

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

GENERAL STUDIES / सामान्य अध्ययन

Name Of Candidate
परीक्षार्थी का नाम

Aswin kakumanu

Roll No./अनुक्रमांक

Medium/माध्यम

English हिंदी

Center Code/परीक्षा केंद्र

Date/दिनांक

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

INDEX TABLE / अनुक्रमणिका

INSTRUCTION / अनुदेश

Q. No. प्र.सं.	Max. Marks अधिकतम अंक	Marks Obtained प्राप्तांक
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Total/कुल अंक	250	

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।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।

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।

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।5. Word limit in questions, if specified, should be adhered to. Any page or portion of the page left blank in the Question-Cum Answer Booklet must be clearly Struck off.
प्रश्नों में शब्द सीमा, यदि निर्दिष्ट हो, का पालन किया जाए। प्रश्न-सह-उत्तर पुस्तिका में खाली छोड़े गये किसी भी पृष्ठ या पृष्ठ के भाग को स्पष्ट रूप से काट दें।

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Examiner's Discretion/मूल्यांकन कर्ता का विवेक :

Start Time/प्रारंभ करने का समय :

End Time/समाप्त करने का समय :

08:00Am

11:00Am

Total Marks/कुल अंक :

Mode Of Examination/
परीक्षा की विधि :Online/ऑनलाइन Offline/ऑफलाइन

*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।

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EG/ईजी :

① ② ③ ④ ⑤

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

ForumIAS

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.

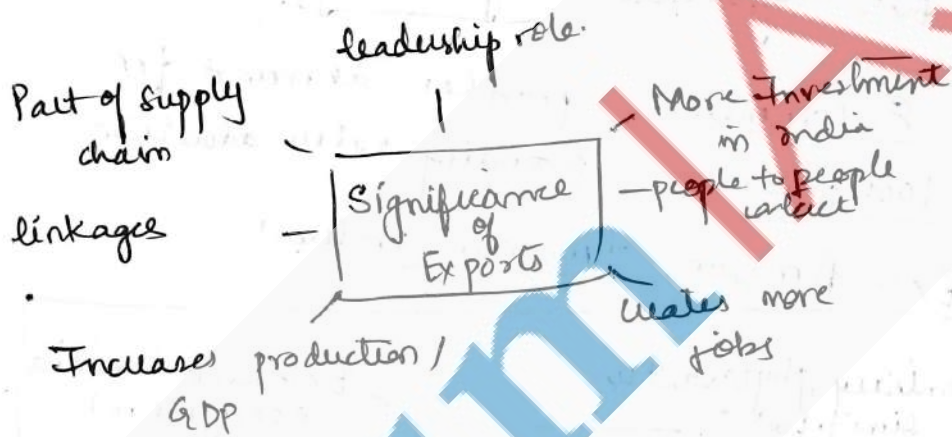
Section - A

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Q43
3pm - 6pm

①

India recently touched highest Exports of 770 billion \$ (FY 21-22), when globally most of countries are slowing down. To multiply on success new Trade policy is launched.



Recent Foreign Trade policy

This policy is based on four pillars

- (i) Moving from Incentives to Tax Remission.
- (ii) Enhancing Trade facilitation Agreements
- (iii) Improved coordination between centre, state.
- (iv) focus on Emerging systems like e-commerce, Digital public infra etc.

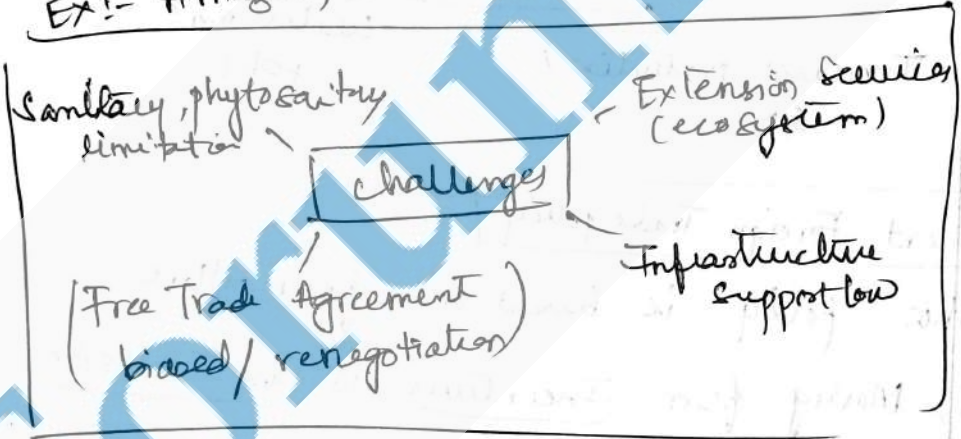
These are provided with an institutional setup (National Committee), decentralized

Towns of Excellence, Export hubs with one district one product

Significance

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- (i) Reduced WTO disputes on incentive for Trade distortion.
- (ii) Trade facilitation on Transparency, Technology provides process reengineering for Exports
- (iii) Decentralized hubs enhance Dryports at state level for Export, dealance
Ex:- Rajasthan largest dryport
- (iv) E-commerce provides demand for local produce providing value addition
Ex:- Amazon, American produce



India with new Trade policy, monetize,
Infrastructure pipeline can achieve
2 Trillion \$ Export by 2028 forming
5 trillion \$ goal a reality.

2)

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Welfare Economy focuses on wellbeing of citizen and improve quality of life in time and space. Pensions act as a buffer for oldage citizen post retirement

Character of OPS

- (i) provides 50% of last drawn salary every month post retirement
- (ii) No contribution by employee everything borne by government.

Fiscal prudence Issues

- (i) Huge Revenue Expenditure on state / center limiting resource spend.

Ex:- 83% of Budget on revenue, only 2.5% of GDP on Capital.

- (ii) Enhances revenue deficit and violates FRBM Act of Zero RD.

- (iii) following system of borrowing enhancing fiscal deficit, Debt.

Ex:- FRBM → 60% of Debt (present 90% of GDP Debt)

(iv) This also causes Intergenerational issues with new generation paying high taxes

(v) leads to crowding out effect reducing effective investment, gross capital formation (GCF)

Ex:- GCF → declining trend.

