

Time Allowed : Three Hours

समय : तीन घंटे



Maximum Marks : 250

अधिकतम अंक : 250

GENERAL STUDIES / सामान्य अध्ययन

Name Of Candidate परीक्षार्थी का नाम	ARADHANA CHAUHAN		
Roll No./अनुक्रमांक	1910092051	Medium/माध्यम	English <input checked="" type="checkbox"/> हिंदी <input type="checkbox"/>
Center Code/परीक्षा केंद्र	ONLINE	Date/दिनांक	26/08/2023

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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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Examiner's Discretion/मूल्यांकन कर्ता का विवेक :			Start Time/प्रारंभ करने का समय : 06:00 pm	End Time/समाप्त करने का समय : 09:06 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 : ① ② ③ ④ ⑤	Evaluation Date/मूल्यांकन तिथि :

Note: Students are expected to incorporate suggestions from the solution 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. Asks 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.

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Q1.

The Earlier Foreign Trade Policy was extended during COVID crisis for 3 years upto 2023. The new trade policy aims to achieve trade of USD 2 trillions by 2030.

Potential of Foreign Trade Policy 2023 in revamping India's participation in global trade

- i) It aims at easing export and import duties, thus promoting trade.
 - (ex) import duties on textile machinery reduced.
- ii) Ensuring Ease of Doing Business
 - (ex) single window clearance systems
- iii) Boosting sunrise sector exports.
 - (ex) SCOMET policy for special chemicals, etc.

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iv.) Ensuring more investments (ex) PLI scheme

v.) Reducing compliance burden, thus promoting industrialisation (ex) Tan Vishwas Bill, 2023

Challenges:

- i.) lack of skilled manpower.
- ii.) International pressure to reduce domestic subsidies (ex) challenge from WTO to earlier incentivisation of export subsidies.
- iii.) Compliance burden still remains a barrier

Way Ahead

- effective implementation of FTP, 2023 by creating awareness
- skilling manpower (ex) PM Kaushal Vikas Yojana etc.

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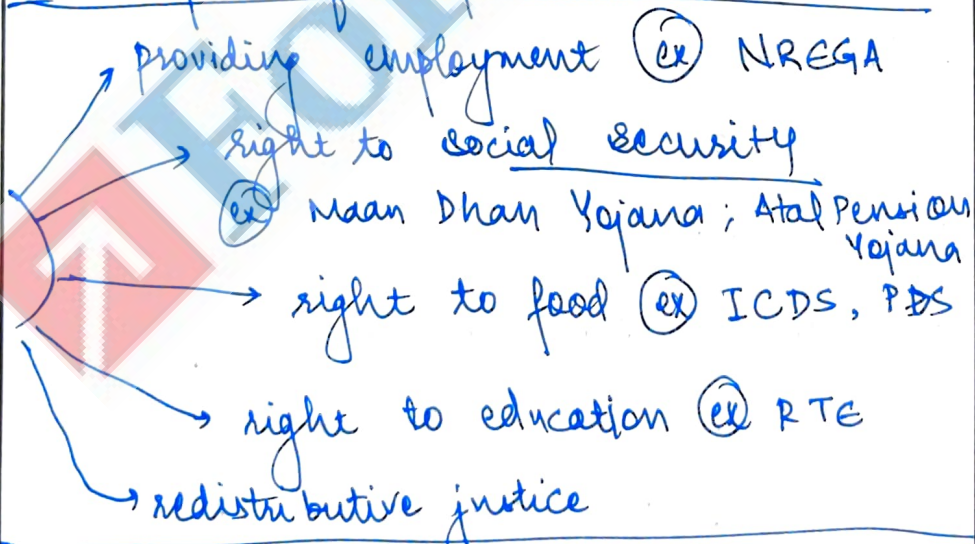
Question No.
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Q2.

Recently, various states have started reverting back to Old Pension Scheme where the retired officers derive half of their last drawn salary as pension.

(ex) Himachal Pradesh

social protection schemes as integral aspect of welfare scheme



Principles of fiscal prudence are important, even in welfare schemes as :

i.) Spending alot on populist policies may

(2)

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lead to excessive fiscal burden on states. (e) In Himachal, over 75% revenue receipts will go into paying pensions.

