

Time Allowed : Three Hours
समय : तीन घंटेMaximum Marks : 250
अधिकतम अंक : 250

GENERAL STUDIES / सामान्य अध्ययन

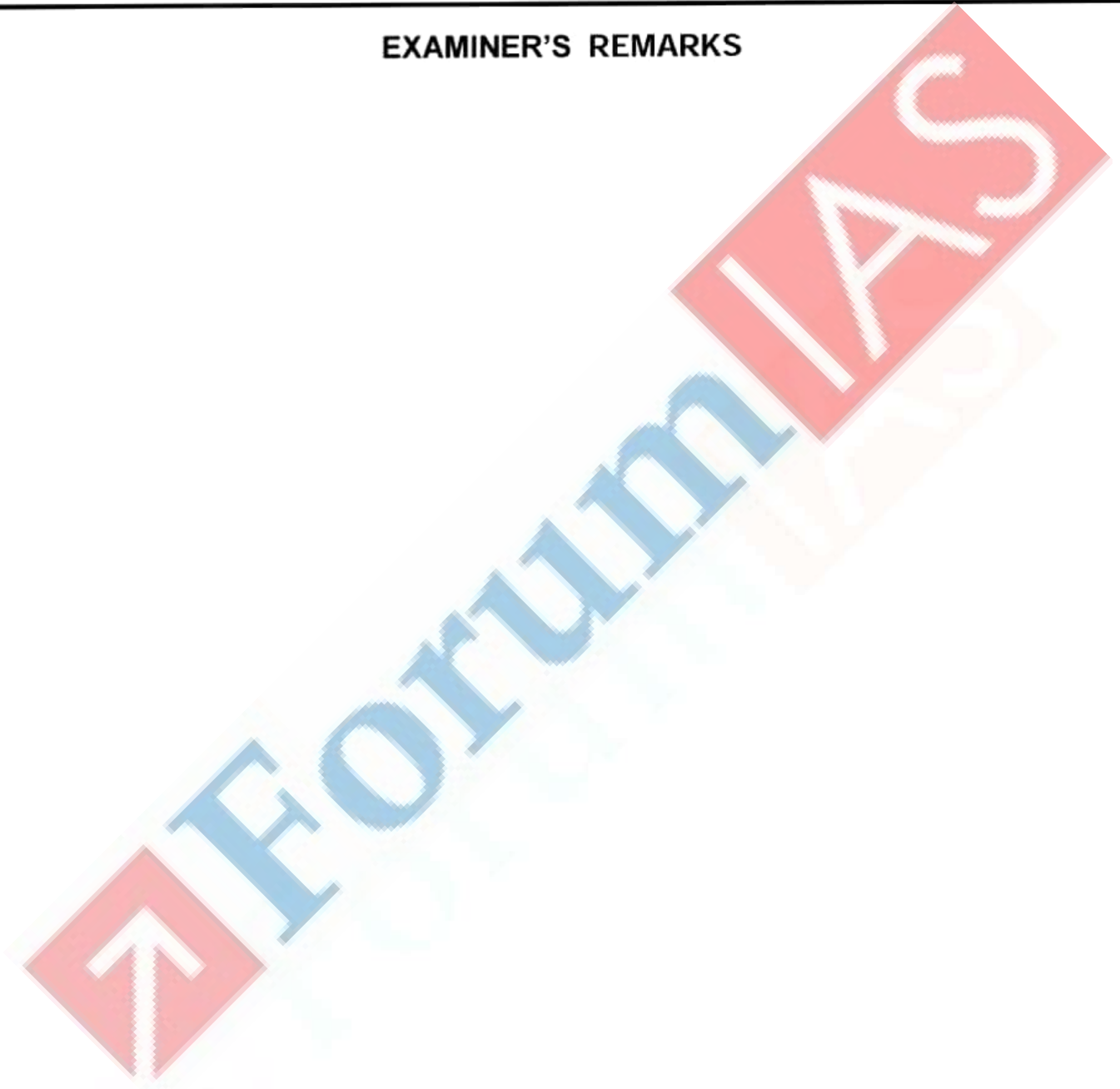
Name Of Candidate परीक्षार्थी का नाम	Pragnanandan Girci		
Roll No./अनुक्रमांक	1910062322	Medium/माध्यम	English <input checked="" type="checkbox"/> हिंदी <input type="checkbox"/>
Center Code/परीक्षा केंद्र	online	Date/दिनांक	31.08.23

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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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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 दिये 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 :
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Note: You can discuss your evaluated copy with the Mentor. Raise a ticket from your portal to schedule a mentor call or visit the offline centre to meet mentor (all 7 days, Timings - 11 AM to 6 PM). Further if you are unsatisfied with the evaluation, you can seek re-evaluation of the copy.

EXAMINER'S REMARKS



1. Foreign trade is an important milestone on the path of becoming a 5 trillion USD economy. In this context, analyse the potential of the recently released Foreign Trade Policy, 2023 in revamping India's participation in global trade.