Balance → New pension

(i) contributory scheme on employee to choose investment with flexibility

Ex:- How to invest money for better returns

(ii) sharing the burden by both

(iii) fixed salary and social protection with a lumpsum amount post retirement

Some states due to various pressures are going back to old pension scheme

which many negative Externalities and fiscal spending which violates welfare principle

AgriStack is an interface of data sharing between varied stakeholders to improve productivity in agriculture developed by government of India.



AgriStack : Silver Bullet

(i) Access to Formal credit reducing Indebtness among farmers

Ex:- Supply scrips / NABARD / mcp history used

(b) provides realtime information on market, environment to plan agriculture

Ex:- Precision agriculture, market barriers reduced.

(c) Best Technological practices shared towards modern system

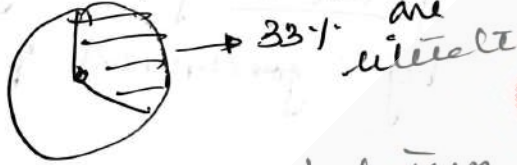
Ex:- Natureal farming mission focus on awareness.

(d) Improved Startup and Industries based on available Information

Ex:- FPI startup boom in Sunshine sector.

Challenges

(i) Digital literacy very poor in India

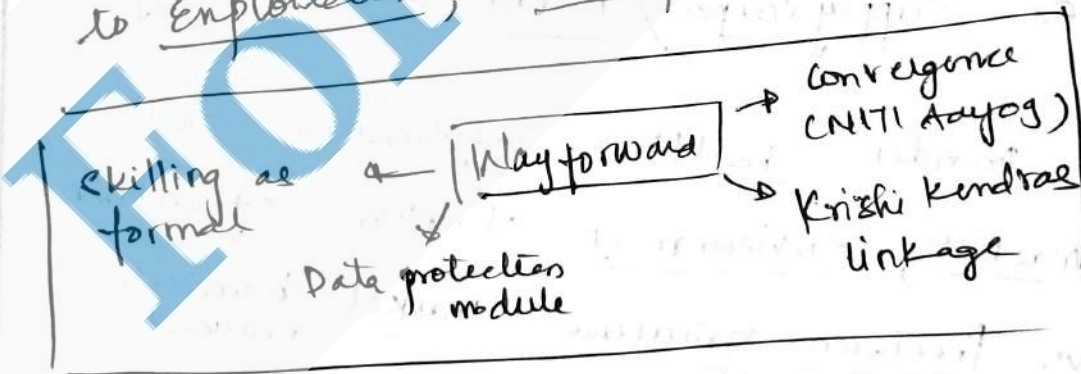


(ii) coordination Issue between center and state
Ex:- APMC model act bit delays

(iii) lack of basic infrastructure

Ex:- 15% of rural connected by Digital fiber
(North East)

(iv) lack of data protection may lead to exploitation, monopolization



Agri slack is first step in digitizing agriculture, revolutionize sector to achieve 100b\$ Export target, 1 lakh FPO creation and doubling income.

A)

World Trade Organization is a global arbitrator to settle Trade issues and to develop an interconnected global Trade policy in World.

WTO → Equitable solutions

(i) Most favoured Nation (MFN) while trading with other countries.

(ii) Reducing subsidy to address trade distortion Ex:- Blue, green, Amber box

(iii) Trade facilitation by reducing entry level barrier

Ex:- Tariff reduced.

(iv) Dispute settlement system and peace clause to breach limit

Ex:- India used peace clause during COVID.

Issue / conflict in food security:

(i) inequitable competition and limits on subsidy reduces food security interests

Ex:- Open procurement contested at WTO by India

India - < 10% subsidy, US and
indirect subsidy, exempted

(iii) Rising sanitary and phytosanitary
barriers creating Neo imperialism
Ex:- indian, Africa goods regulated

(ii) Rising Bilateral agreement
undermine WTO control!
Ex:- US Mexico Trade deal, US China etc
Trade war

(iv) Defunct Dispute resolution blockage
of judges by USA
Ex:- only 1 judge present, some countries
develop alternative

(v) peace clause discussion dropped at
Doha meeting of WTO.

WTO should re design governance
more inclusive, equitable and following
principle of CBDR and supporting
Doha amendment, food security in long run

Stockholm of 1972 created the base for international climate governance with convention like RCO Earth, UNFCCC, UNCBD and institute like GEF, UNEP etc.

Gap between Target

(i) GHG emission on a rising trend

Ex:- 417ppm by 2022 (highest)

(ii) Mitigation measures and financial support gaps.

Ex:- 100bi\$ by 2020 - only 3bi\$ gathered

(iii) Loss and damage fund discussion delayed and miniscule

Ex:- 450 bi\$ needed (Estimate) → 450mi\$ (promised)

(iv) Bias towards mitigation compared to adaptation.

Ex:- only 4% for Adaptation (adaptation gap report)

(v) Technology Transfer delayed, discussed

in New Delhi declaration (2009), sharm el sheikh (2022)

(vi) Emission gap report highlights present rate temperature to 2°C.

Ex:- 2 models given → peaking by 2025 (needed).

Measures for action

(i) Taking global stocktake on performance of NDC CONFEC — compulsory.
Ex:- delayed for 2 years.

(ii) Enhanced commitments under NDC to achieve Paris goals
Ex:- India — pancharmit (Non renewable energy)

(iii) participatory approach in governance
Ex:- Small island states — leadership

(iv) finance system more diverse and innovative
Ex:- First movers coalition model.

(v) Technology Transfer by some institutional checks & balance.

Ex:- Montreal protocol model.

50 Years of Stockholm created awareness, principles for sustainable development to be followed in spirit to achieve the goal of sustainability by 2030.

E-Waste refers to electronic waste released from mobiles, computers etc. In India it is 3.84 million Tonn/yr and to reach 10 million Tonne by 2028. This waste is highly toxic with heavy metals.

