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GENERAL STUDIES (TEST CODE : 1524)

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|-------------------|------|---------------------|------------|
| Name of Candidate | Kush | | |
| Medium Eng./Hindi | | Registration Number | 916052 |
| Center | | Date | 01/01/2021 |

INDEX TABLE

| Q. No. | Maximum Marks | Marks Obtained |
|--------|---------------|----------------|
| 1 | 10 | |
| 2 | 10 | |
| 3 | 10 | |
| 4 | 10 | |
| 5 | 10 | |
| 6 | 10 | |
| 7 | 10 | |
| 8 | 10 | |
| 9 | 10 | |
| 10 | 10 | |
| 11 | 15 | |
| 12 | 15 | |
| 13 | 15 | |
| 14 | 15 | |
| 15 | 15 | |
| 16 | 15 | |
| 17 | 15 | |
| 18 | 15 | |
| 19 | 15 | |
| 20 | 15 | |

Total Marks Obtained:

Remarks:

INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI** इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**
सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. 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. No marks will be given for answers written in medium other than the authorized one.
प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

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1. Tenancy reforms are much needed to give a boost to the Indian agricultural sector. Comment. In this context, also discuss the significance of the Model Land Leasing Act, 2016. (150 words) 10

भारतीय कृषि क्षेत्र को बढ़ावा देने के लिए काश्तकारी सुधारों की अत्यंत आवश्यकता है। टिप्पणी कीजिए। इस संदर्भ में, मॉडल भूमि पट्टा अधिनियम, 2016 के महत्व की भी विवेचना कीजिए।

A tenant is a ~~person~~ anyone on a rented or leased property.

In context of agriculture, tenancy reforms are needed to:

1. ~~no~~ ~~over~~ population explosion + land reform
↓
land holdings have become economically unviable for investment
2. No institutional framework for land leasing
↓
no private investment in agriculture
↓
no growth of sector
3. Informal tenants currently exploited, because of no redressal mechanism
4. Farmer inequality is increasing (will most beneficiaries are land owners)
5. State subject (land, agriculture)
↓
Everything comes from state to state

Thus, tenancy reforms are much needed

to boost agriculture sector,

N171 Model Land Leasing Act 2016

aims to ~~create~~ create institutional
framework for land leasing:

1. legalise land leasing - set out procedure
2. enable leased land to be security for
the tenant (such as for credit, bank account,
etc)
3. Remove clauses of adverse possession
↓
land can't be taken away/
ownership can't be changed
4. Leasing agreement for fixed time period only

Advantages:

1. Consolidation of unoperational landholdings,
such as unrented fallow, ~~land~~ ~~other~~
~~the~~ cultivable wasteland, etc
2. Access to credit, bank facilities
3. Protection of tenants
4. Investment in agriculture - by reaching
scale
5. no fear of ownership change.
6. creation of land banks, ~~new~~ ~~for~~

Thus, tenancy reforms as well as implementation
of Model Land Leasing Act is much needed to ~~DOUBLE~~
FARMER INCOME //

2. Identify the various challenges that have restricted the entry of Indian MSMEs into the foreign market. Also mention some government initiatives that have been taken to facilitate MSME exports. (150 words) 10

विदेशी बाजारों में भारतीय MSMEs के प्रवेश को बाधित करने वाली विभिन्न चुनौतियों की पहचान कीजिए। साथ ही, MSME के निर्यात को सुगम बनाने के लिए सरकार द्वारा की गई कुछ पहलों का भी उल्लेख कीजिए।

MSMEs contribute to about 40% of Indian exports, and employ over 12 cr people.

Yet their export potential has been much untapped, because of challenges that have restricted their entry:

1. No digital marketing / digital presence.
2. No GI tag / lack of awareness
3. No HSN codes - ^{some} countries only accept imports of items which have

HSN code

Eg: Khadi got HSN code only few years ago.

4. No infrastructure connectivity to rail/ports

Eg: North East India.

Exports are rising exponentially in past few years, as they become

connected by initiatives such as UDAN, Act East, etc.

5. Working capital and delayed payments:
Can't process big orders.
This was biggest problem identified by
VIC Linka Committee on MSME
6. Dwarfism: ~~the~~ staying small to avoid
government benefit - problem identified
as economic survey 2020.

(Steps taken):

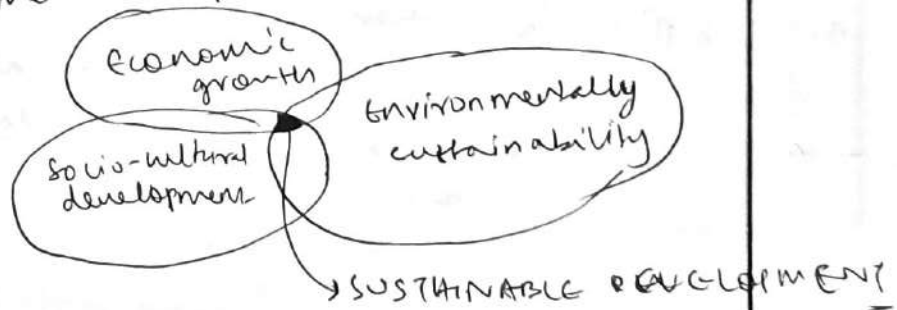
1. Definition changed: Micro upto 5 cr,
Medium 50 cr, Small 250 cr as
according to new definitions
~~from~~ (turnover)
2. Credit guarantee → ~~the~~ CITMSE
3. Working capital → MUDRA Yojana
↳ MUDRA card etc
4. Invoice factoring → via TREDS platform
↓
less delayed payments
↓
better capacity.
5. Other steps and schemes to upgrade
technology such as ATUFS, SFURTI
6. PSB loans in 59 minutes for quick loans

Hence government has taken necessary steps
to support them and remove them from vicious cycle of
dwarfism //.