- ii) less of taxpayers' money in ineffective policies.
- iii) may lead to higher debt on states.
- iv) Crowding out of money for other important welfare schemes like PDS.
- v.) No special funds for schemes like Old Pension scheme, further aggravates the issue.
- vi.) May promote "revadi culture" and complacency in work culture.

The New Pension scheme is thus important as workers themselves contribute for their pensions. To reduce the fiscal burden, taxpayers' money should be judiciously used.

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Q3.

AgriStack is the collection of databases and technologies for agriculture and farmers' development specifically.

(ex) e-NAM, M. KISAN app etc.

AgriStack as panacea for problems of farm sector

- i.) May help farmers to learn from international and national best practices. (ex) - KISAN TV.
- ii.) Reduces leakages in subsidies and efficient access to credit. (ex) DBT mechanism for PM-KISAN etc.
- iii.) Provides platform to connect with exporters (ex) Farmers Connect Portal.
- iv.) may help get remunerative price

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realisation through "One nation one market" (ex) - e-NAM.

v.) Use of AI and ML for suggesting farm specific inputs. (ex) M-KISAN app.

AgriStack as not all panacea

i.) Digital divide creates inequality as small farmers in rural areas have no access to internet, mobile phones etc.

ii.) Over 80% of our farmers are small and marginal and hence cannot gain from economies of scale like through e-NAM.

iii.) Lack of effective extension services to promote these technologies

The solution lies in strengthening KVKs for extension services and ensuring last mile connectivity of AgriStack by digital literacy and equality.

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Q4.

WTO was initially formed as General Agreement on Trade and Tariffs (GATT) and took its present form in 1995 through Marrakesh agreement to ensure free and fair trade.

Success of WTO

- i.) Ensuring free trade regime of goods and services over years (ex) control on tariff and non-tariff barriers.
- ii.) Allowing growth and special focus on least developed nations (ex) most favored nation status.
- iii.) Allows space for developing countries to grow (ex) agreement on agriculture allowing green box subsidies.

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WTO's goal of free trade and food security remains unfulfilled as:

- i) Ineffective dispute resolution mechanism. (ex) vacancies in disputes tribunal.
- ii) Stalled discussions between the first and third world: over issues like subsidies (ex) Doha talks.
- iii) Used by the developed countries to prevent growth of developing nations. (ex) US questioning India's food subsidies.
- iv) Presence of malnutrition and hunger as global issue, despite trade (ex) African countries.

The mechanisms in WTO need to be strengthened, by ensuring effective dispute redressal; steps to ensure consensus among first and third world etc. for better trade realisation

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Q5.

Stockholm Conference in 1973 was first global meet to address climate change and it later lead to Rio Summit and various treaties like UNCCD, UNFCCC, UNCBD etc.

Narrowing gaps between targets and actions as one of biggest challenges

- i) Failure of earlier mechanisms due to lack of implementation and agreement (ex) Kyoto Protocol
- ii) Non fulfillment of goals. (ex) IPCC reports, that we are far away from achieving Paris Climate Goal or 2°C or 1.5°C rise in temperature by end of century.
- iii) Furthering of global warming and reaching climate tipping points where it further speeds up (ex) melting glaciers

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in Antarctica.

iv.) lack of fund transfers as envi-
-saged. (ex) non delivery of promised
funds by developed world

Measures for building coherent
actionable strategy

i.) Forming and implementing financing
mechanisms (ex) recent loss and
damage fund at COP 27, UNFCCC

ii.) Building consensus among nations
for community's role (ex) LIFE approach

iii.) Ensuring mechanisms for techno-
logy transfers and viewing climate
change as global problems (ex) One Sun
One World One Grid initiative.

iv.) Strengthening and monitoring
achievements of INDCs and ensuring
CBDR.

Common but differentiated
responsibilities with respective capabilities
is need of hour to tackle climate
change.

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Q6.

Over 50 million tonnes of e-waste is generated every year globally and has been rising expeditiously due to digitisation, computerisation etc.

Impediments in management of e-waste in country

- i-) Ineffective implementation of polluter pays principle as it is difficult to find producers.
- ii) Consumer behavior of unscientific discarding and not returning even when possible.
- iii-) Lack of focus on repair technologies and thus increased production of e-waste.
- iv-) Ineffective technology in India

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to collect, reuse and recycle e-waste
(ex) radioactive waste management.

