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PRIYANSHU AGRAWAL_GS III_TEST - 7

MACRO COMMENTS

The Purpose of evaluation@nextias.com is to provide constructive suggestions on 'How to improve Answer Writing and thereby score better marks.

STRENGTHS OF THE CANDIDATE

AREAS OF IMPROVEMENT

IMPROVEMENT SUGGESTIONS

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1. केंद्रीय बजट 2024-25 में दीर्घकालिक पूंजीगत लाभ (LTCG) और प्रतिभूति लेनदेन कर (STT) के संबंध में महत्वपूर्ण परिवर्तनों पर टिप्पणी कीजिए। भारत की बचत और निवेश व्यवस्था पर ऐसे परिवर्तनों के प्रभावों का मूल्यांकन कीजिए।
(10 अंक, 150 शब्द)

Comment on the important changes with respect to the Long-Term Capital Gains (LTCG) and Securities Transaction Tax (STT) in the Union Budget 2024-25. Evaluate the impact of such changes on India's savings and investment regime.
(10 marks, 150 words)

The recent budget accounted towards rationalizing tax regime on accounts for increasing tax to GDP ratio; and improve saving driven investment growth

Important changes

i) The dilution of long-term capital gains tax in order to envisage investment across sectors like real estate, with was under-developed in K-shaped recovery

ii) For securities transaction tax rates are rationalized for developing competitive capital market

iii) The transparency in capital gains taxation, will ensure effective tax collection and right valuation effect.

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Impact of it

i) It will reboost India's saving rate as Economic Survey highlight drop from 34% to 30% in 2022-23

ii) Promote virtuous cycle

low tax → Increase saving → Increase Investment → Increase consumption → Improve Investment by Private sector → High GDP → low tax

iii) Ensure self-sufficiency culture thus preventing poor bank deposit ratio problem and impact on multiplier effect

iv) Revamp role of household consumption in GDP; by increased earning based crowd-in effect

v) The improving credit facility thus boosting our Capital Investment

Hence such efforts holds key towards $7 trillion economy goal.

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2. भारत की एक कल्याण योजना "कोई भी व्यक्ति पीछे न छूटे" की कहावत के साथ आगत-आधारित दृष्टिकोण से परिणाम-आधारित सशक्तिकरण में परिवर्तन आया है। उपरोक्त कथन के आलोक में, चर्चा करें कि सरकार के दृष्टिकोण में इस परिवर्तन ने समावेशी विकास को किस प्रकार बढ़ावा दिया है। (10 अंक, 150 शब्द)

India's welfare scheme has undergone a shift from an input-based approach to outcome-based empowerment with the maxim of "no person left behind". In light of the above statement, discuss how this change in the approach of the government has fostered inclusive growth. (10 marks, 150 words)

The emerging new regime based on PLI based incentive, Viability gap funding highlights paradigm shift to promote economic growth driven welfare

Benefits towards Inclusive growth

1) The export benefit as PLI accounted to increase to ~~₹~~ $3.2 lakh crore bringing shift in net international position

11) Solution towards emerging sector

Eg:- Viability gap funding for bringing investment in semicon development

111) Efforts towards regional parity

Eg:- PLI schemes expanding towards new areas like renewable energy, potential in areas like Manikaran

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iv) Promote labour intensive approach as high multiplier effect and potential like 10 million jobs through semicon based industries

v) The successful prudence of development Case Study → PLI in mobile phones manufacturing helping in reaching last mile like in Eastern India.

vi) Scope towards gender equality PLI in technical textiles sectors can provide new job opportunities to semi-skilled female workers

However input based continues
- → Agriculture by ways like fertilizer subsidy
- → Initial progress like tax benefits in MSME initially
- → Expanding domain like input subsidy for Make In India

Thus this shift holds key to develop investment based economies of scale.

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3. भारतीय कृषि की वर्षा आधारित प्रकृति इसे जलवायु परिवर्तन के प्रति अधिक संवेदनशील बनाती है। कृषि की जलवायु-अनुकूलता में गुणवत्तापूर्ण सिंचाई के महत्व पर प्रकाश डालिए। भारत में उपलब्ध सिंचाई पद्धतियों की समग्र दक्षता में सुधार के लिए क्या-क्या उपाय किए जा सकते हैं? (10 अंक, 150 शब्द)

The rainfed nature of India's agriculture makes it more susceptible to climate change. Highlight the importance of quality irrigation in the climate-adaptability of agriculture. What measures can be undertaken to improve the overall efficiency of the available irrigation practices in India? (10 marks, 150 words)

It is said," Indian agriculture suffer from 2V's :- Volatility in market and vulnerability of monsoon as over 60% Indian irrigation is rainfed.

Susceptibility to climate change
- changing precipitation pattern due to phenomena like El-Nino
- Economic Survey on more 4% agriculture GVA growth due to climate shocks
- Unprecedented rainfall and prepardness causing pre-mature harvest.