3. India's march towards inclusive growth and it achieving the Sustainable Development Goals are intricately linked. Discuss. (150 words) 10
समावेशी विकास की दिशा में भारत की प्रगति और संधारणीय विकास लक्ष्यों की प्राप्ति जटिल रूप से जुड़े हुए हैं। चर्चा कीजिए।

OECD defines inclusive growth as growth that is distributed fairly across society and creates opportunities for all. Some elements of inclusive growth are social development, economic growth, technological advancement of all, financial inclusion, skill development, etc.

Sustainable development goals (SDGs) were adopted at UN General Assembly in 2015, as the development agenda for 2015-2030.



SDGs are 17 goals, with 169 indicators, far reaching and comprehensive.

Hence, inclusive growth and SDG achievement are intricately tied up.

1. SDG # 1 no poverty (India's targets) ↓
 SDG # 2 zero hunger (eg: double farmers income)
 SDG # 3 good health (eg: IMA < 70, Under 5 mortality rate < 11)
 SDG # 4 quality education (eg: 100% enrolment at secondary level)

↓
 social development
 +
 inclusive growth

2. SDG # 8 : good jobs and economic growth,
 including right to work

↓
 economic growth
 ↓
 inclusive growth

3. SDG # 9 : innovation and infrastructure
 eg: provide road connectivity to all
 India initiative: PM Gram Sadak Yojana
 ↓
 inclusive growth

4. SDG # 10 : reduce inequality → progressive taxation
 inclusive growth ←

Thus seen some examples of how they are
 intricately linked

4. Highlight the need for evolving an appropriate system of Rules Of Origin in regional trading arrangements. What steps have been taken by India recently in this regard? (150 words) 10
क्षेत्रीय व्यापार व्यवस्थाओं में उत्पत्ति के नियमों की एक उपयुक्त प्रणाली विकसित करने की आवश्यकता पर प्रकाश डालिए। हाल ही में, भारत द्वारा इस संबंध में क्या कदम उठाए गए हैं?

Regional trading agreements and free trade agreements have preferential rates on imports.

Eg: India allows many imports from Sri Lanka at 0% customs duty.

~~Ex~~, ~~Ex~~ Rules of origin is a mechanism by which minimum "x%" manufacturing/processing / value addition must be done in the free trade partner country (in this case Sri Lanka).

FTA agreements sometimes have "rules of origin", sometimes not.

Need for rules of origin:

- eg: it was observed that Chinese companies manufacture in China, then sell Chinese company in Sri Lanka puts label "Made in Sri Lanka" on product, and exports to India.

2. I.e., Chinese firms taking illegal advantage of India's FTA with Sri Lanka.
3. Similar loopholes were observed in other FTA such as with Singapore.
4. This is threat to regional trade, as the violating party violates
 - WTO norms
 - FTA norms.

Hence, in Budget 2020, India took significant steps to close such loopholes, and not allow such unethical and illegal businesses:

1. India's FTA with Sri Lanka revised, for "Rules of origin"
2. with Singapore.
3. RCEP not joined because of lack of agreement over "rules of origin"
4. e-commerce companies directed to highlight origin of product / tell supplier to highlight.
5. new Customs rules // Certificate of origin needed. These measures will help consumers take informed decision regarding their product choices.

5. MSP regime is a creation of an era of scarcity in the 1960s. Discuss its relevance in the current era of surplus agricultural production.

(150 words) 10

MSP व्यवस्था 1960 के दशक के अभावग्रस्तता के युग का एक आविष्कार है। अधिशेष कृषि उत्पादन के वर्तमान समय में इसकी प्रासंगिकता की विवेचना कीजिए।

MSP regime started in 1960s, when India was suffering from a famine post Indo-China war of 1962, and when Green Revolution was beginning.

Since then:

1. Food production has increased AT LEAST 6 times.
2. Land reforms / tenancy reforms neither have taken place
 ↓
 84% of Indian farmers are small/marginal (< 2 acre land holding)
 ↓
 They are not able to produce in scale to travel to APMC to sell at MSP.
 ↓
 They sell to local traders below MSP.
3. MSP is utilized by 6% of large total farmers in the country ~~only~~ thus ONLY
4. While MSP is announced for 23 crops, in reality procurement is done only

for rice and wheat, and sometimes for pulses and oilseeds.

5. MSP thus does **NOT** provide any safety net to **MAJORITY** farmers

6. MSP was supposed to be minimum price, but because of MIP and FCI procurements, and thus lack of competition, it has in reality become maximum price.

7. FCI has to procure rice and wheat more than its buffer requirement, and hence it has excess stocks which are often wasted.

8. It also has to take off-budget borrowing to make payments for procurement/storage.

Thus, MSP has many problems.

Yes, It is not relevant in today's era of changed economic structures.

As a support indicator price should be its only use

Recent agricultural ordinances are thus welcome in their regard, as they shall help lessen dependence of MSP.

6. Examine the link between the recent locust attack and climate change.

(150 words) 10

हाल ही में हुए टिड्डियों के हमले और जलवायु परिवर्तन के मध्य संबंध का परीक्षण कीजिए।

To understand link between recent locust attacks and climate change, we

1. Indian ocean dipole - difference between temperature of west and east Indian ocean.
The POSITIVE phase \Rightarrow west Indian ocean (Arabian Sea), (Persian Gulf), (Red Sea) temperature is warmer.

2. 2017: climate change \uparrow \rightarrow rising global warming
 \downarrow
AND indian ocean dipole ~~the~~ POSITIVE

\downarrow
high temperature in Red sea \rightarrow Asia
 \downarrow
cyclone in Yemen.