Role of trinity of citizens, businesses and govt to tackle e-waste

① Citizens

- Awareness about effective handling of e-waste (ex) using repair mechanisms
- returning old products to producers of e-waste recycle units

② Businesses

- need to practice extended producer responsibility in letter and spirit
- strengthen repair technologies & reuse (ex) software updates rather than phone updates

③ Government:

- strict enforcement & monitoring of e-waste rules.
- Battery Waste Rules also need to be implemented effectively. (ex) li-ion batteries, solar batteries disposal scientifically.

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Q7.

Nuclear fusion is done by merging smaller nuclei to produce energy.

(ex) Deuterium isotope. While nuclear fission is done through breakdown of higher radioactive elements to produce energy (ex) uranium, thorium.

Nuclear Fusion	Fission
→ merging nuclei	→ Breakdown of nuclei
→ lesser threats of radioactive waste leaks.	→ High threats of leak (ex) Chernobyl incident.
→ still evolving technology	→ Is used at many places.
→ <u>Cannot be used for weapons generally</u>	→ used for <u>weapons</u> also (ex) Hiroshima bombing.

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Relevance of nuclear energy in resolving global energy security dilemma

- i.) Produces far more energy than traditional mechanisms. (ex) ITER
thermonuclear reactor can produce 15 times more energy than other sources
- ii.) Can reduce dependence on fossil based energy, thus ensuring sustainability.
- iii.) Cleaner fuel as no emissions except water, water vapor in case of fusion reactions.
- iv.) Energy security in non-resource rich regions.

The challenges are development of technology for same and ensuring that it is not used for destruction purposes.

Nuclear energy if used efficiently can be beneficial and revolutionary role in achieving Paris climate targets

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Q8.

Run of the river hydro electric projects use flow of river water to produce electricity through turbines rather than building large dams & reservoirs. (ex) Kushan Ganga project on Tehum.

Role of run of river projects in balancing ecological conservation and socio-economic development

- i) low cost of projects and thus saves money for other socio-economic welfare projects. (ex) Building dams
- ii) It also doesn't need huge investment in technology and maintenance of dams.
- iii) Dam & reservoir's construction may lead to loss of biological diversity at large scale; which doesn't

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occur in run of river projects.

iv.) lesser displacement risks (ex) as in case of Narmada Gandhisagar Dam construction.

v.) Siltation is less than traditional hydro-electric projects; thus lesser risk of flooding and breach of embankments.

Challenges:

The technology of run of river projects is not developed enough to produce higher amount of energy. Also, it may disrupt flow to lower riparian states and may lead to water sharing disputes.

The solution lies in effective consensus for building such projects and also utilising it to its best potential to ensure energy security for our energy import dependent country.

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Question No.
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09

Vibrant Village programme is a project for ensuring development in the border villages like road construction, internet infrastructure, connectivity etc.

Importance of robust border infrastructure in countering threats from inimical actors

- i) lessen risk of radicalisation by external state actors, due to trust building in these regions.
- ii) Promotes population in border areas, thus adding to sovereignty of nation.
- iii) effective connectivity for faster reaching of forces in time of need. (ex) Atal tunnel.

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iv.) The border population with effective skill development can act as eyes and ears of the forces and thus community's role in countering threats
 (ex) Village Defence Guards.

Issues in ensuring robust border development

- i.) External threats. (ex) Galwan clashes were seen due to India's developmental projects in border areas.
- ii.) Ineffective use of PPP models.
- iii.) Internal threats and acceptance by population (ex) protests due to abrogation of Article 370

Various committees including Shekatkar Committee and 2nd ARC call for border area development to protect these areas from insurgency and internal security threats.

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Q.10.

India faces various internal security threats like left wing extremism, organised crimes like human & drug trafficking, terrorism, cyber security threats etc.

Role of National Security Strategy in tackling challenges of national security

- i) lays down clear guidelines and procedures for acting in certain situations, thus better handling (ex) in case of naxalism.
- ii) Can ensure unity of command and co-ordination between various internal security bodies like NIA, ED etc, through role clarity.

Question No.