Impediment in management

- (i) Informalization of sector.
Ex:- 90% Waste by informal sources.
- (ii) Replacement cycle short with no access to repair and small upgrades by company.
Ex:- Apple small upgrades
- (iii) Lack of skill and infrastructure know how to manage leading to landfill and leaching.
- (iv) Lack of incentive to manage
Ex:- EU buy back option and coupons for new product

Ways to address

citizen

- (i) conscious consumption Ex:- Mission LIFE
- (ii) Use of republicked goods and delivrecing in recycling centers

Business

- (i) Increase life cycle of products by reducing scrap
- (ii) Green design reducing heavy metals

Government

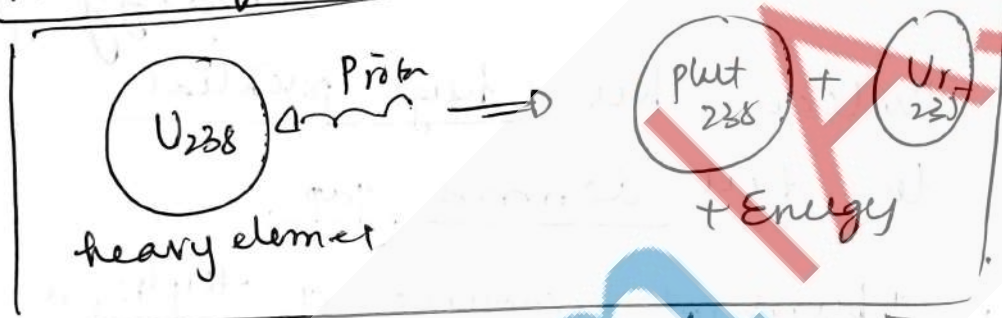
- (i) Implementing EPR in sector and spread by creating ecosystem
Ex:- portal → 90% of producers registrance
- (ii) protect consumer rights
Ex:- Right to repair
- (iii) penalities on companies for any breaches

E-waste should be transformed from linear approach to a cyclic approach to attain sustainability

7)

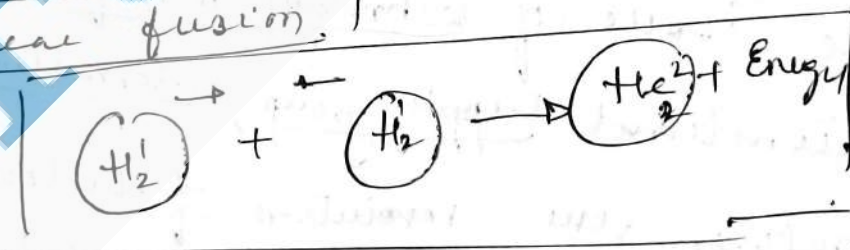
India's share of Nuclear Energy is less than 2% of total which is obtained from nucleus of atom.

Nucleus fission



- heavy element fissioned to generate energy
- moderators needed to reduce chain reaction (graphite rods)
- Threat of nuclear waste and Nuclear meltdown
Ex: - chernobyl.

Nuclear fusion



- Small elements fused to form large element, natural in stars
- produces huge amount of energy than fission.
- can be attained only at high

Temperature and pressure systems

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Ex:- No breakthrough found
(ITER) → artificial sun
china

Relevance of Nuclear Energy

(i) Demand of Energy increasing

Ex:- Global south = 3x present energy

(ii) Nuclear has huge potential
to fill demand gap.

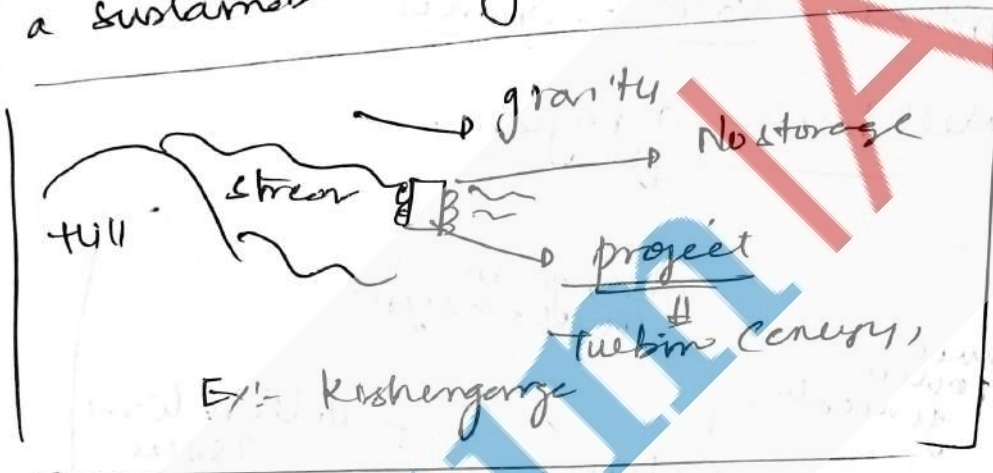
(iii) Abundant resource of Hydrogen
in fusion, non conventional syst
and renewable

(iv) lack of green house gas
emission acting as a sustainable
alternative

The issue of technology transfer,
International supply group, sanctions
limiting the revolution of nuclear
energy. India should exploit

US civi | Nuclear Energy deal to
achieve panchamrit target,

⑤
Run of river projects are small electricity generator / multipurpose projects built to generate energy from moving / flow of water in a sustainable way.



Positive Impact /

- (i) No storage of water
 - Reduced submergence of forest / ecosystem
 - Reduced displacement of people
 - Ex: - 60+ displ by large dams
- (ii) Does not alter ecological flow and only captures the potential energy
- (iii) Decentralized to reach local

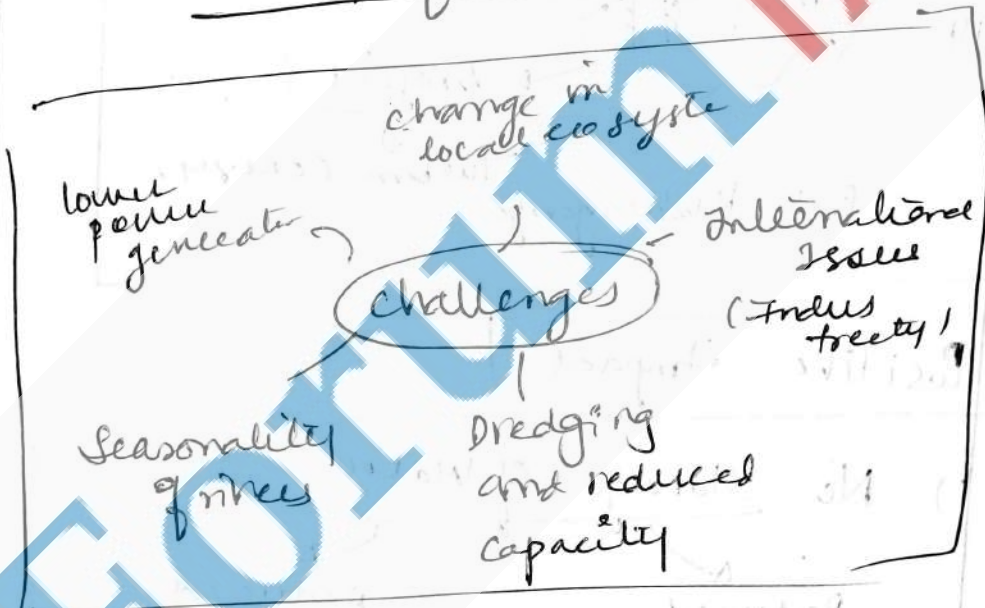
energy needs of community

Ex:- East Siang of Arunachal
powered by such projects

(iv) comparatively get effective than
larger projects.