India's foreign trade consists of 18% of total GDP. With recent Foreign Trade Policy 2023, India aims to achieve 3 trillion USD of exports by 2030, which will be a significant contribution to GDP.

Potential of Foreign Trade Policy 2023

1. Creation of Towns of Export Excellence
↳ To promote export of specialised products with high global demand.
2. Integrated digital technology in export process → promote e-Commerce based export.
3. Streamline tax framework → to ensure zero-rated export & global competitiveness.
4. Focus on export of capital goods
↳ higher earnings & more employment generation.

5. Focus on free trade agreements
to boost exports.

Challenges -

1. Limited value addition focus
2. Need of diversification of export destinations - explore South America
↳ African market
3. Need to promote MSMEs, which contributes to 40% of export.
4. Other logistics & infrastructure related issues not addressed.

However, Foreign Trade Policy 2023 complemented with National Logistics Policy, Bharatmala & Sagarmala like schemes will boost exports in coming years ~~to~~ ^{achieve} 5 trillion \$ economy.

2. Social protection schemes are an integral aspect of a welfare economy; however the principles of fiscal prudence cannot be ignored. Discuss, with special reference to old pension scheme (OPS).

Social protection schemes like insurance and pension, are an important aspect of Welfare state's duty towards its citizens.

Old Pension scheme was a scheme for retired government employees, who used to get 50% of their last drawn monthly salary as monthly pension.

OPS - An aspect of welfare economy -

1. Protection of old age - provides social security.
2. As per the principle of social justice and equity.
3. Ensures a life with dignity (Article 21) after retirement.
4. Also ensures the rewarding of decades of public service → Loyalty & service



Principles of fiscal prudence can't be ignored

1. However, OPS like social protection schemes are part of revenue expenditure
2. Contributors to fiscal deficit.
3. Increases Govt debt → now 83% of GDP

As an alternative, Govt initiated 'New Pension Scheme'.

↳ 10% of monthly salary
14% contribution by Govt

Gets deposited in NPS account that gets invested in financial market and gets returns

↓
Ultimately, at age of 60, one gets them as pension.

Advantages

- ↳ Reduces fiscal burden
- ↳ Contributes to social security
- ↳ Deepens capital market

Therefore, compared to OPS, NPS has shown to be win-win-situation to achieve the twin objectives

3. What do you understand from Agristack? To what extent can it become a panacea for the problems plaguing the farm sector.

Agristack refers to the integrated database planned to keep 3 important data for every farmer i.e.

1. Farmer's name & details
2. Land holding of the farmer
3. Crops grown in the particular land.

A panacea for problems of farm sector -

1. Helps make evidence-based policy formulation
2. Recognition of cropping pattern, real time distress → will lead to timely interventions.
3. Towards conclusive land titling objectives.
4. Integrate various data like soil health card, market needs etc to ensure efficient input, lowered cost and better price discovery.

Challenges / Not a panacea :

1. Digital divide and lack of education, awareness among farmers.
2. Absence of detailed land records → High land disputes (only 94% land computerised)
3. Institutional problems like APMC monopoly, land tenure systems not addressed.
4. Similarly infrastructural needs like transportation, storage also required.

AgriStack can address the overall policy formulation and objective decision making with big data analysis. However, it is not a panacea for farm sector, which needs a multi-stakeholder & multipronged approach for progress.

4. The objective of the world Trade Organisation (WTO) to provide a long term and equitable solution to the dilemma between free trade and food security has remained unfulfilled. Comment.

WTO's creation as a multilateral trade organisation to ensure free trade and balanced competition has created a dilemma with respect to food security, particularly in its Agreement on Agriculture.

WTO's failure to balance free trade & food security →

1. Push to end food subsidies by developing countries like India by putting MSP like subsidy in Amber Box.
2. Stand against fisheries subsidies by India to provide free trade & equal competition.
3. Peace clause — has temporarily addressed the issue — but no long-term solution.

Challenges arises :-

1. Biased towards developed world
↳ Large farmers → ^{no} need of subsidies.
2. However, it creates challenges for India, SE Asia & Africa.
↳ eg 84% of Indian farmers are small & marginal.
↳ Needs subsidies to survive.

Way forward

1. Recognition of the 'equitable' principle.
2. Push for rationalisation of subsidies and not complete ban.

India must provide leadership to global south to ensure equitable benefits from trade, which should be the objective of WTO.

5. Even after five decades of the Stockholm conference, narrowing the gaps between the targets and actions remains one of the biggest challenges towards reversing climate change. Discuss Also, recommend measures for building a coherent actionable strategy to tackle climate change.

Stockholm conference was first step towards addressing the issue of climate change, held in 1970s, that later led to Brundtland commission, concept of sustainable development etc.

Gaps between targets and actions remain towards climate change →

1. 99% of the nations won't be able to fulfill Paris targets by 2030
2. 100 billion \$ climate finance for adaptation not achieved yet.
3. The world will reach 2°C mark by late 2070s. (IPCC)
4. Green house gases have not reached their peak yet.
5. Transition to green energy → Slow.

