्द)

Disasters have widespread impacts ranging from economic, infrastructure destruction, humanitarian crisis ~~help~~ relief and rehabilitation. This requires ~~whole~~ whole of government & whole of society approach:

Need for whole of government & whole of society approach

→ proper coordination between National (CNDRF) and state level (SDRF) Disaster Response forces during disasters

→ Centre - state coordination in planning for disaster mitigation

considering local ~~response~~ factors like topography, seismology, population density etc.

→ Inter ministerial coordination b/w finance, home ministry

→ Involvement of civil society organisations like NGOs for relief and rehabilitation

→ Coordination ~~involvement~~ of state police and CAPF for law and order maintenance in disaster relief camps.

thus disasters require communication and coordination between different ministries, agencies and civil society.

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TOTAL MARKS			



Q.9) 'Grey-zone' warfare challenges traditional notions of sovereignty and conflict. Examine.

(10 marks, 150 words)

ग्रे-ज़ोन युद्ध संप्रभुता और संघर्ष की पारंपरिक धारणाओं को चुनौती देता है। परीक्षण कीजिए।

(10 अंक, 150 शब्द)

Grey zone warfare is being increa-
sing used by countries such as
China to create security threats
by using non conventional techniques
instead of direct military confron-
tation. Ex. using economic sanctions
political means etc.

Challenges of Grey zone warfare

→ Ex. Salami slicing strategy
deployed by China in Sadakh &
South China sea to acquire
land bit by bit threatening
territorial integrity.

→ Risk of being labelled as the escalator of conflict is the affected country responds militarily using traditional military attack i.e. risks bringing international condemnation.

→ The affected country does not even know it is under attack due to the secret nature of grey zone warfare.

→ Has the ability create large scale impact over a long period of time. threatening sovereignty.

Grey zone warfare requires affected countries to respond diplomatically and use economic and political means to preserve its sovereignty.

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TOTAL MARKS			



Q.10) Elaborate on the need for a clearly articulated National Security Strategy (NSS) for systematic, consistent and coherent approach towards national security. (10 marks, 150 words)

राष्ट्रीय सुरक्षा के प्रति व्यवस्थित और सुसंगत दृष्टिकोण के लिए स्पष्ट रूप से अभिव्यक्त राष्ट्रीय सुरक्षा रणनीति (NSS) की आवश्यकता का सविस्तार वर्णन कीजिए। (10 अंक, 150 शब्द)

India has not formulated its National Security Strategy (NSS) which countries like US have.

Need for NSS

- To clearly establish goals/mandate of Indian security forces & agencies
- establish a coordination mechanism between various forces (military & paramilitary) and intelligence agencies.
- Articulate clear strategies against adversarial countries like Pakistan.

- Better response to non traditional and emerging threats like cybersecurity, Social media, communication Networks & prevent their misuse.
 - overall better response in case of attack.
 - Mechanism to establish accountability in case of breach of security ex Pegasus snooping which targetted many MPs, journalists.
- India faced many conventional & non conventional security threats and NSS is vital to overcome these.

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Q.11) The proliferation of Global Capability Centers (GCCs) across India has earned it the title of "GCC Capital of the World". Describe the reasons behind this proliferation and throw light on its impact on the country's economic landscape. (15 marks, 250 words)

भारत भर में वैश्विक क्षमता केंद्रों (ग्लोबल कैपेबिलिटी सेंटर, GCC) के प्रसार ने इसे "विश्व की GCC राजधानी" का खिताब दिलाया है। इस प्रसार के पीछे के कारणों का वर्णन करें और देश के आर्थिक परिदृश्य पर इसके प्रभाव पर प्रकाश डालें। (15 अंक, 250 शब्द)

Global capability centres have been established in India in fields of Banking, investments, IT, electronics etc in cities like Mumbai, Bengaluru, Hyderabad and NCR region.

Reasons for proliferation

→ Demography : high % of youth in engineering & with domain knowledge across IT services.

→ Favourable laws for corporates : Ex social security laws are less strict compared to EU

→ low wages : talented employees
hired at wages lower than
developed countries like US
in PPP terms (purchasing power
parity) providing economic
benefits

→ Design linked incentive scheme
by government of India is for
semiconductor chip design

Impact on Country's Economic
landscape

→ increase in FDI : narrowing of
current account deficit.