Need for climate smart irrigation

1) Promote water use efficiency against high wastage due flood based irrigation
2) Ensure adequate groundwater recharge as 18% Indian cities are water stress and falkenmark indicator at 1500 m^3/capita

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iii) Resolving virtual water export due water intensive subsistent farming of rice-wheat system

iv) Ensure high productivity based on water based approach by 45% rise as per Mihir Shah Committee.

Measures to be taken

i) Promoting micro-irrigation facility like drip irrigation based on per drop more crop approach

ii) Need for successful model like Mission Kakatiya by Telangana

iii) Learning from best practices like Chinese dryland farming

iv) Ensure sustainable agriculture by precision based practice through technological extension service

Thus ensure climate smart Annadatta for doubling farmers income.

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4. भारतीय कृषि में पशुधन के महत्व को ध्यान में रखते हुए, विश्लेषण करें कि पशुपालन में निवेश भारतीय कृषि को प्रोत्साहित करने में किस प्रकार मदद कर सकता है। (10 अंक, 150 शब्द)

Considering the importance of livestock in Indian agriculture, analyze how investment in animal husbandry can help in incentivizing Indian agriculture. (10 marks, 150 words)

Economic Survey 2023 stated livestock account 30% of agriculture GVA with over 5% compound annual growth rate and highest livestock population globally

Importance of it
- Dalwai Committee to double farmers income
- NFHS for food nutrition by egg under PDS
- Help in rural development by huge untapped potential

Investment in animal husbandry incentivize agriculture

1) Bringing out farmers from marginal outcomes like success of White Revolution in Anand area by Amul

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ii) Resolve disguised unemployment by promoting jobs in associated food processing like Mother dairy

iii) Helps in resolving agrarian crisis by mixed farming for better income

iv) Prevent negative practice like use of stubble to make fodder for cattles

v) The Cooperative promotion like Safal towards integrating both by agglomerative effect

vi) Resolve bonded labour issue and regional agrarian disparity Eg:- Huge potential across North East.

In this regard channelizing support like Gokul mission and development under Animal husbandry Infrastructure development funds holds the key.

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5. आंध्र प्रदेश में भारतीय लॉरेल वृक्षों (Indian Laurel trees) की खोज ने पेड़ों में पानी को संग्रहीत करने और छोड़ने (store and release) की क्षमता में वैज्ञानिकों की रुचि जगाई है। इस संदर्भ में, पेड़ों में जल परिवहन और भंडारण (transportation and storage) की प्रक्रिया के पीछे के विज्ञान की व्याख्या कीजिए। (10 अंक, 150 शब्द)

The discovery of Indian Laurel Trees in Andhra Pradesh has sparked the interest of scientists in the capacity of trees to store and release water. In this context, explain the science behind the process of water transportation and storage in trees. (10 marks, 150 words)

In the backdrop of huge water scarcity arising as India accounts 17% world population, but just 4% water resource, prompts to find smart solution.

Process of water efficiency in trees

i) The role of roots having thin hair to absorb water molecule.

ii) These water molecule are passed by Xylem tissue to whole plant for transportation

iii) Since Xerophotic plants grows in water deficient areas have converted barks into fleshy stems with thorns rather than leaves; preventing loss of water through transpiration

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Indian Laurel trees

i) They have hollow barks with huge water storing potential

ii) They have closed stomata that reduces transpiration level and thus saves water

iii) Further, there roots have high hair density with penetration potential, that helps to extract water and store indefinitely.

This model can be used through climate smart engineering design to promote extra water storage and resolve deficiency.

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6. सैन्य क्षेत्र में जिम्मेदार कृत्रिम बुद्धिमत्ता पर हाल ही में आयोजित वैश्विक शिखर सम्मेलन (आरईएआईएम, 2023- responsible artificial intelligence in the military domain) ने सैन्य अनुप्रयोगों में कृत्रिम बुद्धिमत्ता के उपयोग से जुड़े अवसरों, चुनौतियों और जोखिमों को प्रदर्शित किया। इस संदर्भ में, रक्षा और सैन्य अनुप्रयोगों में कृत्रिम बुद्धिमत्ता के प्रभाव का आलोचनात्मक विश्लेषण कीजिए। (10 अंक, 150 शब्द)

The recently conducted global Summit on Responsible Artificial Intelligence in the Military Domain (REAIM, 2023) showcased the opportunities, challenges and risks associated with the use of Artificial Intelligence in military applications. In this context, critically analyse the impact of Artificial Intelligence in defence and military applications. (10 marks, 150 words)

Artificial Intelligence emerged as disruptive and bleeding edge technology callibred by self-learning algorithm having high potential in technological advancement

AI in defence

Positive impacts

a) Improve defense potential

Eg:- AI based iron dome system to predict upcoming missile challenge

b) Helps in reducing loss of life

Eg:- USA, use AI based simulation for training purpose in rugged terrains

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c) Manufacturing complex weapons
wagner group advocate in creating modern day surveillance drones

d) Helps in retalliation purpose
AI based deep learning algo for effective planning and neutralization

Negative Impacts

a) Promote hybrid warfare
By AI based propoganda setting like China across LAC border region

b) Use in unaccounted surveillance
AI based drones capturing strategic location for asymmetric warfare

c) Use of AI for internal instability
Failure of military to clamp on practice like deepfake for communal riots

Thus need to account ethical guidelines as per Bletchley Declaration.