Measures to build a coherent strategy :-

1. Mitigation :- Adopting green methods to achieve NDCs by 2030
↳ Penalty provision for non-compliance
2. Adaptation :- Developed world must raise 100 billion\$ / year for adaptation fund.
3. Loss & Damage :- Financial provisions as well as grouping (like CDR) for minimising loss due to disaster.
4. LeadIT - Leadership for Industry Transition to support transition to green energy.
5. Increase afforestation under REDD+ initiative.

A collaborative approach can only address the issue of climate change by 2050, by achieving Net Zero targets.

6. What are the impediments in management of E-waste in the country? In what ways can the trinity of citizens, businesses, and the government tackle this menace?

E-waste generated in India stands third in terms of volume per year, at global level. Only 23% of e-waste are collected back in India.

Impediments in E-waste management

1. Absence of re-collection mechanism
2. Absence of recycle & recover infrastructure.
3. Lack of awareness about the e-waste & their harmful impact.
4. Absence of investment in e-waste management.

Ways to tackle this menace

Citizens -

1. Awareness creation by NGOs
2. Proper disposal of e-waste
3. Fundamental duty of protection of environment

Businesses:

1. Follow Extended Producer Responsibility to collect and get back e-waste.
2. Invest in waste to wealth techniques.
3. 'Right to Repair' → provide repair service till 10 years to minimise e-waste generation.

Government -

1. 4R principle as part of policy - Recycle, Recover, Reuse, Reduce.
2. Facilitate waste to energy plant.
3. Promote circular economy.

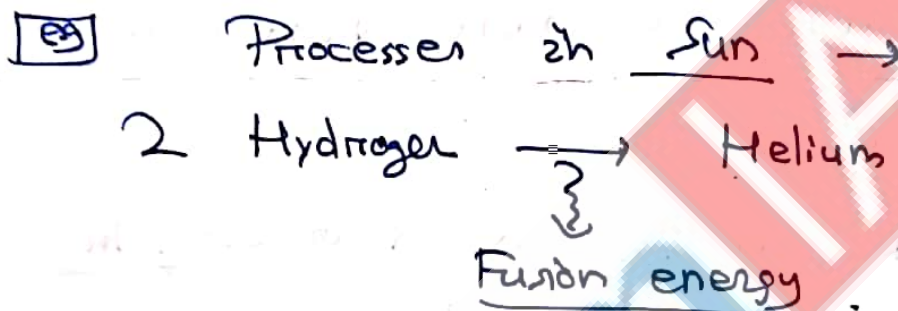
Therefore, multistakeholder efforts are needed to ensure sustainable management of

E-Waste for a healthy environment

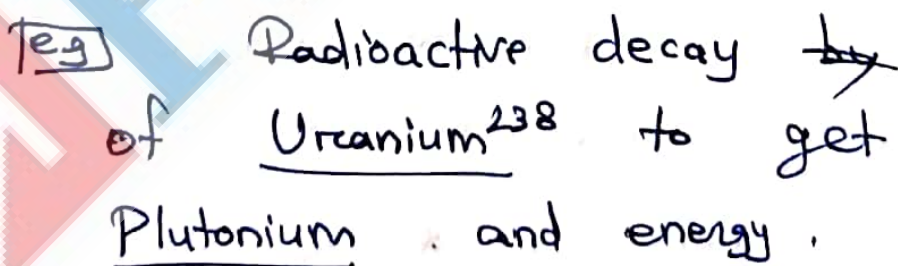
as per SDG 12.0 - sustainable production & consumption.

7. How does nuclear fusion differ from nuclear fission? Assess the relevance of nuclear energy in resolving the global energy security dilemma?

Nuclear fusion refers to the combination of two smaller atoms to form a bigger atom → generates large scale energy.



Nuclear fission refers to the breaking of larger atom into smaller atom by bombarding it with neutron.



Relevance of nuclear energy :

1. Clean & Green source
2. Large scale energy generation from very less raw materials.
3. No harmful green house gas emission.

Challenges

1. Disposal of radioactive waste
2. Threats of nuclear attacks as well as disasters like Chernobyl.
3. Radioactive water discharge into Ocean [eg] Fukushima plant.

However, overall with new technology, nuclear energy has become safer. India targets to achieve 10 GW nuclear energy by 2030.

8. What are run-off the river hydroelectric projects? How can run off the river hydroelectric projects balance ecological conservation with socio-economic development?

Run-off the river hydroelectric projects refer to those dams created to produce hydroelectricity by using kinetic energy of river to rotate turbine, ~~to~~ without creating a large scale reservoir to store water.

[eg] Rattle project - ~~Rav~~
↳ Chenab river (J & K)

It balance ecological conservation with socio-economic development →

1. Prevents construction of large scale ~~to~~ dam, which may damage forests & ecology.
2. No submergence of large area unlike Tehri dam.

3. Protects wildlife of the region without damaging habitat
4. In line with Indus Water Treaty which allows run-off the river project.

Challenges -

1. Can not be constructed at every place
2. Need altitudinal difference of river to rotate turbine.
3. Also amount of energy generated is less than conventional projects.
4. With drying of river in summer, production capacity may be altered.