3. desert region in Yemen + cyclone

\hookrightarrow breeding ground for desert locusts

number of locusts expand. \leftarrow

4. 2017-18: locusts ~~to~~ cross over ~~the~~ Red sea to Somalia, Ethiopia in Horn of Africa - food crisis.

5. 2019 :- locusts expand to Iran,
Pakistan - food crisis

6. 2020 :- Indian Ocean El Niño positive
+ global warming

↓
high moisture + cyclone in Arabian sea

↓
locust carried over to India
from Pakistan - Iran - Afghanistan

Thus, there is link between locust attack
and global warming via increasing cyclones
in west Indian Ocean, thus increasing
moisture and temperature

7. Highlighting the properties of Carbon Nanotubes, discuss its applications.
(150 words) 10

कार्बन नैनोट्यूब्स के गुणधर्मों पर प्रकाश डालते हुए, इसके अनुप्रयोगों की विवेचना कीजिए।

The properties of Carbon Nanotubes are as follows: ↳ (Allotropes of carbon)

1. very high surface area to volume
2. size of the particles / structure moving to a quantum realm → properties greatly altered
3. They are allotropes of carbon having a tubular shape.
4. Made of graphite
5. extremely stiff, strong
6. Electrical properties - because of size of particles being in quantum realm
7. Heat conduction properties - same reason as last point

Some of its applications are:

1. Possibility of new building materials, much stronger and lighter than steel.

2. This would greatly help in disaster resilient applications
3. Application to electronics: storing data
 ↓
 Nano - RAM for computing
 ↓
 super computers faster
4. Renewable energy: → storage of renewable power
 ↓
 Solar panels: electron capture coatings
 ↘
 Solar panels: electricity conduction
5. Nano medicine: delivery of smart drugs
6. Pollution control: filtration of water

considering these benefits and potential applications, government has launched Nano Mission (Department of Science and Technology). ~~and~~ A Nano Technology Initiative Division has also been set up in MEITY.

8. India's domestic patent regime privileges public health over pharmaceutical industry's interests. Comment. (150 words) 10

भारत की घरेलू पेटेंट व्यवस्था औषध उद्योग के हितों पर सार्वजनिक स्वास्थ्य को विशेषाधिकार प्रदान करती है। टिप्पणी कीजिए।

The given statement deals with
India's compulsory patent licensing
laws

India is largest producer of ~~the~~
generic (low cost) medicine, and one of
the fastest growing pharma industries of the
world. It is hence called pharmacy of
the world. Yet, patent regime:

→ Allows compulsory licensing, i.e.,
in PUBLIC interest, government
can take compulsory license of
a patent, and allow a government/
other pharma company to manufacture
it for public health purposes.

→ It prevents evergreening of patents.
Evergreening = making minor/cosmetic
changes to extend patent duration.

→ It allows government to use patent for
research (other purposes).

Eg. COMPULSORY licensing was done in

→ 2012: Shortage of anticancer drug
Nexavar in market.

→ patent held by Bayer pharma (Germany)

→ cost of 120 tablets = ₹ 2.50 lakhs

↓
Unaffordable for Indian healthcare
system.

→ So, compulsory license → NATCO

↓
₹ 8880 for 120 tablets

↓
8% royalty to Bayer

Yet, it would be wrong to say that pharma
industry interests are compromised because:

1. WTO norms allow compulsory license for
public health.
2. India has used compulsory license clause
ONLY ONCE - above example -
NEVER ANY OTHER TIME.
3. Generalizing of patents is not allowed by
many other countries also.

Hence, it can be said that the protections are
for extreme cases, when there is shortage and
it is completely unaffordable, as is evidenced
by above analysis.

9. Bring out the arguments surrounding the idea of employing the principle of 'one border - one force' on Indian borders. (150 words) 10

भारतीय सीमाओं पर 'एक सीमा-एक बल' के सिद्धांत का उपयोग करने के विचार के चतुर्दिक व्यास तर्कों को स्पष्ट कीजिए।

Current scenario :

Various borders are managed and safeguarded by different agencies such as

1. BSF - border security force
↓
Bangladesh, Pakistan
2. ITBP → Indo Tibetan Border Police
↓
China
3. Assam Rifles → Myanmar border
4. Sashastra Sena Bal → SSB
↓
Nepal, Bhutan

All of these forces :

1. have different organisation / reporting authorities
2. division of answerability →
→ to Mo Home Affairs
→ to Mo Defence.
3. no joint coordination / information sharing / exchange of best practices.

Hence, "one border - one force" has been proposed

Arguments in favor:

1. Coordination, joint answerability
2. Sharing of best practices.
3. Single point of answerability
4. Often arms, drugs traffickers use multiple borders - eg: sometimes Myanmar border, sometimes Bangladesh border.
↓
would help plan anti-trafficking better.
5. ~~Single point of~~ coordination between civilian administration and other stakeholders for development and success of Border Area Development Program.

Arguments Against:

1. Myanmar border - forest; Bangladesh border - river; Pakistan border - desert + mountains; China border - uninhabited high altitudes.
Thus geography is different - currently each force is separately trained correspondingly
2. Nature of neighbors - All borders are not strictly closed - eg: friendly border with Nepal/Bhutan v/s border with Pakistan.

~~It might be sent out~~

Thus, in any case, a single point coordinating agency must be created, even if not one force.

10. Assess the need to create a new cadre of Indian Frontier Administrative Service to undertake the vital tasks at Indian frontiers. (150 words) 10
भारतीय सीमांतों पर महत्वपूर्ण कार्यों को संपादित करने के लिए भारतीय सीमांत प्रशासनिक सेवा का एक नया संवर्ग बनाने की आवश्यकता का मूल्यांकन कीजिए।

Indian Frontier Administrative Service (IFAS)
is an old idea, that was implemented
temporarily in erstwhile NEFA (North
East Frontier Administration).