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7. लोक लेखा समिति ने हाल ही में प्लास्टिक प्रदूषण के बढ़ते खतरे के बारे में चिंता व्यक्त की है। इस संदर्भ में, प्लास्टिक प्रदूषण को रोकने के लिए सरकार द्वारा हाल ही में प्रारम्भ की गई पहलों पर प्रकाश डालिए। (10 अंक, 150 शब्द)

The Public Accounts Committee has recently flagged concerns about the rising menace of plastic pollution. In this context, highlight the recent initiatives taken by the Government to curb plastic pollution. (10 marks, 150 words)

Greenpeace Foundation stated India being 2nd largest plastic waste generator and having most stockpile of plastic legacy waste"

Concern of it

I) The high rate of cattle mortality seen by Prevention of Cruelty against animal association

II) The cause of disaster like high plastic coagulation causing floods into urban areas like Delhi drainage issue

III) The impact on marine ecosystem by microplastics due to issue of high bioaccumulation and magnification

IV) High legacy of single use plastic waste; having low recycling potential

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Initiatives by Government

i) Creating dedicated guidelines under plastic waste management rules like Extended producer responsibility

ii) Creating pollutors pay principle for shift towards other recyclable options

iii) 100% use of jute bags mandated in trade and packaging of certain goods

iv) Providing incentive for recycling waste and shift towards high density plastic components

v) Shifting guidelines to clamp on using and producing single use plastics to 120 μm level

vi) Under LIFE Mission to change towards sustainable options of carrying bags

Thus marks efforts towards resolving plastic waste menace.

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8. भूस्खलन एक प्राकृतिक घटना के बजाय मानव-प्रेरित घटना बन गई है। भूस्खलन की बढ़ती घटनाओं के कारणों पर प्रकाश डालें और आपदा को कम करने के लिए क्या उपाय किए जा सकते हैं। (10 अंक, 150 शब्द)

Landslides have become more of a human-induced phenomenon rather than a natural phenomenon. Highlighting the reasons for increasing incidences of landslides, suggest measures that can be undertaken to mitigate the disaster. (10 marks, 150 words)

Recent mammoth landslide incident across Wayanand, Kerala disrupting human lives; re-brought focus on high disaster potential of landslide

Landslide due natural phenomena

a) High rainfall based shift of mass due weakening internal bond

b) Earthquake induced landslide

c) Volcano eruption or forest fire

Majorily by human activities

i) Unsustainable construction activities like roads in Char-Dham circuit

ii) Heavy tourism activities

Eg:- Uttrakhand landslide issue

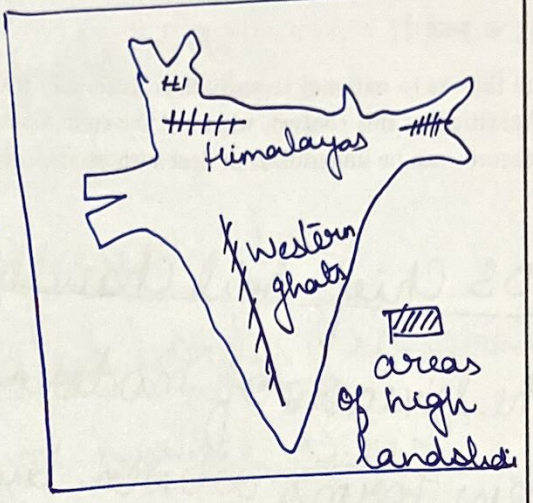
iii) Human induced climate change increasing natural disaster potential

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like Glacial lake Outburst across Siachin with high landslides

iv) Creation of high intensive building and gentrification on weak lands.



Measures to be taken

i) Artificial strength injection by use of iron-grids to reduce vulnerability

ii) Adequate mapping of potential sites and restricting mobility in such spots

iii) Mitigation by accounting for structural reforms based on carrying capacity potential

iv) The control of tourism intensity by accounting to ecodensity approach

v) Natural restoration by afforestation and wind shield plants

These steps are aligned to Sendai framework

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9. राष्ट्रीय सुरक्षा के लिए खतरे धीरे-धीरे "भौगोलिक" से "विषयगत" (thematic) में बदल गए हैं। इस संदर्भ में, आंतरिक सुरक्षा की समकालीन चुनौतियाँ (contemporary challenges) क्या हैं और ऐसी चुनौतियों से निपटने के लिए क्या उपाय किए जा सकते हैं? (10 अंक, 150 शब्द)

The threats to national security have gradually transformed from being "geographic" to being "thematic". In this context, what are the contemporary challenges of internal security and what measures can be undertaken to deal with such challenges? (10 marks, 150 words)

CDS Chief Anil Chaudhary stated," In the lexicon of modern day warfare, new forms driven by hybrid approach have taken over geographic nature".