However, such projects can be implemented in the Himalayan region by preserving the eco-sensitive region as well as ensuring socio-economic development.

(Q) A robust border infrastructure is the surest way to counter multifarious threats emanating from inimical actors. Discuss, in light of vibrant village programme.

Vibrant Village programme was initiated by Home Ministry on India - China border village covering more than 3000 villages.

↳ Under the leadership of Indo - Tibet Border Police.

Robust Border Infrastructure

↳ surest way to counter threats from inimical actors →

1. Ensures proper monitoring
2. Creates dominance over the region.
3. Early detection of intrusions
4. Opportunity for prevention of any encroachment
5. Minimises loss of lives and infrastructure.



Advantages from ~~Bor~~ Vibrant Village Program →

1. Strengthens reach of Indian forces to border villages.
2. HUMINT collection by pastoralists on border
3. Creates trust among residents
↳ Protects their right to livelihoods
4. Better spatial integration
↳ By promoting tourism & interaction from hinterlands
5. Improves connectivity — roadways, water supply, telecommunications

10. How far can a clearly articulated National Security strategy help in tackling challenges to national security?

National Security Strategy
needs clear articulation to
comprehensively deal with security challenges

① To deal with terrorism
need multiple stakeholders and
clear path.

② Interconnectedness of threats

- ↳ Terrorism
- Arms smuggling
- organised crime
- Drugs trafficking.

Need clear articulation &
understanding.

③ Need to solve grassroot
problems

eg) Naxalism → Tribal empowerment
is required.



4) Border security → Adequate
funding to deal with
intrusions through upgradation
of infra.

Yes) Fencing of entire Myanmar
border needed to prevent
infiltration activities

5) Coordination between security
forces - need structural reforms

Yes) conflict between Assam Rifles
and state police in Manipu.

Therefore, a concerted
effort with clear, comprehensive
policy is needed for national security.

11. What are the factors that influence the inflation trends in the country? Highlighting the impacts, discuss the institutional measures in place to check inflation.

Inflation refers to the general rise in the level of prices of commodities and services. India's inflation has remained around 6% to 7% in post-COVID period.

Factors that influence inflation trends in countries

1. Supply-side constraints : Like poor storage & transportation network
2. Cost of production : Rise in production cost due to rise in labour cost, raw materials cost etc.
eg. Tomato price rise → Impact on food processing industry
3. Rise in demand :
↳ Due to rise in income
↳ ~~low~~ more cash in hand due to lowered taxes or low interest rate
4. Global incidents - Ukraine war led supply issue eg fertilizers

↳ Also Fed tapering by USA → shortage of dollar → rise of import cost.

5. Other reasons like Govt policies of freebies, loan waivers, etc also impact inflation.

Impacts of inflation -

1. Rural distress - due to unaffordable commodities and low purchasing power
↳ Increases poverty.
2. Impact on exports - reduced global demand of high priced commodities
↳ Also ban on exports e.g. wheat ban (2023)
3. Increases import dependence → to address inflation e.g. Tomato from Nepal
↳ Burdens foreign reserves
↳ Increases current account deficit
4. Contractionary policy by central bank to control inflation → leads to high interest rate → slows down investment

5. Leads to limited impact of fiscal policy objectives.

Institutional measures to check inflation:

1. RBI monetary policy committee →
To keep Inflation in 2% to 6% range

2. Decision on Repo rate, Reverse Repo Rate, Marginal standing facility
to manage interest rate.

3. Also CRR & SLR limits →
increased to check inflation

4. Fiscal policy → Increase tax rates
to reduce money supply

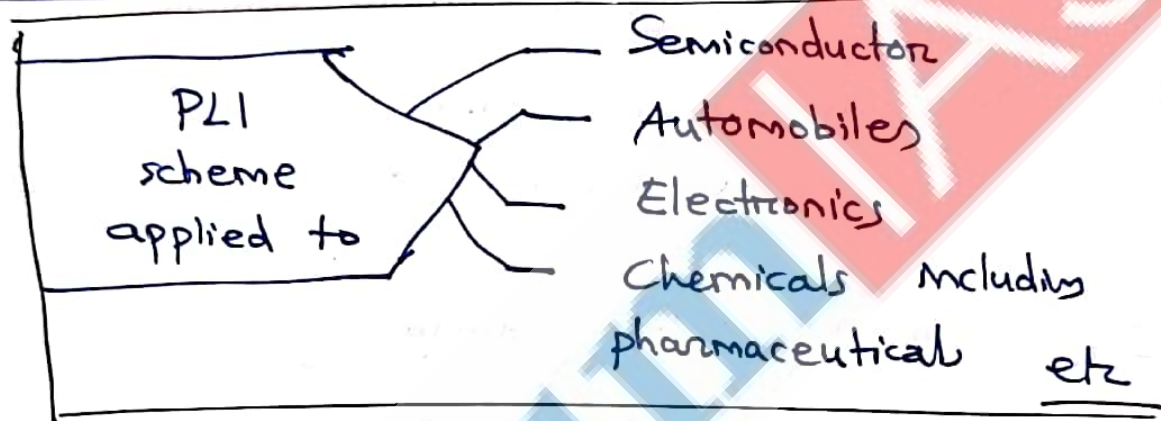
5. Improve supply through PDS,
Imports, export limits etc.