प्रश्न संख्या

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- iii) A step towards efficient data collection and monitoring of threats. (ex) NETRA and CCTNS.
- iv) Will help create deterrence among state and non-state actors. (ex) reinforcing zero tolerance to terrorism.
- v) Reduce black money and money laundering → thus reducing organized crimes as well

Challenges:

- i) Formulation & effective role allocation needs states' support as well. (ex) NIA to probe in various states
- ii) skilling workforce in efficient technologies. (ex) cyber security offensive & defensive capabilities.
- iii) Refugee problems, in forming ^{& threat to internal} effective refugee policy. popul
ation

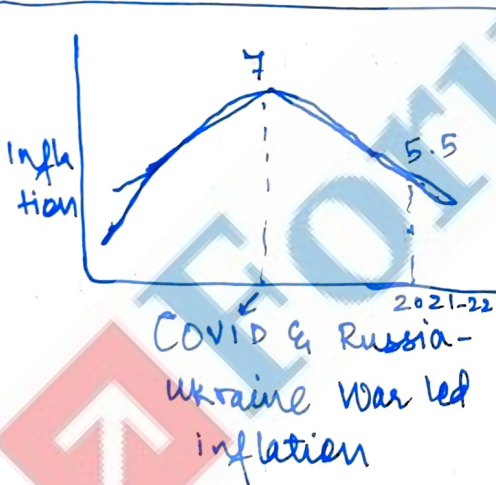
A national security strategy is but very important for India in period of hybrid warfare & hostile neighbors.

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प्रश्न संख्या

Q.11.

Inflation is the unusual rise in prices of commodities and services. In recent period, inflation (CPI) crossed RBI'S margin of 6% due to various factors.



Factors that influence inflation trends

- i.) International fuel prices
- ii.) Supply of

commodities in global market (ex) Due to COVID → supply chains were impacted.

- iii.) Demand Pull Inflation due to rise in demands (ex) festive seasons
- iv.) Cost push inflation due to

Question No.
प्रश्न संख्या

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reduction of supply of goods in internal market (ex) recent benar price inflation

v) Weather vagaries may also cause reduction in supply (ex) tomato inflation due to unusual rains.

vi) Government spending excessively increased may increase money supply in market (ex) post COVID recovery packages across globe.

vii) Artificial hoarding and black marketing.

Impact:

i) Burden excessively on the poor, specially due to food price inflation.

ii) May lead to caps on export of items to maintain supply → impacting exports (ex) wheat export ban.

iii) may lead to high employment in some cases due to rising demand.

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Question No.
प्रश्न संख्या

Institutional measures to check inflation

- i) RBI's monetary policy committee is mandated to maintain inflation in range of $4 \pm 2\%$ using policy rates. (ex) repo rate increase to cut money supply.
- ii.) Governments' fiscal policy route. (ex) Increasing taxation to curb demand pull inflation.
- iii.) Various laws like essential Commodities Act to maintain supplies and curb hoarding.

Inflation leads to unequal burden on the vulnerable sections and impacts country's growth. Thus, essential to curb it through measures like increasing repo rate, ensuring efficient supply chains etc.

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Q12.

PLI or production linked incentive scheme aims to promote investment and production in India in certain sectors by incentivizing incremental sales.

PLI scheme as cornerstone of Atmanirbharta

→ Boosts investments in sunrise sectors. (ex) solar cells, li-ion cells

→ Ensures supply chain resilience

→ Boosts investments and manufacturing in India
(ex) Make in India

→ Boosts employment and thus growth

→ reduced dependence on imports
(ex) - automobile sector growth

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Question No.
प्रश्न संख्या

Challenges in PLI sector

- i.) Regulatory challenges (ex) various compliance burdens related to taxation etc.
- ii.) land acquisition challenges
- iii.) Ineffective concurrence between central and state government.
- iv.) lack of skilled manpower (ex) in sectors like solar PV cells.
- v.) High cost of setting up and ineffective credit reach.
- vi.) Resource challenges (ex) Li mining for Li-ion cells → dependence on imports.
- vii.) Remains an assembling unit with little focus on research & development (ex) assembling of various imported mobile parts.

Question No.
प्रश्न संख्या

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Suggestions:

- i.) Skilling workforce in sunrise sectors (ex) through PM Kaushal Vikas Yojana 4.0
- ii.) Ease of Doing Business (ex) Digitization and single window clearance
- iii.) Simpler taxation and incentivizing (ex) GSTN portal and exemptions to some sectors.
- iv.) Promoting ways to ensure supply of raw materials (ex) Mines and Minerals Act 2023 allows private sector in li mining.