Contemporary challenges

i) Cybersecurity due to high internet penetration accounting risk of financial crime and sensitive data

ii) New forms of money laundering by dark web and use of cryptocurrency

iii) Challenge to critical infrastructure like Kundakulum nuclear plant

iv) The new form of illegal trade as FATF on wildlife trade for money laundering

v) Shift towards technology based

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warfare like use of swarm drone attacks like in Red Sea by Houthis

Measures to be taken

i) Comprehensive approach like Comprehensive Integrated border management services (CIBMS) for border areas

ii) Developing modern capacity based solution like NCIIPC for critical infra

iii) Promoting specialized approach like CERT-IN for cybersecurity

iv) Improving International collab like Basel Convention for resolving financial crimes

v) The modern day technology like S-400 system and Brahmos for deterrence

Naravane stated, "modern time needs integrated theatre command based solution"

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10. भारत के सीमा सुरक्षा ढांचे को मजबूत करने और सीमा पार खतरों से निपटने में उन्नत सीमा निगरानी प्रौद्योगिकियों (enhanced border surveillance technology) की भूमिका का मूल्यांकन कीजिए। (10 अंक, 150 शब्द)

Evaluate the role of enhanced border surveillance technologies in bolstering India's border security framework and addressing cross-border threats. (10 marks, 150 words)

India having over 15600 km border, 7517 KM maritime border; with rugged terrain and hostile neighbours poses real threat to internal security

Cross border threats
- Infiltration like militants across Kashmir
- Illegal drug trade due golden triangle and crescant
- Unmarked borders and disputes like Sir Creek line
- Source for counter-fiat currency.

Role of border surveillance technology

Indian border security
- Improving retalliation potential of armed forces like use of night vision facilities
- Help in controlling infiltration by smart fencing solution
- Smart intelligence potential by use of high vision drones with mobility sensor

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Address cross border threat

i) The first line of defence like use of S-400 system to neutralize external missiles

ii) The preparedness against terror attacks with infrared ray surveillance

iii) Help in preventing Organized crime operation of illegal cross border trade

iv) Preventing influx of ground support to overground worker network.

Efforts taken

1) Collective fencing collaboration by India - Bangladesh

ii) Using IRNSS facility to monitor till 1500 km beyond border area

Thus marking continuous strides towards modern border management

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11. जबकि भारत में स्टार्टअप्स ने अर्थव्यवस्था में उद्यमशीलता और नवाचार को बढ़ावा देने में उल्लेखनीय सफलता हासिल की है, भारत में स्टार्टअप्स की स्थिरता को चुनौती देने वाले कुछ संरचनात्मक मुद्दे हैं। स्टार्टअप्स के सामने आने वाली इन चुनौतियों पर प्रकाश डालें और समस्याओं के व्यावहारिक समाधान सुझाएं। (15 अंक, 250 शब्द)

While startups in India have achieved notable success in fostering entrepreneurship and innovation in the economy, there are certain structural issues challenging the sustainability of startups in India. Elucidate upon these challenges faced by startups and recommend practical solutions to the problems. (15 marks, 250 words)

India having 3rd largest startup ecosystem with over 1 lakh registered startup and 111 unicorn companies, act as key pillar towards India Atmanirbhar Bharat spirit

Notable success

1) Expanding into new domains

Eg:- Startup in emerging technology like nanotech based startup

11) Reduced pressure by job creating attitude

111) Gender empowerment

Eg:- Falguni Nayar through Nykaa by role modelling effect

IV) Reaching to last mile

Eg:- Agri-startup like Ninjacart for better logistics.

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Challenges prevalent

i) Idea of startup bubble burst
Due to low sustainability on self and heavy fund dependent. Eg:- Byjus

ii) Lack of innovation
As over 80% startup are based on common business protocols

iii) Dwarfism
Vijit Sinha committee observed low sustainence due orientation towards sell-off to large firms

iv) Low export-oriented attitude
Resulting into lack of competitiveness

v) Failure to achieve economies of scale
Due lack of investment in technological modernization

vi) Regulatory cholestrol
Resulting into low freedom to innovate and impact of regionalism

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Best practical solutions

i) The need for constant mentoring like Incubation and design centre under Startup India

ii) Improving participation by unaccounted segment like women, tribals etc under Standup India scheme

iii) International best practices like Japanese in senior under silver economy support package

iv) Focussing on constant expansion and better capital market development as per Baba Kalyani Committee recommendation

Thus hold critical role for Viksit Bharat by 2047

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12. भारतीय रेलवे के बुनियादी ढांचे के आधुनिकीकरण में सार्वजनिक-निजी भागीदारी की प्रभावशीलता का आलोचनात्मक मूल्यांकन कीजिए। सुरक्षा क्षेत्रक को रेलवे के लिए प्रमुख चुनौतियों में से एक मानते हुए, भारतीय रेलवे के समग्र सुरक्षा मापदंडों में सुधार के लिए क्या उपाय किए जा सकते हैं?