↳ [es] PM Garib Kalyan Ann Yojana
to tackle food inflation

Inflation helps in economic growth,
when kept within optimum range.
Therefore, Govt & RBI has key role
in managing inflation to promote GDP.

12. Though a cornerstone of Atmanirbhar Bharat, production linked Incentive (PLI) scheme is not without its own challenges. comment.

Production Linked Incentive (PLI) scheme refers to the incentives being provided to manufacturers of particular sector for every increments in volume of production.



A cornerstone of Atmanirbhar Bharat →

1. PLI gives incentive for 'Make in India' → attracts foreign investors to establish factories in India.
2. Promotes export of products with increment every year
↳ Towards 3 trillion \$ export goal by 2030

3. Helps in making India part of global value chain.

[eg] India - became 2nd largest mobile exporter.

4. Gives employment to skilled Indians

↳ It helped reduce unemployment to 4% from around 7%.

5. Promoted faster GDP growth →
helped revive Indian economy post-COVID

PLI has its own challenges

1. Burden on public exchequer →
increases fiscal deficit

2. No run-set clause for the scheme
to end → companies taking benefits
for years.

3. Other challenges are not addressed

such as

- [poor infrastructure
- [low logistics efficiency
- [Lack of employable workforce (≈ 5% formally skilled)

4. Many sunrise sectors are not covered under PLI -
5. Challenges of monitoring → mis-reporting of sales to gain benefits of PLI.

Way forward -

1. Adding a sunset clause →
eg PLI for a company upto 3 years
2. Other infrastructural reforms to facilitate industrial development.
3. Rationalisation of PLI scheme to incentivise deserving and labour intensive sectors like Textiles.

PLI scheme has potential to achieve the Atmanirbhar Bharat goal. However, the challenges need to be addressed by the Govt with focus on holistic reforms like tax laws, logistics, skill development etc.

13 How is internationalisation of rupee different from de-dollarisation? Highlighting the benefits of internationalisation of rupee discuss the challenges associated with the same.

With rise of cold war - like situation, Ukraine war, Chinese dominance etc; the dedollarisation concept has been arised in global economy. At the same time, India has initiated internationalisation of rupee.

Difference:

<u>Dedollarisation</u>	<u>Internationalisation of Rupee</u>
<ol style="list-style-type: none">1. Reduction of use of dollars in global transactions.2. [e.g] China's effort to use <u>Yuan</u> in trade.3. To <u>tackle</u> the <u>USA's</u> <u>hegemony</u> over <u>global</u> <u>financial</u> <u>market</u>.	<ol style="list-style-type: none">1. Promotion of use of rupee in international transaction.2. [e.g] <u>Rupee - Ruble</u> agreement, Pushing for inclusion of rupee in <u>IMF</u> <u>currency</u> <u>basket</u>.3. To protect India's economy from various <u>global</u> <u>shocks</u>.

4. Part of cold war like situation —
— China - US trade war
— BRICS currency etc.

4. Promotion of Atmanirbhar Bharat ideas →
— for Indian interest & strategic autonomy.

Benefits of Internalisation of Rupee

1. To insulate Indian economy from global shocks like Fed tapering, global financial crisis, war etc.
2. Promote Indian exports
3. Reduce dependence on foreign exchange reserves — which is dominated by dollars.
4. Promote India's soft power
5. Helps Indian diaspora for ease of sending remittances
—
[eg] RUPTV card th UAE, Saudi Arab
6. Increase investments in FinTech sector of India.



Challenges associated -

1. Huge trade deficit with various countries → hesitation to use rupee as transaction currency
2. Limitation of India's banking sector in terms of infrastructure
3. Dollar has still huge dominance over financial markets.
4. Fluctuations of exchange rate of rupee