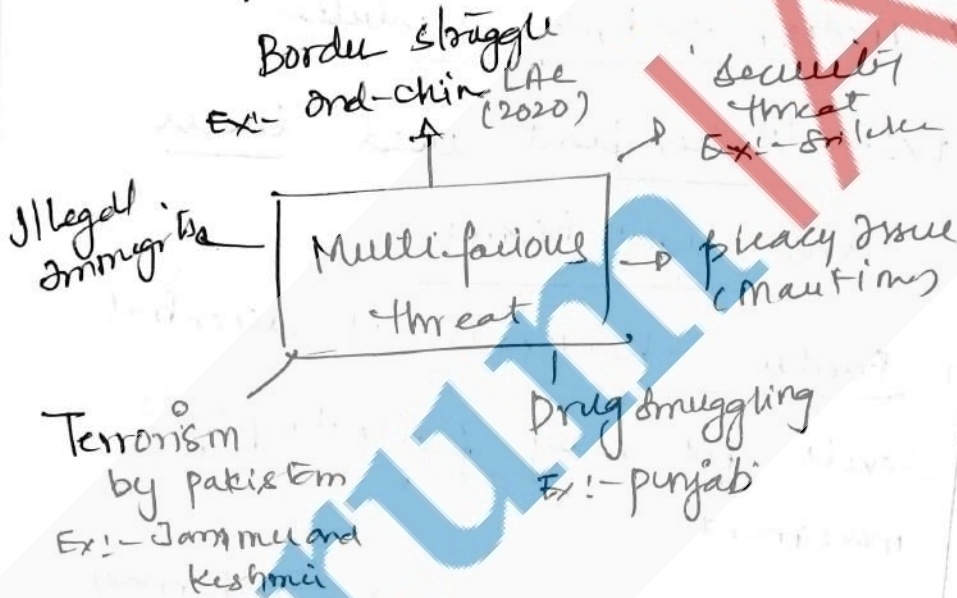
Ex:- 1/1000th cost compared to dam

(v) protect Socio Economic, well being
of region.



Rain on River projects provides a
well developed balance for
sustainable development in
line with ecological flow of river.

India has land Border in complex stages of settlement and exemption (freemovement regime) and maritime border of 7500 km eminating threats.



Robust Border Infra → Panacea?

(i) Vibrant village programme:-

① Developing basic ammenities and making villages resilient.

② Acts as Eyes and Ears for ground level intelligence.

③ To act as first line of defence

④ Modern Technological solution

also improve citizen welfare.

(ii) Border dispute resolution for

demarkation and clear understandings

Ex:- Nepal cartographic Expedition

(iii) Comprehensive Integrated Border Management (CIBM) provides for

a modern technological solution

Ex:- Western front used lasers

and light beams

(iv) Border checkpoints at decentral

levels for easy people to people movement.

(v) This checkposts also enhances

International Trade in line with

foreign Trade policy.

Robust Border Infrastructure based on

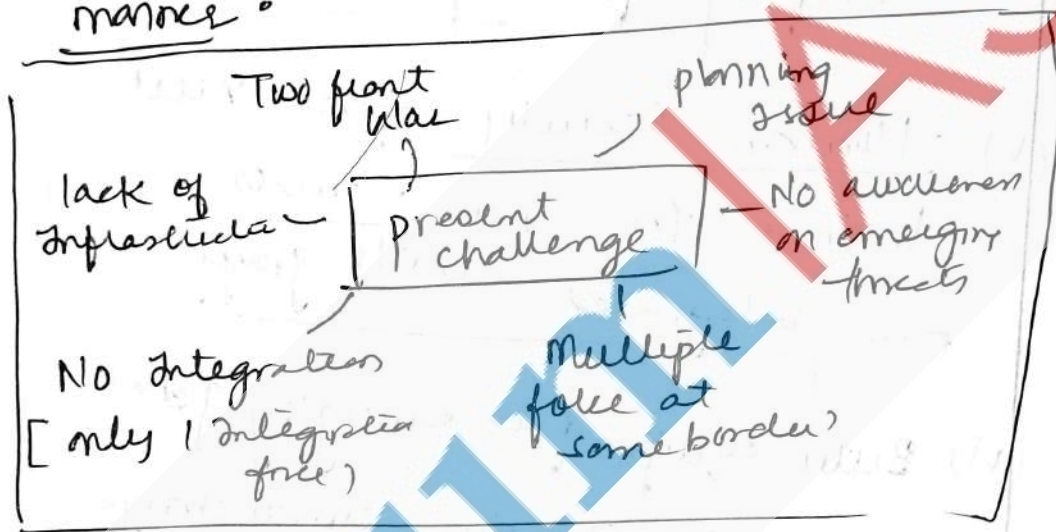
Technology, Sustainability with

dynamic spirit address even the two front war effectively.

Hybrid wayfare,

10)

National security strategy (NSS) is a clearly delineated guidelines about threats of India and ways to address the same in integrated manner.



NSS - Impact

(i) Theaterization of Armed forces based on region leading to integration.

Ex:- East, West, North, South Theaters of Army, Navy, Airforce.

(ii) This leads to coordinated planning and share Capital Expenditure.

Ex:- Only 10.1% of GDP on Capital in military enhanced.

(iii) Enhanced role of chief of defence staff in coordination,

forging civil-military spirit

(iv) focus on Emerging threat and Intelligence

Ex:- Security towards china shifting from factors

(v) Human security forces will be trained for new threats

Ex:- integrated Battle groups

(vi) Better equip for emerging global common threats like climate change, Terrorism etc.