- prevents brain drain of later talented population.
- Export of these services contributes to GDP of the country
- Increase in R&D among private players
- competition and improvement in quality of services by domestic firms

→ Negative → competition for resources ex. funds, manpower for MSMEs & domestic firms.

promoting western culture ↙ ↘
 ↙ ↘
 repatriation of profits out of the country
 increasing stress levels among youth.

GCC have contributed positively to the economy but its impact on society + MSMEs needs to be checked by effective regulation

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Q.12) As the Pradhan Mantri Jan Dhan Yojana (PMJDY) completes a decade of its implementation, evaluate its effectiveness in promoting financial inclusion and economic empowerment in the country. (15 marks, 250 words)

प्रधानमंत्री जन धन योजना (PMJDY) अपने कार्यान्वयन के एक दशक पूरे कर रही है, देश में वित्तीय समावेशन और आर्थिक सशक्तीकरण को बढ़ावा देने में इसकी प्रभावशीलता का मूल्यांकन करें। (15 अंक, 250 शब्द)

PMJDY ~~is~~ is the central sector scheme of ministry of finance - govt of india that provides zero balance bank accounts to the unbanked ~~pop~~ households of the country.

Provisions under scheme

→ Jan Dhan accounts with no minimum balance requirement for all households ~~for~~ selected from 2011 SECC.

→ ~~Micro insur~~ Free accidental coverage of Rs 2L insurance

→ Rupay debit card facility.

→ Overdraft facility.

Effectiveness in Promoting financial inclusion

merits	Demerits
<ul style="list-style-type: none"> → encouraged <u>savings habit</u> among poor population → <u>women</u> of the family chosen as <u>account holder</u> leading to their financial inclusion → Bank accounts for farmers (to PM Kisan) → <u>increased loan availability</u>, inclusion in formal <u>banking system</u> 	<ul style="list-style-type: none"> → Jan dhan accounts used as <u>money mules</u> by the wealthy during 2016 <u>demonetisation</u> to escape scrutiny

Impact on economic empowerment

merits

- Empowers women of households with deposits of Rs 500 & Rs 1000 during COVID-19 to sustain lockdown.
- Direct Benefit Transfer for schemes such as Vijwala, PM Kisan (Rs 6000)
- MNREGA wages transferred directly to accounts preventing leakages.

Demerits

- Inclusion & exclusion errors of beneficiaries
- Accounts not used, maintained at zero balance.
- cash withdrawal - also as soon as money/salaries received

PM BJD's such as ADAR DBT has synergies with other schemes led to financial inclusion & economic empowerment.

Feedback
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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.13) Critically examine the role of Primary Agricultural Credit Societies (PACs) in achieving the twin targets of boosting rural economy and mainstreaming small and marginal farmers.

(15 marks, 250 words)

ग्रामीण अर्थव्यवस्था को बढ़ावा देने और लघु और सीमांत कृषकों को मुख्यधारा में लाने के दोहरे लक्ष्यों को प्राप्त करने में प्राथमिक कृषि ऋण समितियों (PACs) की भूमिका का आलोचनात्मक परीक्षण करें। (15 अंक, 250 शब्द)

Primary agriculture credit societies are cooperative societies ~~at~~ in rural areas regulated by respective state registrars of cooperative societies.

Role in Boosting Rural Economy

- Provides credit to small & marginal farmers to undertake farming activities, personal expenditure
- setting up storage facilities to prevent distress sale
- presents rural distress in case of crop failure
- financial inclusion of small & marginal farmers.

- Farmers can collectively form Farmer Producer Organisations (FPO) to club their resources for better access to credit.

→ Role in mainstreaming

- Cooperative society functions as a platform for farmers to come together and discuss various issues

- 1 vote per farmer i.e. giving equal voice to small & marginal farmers in deciding issues.

→ Plays an important role in voicing their concerns to the state governments and have a collective bargaining power

Challenges

- Corruption and politicisation of FACS.
- No - uniformity in regulation among different states.
- High default percentage on loans reducing their ability to lend further.

→ unable to prevent farmer suicides and distress selling.
Non Performing Assets (NPA) in FACS is a major problem preventing its success. Tighter regulation on lending norms is required to reduce it.

Feedback

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TOTAL MARKS			



Q.14) How will you explain the irony of low millet cultivation and consumption despite their multifarious benefits? Also, suggest measures to curb this anomaly. (15 marks, 250 words)

आप मोटे अनाज/मिलेट की कम कृषि और उपभोग के विरोधाभास को कैसे समझाएँगे, जबकि इसके कई लाभ हैं? साथ ही, इस विसंगति को रोकने के उपाय भी बताएँ। (15 अंक, 250 शब्द)

Millets called as 'Shree Anna' in India are nutrient dense and fibre rich foods ~~are~~ with India having highest production in the world.