IMF SDR
reform push

Steps
taken

RUPAY card
promotion

Rupee-Ruble
Agreement with
Russia

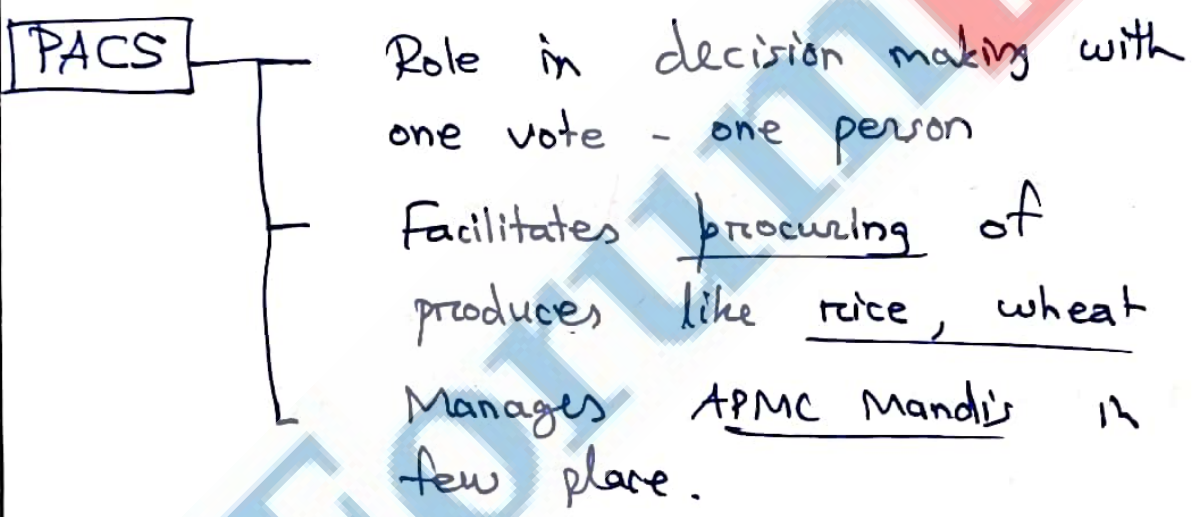
Integration of
UPI with various
countries of middle east

Rupee-Rial
agreement with Iran

Internationalisation of Rupee
will surely promote Indian interest
of becoming a developed country by
2047 with significant global influence.

14. What are Primary Agricultural Credit Societies? Can the cooperative push alone help in achieving the twin targets of boosting rural economy and mainstreaming small and marginal farmers?

Primary Agricultural Credit Societies (PACS) are the cooperatives formed at grassroot level among farmers with the objective of finance their agricultural needs through credit in a democratic way.



Cooperative alone can help achieve the twin targets of rural economy and mainstreaming small & marginal farmer →

1. Streamline the supply chain through multiple cooperatives at various level



For example - ANAND Model in Gujarat

Cooperatives led White Revolution
transformed rural economy.

2. Promote participation in decision making
↳ Include even marginal farmer.
3. Can help in land pooling and cooperative farming → help in mechanisation as well as reduced input cost.
4. Promote formation of Farmer Producer Companies [e.g.]
↳ Kandhamal Maldi based FPC in Odisha based on cooperatives.
5. Alternate income source like management of storages, infrastructure and non-agriculture credit
[e.g.] ↳ SHEs based model

Limited role of cooperative -

1. Social divisions { caste divide
Inequal power structure
domination by rich farmers
2. Govt policies
↳ Like MSP promotes unscientific cropping pattern → prevents utilisation of cooperative structure.
3. Need of contact farming & food processing industries for further value addition.
4. Poor literacy & awareness.

Cooperative model combined with institutional reforms, like farm laws of 2020 can contribute to twin objectives of rural economy growth and small-marginal farmers' mainstreaming by doubling the farmers' income (Dalwai committee)

15. Farm policies in the country have inadvertently led to undesirable consequences. Do you agree? Giving emphasis on PM PRANAM, discuss ways to enhance soil health and farm productivity.

Starting from Green Revolution,
Farm policies in the country have significantly contributed to undesirable social, economic & ecological consequences.

Farm policies ⇒

(i) Ecological consequences -

(i) MSP policy - promoted monoculture, excessive ground water exploitation leading to waterlogging. and

(ii) Subsidised fertilizers - Led to overuse and soil salinisation, alkalisation as well as water pollution - eutrophication etc.

(iii) subsidised electricity - Exploitation of irrigation facilities through water pumps - Depletion of water table.

ii) Social consequences →

- (i) Inequality rises — rich farmers have taken major benefits
- (ii) High small & marginal farmers — (84%) due to poor land reforms.
- (iii) Health hazards from excessive fertilizer, irrigation, monoculture →
eg malnutrition, cancers etc.

iii) Economic consequences =

- (i) High fiscal deficit :- (Subsidies → almost 2.5% of GDP)
- (ii) Patron-client syndrome with one-way benefits.

Ways to enhance soil health & farm productivity →

PM Pranam Scheme -

- ↳ Incentivises state government to promote fertilizer use efficiency
- ↳ 50% save in subsidies to be given back to states to further promote sustainable agriculture.

↳ It will reduce the excessive
fertilizer use through states
promoting → Integrated Nutrient
Management

Other ways to improve -

1. Neem-coated urea
 2. Soil Health Card based inputs
 3. Drip & Sprinkler Irrigation
 4. Mulching practices
 5. Zero tillage practices
 6. Organic farming and
Zero Budget Natural Farming
 7. Crop rotation, Crop Mixed cropping,
Agro-forestry etc
- } for soil
moisture &
nutrient
conservation

PM PRANAM is a right step
to promote sustainable fertilizer use.

However, other steps as mentioned
need to be taken to achieve the
ultimate objective of climate-smart
sustainable agriculture.

16. What do you understand by heat waves? Highlight the reasons and impact of the rising frequency of heat waves across India. Also, recommend some measures to mitigate its impact.