The strategy is a need of hour

as recommended by Kargil Committee, Naresh chandra Committee and can

be protected under official secrets act for promoting sovereignty, security of state

11)

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Inflation refers to general rise in price. This measured by varied indices.

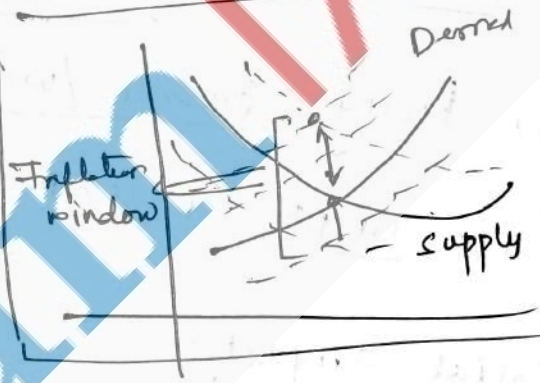
Post COVID globally inflation is on rise:

Ex:- India (4% → 8%) (2020) (2023) ; USA (2% → 9%) (2020) (2023)

Factors influencing inflation

(i) Demand changes

(a) Increased money supply enhances demand



(b) liquidity trap with no effect on monetary control

(c) Improving financial states.

Ex:- per capita income growing

(ii) Supply changes

(a) Increased cost of factors of production

Ex:- land, labour cost

(b) Disrupted supply chains

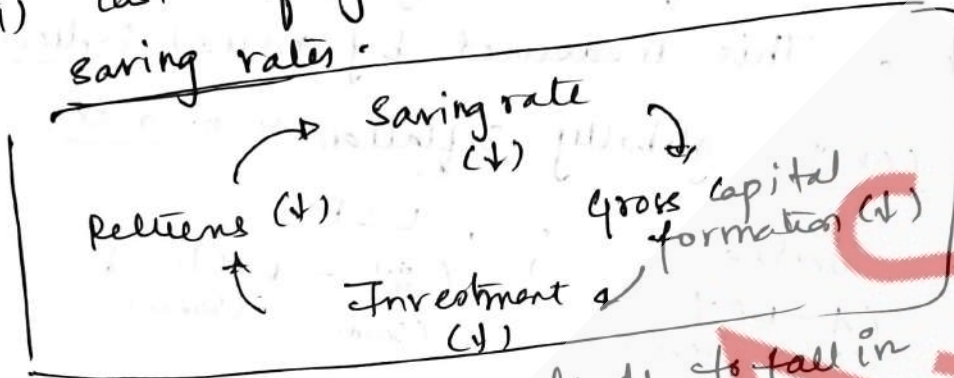
Ex:- COVID 19, Ukraine Russia war

(c) Sudden calamities Ex:- floods in Haryana, Punjab (2023)

Impact of inflation

Economic costs :-

(i) Cost of goods increases, reduces saving rates.



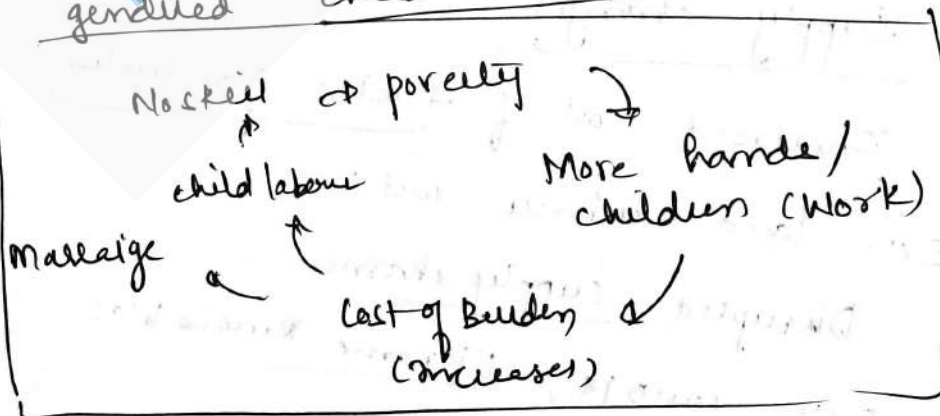
This vicious cycle leads to fall in Banks Ex. Silicon valley bank (SVB) in USA

(ii) Rising income/wealth inequality
Ex: UNDP → COVID → vulnerable most affected

Social Impact :-

(i) Cost of Society is faced by masses
Ex: Gas, petrol price increases

(ii) Rise of poverty, child labour and gendered child marriages.



Institution to control inflation

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(i) Reserve Bank of India

- (a) Monetary policy committee to target consumer price index to a basket of 4-6-1-1.
- (b) counter cyclic measures for banks under Basel.
Ex:- Indian Bank most reluctant with high growth rates.

(ii) Government (Fiscal policy)

- (a) Spending to kickstart virtuous cycle of growth

Ex:- Capital Expenditure → 88-1-17
• Atmanirbhar Bharat

- (b) Buffered by providing commodities

Ex:- food supply to store indian

(iii) Price stabilization system by

varied schemes

Ex:- operation green, PM AASHA

Controlled inflation, sustained growth

leads in promoting Inclusive development to reach 5 trillion \$ goal.

12

Production linked Incentive (PLI) scheme provides support for enhanced production with a goal of Make in India. This aims in achieving Atma Nibhar.

Performance of PLI

post 2 years of introduction this scheme has achieved 40% of investment target, 40% Export and 20% Employment target and is on path.

(i) promoting self reliance in strategic sectors like defence, Quantum
Ex:- 3rd negative list (min of defence)

(ii) Improving Industry ecosystem and enhancing share in GDP
Ex:- 17% (present) → 25% target

(iii) Addressing disguised unemployment with a potential of 1 crore jobs

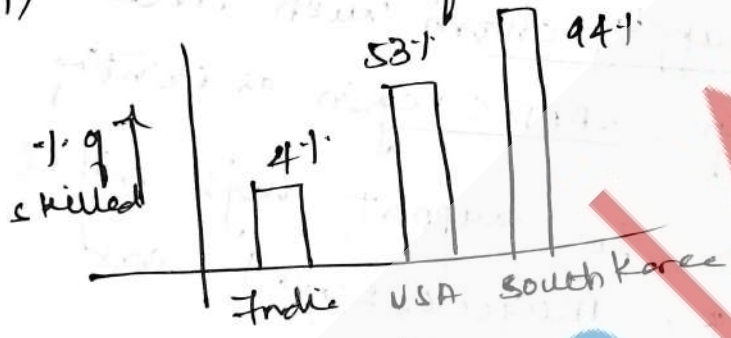
(iv) Attracting investment moving out from china, part of global supply chains.