Proposal for new cadre of IFAS is proposed
as single authority for:

1. development of border areas.
2. civilian - military border area
coordination
3. capacity building in residents of
border areas.

Need:

1. Implementing agency for:
PM Gram Sadak Yojana in country is
AP Mo Rural Development, yet in
border areas is Border Roads Organisation
under Mo Defence
2. i.e., often plans, schemes, etc are
implemented in border areas differently
than rest of country.

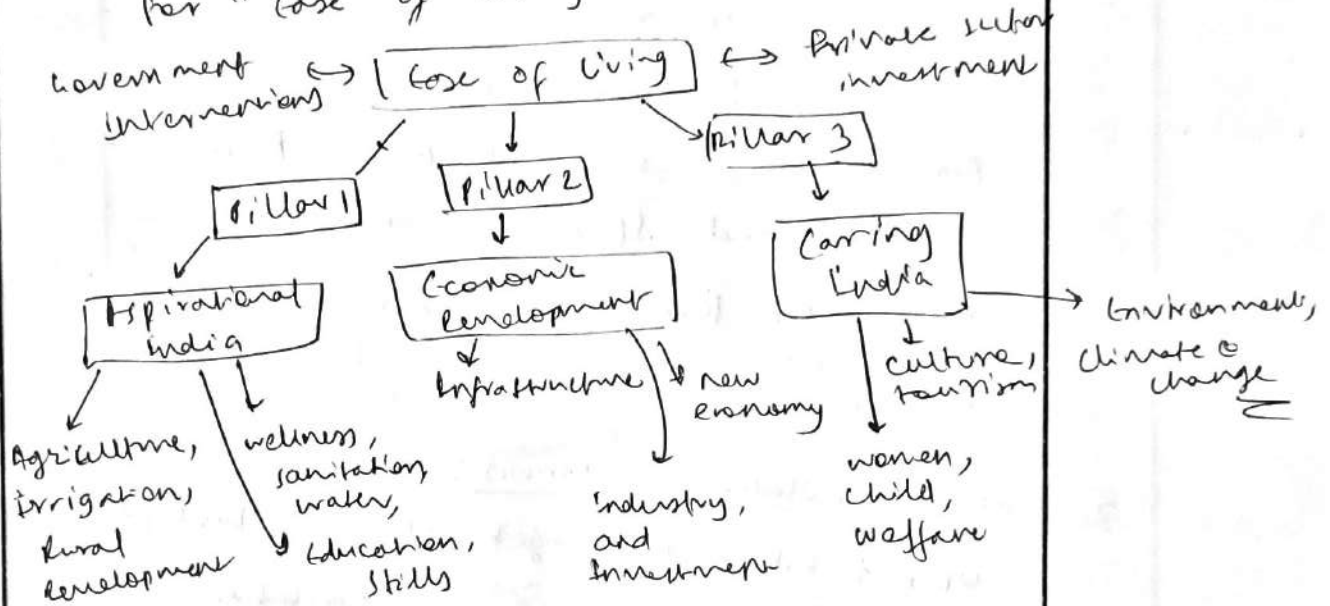
3. Border areas have presence of military police which leads to heightened stress among public even in peacetime (in some sensitive districts)
4. Hence: → border areas haven't been able to develop to potential
 → infrastructure connectivity is weak (North East, Kashmir).
 → Technology is not used to full potential.
5. There are also frequent friction between civilian administration and military police administration.

IFAs as single ~~coord~~ coordinating authority at border areas can potentially resolve these issues, and usher in development and infrastructure to secure lives and livelihoods of people in border areas.

11. The main objective of Union Budget 2020-21 is to provide "Ease of Living" to all citizens. Analyse the framework proposed in the Budget 2020-21 to achieve this objective. (250 words) 15

केंद्रीय बजट 2020-21 का मुख्य उद्देश्य सभी नागरिकों को "ईज ऑफ लिविंग" (जीवन सुगमता) प्रदान करना है। इस उद्देश्य को प्राप्त करने के लिए बजट 2020-21 में प्रस्तावित ढांचे का विश्लेषण कीजिए।

The framework proposed in Budget 2021 for "Ease of Living" is as follows:



took
Pillar 1:

1. Agriculture, Irrigation, Rural Development:

Proposals in Budget :-

→ PM KUSUM: solar for farmer

Set up upto 2 MW solar power in barren land

→ solar pump to reduce diesel consumption

→ 1 lakh crore Agriculture and food processing fund

- Incentives and interest subsidies for farmers, and SHG
 - Liberalisation of agriculture sector
2. Education and Skills:

- New education policy launched
- focus on digital education in pandemic year
- for skill: focus on apprenticeships
- for skill: focus on IM (Industrial) Training Vojana and Skill India Mission.
- EMO - SAT test launched for foreign students.