Reasons for low cultivation & consumption

Benefits of millet cultivation & consumption

→ ~~It can be~~ cultivated in low rainfall areas ex. Rajasthan, Karnataka. - require minimal irrigation contributing to water conservation

→ Health benefits : high fibre
content supporting gut health &
digestion. More Nutrient dense
Ex. Iron (Ragi), Calcium,

→ cheaper compared to traditional grain
→ lower glycemic index com-
-pared to traditional grains like
Rice & wheat

Reasons for low cultivation &
consumption

→ Green revolution in 1960s
introduced high yield Rice &
wheat varieties shifting cultiva-
-tion in their favour

→ Lack of incentives to farmers
of millet ex MSP not properly
implemented ⇒ MSP majorly
given for rice & wheat

- Lack of food processing / marketing initiatives for millets.
- Lack of R&D to increase their yields and develop pest / climate resistant varieties.

(measures to curb this anomaly)

- Awareness generation about its benefits → Ex. International year of Millets 2023, status of "Shree Anna"
 - Higher procurement under PDS and PM POSHAN scheme for mid day meals.
 - MAHARSHI - R&D for millets
 - ~~more~~ higher benefits under MSP
Ex 60% - 70% of A2+FL cost
- Millets consumption and production can fulfill twin objectives of increasing farmers income and contribute to nutrition and food security (SDG 3)

Feedback

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TOTAL MARKS			



Q.15) "India's Space Technology is virtually touching every person's life". In light of this statement, describe how advancements in space technology have impacted various aspects of daily life in the country. (15 marks, 250 words)

"भारत की अंतरिक्ष प्रौद्योगिकी वस्तुतः प्रत्येक व्यक्ति के जीवन को प्रभावित कर रही है"। इस कथन के आलोक में, बताएँ कि अंतरिक्ष प्रौद्योगिकी में प्रगति ने देश में दैनिक जीवन के विभिन्न पहलुओं को कैसे प्रभावित किया है। (15 अंक, 250 शब्द)

India contributes to 2% of the global space economy with ISRO - the public sector undertaking contributing a major chunk followed by startups supported by ISRO thru INSPACE.

Impact of Advancements in space technology

- Communication : satellite communication in Remote areas
- Internet : use of low earth orbit satellites to provide satellite internet in rural areas - Ex Starlink partnering with Jio & Airtel.

- Transportation: NAVIC: India's indigenous positioning system and navigation system covering ~~the~~ Indian boundaries + 1500 kms.
- Agriculture: Weather information, allowing timely sowing, navigation of drones for spraying pesticides, land mapping to give titles to land owners, surveys of crops sown, farm fires in NCR region
- Border security: satellite surveillance through remote sensing satellites, terrain mapping for army, wind speeds for Navy Air force.

- Air Traffic monitoring and navigation of flights.
- weather forecasts, warnings and disaster preparedness : modelling of climate patterns, winds etc can help predict cyclones, rainfall.

Thus Indian space economy has impacted each & every corner of the society with potential to reach 10% of global space economy in future

Feedback

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Q.16) How can 'agrivoltaics' benefit India's agriculture and energy sectors? Highlighting the factors hindering its widespread adoption, suggest remedial measures. (15 marks, 250 words)

एग्रीवोल्टेक्स भारत के कृषि और ऊर्जा क्षेत्रों को कैसे लाभ पहुँचा सकता है? इसके व्यापक रूप से अपनाए जाने में बाधा डालने वाले कारकों पर प्रकाश डालते हुए, उपचारात्मक उपाय सुझाएँ। (15 अंक, 250 शब्द)

Agri-voltaics refers to producing of energy / electricity in the farm itself to conduct farm operations.

Potential

→ Agriculture sector

- on demand electricity for irrigation based on crop needs.
- supplementary income for farmer from sale of excess electricity.
- use of wasteland / fallow land to generate income.

→ Energy sector

- Reduce pressure on grid from electricity supplied for irrigation.
- Reduction in electricity subsidies for farm sector.
- improving energy efficiency of GDP "Panchamrit target" of India.
- Energy conservation; reduce oil imports

Challenges

- Lack of knowledge and training, high illiteracy among farmers.
- land fragmentation: unable to install solar panels on small farm lands.
- ~~only 45%~~ > 50% of agriculture in India is rained
- Tractors / machines either not used or mostly based on diesel (ICT engine)

→ Lack of battery storage facilities to store energy generated.