PLI can be a tool for India to boost its growth to 5 trillion \$ economy along with employment generation in sustainable manner.

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Q13

Internationalisation of rupee refers to use of rupee in international transactions rather than using dollar or other currencies.

Recently, India started using rupee in various transactions.

(x) buying ~~old~~ oil from Russia;
use of UPI by foreigners etc.

Internationalisation of Rupee as different from De-dollarisation

While de-dollarisation is only about not using dollar in international transactions; internationalisation of rupee is broader term wherein rupee is used not only by Indians, but by other players as well.

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Question No.
प्रश्न संख्या

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के लिए

In case of internationalisation, India can also give grant-in-aids in rupee.

The use of currencies like Ruble, Renminbi and even crypto-currency forms part of de-dollarisation. But, internationalisation of rupee is specifically expansion of use of rupee in international trades.

Benefits of internationalisation of rupee

- i) Reduced dependency on dollar or any other currency for exchanges.
- ii) lesser threat due to changes in international market. (ex) fed tapering related flight of investments.
- iii) Promote India as a global superpower and may also lead to inclusion of rupee in IMF basket.

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iv) Exchange rate volatility and maintaining of forex reserves will not be as essential as now.

Challenges:

- i) Further connectedness with intern-
-ational market, thus impacting
internal systems due to external
threats. (a) Global Financial Crisis
- ii) Will need complete capital account
convertibility, which is not desirable
as per Tarapore Committee.
- iii) Implementational challenges
- iv) may lead to external inflations.

The solution thus lies in
first making internal capital systems
resilient and implementation of
internationalisation with sufficient
safeguards.

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Q14.

Primary Agricultural Credit Societies or PACS are co-operative societies at local levels that get credit from District Central Co-operative Banks and indirectly from NABARD to finance agriculture.

Currently, around 19% of agriculture credit comes from co-operative societies as per Economic Survey 2022-23.

Role of co-operatives in achieving twin targets

① Mainstreaming small and marginal farmers

→ protecting them from hold of moneylenders, which exorbitant rate

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Question No.
प्रश्न संख्या

Almost 20% of agricultural credit is still from informal sector (NSO)

→ Help provide credit specifically for agricultural purpose (ex) renting machinery, buying HCV → thus investment in agriculture.

→ Provide small loans, helping the small & marginal farmers, which are over 80% of all farmers.

② Rural Economy Boost

→ By providing credit, and higher income to farmers → boosts demand in rural areas.

→ Employment in PACS (ex) recent computerisation drive of all PACS.

→ Promote credit penetration and saving culture → leading to growth in long run.

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→ Beneficial for vulnerable sections specially, which face challenge in getting bank loans.

Challenges:

- i) PACS penetration is still around 95% and many villages lack PACS.
- ii) Politicisation of credit societies and gobbling of benefits by elite groups (ex) mis utilisation of funds.
- iii) lack of skilled workforce and effective modernisation.

Way Ahead:

→ Use of KVKs to supplement credit with extension services for best use of credit.

→ Strengthening Co-operatives by ways like social audits.

PACS can be revolutionary force for agriculture if effectively utilised.

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Question No.

प्रश्न संख्या

Q15.

PM PRANAM scheme was introduced in Budget 2023-24 with the aim of promoting use of alternative fertilisers and sustainable use of fertilisers.

Undesirable consequences of farm policies

i.) Fertiliser subsidy like urea subsidy has led to overuse of urea (ex)
N:P:K ratio of 4:2:1 is ideal, but in current ratio, proportion of nitrogen has gone up to 8 times.

ii.) Boost to water-intensive crops through MSP like rice and wheat then salinisation of soil (ex) in Punjab and Haryana.

Question No.

प्रश्न संख्या

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iii) Unequal distribution of resources
 (ex) Green revolution benefitted
 only certain regions like Punjab,
 Haryana, Western UP.

iv) Schemes like PM Kisan have helped
 the farmers only and the peasants
 are left out.

v) lesser focus on climate sensitive
cropping (ex) dryland farming like
millet.

Though, farm policies have
 made India food secure and net
exporter of agricultural products
 but has its own undesirable effects.

Ways to enhance soil health
 and farm productivity

i) PM PRANAM to promote alternative
 fertilisers like liquid urea, neem
coated urea.