3. Water, Sanitation, business:

- ODF + achieved, target ODF 100%, Water
- 2019-2024 10 year rural sanitation strategy
- Mahatma Jyoti, Nav Ghar Jal initiatives
- Waste water processing in PPP

- Pillar II 1. Infrastructure
- National Infrastructure Pipeline → ₹111 lakh crore
 - (24% roads, energy, 14% roads, 16% urban)
 - New Border Road projects

2. Industry and Investment:

- FDI norms relaxed.
- ECB norms relaxed - all companies can borrow upto 750 million \$
- FPI norms relaxed → routes like as FAR, VFR, etc

2. New Economy:

- liberalisation of agriculture
- new auction policy for minerals, etc

Pillar III:1. Women, child and welfare:

- labour code on social security.
- consolidation of labor laws.
- GER (~~Welfare~~ ^{girl}) > GER (boys) in education

2. Culture and Tourism:

- 5 new museums announced: Lalchitra, Patichikanur, Sibasagar, Dhalantra, Hastva pur.
- Non-line museum at lothal
- Museum of Trade at old mint buildings, Kolkata

3. Environment:

- focus on renewable energy
- Urban forest scheme ~~Van Ashra~~
→ Nagar Van Yojana

Hence budget 2020-21 has taken comprehensive steps

12. Several challenges are needed to be addressed to realise the full benefits of the recent agricultural marketing reforms. Discuss. (250 words) 15

हालिया कृषि विपणन सुधारों के पूर्ण लाभों को साकार करने के लिए अनेक चुनौतियों का समाधान करने की आवश्यकता है। चर्चा कीजिए।

Recent agriculture marketing reforms ~~are~~ and ~~or followed~~ challenges are as follows.

(I) Reform I :

Legislation : APMC related:

Features : Legislation to prevail over state APMC laws; provision for intra and inter state trade in all agricultural commodities;

Challenges :

- The legislation prohibits states from levying any tax on such trade
 - ↓
 - state's fiscal capacity decreases
 - ↓
 - farmer welfare suffers
- No registration (de-registration norms for traders.
 - eg: recently, a trader registered, purchased commodities using new laws, and de-registered as a trader
 - ↓
 - farmers' produce taken without payment.

3. Swaminathan committee recommendations
on prices not implemented

↓
farmers will continue to get low
prices &
potential not achieved

Legislation: contract farming.

features: permits advance agreement between
farmer and buyer before production.

Challenges:

1. Price discovery process might not be
realised, if significant proportion
of one commodity is purchased via
contract farming.

Eg: If all potato is purchased from
XYZ district via contract

↓
potato doesn't reach market

↓
no price discovery

↓
farmers may get lower price by contract

~~1. Standardisation~~

2. Model contracts might be needed for
different types of deals, to prevent
exploitation of farmers.

Legislation 3: Essential commodities Act
feature: food commodities not essential
commodities; no stocking limit except in
extreme cases.

Challenges:

1. Recently government re-imposed export ban
and stocking limit on sugar despite
amendment
2. Knee jerk reactions by governments
continuing to prevent investment

General Challenges:

1. Implementation depends on state government
↓
No incentive for state government
2. Environment of distrust may prevent
potential from being reached.
3. Cold storage, supply chain still not good
to help best utilization of amendments
4. Similarly, weaknesses in forward and
backward linkages and infrastructure
bottlenecks

Thus, all these challenges must be resolved
for sector to reach its potential

13. Multimodal transport requires multiple integrations across different modes of transportation. Substantiate. What are the challenges and opportunities associated with multimodal transportation for India? (250 words) 15

बहुविध परिवहन (मल्टीमॉडल ट्रांसपोर्ट) के लिए परिवहन के विभिन्न साधनों के मध्य विविध रूप से एकीकरण की आवश्यकता है। पुष्टि कीजिए। भारत के लिए बहुविध परिवहन में जुड़ी चुनौतियां और अवसर क्या हैं?

Multimodal transport is generally studied at two levels → inter-city
↳ At country level.

① National level:

Some examples are:

1. Imported goods at Haldia port

Jal Marg - National Waterway I
↳ Haldia - Varanasi → From goods train
at Varanasi to
Delhi

Delhi Mumbai Industrial
Corridor
↳ Rajasthan

ie, shipping, inland waterway, rail and road
used for import

2. ~~Assam's~~ Tribal villages in Assam

UDAN flights ← Unwahati
↳ Myanmar: ie, road, and air
for export

Integrations across multiple modes needed

1. In first example - dry port at Varanasi needed. Similar dry ports exist at Haridwar (Uttarakhand), Patna, and 20+ are under construction.
2. For second example - close integration needed at airline logistics.
3. In general, there must be automated/semi-automated integration points for smoothless journeys of goods/individuals.

Advantages and Opportunities:

1. Infrastructure potential unlocked as a growth and development multiplier.
Eg: Jal Marg Videsh project → makes Ganga "Arth Ganga".
2. Similarly for cross border India - Bangladesh waterway - railway - roadway projects → unlock cross border trade →
Eg: Sonamurra - Sandkhandi Gomati River.
3. Indo - Myanmar - Kaladan Multimodal Transport project: Haldia → LITWE →
Tripura / Mizoram ← Kaladan river
4. Will help India increase exports, by connecting North East, and Act East, in addition to projects like Sagarmala and

Train integration with Industrial corridors

Challenges: 1. Funding issues

2. Eg: IRTS was funding some projects

3. Delays in construction

(7)

Intra-city:

within city, multimodal transport is

mainly for daily commuters, it is

key component of SMART and Smart City.

Example: Bangalore: walk → Bus → Train → Office

Advantages and opportunities:

1. helps reduce congestion in metro cities.

2. Helps reduce cost of travel for daily commuters

3. helps reduce greenhouse emissions by private vehicles.

Challenges:

1. financing issues: Eg: Bangalore metro delayed by multiple years.

2. Construction increases congestion before project is completed.

3. Public spaces and parks encroached

Hence multimodal transport in India is a

key component of infrastructure.

14. Though COVID-19 pandemic exposes the vulnerability of Informal sector and associated labor force in India, it also presents an opportunity to rebalance formal-informal economy dynamics in the country. Discuss.

(250 words) 15

हालांकि, कोविड-19 महामारी भारत में अनौपचारिक क्षेत्रक और संबद्ध श्रम बल की सुभेद्यता को उजागर करती है, लेकिन साथ ही यह देश में औपचारिक-अनौपचारिक अर्थव्यवस्था की गतिशीलता को संतुलित करने का एक अवसर भी प्रस्तुत करती है। चर्चा कीजिए।

Nationwide lockdown was announced on March 24. The migrant Exodus that followed was not expected either by source or destination States, by Union Government or by civil society.