(15 अंक, 250 शब्द)

Critically evaluate the effectiveness of public-private partnerships in the modernization of railway infrastructure in India. Considering safety as one of the major challenges for railways, what measures can be taken to improve the overall safety parameters of Indian Railways?

(15 marks, 250 words)

In the backdrop of increasing rail accident like Balasore case and reducing mix into freight transport Bibek Debroy Committee recommended for PPP in railways

Effectiveness in modernization

i) Promote effective safety

Eg:- Britain model resulting into significant reduction in accident

ii) Ensure effective resource usage

Eg:- Human capability development for efficient management

iii) Helps in timely development

Eg:- Shaping Kavach like solution used in Vande Bharat trains

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iv) Help in promoting multi-modality By linking to other modes and forming logistic corridor

Challenges persist

i) The lack of private investment Due to land aquistion delay under BOT model

ii) The issue of adequate formulation of contract under HAM model leading to disincentivizing effect

iii) Internal conflict seen by resistance from internal team members

iv) Issue of cross-subsidy; due to high discount on passenger travel causing high freight transport

v) State based challenges due to low cooperative federalism

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Measures to improve safety

i) Sam Pitroda recommendation to create dedicate authority withus railways for safety concerns

ii) Sam Kakodkar Committee to account adequate funds in R&D for creating solution like Kavach.

iii) Bibek Debroy recommended on ppp @ approach in railway safety with timely management of resources

iv) learning from best practices like Germany anti-derailing system to ensure higher safety

These steps holds key to achieve goals of National Rail policy, 2030.

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13. "अगर उपज समय पर हमारी थाली तक पहुंच जाए तो खेती लाभकारी हो जाती है।" इस संदर्भ में, भारत में कृषि विपणन और परिवहन क्षेत्र के समक्ष आने वाले अपस्ट्रीम और डाउनस्ट्रीम मुद्दों पर प्रकाश डालिए। इस क्षेत्र की समग्र दक्षता में सुधार के लिए कौन-सी पहलें प्रारम्भ की जा सकती है? (15 अंक, 250 शब्द)

"Farming becomes remunerative if the produce reaches our plates in time". In this context, highlight the upstream and downstream issues faced by the agriculture marketing and transport sector in India. What initiatives can be undertaken to improve the overall efficiency of the sector? (15 marks, 250 words)

According to Indian Council of Agricultural research, India despite being largest producer, have one in every third child malnourish and face wastage of about 20% of total produce annually

Issues in agriculture market and transport

i) Upstream issues

a) lack of backward linkage with food processing; causing low industrialization

b) Issue of inadequate cold mobile facility leading to high rottening level

c) Warehousing challenges due to no denial policy in procurement and poor buffer stock rights

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d) lack of integration to private sector causing issue like cogweb effect in inflammatory type TOP crops.

ii) Downstream issues

a) High vulnerability to monsoon causing inappropriate forecasting potential.

b) Issue of farm management as NASSCOM highlight just 10% technological integration

c) falling productivity due climate change as 4% yield drop in wheat

d) Issue of poor agglomerative effect as over 85% farmers are small and marginal with less than 1 hectare land.

Initiatives taken and needed

i) Promoting distributive justice by creating platform of platforms like e-NAM.

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ii) Ensure rationalizing food distribution under PDS system by one nation one ration card for inclusionary benefit

iii) Improving supply chain management as Mihir Shah Committee stated by PPP in food storage

iv) Promoting crop diversification to ensure higher yields and better nutritional based food supply

v) Creating agri-startup like Reliance-Kart for better marketing of agri-products

vi) Improving food processing potential under PM Sampada Yojana

Thus ensure remuneration towards farm to folk based approach

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14. भारत की कृषि संबंधी निर्यात-आयात की नीतियां किसानों के बजाय उपभोक्ताओं की ओर अधिक झुकी हुई हैं। दिए गए कथन के आलोक में, किसानों पर आयात और निर्यात नीतियों के प्रभावों का आलोचनात्मक विश्लेषण कीजिए। किसानों को आयात-निर्यात संबंधी मूल्यों के दहशत से बचाने के लिए क्या उपाय किए जा सकते हैं? (15 अंक, 250 शब्द)

India's agriculture export-import policies are tilted more towards the consumers rather than the farmers. In light of the given statement, critically analyze the impact of import and export policies on farmers. What measures can be undertaken to shield farmers from import-export price shocks? (15 marks, 250 words)