This system is supported by Gatishakti, Digital India, Monetization pipeline and reformatory system.

Challenges prevalent

(i) fear of starting licence Raj system undermine Rule of Law.

(ii) low level of skilled work force



(iii) poor contract enforcement and IPR regime in India

Ex:- low rank on global innovation index

(iv) Not part of global supply chain

and Non resilience of supply chain

Ex:- COVID 19, Russia Ukraine disturbed supply chain

(v) High initial cost of investment

Way Forward

(i) process Reengineering in Industry sector

Ex:- Trade facilitation Agreement, Advance settle/policy agreement etc.

(ii) skilling of workforce by providing incentive and collaboration
Ex: Haryana → Degree + Internship
, PM Kaushal Vikas Kendras etc.

(iii) promoting a strong data, IPR protection regime to boost confidence

(iv) Regional supply chain with India leadership, SAARC region as eventing

(v) Big banks to support high initial cost (Ex: merger of Bank) and Innovation support
Ex: Fab India Hackathon

PLI scheme will be a transformatory change to improve Industrial QVA and enhance India's Global Exports to achieve "Vishwa guru status"

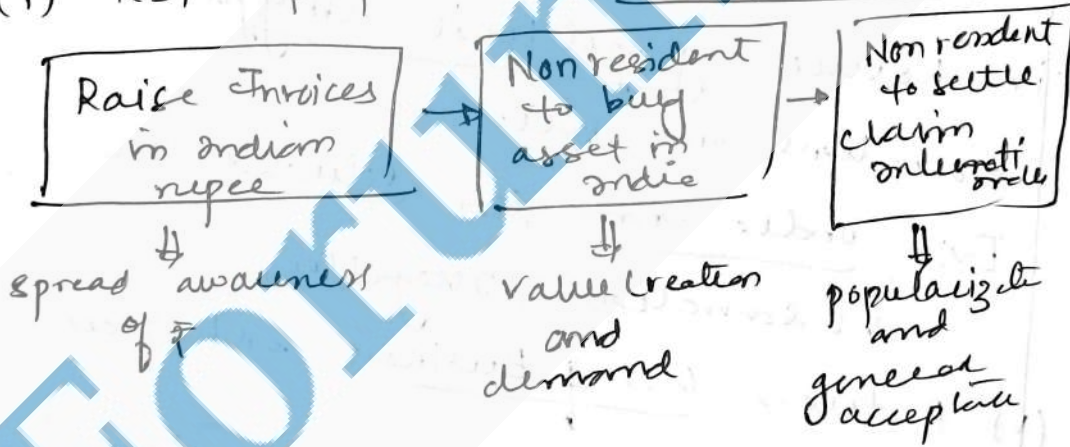
13

Internationalization of rupee refers to making rupee a generally accepted currency for settlement, Exchange.

De dollarization refers to reduced usage of dollars in settlement due to ITK, Sanction system etc.

Process of Internationalization of rupee

(i) RBI proposed a 3 step process



(ii) creates Vostro, Nostru account in bilateral trade

Ex:- Russia, India oil settlement

(iii) currency swap agreement to create a popular image

Ex:- SAARC swaps of currency.

Benefits of Internationalization

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(i) Reduces India's vulnerability to External shocks

Ex:- Finance crisis 2008

(ii) Enhances value of rupee and reduces volatility

Ex:- India lowest 89 ₹ - 1 \$ recently

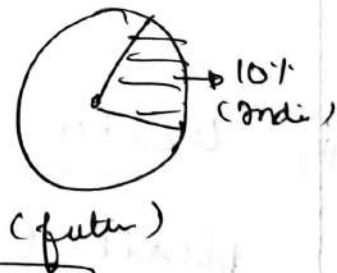
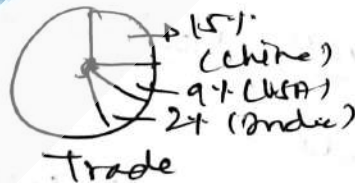
(iii) Can create foreign assets with Indian rupee than depending on other currencies

(iv) Reduces geopolitical struggle and sanctions on India

Ex:- India from US sanction (illegally) on cost of Business enhances

(v) Reduces Trade

Present



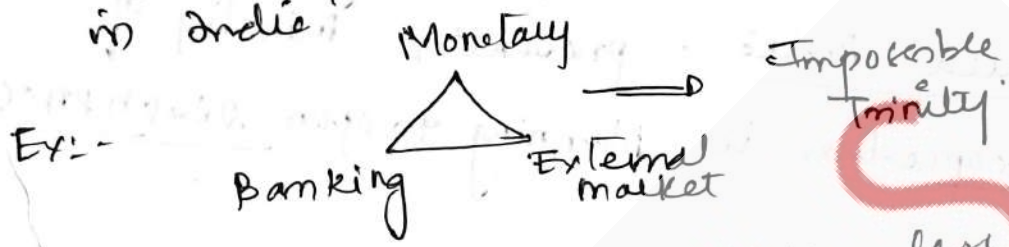
Challenges in Internationalization

Indian rupee was international in 1960. But later delinked due to challenges.

(i) Complete capital convertibility, which lead to flight of capital.

Ex:- Bimal Jalan committee (in stages)

(ii) Reduced control on monetary policy in India.



(iii) India's present global trade, less acceptability of rupees and lead to double conversion.

(iv) Competition from Yuan and other emerging currency.

India should focus on international of rupee with regional to global and linked with business reforms to enhance an interconnected economic system.

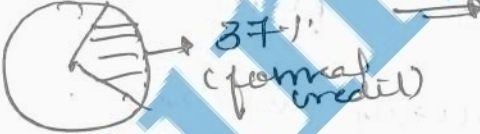
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Primary Agriculture Credit Society (PACS) is a cooperative financing system in rural India - presently Ministry of cooperation is planning to open 2 lakh PACS.

PACS → Benefits

(i) Access to formal credit with a credit history

Ex:-  37% (formal credit) → high farmer suicide.

(ii) Creating a knowledge bank for best practices, Technological support

Ex:- PM paramparaghat scheme focus on PACS.