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Question No.
प्रश्न संख्या

- ii.) Soil Health Cards to shift away from one size fits all and use of ~~so~~ fertilisers as per soil.
- iii.) Use of technology and research to boost productivity (ex) use of gypsum to cure salinisation of soil.
- iv.) Promoting precision agriculture.
(ex) micro-irrigation proven to boost productivity by over 45% (Ashok Dalwai Panel)
- v.) Use of climate sensitive agriculture (ex) millet or "Three Anna" in drylands. ex - Maharashtra - Vidarbha
- vi.) Other methods like inter-cropping, integrated farming etc. to boost soil productivity.

Agriculture still employs over 40% of our population & thus steps like PM PRANAM and Agricultural Development are essential for growth

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Question No.
प्रश्न संख्या

Q16.

Heat waves refer to a rise in temperature over 37°C in plains, over 30°C in coastal areas and over 27°C in hilly regions.

The number and intensity of heat waves have risen in recent times (ex) Rajasthan heat waves, Delhi heat waves recently.

Reasons:

- i.) Climate change and global warming (ex) IPCC suggest global rise in temperature over 1.2°C since pre-industrial times.
- ii.) Changed rainfall patterns and cycles due to phenomena like El Nino, Indian Ocean Dipole etc.
- iii.) Anthropogenic factors like:

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- industrialisation & emissions
- vehicular pollution
- iv.) Creating of urban heat islands due to trapping of heat in tall rising buildings and concrete use.

Impact :

- i.) loss of productivity due to heat.
- ii.) loss of many lives due to failure of adaptation.
- iii.) rise in disease burden. (ex) fungal infection
- iv.) Impacts flora and fauna and ecosystem changes.
- v.) Impact on agriculture and failure of crops.

Measures to mitigate impact.

- i.) Shift to greener alternatives
(ex) Green buildings.
- ii.) Afforestation to reduce heat

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Question No.
प्रश्न संख्या

- in cities (ex) Miyawaki forests.
- iii.) Use of traditional cooling mechanisms where possible to reduce further heating & emission by use of ACs.
- iv.) Strengthening the health care apparatus to deal with rising disease burden. (ex) PHCs in all local areas.
- v.) Global co-operation to tackle climate change and greenhouse gas emissions (ex) International solar alliance.
- vi.) Community participation in response as per NDMA guidelines. (ex) shift to dryland farming specially in vulnerable regions.

The solution in long term is to achieve SDG 13 goal & Paris Climate goals.

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Question No.

प्रश्न संख्या

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Q17.

The Chandrayaan missions were planned to ensure flight to moon for various studies of its surface, presence of elements, water etc.

Recently, the Chandrayaan-3 mission successfully landed on the far side of moon softly.

Differences between Chandrayaan-2 and Chandrayaan-3

Chandrayaan-2	Chandrayaan-3
i-) Attempted to reach <u>south pole</u> of the moon for first time, but <u>crash landed</u> and thus <u>lost connection</u> .	Successfully attempt- -ted <u>soft landing</u> on <u>south pole</u> of moon (the point named Shiva Shakti)

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Question No.
प्रश्न संख्याChandrayaan-2

→ Space rocket
GSLV - Mk III was
used

→ Vikram lander
and Pragyaan rover
were used.

→ higher budget

Chandrayaan-3

→ GSLV Mk-III
renamed as LVM3
used

→ The Pragyaan
rover remains
same, but
lander changed.

→ lower budget

The successful Chandrayaan-3 mission is a testimony of the space prowess of ISRO and India by being first nation to reach south pole of moon.

Indias' presence in Artemis accords
→ importance in lunar exploration

Artemis is a NASA's mission to moon which comprises manned

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mission to moon in 2026. India joined the countries in Artemis group recently. Its importance in lunar exploration:

- i) Help understand the elements on moon and presence of water or life ~~of~~ moon.
- ii) Establishes India's important position in space sector in line with Indian Space Policy.
- iii) Provides necessary insights for further missions like chances of presence of life or its possibility.

India's contribution to global space sector is currently 2%. Both Chandrayaan & Artemis play important role in taking it to 9% as per Space Policy, 2023.

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Question No.
प्रश्न संख्याQ18

Knowledge economy refers to use of knowledge, research, development and innovation to promote economic growth.