The reasons for the migrant crisis was:

1. As urban areas shut down, informal workers lost jobs.
2. ~~Not~~ NOT having savings to rely on, with high urban cost of living, they were forced to travel home.

Thus COVID-19 pandemic has exposed vulnerability of informal sector and associated labor force in India.

Other evidence 4:

↳ Unemployment rate increased from

6% to 23%

↓
PLFS-2017

↳ OECD report

2. Consumption greatly declined - which is evidence of low savings
3. Dependence on schemes like MGNREGA and PDS increased.
(MGNREGA highest ever man hours this year)
4. GDP fall in 1st quarter by 23.5%
Yet, it is also opportunity to balance formal-informal economy dynamics as:

1. Skilling programs to all unemployed who have returned to source states & come within formal security net and government data

~~Credit linked subsidy programs~~

- Various governments including Union have already started this.
2. Skill mapping of returned migrant workers - help match them with formal employers - within formal system.
eg: Delhi government has launched portal for the same

3. Credit linked subsidy programs for financial inclusion and working capital.

eg: PM SVANidhi

↳ Street vendors loans upto ₹ 10000.

↳ once they are within financial system, they are not only saved from informal moneylenders, but also get access to future government initiatives

4. New labour codes passed, including

labour code on social security.

It seeks to provide minimum level of social security to all workers including contract labourers

5. Contract labour implementation - will save informal workers from exploitation of middlemen.

eg: In recent labor violence at Wipac factory (mobile assembly) - it is alleged that labourers were hired via contractors who were not paid.

6. Minimum wage reforms - as according to Anoop Sarpathy committee recommendations.

Thus, COVID-19 crisis is labor force is opportunity for reforms //

15. Highlight the drivers and challenges facing India's ambition to become a gas-based economy. Mention the steps that have been taken by the government recently in this regard. (250 words) 15

गैस आधारित अर्थव्यवस्था बनने की भारत की महत्वाकांक्षा के चालकों और सामना की जाने वाली चुनौतियों को रेखांकित कीजिए। इस संबंध में हाल ही में सरकार द्वारा उठाए गए कदमों का उल्लेख कीजिए।

NITI Aayog and Government have been pushing concept of gas based economy. The concept is that of cleaner natural gas, and gas based fuel gradually replacing coal and petrol from India's energy mix. The drivers and challenges can be seen in

2 dimensions → conventional gas
→ non-conventional gas

Conventional: [i.e. natural gas, liquified petrol gas (LPG)]

(A) Current Status:

1. currently ~6% of energy mix,
2. target: ~15% by 2030
3. currently: most is imported (via ports at Gujarat from Middle East)

(B) Production:

1. ICL basin (Krishna Godavari) ~~basin~~ has started production, to reduce dependence on imports.
2. North east (near Daman, Imphal), gas is ~~produced~~ produced // in Gujarat also

Drivers:

1. Open Acreage Licensing Policy: Joint exploration,
2. Composite exploration cum production license.
3. Production will lead to reducing dependence on imports → precious reserves saved
4. Pricing and Marketing reforms:
 - competition and international norms
 - more transparency in pricing
 - market linked
 - can be brought under GST in future
5. Very low emissions - need for gas based economy is to meet INDC.
7. Infrastructure:
 - currently dependent on old pipelines like HBJ Pipeline from Hazira, Gujarat.
 - PM Urja Ganga - northern states of UP, Bihar, Jharkhand - will greatly benefit
 - pipeline from KG basin completed
8. for CIL: ~~CG~~ MAHAL, PM Ujjwala, household use, automobile

Challenges:

1. Not under GST - price for buyers still high
2. Infrastructure - deadlines missed,
3. ~~Imports~~ Imports have not reduced

10 Unconventional: (coal bed methane,
coal gas,
biogas, ~~etc.~~ gas hydrate,
etc.)

Drivers:

1. SATAT: CNG - compressed biogas
↳ promotion of CNG as automobile fuel
2. Swachh Bharat → GOBAR dhan
↓
incentives to rural entrepreneurs to generate biogas.
3. Similarly → CNG compost scheme.
4. Gas hydrate exploration plan
↓
Deep Ocean Mission.
5. Plan to check feasibility of other unconventional means

Challenges:

1. Cost is higher
2. Too much competition from other renewables hinders their development - as they are at nascent stage

India's gas based economy is crucial part of meeting India's INDC by 2030, and all initiatives must continue on war footing

16. Climate Change and the associated events endanger the marine and coastal ecosystems while increasing the vulnerability of coastal population. Examine. (250 words) 15

जलवायु परिवर्तन और संबद्ध घटनाएं तटीय जनसंख्या की सुभेद्यता को बढ़ाते हुए समुद्री एवं तटीय पारिस्थितिक तंत्रों को खतरे में डालती हैं। परीक्षण कीजिए।

Recently, lot of new and existing phenomena ~~has been~~ have been observed, which indicate damage to marine and coastal ecosystems, such as:

1. Marine heat waves:

- IPCC special report on Ocean and cryosphere in a changing climate said marine heat waves have been increasing in frequency and intensity
- Doubled since 1982
- This adversely affects fishing economy → fishing coastal population

2. Rate of ocean warming increasing:

- From IPCC special report
- Ocean has taken 90% of the excess heat in climate system since 1990s,
- Thus, its rate of warming has more than doubled
- Southern Ocean which was earlier less affected is also affected now - it has taken majority of heat since 2000s.