(iii) Welfare activities also supported by PACS to improve rural growth

Ex:- Social audit

(iv) collective bargaining setup improves market access.

Challenges in PACS

- (i) less representative captured by Dominant caste, Zamindars creating conflict
- (ii) poor Technological and support system due to corruption leading to capital crunch.
- (iii) Red Tapism leading to delays and exploitation of farmers leading to further
- (iv) Market access also delayed due to price asymmetry information across PACS.
- (v) lack of skill in creating a knowledge system.

Way Forward

- (i) focus on Infrastructure development by accessing Agriculture Infrastructure fund under NABARD.
- (ii) participatory approach by

frequent elections and nomination.

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Ex:- New cooperative law

(iii) Overarching market reforms
for One Nation one market

Ex:- ENAM, GRAMS electronic link.

(iv) SHG linkage to PAES for
checks and balance

Ex:- Kudumbashree, Keele PAES.

PAES is one step for rural welfare
along with grain storage plan,
FPO and self help group promotes
an agrarian revolution to achieve
intended goals sustainably.

farm policies, though intended for welfare and development had many negative Externalities on 60% of Indian population.

Negative Impact

(i) Environment

(a) fertilizer subsidy led to over usage

Ex:- NPK \rightarrow 4:2:1 (ideal) \rightarrow 7:3:7:1 (India)

(b) MSP support skewed and change in agri climate zone

Ex:- Rice, Sugarcane in dry region

(c) free electricity led to water scarcity

Ex:- punjab \rightarrow CaCO_3 \rightarrow soil fertility

(ii) Economy

(a) No agriculture transition reduced farm resource in India (11% of GDP)

(b) subsidy, distortion at WTO

Ex:- peace clause

(c) Sanitary, phytosanitary limits

Ex:- Banana in UK stopped

(iii) Socio-cultural

- (a) Enhanced cost on farmers led to indebtedness Ex:- 60% indebted
- (b) less usage of millets led to poor nutritional outcome
Ex:- 30% stunted, 50% anaemic
- (c) health entitlements Ex:- Cancer train (punjab)

Enhancing Soil health

(i) PM PRANAM

- (a) To focus on Natural farming under PM Kishi Samrath
- (b) Enhance soil fertility by finding alternate inputs
- (c) Grant in Aid support to farmers at 70%
- (d) promote sustainable practice system by persuasion

(ii) Soil health card provided informat on soil to farmers to have a balanced nutrient (micro/macro)

(iii) PM Kishu Sanchayee, PM KUSUM

to provide green, effective irrigation

(i) One Nation, One fertilizer, Neem

coated fertilizer, Nano Urea reduced usage

Ex:- 500ml/Nano Urea = 25 kg urea

(ii) Subsidies more focussed on Technological / research improvement

Ex:- Creating Agri stock system

(iii) Market development for a Sustainable demand

Ex:- organic farming, social stock, Exchange (SSE) system

M. Swaminathan committee focussed on an integrated, Techno Saavy farm system to improve productivity.

This need to implemented to achieve SDG by 2030;

16)

Heat wave as defined by IMD &

departure from Normal, maximum

Temperature by 4-6°C (increased

severity) or increased maximum

Temperature ($> 40^{\circ}\text{C}$ (plain) $> 35^{\circ}\text{C}$ (Hills))

Rising frequency/intensity in India

(i) Deforestation leading to reduced forest cover in many regions, degradation

(ii) Increased ocean Temperature
delayed monsoon

Ex:- IPCC - Indian ocean - 1.06°C (↑) (pre industrial)

(iii) Increasing green house gas Emission

Ex:- India - 3rd largest globally

(iv) lack of ambient cooling, vicious cycle of cooling created.

Ex:- cooling \rightarrow HFE/CFE \rightarrow green house effect.

Triple Lanina dip enhanced
temperatures globally, and
specially in Indian region.

Impacts

(i) loss of human life and
health hazard

Ex:- NARCB → heatstroke deaths → $\frac{45-1(\uparrow)}{(2014-22)}$

(ii) loss of productivity of humans

Ex:- ILO → 40% loss in productivity
by 2030
(farming sector)

(iii) vulnerable section like children,
Elderly indifferently impacted.

(iv) Water scarcity by drying up
of varied lacks, drought situation

(v) Rises demand for electricity
cheaply greenhouse gas emission

(vi) Impacts degradation and
fastens up

Ex:- REDDT heatwave as a
threat

Measures

(i) Implementing National Cool Action
 plan making cooling system part
 of infrastructure (airflow)
 Ex:- AP secretariat → cooling plan.

(ii) Improving green cover vehiculing
85% target
 Ex:- Vam Nagare to be promoted

(iii) storage using reflective substance
 to reduce Evaporation
 Ex:- Norway black balls for storage.

(iv) Early Warning, dissemination
 to reduce impact on population.

(v) Special support system during
summer
 Ex:- Chalivendra → voluntary in
cool water Andhra
model.

Adaptation and mitigation of heatwave
 needed to fight climate risk
 by a participatory approach.

(17)

Chandrayan 3 is a mission of ISRO to have a soft landing at southern pole of moon surface.



Differences between both C2/C3

(i) launch system

Chand 3	Chand 2
propulsion unit (transfer) lander, rover	orbiter (communication) lander, rover

(ii) Area on Moon

Chand 3	Chand 2
2 km x 2 km	500m x 500m ↓ Enhanced retrieval reliability led to least



(iii) Altitude for velocity adjustment
in finebreaking from 2-4 increased
(iv) Timeframe increased by more
solar panel used.

The payload scope by presence of
chandrayan 2 orbiter provided chandrayan
2 to enhance technological calibration to
have a "failure based approach" flexibility.

Artemis Accord - Lunar Exploration

India recently signed US led Artemis
accord which focus for a peaceful
ecosystem for exploration.

(i) Information sharing between
different countries to a collaborative
approach.

Ex:- Hydrogen discovery - led to
development of spaceport on moon,
refueling station

• This also helps in collaboration
in varied technological field

Ex:- Microbiological impact on human

(ii) Exploration based on COPODs,
International law lead to better
planning and reduced friction.

(iii) Interoperability is a farfetched
dream is possible with accord.

Ex:- Space tourism by Indians and
private space rocket

(iv) further Technological support and
payload support in lunar exploration

Ex:- NASA → Chandrayan 1 → Water
(Norm).