Role of research and development in unlocking potential of "knowledge economy"

- i.) Promoting more innovations and patents. (ex) vaccine development.
- ii) Revolutionising agriculture by research on traditional as well as modern methods (ex) GM crops and call for Jai Anuandhan.

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Role of National Research Foundation
Bill in democratising research
ecosystem

- i) Establishing centres of excellence for research in various parts of country → thus providing opportunities to all.
- ii) Ensures higher funding for Research which is currently less than 1% of GDP compared to around 3-5% in US, Israel etc.
- iii) Will help establish international linkages in research. (ex) India-Israel on agri research
- iv) Promoting research ecosystem in schools & universities, thus innovation and learning.
- v) Also aims to ensure industry-academia linkages (ex) giving projects

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Question No.
प्रश्न संख्या

to IITs like for lab grown diamond research.

vii) Ensuring private participation in research
[Challenges:]

i) lack of awareness of the present mechanisms of research also.

ii) Skewed participation due to lack of skills (ex) lesser participation of women in stem courses.

iii) Implementational challenges (ex) hesitancy of private sector due to unstable policy regime.

The National Research Foundation Bill but is important and much needed to promote research culture in the country, thus boosting innovation and growth.

Q.19.

Hybrid warfare is the new form of warfare comprising both or either of both hard and soft kill methods.

(e) use of drones, cyber attacks etc.

Implications of hybrid warfare for India

- i.) Increased instances of use of drones and drone swarms. (e) - Pakistan using them for drug trafficking across border.
- ii.) Fear of surveillance as drones are small and not easy to detect.
- iii.) Threat of cyber attacks. Accord-
-ing to report by E&Y, India is

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2nd most prone to cyber threats

iv.) Anonymous attacks (a) attack on critical information infrastructure like Kundankulam power plant attack and power outage in Mumbai.

v.) Use of over ground workers to act as eyes and ears of various state - non-state actors ; thus further risk of radicalisation.

Measures to develop comprehensive ecosystem

i.) To tackle Cyber attacks

→ Gulshan Rai Committee recomm-
-ended use of indigenous servers
and reduce dependence on foreign
actors for same.

→ Steps like use of Tallinn Manual
to ensure cyber safety.

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- Strengthening CERT-in and sectoral CERTs (ex) telecom sector
- ii) A comprehensive drone policy to address not just drone as a service, but also drones as warfare mechanisms.
- iii) Strengthening both offensive and defensive capabilities by skilling workforce. (ex) Cyber scientists
- iv.) Protection of critical information infrastructures like VIDAI, nuclear plants etc. (ex) Established National Critical Info Infrastructure protection Centre (NCIIPC).

Hybrid warfare is the reality of modern warfare & thus our capabilities must be strengthened accordingly.

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Q20

The eastern frontier of India faces instability of various forms like insurgency in Nagaland, ethnic conflicts like Kuki-Meity in Manipur, refugee crisis etc.

Internal security challenges related to peace in neighbouring countries

- i.) Unstable situation in neighbours may cause persecution of minority & thus refugee influx in border areas. (ex) Rohingyas from Myanmar
- ii.) Challenges in neighbouring states leads to insurgency in those regions that have fallout on India (ex)

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support to insurgents in form of bases, arms support etc. in Myanmar, Bangladesh etc.

iii.) Promotes trans-national organised crimes (ex) human trafficking, counterfeit currency etc.

iv.) Non state & hostile state actors may use the situations for creating trust deficit and radicalisation of youth.

v.) loss of culture of locals & thus ethnic conflicts (ex) Bru Reang conflict in Mizoram, Tripura.

vi.) Presence of drug channels like ~~the~~ golden crescent on western and golden triangle on eastern border → promotes drug trafficking and addiction in youth.

Question No.

प्रश्न संख्या

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Suggestions :

- i.) Bilateral talks and cross border agreements. (ex) Border Protection Guards across Indo-Bangladesh border to tackle organised crime.
- ii) Effective refugee policy is need of hour to tackle the rising crisis, specially in north-east.
- iii.) Development in border areas. (ex) Border roads, vibrant villages programme etc.
- iv.) Preservation of local culture (ex) celebration of Hornbill festival
- v.) Trust creation by talks with insurgent groups (ex) Bodo Peace Accord.

Internal security challenges are a threat to national integrity & must be handled at priority.