Measures

- Government shld organise workshops, use Kisan TV to educate farmers
- Incentives for solar power generation
- ~~Encour~~ increase installation of Net meters
- ~~on~~ electrification of farm machines & tractors.
- Procure critical minerals Ex Lithium from Chile (KABIL).

Agri voltaics is an emerging technology which is still far away from being adopted by Indian farmers. Government PM KUSUM scheme is a set in right direction to encourage agri voltaics.

Feedback

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Q.17) Project Tiger's 50-year journey is marked by significant achievements yet persistent socio-economic and ecological challenges related to tiger conservation highlight the need for a more holistic and integrated approach. Discuss. (15 marks, 250 words)

प्रोजेक्ट टाइगर की 50 साल की यात्रा महत्वपूर्ण उपलब्धियों से चिह्नित है, फिर भी बाघ संरक्षण से संबंधित सतत सामाजिक-आर्थिक और पारिस्थितिक चुनौतियाँ अधिक समग्र और एकीकृत दृष्टिकोण की आवश्यकता को उजागर करती हैं। वर्णन कीजिए। (15 अंक, 250 शब्द)

Project tiger was launched in 1974 to establish Tiger Reserves in India to protect and increase tiger population in the country. ~~Since its launch, the~~

Achievements

- more than doubling of tiger population
- established corridors for free movement of tigers ~~also~~ between protected areas.
- core regions of tiger reserved: (critical tiger habitat) undisturbed by human activities
- peripheral areas: established to encourage community

engagement and scientific research

→ Efficient monitoring : camera traps
m-traps application. Significant
up grade from the age old pug
mark technique.

→ Increase in the number of tiger
reserves across the country →
latest addition being Madhav
National Park in MP.

→ ecosystem & food chain preserva-
-tion : mainstenance of
sufficient amount of prey species.
⇒ Tigers are umbrella species
leading of overall ecological
conservation.

Challenges

- Socio-economic → deforestation for development
- centrally sponsored scheme → ∴ states required to contribute 60% funds.
- some states already suffer from severe fiscal deficit.
- opportunity cost : \rightarrow low spending on health & education sectors.
- Tribal Rights and resettlement from core areas leading to conflicts and activism.
- Infrastructure projects : Ex. Ken-Betwa river linking causing submergence of tiger habitat.

Ecological Challenges

- Global warming reducing prey population
- wildfires and reduction in water availability in peak summer season.
- Protecting the tiger will help umbrella species of SDG 14: life on land.

Feedback

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Q.18) Explain the various causes and the effects of landslides. Also, discuss the measures to mitigate their impact, with a special emphasis on National Disaster Management Authority (NDMA) guidelines. (15 marks, 250 words)

भूस्खलन के विभिन्न कारणों और प्रभावों का वर्णन करें। साथ ही, राष्ट्रीय आपदा प्रबंधन प्राधिकरण (NDMA) के दिशा-निर्देशों पर विशेष बल देते हुए, उनके प्रभाव को कम करने के उपायों पर चर्चा करें। (15 अंक, 250 शब्द)

Landslides is a phenomenon of mountainous regions and involves sudden slides of rocks/pieces of land under the influence of gravity.

It can be aided by various geomorphic agents like wind/rain etc.

Causes

→ Western Ghats: excessive rainfall loosening the soil

→ Himalayas: successive heating & cooling of rocks causes fractures to develop resulting in breaking away of pieces of rocks.

- unplanned construction in seismically active areas of Himalayas
ex. hill stations of Shimla, Manali
- large infrastructure projects. ex
dams affecting water flow causing
landslides.
- reforestation : loosens the soil.

Effects

- infrastructure destruction : homes,
dams, telecom towers / cables,
electricity poles uprooted.
- humanitarian disaster : loss of
lines.
- connectivity lost due to road blocks
- Biodiversity impacted : trees uprooted,
animals to suffer.
- Economic losses, rehabilitation &
recovery costs.

Measures to mitigate impact

- use of geotextiles to cover mountainous slopes.
- planned infrastructure creation; avoid heavy settlements along vulnerable hill slopes and seismically active regions.
- adhere of ecologically sensitive area guidelines (ESA) in western ghats.
- Terrace farming to reduce water flow along slopes.
- sensors for early detection and warning dissemination.

NDMA formed under NDMA Act 2005 has issued comprehensive guidelines to mitigate the impact to landslides and protect both humanity and environment.