Heat waves are the unusual rise of temperature of a place for a certain time. IMD defines heat waves as 5°C rise in average temperature as heat waves.

[e.g] Delhi heat waves - May 2023

Reasons of rising frequency of heat waves across India -

1. As part of climate change led global warming \rightarrow Average rise in temperature by 1.3°C (UNEP)
2. Urbanisation :- High concretisation in urban area, reduces albedo capacity \rightarrow Traps heat
 \rightarrow [e.g] Urban Heat Island effect
3. Land use change: With deforestation, wetlands encroachment, there is reduction of heat regulation capacity.



4. Green House Gases - With emissions from industries, vehicles, fossil fuels → Methane, NO_x, ozone, CO₂ etc contribute to heat waves.

- ↳ Due to high absorption capacity
- ↳ Also due to prevention of earth's heat to reflect back

Impact of rising frequency of heat waves

1. Social Impact :-

- ↳ Sun-stroke deaths increasing
- ↳ Undeclared lockdown - impact on livelihood

2. Economic impact :-

- ↳ Reduced working hours
- ↳ Lowered production capacities
- ↓
- ↳ Slow down growth

3. Ecological Impact :-

- ↳ Loss of wildlife due to heat related death [e.g] Gir Lions death
- ↳ Forest fires [e.g] Simlipal fires (2021)
- ↳ Flash droughts

Measures to mitigate impact :

Short-term / Immediate measures -

1. Awareness among people to remain hydrated , staid home during heat wave.
2. Adequate facilities to deal with heat-stroke .

Long-term measures -

1. Afforestation → Nagar Van scheme (Urban forestry).
↳ Adequate space for vegetation & wetlands .
2. Sustainable Urbanisation → Adequate blue-green infra , roof-top gardening, vertical forestry etc.
3. National Cooling Action plan to reduce the warming efforts.

Heat waves are going to rise with climate change as per IPCC 2022 report . Therefore , adequate mitigation and adaptation measures must be taken in time .



17. How is Chandrayaan-3 different from its predecessor, Chandrayaan-2? To what extent can India's presence in Artemis Accords help in furthering the exploration of lunar surface?

Chandrayaan series are India's moon missions, which started with Chandrayaan-1 moon orbiter in 2008, Chandrayaan-2 orbiter & lander in 2019 (partially failed) and Chandrayaan-3 in 2023.

Difference of Chandrayaan-3 from Chandrayaan-2

1. Chandrayaan-3 → A failure-based design with learnings from the failure of Chandrayaan-2
2. Multiple back-up options - like if one sensor fails another will work out.
3. Increase strength of its legs with honeycomb-shock-absorbers.
4. Area of probable landing increased upto 4 km x 4 km grid from 500 m x 500 m grid.

5. Hazard detection cameras on board -
to detect any crater before landing
to change its position.

6. Overall, it has only lander,
~~orbit~~ and rover; whereas
Chandrayan 2 had orbiter as well.

Due to these differences,
Chandrayan-3 could successfully landed
on the south polar region of moon.

India's presence in Artemis Accord.

Artemis Accord → USA-led grouping
to achieve moon landing of human-
beings after more than 50-years

↳ Last human landing by
Apollo-17 in 1972.

India has signed Artemis Accord
during state visit of Indian PM
to USA in 2023.

It will help further exploration of
lunar surface →

1. NASA - ISRO potential collaboration
in this regard.
2. NASA aims to send first man-of
colour (non-white) to Moon ⇒
can be achieved through India's participation.
3. Further study of water/ice
presence over south pole →
help form potential moon-base there.
4. Promote private sector participation
in lunar exploration.

Apart from this,
India plans to launch ZUPEX mission
with Japan to moon in 2024-25.
Artemis Accord will help promote
such collaboration in future for
the overall benefit of mankind.

18 Research and Development in the key to unlock the potential of 'Knowledge economy'. In this perspective, analyse the role of the National Research Foundation Bill, 2023 in democratizing the research ecosystem in India.

'Knowledge economy' refers to the contribution of those sectors based on scientific, technical and entrepreneurial knowledge in economy.

Such sectors are - Space, Biotechnology, Pharmaceutical etc.

R & D : key to unlock potential of knowledge economy : -

1. R & D promotes new innovations
↳ contributes to new sectors, like Quantum Technology, Generative AI etc.
2. Promote energy-efficient techs to address climate goals.
3. Integrate with global knowledge economy through collaboration in R & D [eg] ISRO - NASA - NISAR mission

To achieve this target, India under National Education Policy 2020, has enacted National Research Foundation Bill 2023 (NRF Bill).

Role of NRF bill in democratising research ecosystem

1. Creation of single overarching research funding body — NRF
2. To promote inter-disciplinary research — [eg] Earlier it was limited due to multiple funding body
↳ DBT → Biotechnology
↳ ICMR → Medical research etc.
3. Equal focus to be given to social sciences → earlier 90% + funding given to natural sciences.
4. Nationally important areas can be prioritised. eg Defence
Agriculture
5. Promote inter-university, industrial collaboration etc.