- This has adverse impact on marine
biochemistry.
3. Rising sea level and coastal ecosystems:
- sea level rise by 9 cm already since 1970s.
 - set to increase by 24-30 cm by 2065,
and 40-63 cm by 2100
 - (IPCC 5 data)
 - This will lead to sea water intrusion
 biodiversity loss → mangroves destroyed
 fishing livelihoods and coastal livelihoods
 threatened → coastal populations
 can become climate
 refugees.
 Bangladesh (at low level)
 might be one of earliest sufferers.
4. Increasing ocean acidification
- ↓
 - fishing economy disturbed
 - ↓
 - population affected.
5. Warming ocean → thermal stress
- coral bleaching
 - tourism
economy
(affected)
 - coastal population suffers.

6. Changes in storm patterns → stronger,
reefs eroded, ← more frequent storms
mangroves uprooted
tourism, agriculture suffers.

7. Recent Arctic expedition MOSAIC
↓
discussed phenomenon of
Atlantification
↓
biodiversity losses, ocean current
impacted
↓
European ports might freeze
↓
economy suffers

8. Coastal floods → water-borne diseases.

All these events will also be discriminatory
in nature, i.e., impact will be adversely
felt by the poor, weak, vulnerable and
marginalized.

thus, climate change and associated events
endanger marine and coastal ecosystems and
populations

17. Using examples, highlight how natural ecosystems perform different hazard mitigation functions. (250 words) 15

उदाहरणों का उपयोग करते हुए, रेखांकित कीजिए कि प्राकृतिक पारिस्थितिक तंत्र किस प्रकार अलग-अलग संकट के शमन का कार्य करते हैं।

Natural ecosystems perform hazard mitigation in almost all circumstances.

(i) forests and grasslands:

- prevent soil erosion
- hence prevent desertification
- hence prevent heatwaves / droughts

eg: Great tree Belt Africa + Planned Along similar belt Rajasthan

(ii) forests and mountains / forests on slopes:

- prevent landslides
- prevent floodwater discharge
- hence perform hazard mitigation.

eg: excessive deforestation →
↓
landslide in Kerala in Idukki
this year

(iii) coastal mangroves / coastal coral reefs

- protect from salt water intrusion
- first barrier against cyclones.

- also provide some protection against larger disasters like hurricanes.
- hence provide hazard protection
- Eg: mangrove forest Sundarbans.

(FV) Riverine vegetation and grasslands:

- prevent flooding of river in case of ~~excess~~ excess rain by continuous filtration

- prevent excessive silting of rivers - due to erosion (by stopping soil erosion).

- hence hazard mitigation

Eg: riverine grasslands along Brahmaputra prevent excess damage to Kaziranga national park.

(V) Agro forestry models:

- lead to ground water recharge

- thus ground water level builds up, instead of only groundwater exploitation in case of agriculture.

- in drought year - ground water can be used //

- Thus hazard mitigation,
eg: Bad land management practices,
Drought tool box UNCCD
(UN convention to combat
Desertification).

VI Bamboonomics:

- Indian initiative launched at UNCCD
→ Help provide employment to tribal
population, and prevent desertification
→ hazard mitigation hence

thus, variety of natural ecosystems,
across mangroves, coral reefs, forests,
mountain vegetation, riparian grasslands,
bamboo forests, etc provide forested
mitigation hence

18. Explain what genome sequencing is and state the challenges in scaling up genome sequencing projects. Also, throw some light on the recently launched IndiGen Project. (250 words) 15

व्याख्या कीजिए कि जीनोम अनुक्रमण क्या है और जीनोम अनुक्रमण परियोजनाओं को बढ़ावा देने में विद्यमान चुनौतियों का वर्णन कीजिए। साथ ही, हाल ही में आरंभ की गई इंडिजेन (IndiGen) परियोजना पर कुछ प्रकाश डालिए।

A genome is DNA or sequence of genes in a cell. ~~Process~~ ^{concept} of genome sequencing:

- ~~All~~ All cells have pairs of chromosomes.
- Each chromosome has 3 billion "base pairs"
- One base pair is one of A-T / G-C molecules.
- The order of these molecules determines genes, i.e. patterns of which determine characteristics, and thus the entire organism.
- Genome sequencing is process of figuring out EXACT ORDER of the ~~base~~ base pairs in an individual.

Challenges in scaling up genome sequencing:

- Time consuming process
- Error prone

3. Large investment needed in Computational life sciences.
4. Parallel processing hardware and software infra structure needed to process and store large number of base pairs
↓
not easily available →

Indigen Project:

Origin:

- CSIR sequenced first genome in India indigenously

Need:

- Genome determines which proteins get synthesized
- Genes determine presence of genetic disability
- Genome determines any active/passive pathway in body which might lead to any diseases
- When genes are altered / mutated as DIS-EASE
- Most genome sequencing work has been done on western populations.
- Hence disease treatment mechanisms are adapted to them.

- It is possible that there are some unique variations in our genome - understanding them can lead to better health efforts
- Rare diseases are rarely diagnosed, and rarely treated
- Hence, an Indian genome sequencing project was much needed, especially considering diversity in India

Indigen Project features and aim:

- Prepare baseline data of Indian genome,
- Build expertise in precision and personalized medicine using that
- CSIR
- ensure it represents diverse Indian ethnic groups
- diagnosis of rare diseases
- improve ultimately health of population

or

SCALE?

- 20000 Indian Genomes in 5 years

RESULT?

- 1000+ genomes sequenced so far
- 33% variants FOUND UNIQUE TO

INDIA

Hence justified need for project, in the long run it will be significant step in building health capacity.