India despite being amongst largest agriculture producer, accounts to only 2% export of globally agri-trade and high imports like in edible oil

Impact of Indian policies on farmers

1) The trade protectionism
Eg:- Canalization of fertilizer import increase urea based import bills

11) Restrictive focus on contract farming resulting into shift towards MSP based domestic market preference

111) Low qualitative grading
Result into low farm export on grounds like WTO sanitary-phytosanitary measures

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iv) Lack of policy consistency

Eg:- Recent sugarcane export ban to account for ethanol blending

v) Challenge of elitism capture

Due to one-sided favourable policy to large farmers, due to high lobbying potential

vi) Untapped exporting market

As Ashoka Gulahti observed on under-development of agri-trade with Africa

vii) High inflationary effect

On crops like edible oil due to limited import/export destination like 90% from Indonesia

Measures to shield farmer

1) Effective IPR based clarity

Eg:- Seen in recent Pepsico-farmers clash to protect farmer rights to sell the produce

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ii) Focussing on internal aspirations

Eg:- Satish Damodaran on needs of MSP to ensure agrarian continuity despite WTO Amber box issue

iii) Shift towards farmer centric policy for safeguarding import based control to imported inflation by interventions

iv) Safety for marginal farmers

Role of FPO's and Kisan Vikas Kendra to safeguard from inappropriate contractual farming

v) Dalwai Committee recommendation for localized market creation at local body level for sell of goods

Thus ensuring justice to Annadatta under our GYAN targets.

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15. चिकित्सा विज्ञान में भारत की उन्नति, भारत की पहली कैंसर रोगी के इलाज के लिए CAR-T सेल थेरेपी का उपयोग करने में सफलता में परिलक्षित होती है। कैंसर और संबंधित बीमारियों के इलाज में CAR-T सेल थेरेपी के कामकाज और प्रभावशीलता पर चर्चा कीजिए। (15 अंक, 250 शब्द)

India's advancement in medical science is reflected in India's success in using CAR-T cell therapy to treat the first cancer patient. Discuss the working and effectiveness of CAR-T cell therapy in treating cancer and related diseases. (15 marks, 250 words)

Recently IIT-Bombay highlighted potential on treatment of cancer through CAR-T cell therapy ; whereby T cell promote immunity with CAR based support mechanism

Working and effectiveness

i) Helps in restricting cancer spread As T-cell ensures reproductive reduction effect within cancer cell

ii) Successful prudence to treat Stage 1 cancer in Bristol by CAR-T cell based biotechnology

iii) Improving capabilities under medical facilities like ELISA

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iv) Having low neurogenetic impact due to limited targeting on host cells

v) Promote self healing tendencies thus reducing scope of side effects

vi) The huge potential to treat certain type like breast cancer as WHO highlighted on success in USA.

Challenges persist

i) The T-cell replicating rate control mechanism is still to accounted and may cause high risk

ii) Challenge in regards to CAR based approach of genetic manipulation

iii) The ethical consideration in accounting such Gene modification approach

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Way forward

1) Improving on research and development facets to explore the unexplored potential

11) The International Cooperation for identifying areas of concern and collaboration for right ethical utility

111) Accounting to academia-industry linkage with expertise bodies for sustainable financing for research

1V) focussing towards more deeper testing to find future side effects and preparedness for it

In this way CAR-T cell therapy a way for India's Vishwa Guru in technology's aspiration.

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16. भारत के गगनयान मिशन और भारतीय अंतरिक्ष स्टेशन का मुख्य उद्देश्य क्या है? किन अन्य देशों ने अंतरिक्ष में अपने मानवयुक्त मिशनों को सफलतापूर्वक लॉन्च किया है? गगनयान मिशन और उससे संबंधित भारतीय अंतरिक्ष स्टेशन के सफल क्रियान्वयन के लिए कौन सी प्रमुख प्रौद्योगिकी की आवश्यकता है? साथ ही, इन मिशनों से जुड़ी चुनौतियों को भी स्पष्ट कीजिए।

(15 अंक, 250 शब्द)

What is the main objective of India's Gaganyaan Mission and Bharatiya Antariksha Station? Which other countries have successfully launched their manned missions into space? What major technologies are required for the successful execution of the Gaganyaan Mission and related Bharatiya Antariksha Station? Also, elucidates the challenges associated with these missions.