(v) focus on lunar space travel increased
spelt for Exploration, Investment

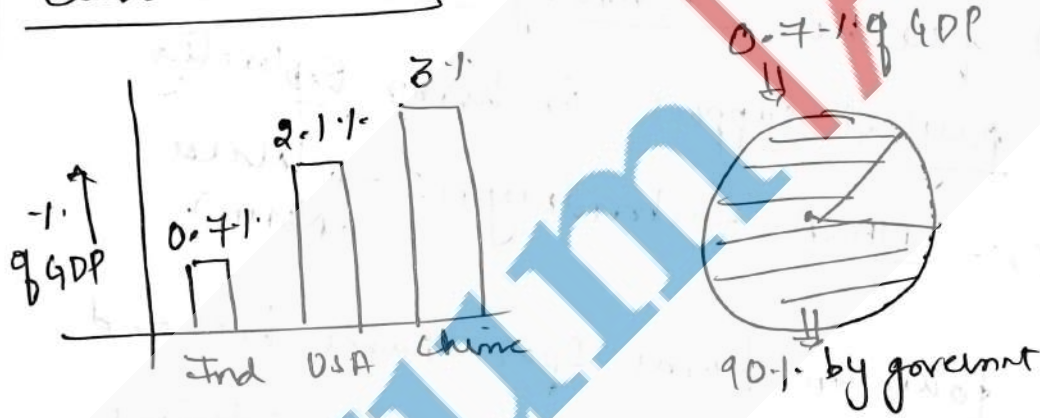
(vi) This also lead to a platform to
address space debris.

Lunar surface has huge hidden
secrets of human evolution, discovery
travel can be achieved by
Artemis Accord, Chandrayan system

India is focussing to achieve a "Knowledge Economy" for Innovation,

analysis by 2030 which can be achieved by Research and development

Current status :-



RED as key

(i) Improves Technological know and administrative

Ex:- fab india, Defence hackthon focussed

(ii) Create Sustainable, Inclusive solutions stron metize fit all

Ex:- Amazon market analysis before launch of product

(iii) Create New Employment opportunities
in high end jobs.

(iv) Improve research ecosystem,
capital formation, reduced brain drain

(v) output enhanced to achieve
GDP target.

NRF Bill 2023 → positive impact

(i) Collaboration of funding between
varied ministries
Ex:- 50,000 cr /yr under fund created.

(ii) private participation enhanced by
industry academia linkage

(iii) competition in allocation of
funds based on outcome and
reformatory system.

(iv) governing council by PM and
ex officio chairman.

(v) Aids in interdisciplinary
research, foreign collaboration
as mandated under NEP.

Issues

(i) The allocation is less than committee recommendation of 1 lakh crore / year (1.5% of GDP)

(ii) change of system from SERB to NRF, no change / process reengineering

(iii) combined allocations reduced than original.

Ex:- parliament → NRF → (1.5% less allocate)

(iv) No better human resource and infrastructure for research

Ex:- only 100 PhD scholars in cyber security

NRF bill is a step in right direction. This with revamped education and industry collaboration leads to achieve 5 trillion \$ target of India.

Hybrid Warfare refers to integrating of conventional and nonconventional systems creating new threats for security.



Implications on India

- (i) Sovereignty / security of state
 - (a) New Types of Technology
Ex:- Drone attack on IAF station
 - (b) overwhelming capability
Ex:- swarm drone attack
 - (c) cyber security Honey trap threats
Ex:- pegasus

(ii) Digital system

(a) Attacking cyber physical system (CPS) Ex:- critical infrastructure.

(b) Ransomware undermining data piracy

Ex:- Infosys (Denial of service)

(iii) Social impact

(a) Enhanced division by propoganda

Ex:- Communal clash, Manipulative violence

(b) Radicalization by fake news

Ex:- Telangana lynching (2010)

(iv) Electronic manipulation

leading to Election issues

Ex:- EVM Hack by AAP (2019 election)

(v) Creating deepfake, Blockchain for money laundering

Steps Needed

(i) Develop a National security strategy or policy covering all possible threats.

(i) Improve Institutional Support by

frequent training

Ex:- cyber swach kendras

(ii) limit data leaks by banning apps and developing Indian systems

Ex:- Maya OS by Min of Defence

(iv) Enhance counter split by collaborati
Ex:- DRDO → Anti Drone system

(v) Enhance capabilities Indegenious defence (Negative list)

Ex:- SIPRI → top 5 defence import

(vi) Spreading awareness to citizen

Ex:- Digital learning, factchecking (PIB)
and legal system

Hybrid Warfare needs an integrated, collaborated and coordinated approach to address the problem holistically. This needs a proactive approach in peace than a reactive approach.

20

Internal security refers not only to have less public order disturbance but creating peaceful ecosystem for Welfare, development of citizens.

Internal security → Neighbours

① Eastern frontier

(a) Military capture by Myanmar

led to inflow of armed insurgents into India.

Ex:- MHA speech on Monsoon session.

(b) This supported by free movement regime lead as a safeharbor and Training ground.

Ex:- NSCN(CK) → training in Myanmar.

(c) Drug Triangle led to organized crime and disturbance.

Ex:- Arms, Money passage through same corridor.

(d) Ethnic conflicts enhanced by insurgent

Ex:- Manipur conflict (2023).

(e) China involvement for Training and money supply observed by intelligence bureau.

(2) Western frontier

(a) Pakistan using state policy of terrorism to create 100 cells for bleeding India via terrorists.

(b) This with economic instability of Pakistan led to illegal immigrants.

(3) Nepal open border exploited fake currency to damage economic system.

(4) Bangladesh Wac (1971) led to illegal immigrants and ethnic disturbance in NE states.

Ex:- Assam Accord (1975)

(5) Naxalite supported socialists states by propaganda, arms.

Way Forward

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① Eastern front

(i) Border Demarcation, smart fencing with well established check points

(ii) coordinated efforts with neighbour countries

Ex:- operation Sankhona

(iii) Improved enumeration of outsider in region.

② Coordinated Internationally for global threats

Ex:- Terrorism

③ Net service provider in India

clean region by defence support

Ex:- Training, Humanitarian assistance

(Nepal Earth quake)

④ Counter propoganda by state machines

Ex:- Radio, best practices

India should follow "Security and development" approach among Neighbouring nations for a sustained peace system