6. Can help attract NRI scientists
to open labs in India.

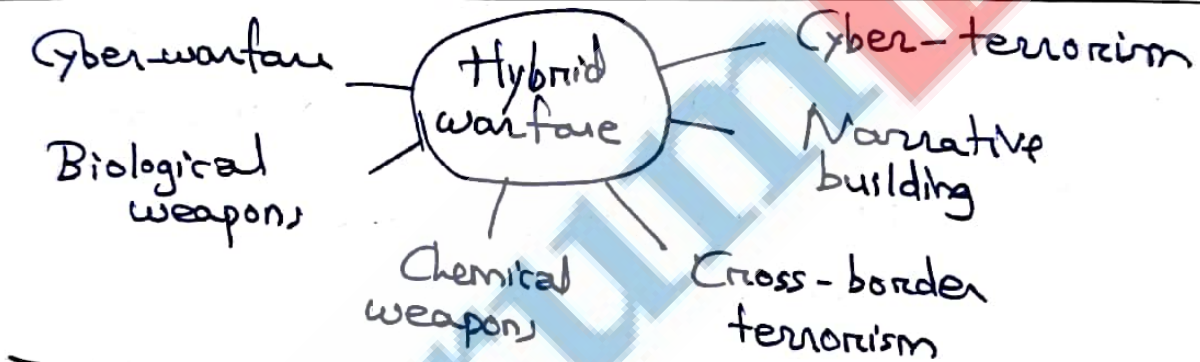
Challenges -

1. India spends 0.7% of GDP in R&D,
whereas China - 2.1%, USA - 2.8%.
2. 50000 crore allotted under NRF
may not be sufficient.
3. Rational decision making in allocation
of funds — remains a challenge.
4. Need of private sector contribution
5. IPR framework need to
be streamlined.

India's knowledge economy
has good foundation to show its
potential due to its large demographic
dividend. However, a larger participation
of industry - academia - govt department
in R&D will further push
towards developed country goals by 2047.

19. What do you understand by the term 'Hybrid warfare'. Highlighting its implications for India, recommend measures to develop a comprehensive ecosystem to counter the same.

Hybrid warfare refer to the combination of traditional / conventional army-led warfare with various other forms like cyber-warfare, information-warfare, non-state actor-led warfare etc.



Implications for India :-

1. Impact national economy - with threats from both China & Pakistan.
2. Cyber attacks on critical infrastructure, eg
 - Kundankulam nuclear plant attack
 - Tehri dam attack

3. It can hold entire system as ransom, through ransomware
[eg] WannaCry.
4. Need for coordinated response —
which lacks in India due to
multiple institutions.
5. Significant control over NGOs,
Civil society organisation by foreign
power due to globalisation
↳ Use of CSOs as 4th
generation wartime tool.

Measures needed for a comprehensive ecosystem to counter the same →

Institutional step :-

1. Integrated Battle Commands
2. Dedicated unit for cyber-warfare
3. Institutional step to tackle
Weaponisation of space
[eg] Anti-Satellite Technology



Infrastructure

1. Strong Cyber-security infrastructure for overall financial & economic network
2. Satellite technologies to keep a check on various enemy activities.
3. ~~Global~~

Processes

1. Global collaboration against Hybrid warfare → Increase inter-operability with friendly nations.
2. Counter-narratives as information warfare.

With 4th Industrial Revolution, new emerging technologies has presented a greater challenge to National security. A comprehensive integrated policy is required to address the issue.

20. How are internal security challenges related to peace in neighboring countries? Explain with special reference to instability on India's eastern frontiers

Internal security challenges like terrorism, naxalism, insurgency, arms smuggling, drugs trafficking etc have direct or indirect link with peace in neighbouring countries.

Instability on India's eastern frontiers →
Impact on Internal Security of India →

(i) Myanmar : (i) Military take-over by coup → led to refugee crisis → entered into Manipur, Mizoram region

(ii) Ethnic rivalry strengthened due to such immigration between Meitei - kuki in Manipur

↳ As kuki tribes have supported such immigration due to family and kinship ties

(iii) Also, led to arms smuggling into India - as Kuki-chin rebels of Myanmar already possessed advanced weapons with China's help.
~~sponsor~~

(iv) Drugs smuggling increased with this, as Myanmar part of Golden Triangle → Drugs trade to finance any rebel / insurgents
↓
All threats combined and manifested in Manipur riots & clashes.

(v) Other issues from Myanmar include the Rohingya crisis → Due to ethnic cleansing by Myanmar's Buddhists → Rohingyan entered India.
↓
Challenge to Internal security.

11 Bangladesh -

(i) Major challenge in 1971 period -
excessive immigration due to
political violence by West Pakistan

↓

Created demographic changes in
Assam region → later led to
ULFA - led insurgency

(ii) Similarly, smuggling of cows,
drugs as well as human traffickers
along Bangladesh border remained
threat to India's internal security.

Therefore, peace in
neighbourhood is important to deal
with internal security in India.

Diplomatic efforts as well as
strong institutional measures are
required to ensure peace both
inside and outside the border.