(15 marks, 250 words)

The ISRO highlighted on complete preparedness for pilot testing of Gaganyaan mission by Vyomitra robot to establish roads towards Gaganyaan manned mission

Main Objective of both

India's Gaganyaan Mission
- Humans in low Earth orbit
- Promoting efforts towards increasing space tourism
- Showcase potential towards effective entry and exit in manned missio

Bharatiya Antariksha Station
- Creating space observatory in low Earth orbit
- Conducting and supporting further space mission
- Basic observation and space facilities

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Countries with successful launch

I) USA through Apollo mission
II) Russia
III) China

Major technologies required

Gaganyaan mission

i) Effective Low Earth orbit entry with timely detachment from LVM-MK III
ii) The reentry mechanism to return back safely by controlling gravity drift
iii) Adequate facility for emergency exit during systematic failures
iv) Balancing crew module with just sufficient payload to carry by launch vehicle

Bharatiya Antariksha Station

i) Placing the module into stable

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orbit and ensure self-sufficient recharge facility by solar energy

ii) The gravity escape velocity be ensured with heavy payloads challenge

challenges persist

i) Safety of launch vehicle; though LVM-MKIII has highest accuracy of 98%

ii) The adequate on-ground communicate for preventing any unaccounted tragedy

iii) The training challenges; due low skilling facility in this regard

Thus India must continue to create and innovate by instilling adequate safety to achieve goal of self-sufficiency in manned mission

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17. "भारत की अपतटीय पवन ऊर्जा के क्षेत्र में उच्च क्षमता है, लेकिन कार्यान्वयन अभी भी कम है।" अपतटीय पवन ऊर्जा के दोहन में बाधा डालने वाली चुनौतियों पर चर्चा करें और संभावित समाधान सुझाएँ। (15 अंक, 250 शब्द)

"India's offshore wind energy has high potential but remains low on implementation". Discuss the challenges impeding the harnessing of offshore wind energy and suggest possible solutions. (15 marks, 250 words)

India having 4th largest renewable energy facility and 4th largest wind energy production; highlights upon the constant stride towards 50% target by 2030.

High potential of offshore winds

i) The unexplored potential in areas like North East due huge mountain based funneling effect near Bay of Bengal

ii) The open wide area with high potential of land-sea breeze.

iii) The prevalence of continuous jet streams across Bay of Bengal region with high kinetic energy potential

iv) The opportunity for collaborative efforts in Indian Ocean region

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Challenges impeding

i) Lack of adequate technology to harness mega offshore wind potential

ii) Adequate griding establishment and energy storage and maintainence of such facilities

iii) The maritime border issue like across Sir creek line and huge risk of critical infrastructure security

iv) Problem of huge investment needs with high funds storage and low interest by private sections

v) The hostile neighbourhood relations, disincentivizing scope of collaboration

vi) Problem of energy transfer to mainland as huge investment needed for integration

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Possible solutions

i) Exploring PPP opportunities for advocating ways like Viability Gap funding

ii) Learning from International prudence like Japanese success to generate across Pacific Ocean region.

iii) Accounting for research and development by laying down special support by Ministry of New and Renewable Energy

iv) Trying to utilize international platforms for collaborative technology like i-CET between India-USA.

Thus enmarking our journey to shift towards clean energy to become Carbon neutral by 2070.

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विकास के केंद्र होने के अलावा, शहरी क्षेत्र आपदा जोखिमों के संचय के केंद्र भी हैं। मेगा-शहरी समूहों (Mega urban cities) में आपदा प्रबंधन विशेष रूप से जटिल क्यों है? शहरी क्षेत्रों में आपदा प्रबंधन और जोखिम न्यूनीकरण की समस्याओं को दूर करने के लिए क्या उपाय किए जा सकते हैं?

(15 अंक, 250 शब्द)

In addition to being the centres of growth, urban areas are also centres of accumulating disaster risks. Why is disaster management particularly complex in mega-urban cities? What measures can be undertaken to address the problems of disaster management and risk reduction in urban areas?

(15 marks, 250 words)

Recently urban areas faced wrath of disaster risk like Hyderabad urban flooding, Delhi heat stress, Mumbai marine heat stress with high vulnerability due million population within these mega-cities.

Centre of accumulating disaster risk

i) The urban heat island effect; causing heat stress risk and subsequent losses

ii) Inadequate drainage due excessive concretization and Wetland Enchroachment causing high urban flooding

iii) Unprecedented urbanization increasing risk of landslides in hilly cities.

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iv) The secondary effect due global warming resulting into floods due Himalayan snow melting on river banks cities.

Complex situation in mega-urban cities

i) High degree of urban sprawl as NITI Aayog observed over 50% Indians in urban areas by 2041

ii) The inadequate housing; due to slum culture like Dharavi in Mumbai

iii) Development-environment dichotomy as needed encroachment for high gentrification needs

iv) The high level of heterogenity in such area; with different lifestyle as CPCB observed "plastic as way of life in lower section" causing plastic pollution

v) Inappropriate waste management.

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due excessive waste generation like Banglore as India's Silicon Valley

Ways to resolve it

I) Following adequate urbanization like Vancouver Ecodensity approach for sustainable solutions

II) Restoring natural aquifers or by ways like agroforestry in urban area or peri-urban development solutions

III) Ensure effective water circularity based on integrated water shed management approach

IV) Accounting Sendai framework for mitigation by structural reforms like earthquake engineered designs

Thus ensuring sustainable urbanization as way to prepare for disaster risk reduction.