Feedback

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TOTAL MARKS			



Q.19) Ethnic fault lines represent a serious security challenge, but they are only one aspect of the broader security concerns in the Northeast. Analyse. (15 marks, 250 words)

नृजातीय तनाव सुरक्षा से संबंधित एक गंभीर चुनौती का प्रतिनिधित्व करती हैं, लेकिन वे पूर्वोत्तर में व्यापक सुरक्षा चिंताओं का केवल एक पक्ष हैं। विश्लेषण करें। (15 अंक, 250 शब्द)

India's northeast comprise of multiple ethnicities like Naga, Bodo, Kuki, Mizo, Meiti, BRW, Chakmas etc which have closer affinities to south east Asia than rest of India & south Asia.

Ethnic Challenges in North East India

→ historical reason: administered by British as 'frontier areas' with little contact to central administration.

∴ they didn't accept Indian state sovereignty on independence.

→ Demands for separate state | homeland, more autonomy & separate homeland ex.

Bodoland, greater Nagalim.

- Inter tribal conflicts : state bound-
-aries have little resonance with
ethnic divisions ex. Meiti-kuki
conflict.
- Control of local resources : ex land;
poor implementation of FRA 2006 2
schedule 6.
- ~~to~~ lack of economic development,
disgruntled youth, demands for
reservation in $\$$ (ex Meitis),
poor infrastructure & social sectors
like health / hospitals

Other Border Security Concerns in
North East

- Illegal migration : ex. Rohingyas
(Myanmar), Bangladeshis \Rightarrow
changing demography of states.

Forum IAS

- safe heavens for separatists in Myanmar → close ethnic linkages of these tribes with Myanmar.
- Free Movement Regime (FMR) with Myanmar upto 80km.
- Smuggling of Drugs (from golden triangle region), cattle (from Bangladesh), human trafficking, arms.
- Chinese support to separatists in form of funding, training, arms & ideology. Chinese incursions in Tawang (2010).
- Geographical constraints: forests along Bhutan boundary provide hideouts to militants, plains & marshes with Bangladesh (no natural barrier).
- Political instability in Bangladesh & Myanmar - ethnic & communal clashes.
- Government's initiatives like vibrant village program, modernisation of police force, NRC will help mitigate this.

Feedback

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Q.20) Maritime security challenges are complex, driven by both conventional and non-conventional threats. In this context, discuss the key maritime security challenges in India. Also, highlight the measures taken by the government in this regard. (15 marks, 250 words)

समुद्री सुरक्षा चुनौतियाँ जटिल हैं, जो पारंपरिक और गैर-पारंपरिक दोनों तरह के खतरों से प्रेरित हैं। इस संदर्भ में, भारत में प्रमुख समुद्री सुरक्षा चुनौतियों पर चर्चा करें। साथ ही, इस संबंध में सरकार द्वारा उठाए गए उपायों पर प्रकाश डालें।

(15 अंक, 250 शब्द)

Maritime security challenges involves threat to India's ~~install~~ marine installations, artificial islands, vessels, ships and coasts.

Maritime Security Challenges in India

* Conventional threats

→ Maritime Terrorism : ex. use of

coastal route for terrorist infiltration

ex during 26/11 attacks in Mumbai
2008

→ Smuggling of drugs :

proximity to golden crescent region

and India acts as transit hub

for transportation to western countries.

- △ unconventional threats
- Smuggling of gold, electronics etc through in containers
 - Human trafficking & illegal migration on ships
 - Fisherman conflicts with Sri Lanka
 - Piracy : in Gulf of Aden, Somalia coast
 - Chinese Presence in Indian ocean region : Ex Research vessels in Hambantota port, Djibouti, Gwadar
 - Threat to trade at key choke points
Ex. Malacca Strait, Hormuz st.

Government measures

- Institutional : Maritime security maintained by Navy, Coast Guard & State Marine Police Force
- National command control communication & intelligence network
(NCBI) to gather

data on ships, vessels, boats in Indian waters:

- Piracy Act 2022 - allows operations by # in op. high seas, special courts for trial, deportation to any country with which India has mutual legal assistance.
- Compulsory registration of all ~~to~~ fishing boats.
- Navy's Information Fusion Centre at Gurgaon for maritime domain awareness
- Navy's Maritime Security Strategy
- Deployment of stealth frigates, aircraft carriers & submarines

In addition to the above measures, India should closely cooperate with like minded countries like QUAD. to ensure free, open and inclusive Indo-Pacific region

Feedback

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