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19. भारत की आंतरिक सुरक्षा के लिए सोशल मीडिया और नेटवर्किंग साइट्स द्वारा उत्पन्न खतरों पर चर्चा कीजिए। सूचना और प्रौद्योगिकी नियम, 2021 के तहत तथ्य-जांच इकाइयाँ (FCU) सोशल मीडिया पर फर्जी खबरों के प्रसार के समग्र खतरे को नियंत्रित करने में किस प्रकार मदद करती हैं? सरकार द्वारा तथ्य-जांच इकाइयाँ (फैक्ट चेक यूनिट) स्थापित करने के बारे में प्रेस प्रसारकों और डिजिटल मीडिया प्रतिभागियों की क्या-क्या चिंताएँ हैं? (15 अंक, 250 शब्द)

Discuss the threats posed by social media and networking sites to the internal security of India. How do the fact-check units (FCUs) under Information and Technology Rules, 2021 help in controlling the overall menace of the spread of fake news on social media? What are the concerns of press broadcasters and digital media participants about the Government establishing fact-check units? (15 marks, 250 words)

India having 2nd largest cyber-network with new agents like social media emerging as 'dual-sword effect' with high risk potential.

Threats posed by them

I) New form of terrorist recruitment
Eg:- ISIS using secret channels across facebook highlight by Oxford Study

II) The new channel for money laundering
Eg:- Z-cash site for crypto based solution

III) The new form of attack controlling
Eg:- Use of social media to strategize Christchurch attack

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iv) Promote radicalization

Ministry of Home affairs banning certain sites in Kashmir spreading fundamentalism

v) Risk of media jingoism and sensationalization

Eg:- Role of shaping communal riots or Islamophobia through social media

Role of Fact-check units

i) Conducting through algorithmic evaluation to identify source of rumors

ii) Clamping down on freedom and putting sites under strict vigilance

iii) Public awareness by timely release through PIB about misinformation like vaccine hesitancy issue

iv) Responsible check on IT Intermediaries to ensure struct implementation of IT Rules, 2021

v) Highlighting on new risk and coordinating with specialized agencies like CERT-IN

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Concerns regarding to such Units

1) Press broadcasters

i) The compulsory broadcast and clamping upon time condition, reducing their profitability and TRP ratings

ii) High interference in media working and using for political vendetta like in case of deepfake issue.

2) Digital media participants

i) The compulsory sharing of algorithm and internal interference in ecosystem

ii) Forceful restriction and impacting freedom of user promoting excessive surveillance culture

In this regard need for more balanced and ethical approach by coordination towards comprehensive resolution of such cyberthreats.

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20. कश्मीर घाटी में हिंसा भड़काने में हिंसक गैर-राज्य अभिकर्ताओं (वीएनएसए-अपवसमदज Non-state actors) की भूमिका पर प्रकाश डालते हुए, चर्चा कीजिए कि सशस्त्र बलों द्वारा "ऑपरेशन सद्भावना" स्थानीय युवाओं की आकांक्षाओं को संबोधित करके वीएनएसए-ओजीडब्ल्यू (ओवर ग्राउंड वर्कर्स) गठजोड़ से कैसे निपट सकता है।(15 अंक, 250 शब्द)

By highlighting the role of Violent Non-State Actors (VNSAs) in inflicting violence in Kashmir valley, discuss how "OPERATION SADBHAVNA" by armed forces can tackle the VNSA-OGW (Over Ground Workers) nexus by addressing the aspirations of local youth. (15 marks, 250 words)

Recent clash witness in Raesi district, in Jammu killing about 9 people highlighted on continuity of militancy in Kashmir Valley

Role of Violent non state actors

i) Shaping new hybrid warfare
By overground support network creation and promote lone wolf attacks

ii) Recruitment on radical perception
Eg:- Ministry of Home Affairs highlight 83% new recruits are youth

iii) Impact internal fiscal stability
By circulating counterfiet currency and using them for recruitment purpose

iv) Promote border infiltrations
Thus high injection of violent Mujaheedins

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or sleeper cells; to create situation of surprise attacks.

v) Use of technology

Eg:- Conducting drone swarm attacks as seen near Kashmir border.

Role of Operation Sadbhavna

i) Changing military orientation from punitive to surrender cum rehabilitation approach

ii) Aligned to Bezbaruah Committee recommends to resolve radicalization by perception building for unity and integrity

iii) Accomodating compassionate policing with emphasis on preventing youth in such militant activities

iv) Preparing adequate on-ground network, to provide intelligence and

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support to identify risk and find such over-ground workers.

v) The reformatory approach for pushing youth in human capital development by skilling programmes rehabilitation

Way forward

1) Naresh Chandra Task force stated need for strengthening better border village based system like Vibrant village programmes

ii) Kargil War review Committee stated need for integrating role of border people with sensitive handling for threat identification and neutralization

Thus Operation Sadbhavna right step towards safeguarding India's internal security.