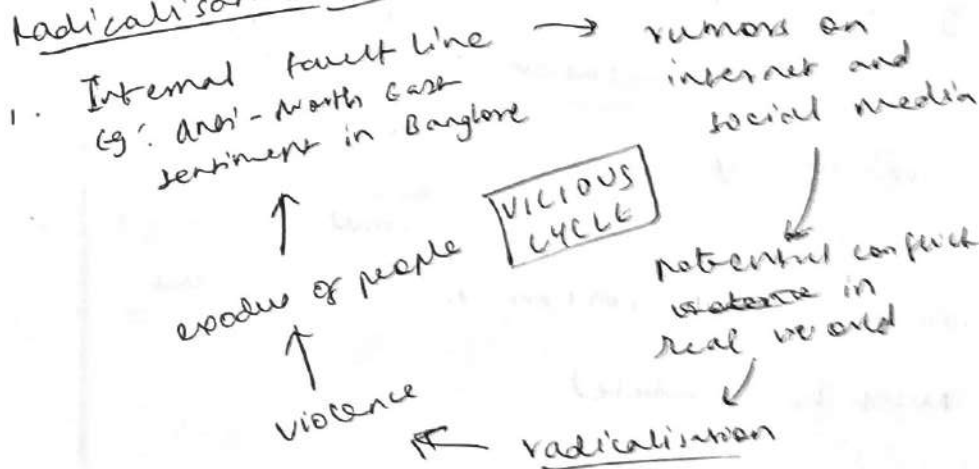
19. India needs to avert radicalisation and societal dissonance, as internal faultlines are a breeding ground for cyber and transnational terrorism. Discuss. (250 words) 15

भारत को कट्टरपंथीकरण और सामाजिक मतभेदों को रोकने की आवश्यकता है, क्योंकि आंतरिक दरारें साइबर एवं पार-राष्ट्रीय आतंकवाद का जनन स्थल होती हैं। चर्चा कीजिए।

"India with its enormous diversity, multi-ethnic, multi-lingual, multi-regional, multi-religious", is always a place of a million mutinies". This quote captures how India has great diversity. Over time, lot of internal faultlines have come to the fore, and India has emerged stronger from each.

Current challenge is that of radicalisation and societal dissonance leading to cyber and transnational terrorism.

Radicalisation :- Cyber terrorism:



Hence, must be averted.

Societal dissection - cyber terrorism:

WhatsApp rumors of
child kidnappers

cyber
spread via internet → societal dissection

VIOLENCE

travellers
attacked
on their
route

isolated
group of
people

Hence must be arrested

Transnational terrorism - radicalisation:

→ fronts of terrorist organisations such as

ISIS ~~and others~~

→ radicalisation using technology via deep web

→ radicalisation using frontal organisations

in the guise of protesting injustice

(eg: in Kashmir).

→ often these organisations are funded

by various agencies in Pakistan.

→ Hence radicalisation is a result of

transnational terrorism is huge threat

⊙ must be combated

transnational terrorism - societal
dissension

1. difference of opinion in society

↓
insecurity, identity crisis

↓
used for advantage by transnational
organisations

↓
terrorism.

eg: LB report highlighted link of certain
NGOs with organised crime / terrorist
groups

Hence India needs to avert radicalisation and
societal dissension

way forward:

1. counter terrorist financing,
via cooperation with FATF.

2. effective national unity programs,
such as Ek Bharat Shresth Bharat

3. effective IT and social media laws to
prevent fake news and radicalisation

20. Given the emerging security challenges, discuss why the establishment of Integrated Theatre Commands is being seen as an important defence reform.

(250 words) 15

उभरती हुई सुरक्षा चुनौतियों को देखते हुए, चर्चा कीजिए कि क्यों एकीकृत थिएटर कमान की स्थापना को महत्वपूर्ण रक्षा सुधार के रूप में देखा जा रहा है।

India plans to reorganise and restructure military organisation by creating 5 theatre commands :-

1. China specific Northern command
2. Pakistan " western "
3. Peninsular command - rest of the land
4. Air defence command
5. Maritime command.

Theatre commands are joint-service commands under a common commander, for a specified geographic / thematic territory,

Emerging security threat

Advantage of theatre command as important reform

1. CHINA :

China is becoming increasingly assertive, not just in Ladakh, but also Doklam tri junction (2017), etc

- Improved coordination of forces at border
- Improved logistical ability of forces in region
- Joint / well coordinated missions and defence.
- More optimal use of existing firepower - Eg: shared missiles (land and air, etc)

2. Multimodal nature of attack:

Eg: If there is air attack via sea, defence naval defence and air defence currently won't coordinate.

- Current scenario: Army, Navy, Air force all defend air space on different frequencies
- Changed nature of challenges requires cooperation.
- Hence theatre commands will bring coordination and synergy
- They will also remove duplication of effort, and thus save resources.

More resources needed (to combat emerging threat)

3. Procurement:

Eg: 2019: Navy placed order of 57 air crafts; Air force wanted 110.
Communication between them led to reduced requirement

- integrated approach towards procurement
- saving valuable resources, and foreign exchange (if item is to be imported).
- long term planning to weapon infrastructure and purchase, instead of an emergency basis

4. Joint / cross-domain coordination between human resource and logistics needed

nature of emerging threats

- Across geography
- Across personnel
- Across management of both
- Theatre command will help

Thus, from above analysis of nature of emerging security threats and requirements to respond to that, it is seen that theatre commands will help in combating them all

In addition, they might also bring down defence expenditure, for example by joint procurement, logistics and human resource management (as seen). (currently 40% of MoD defence budget goes in salary and pension, and that is only set to increase)

Hence it is important step

Thus, from above analysis of nature of emerging security threats and requirements to respond to that, it is seen that theatre commands will help in combating them all

In addition, they might also bring down defence expenditure, for example by joint procurement, logistics and human resource management (as seen). (currently 40% of MoD defence budget goes in salary and pension, and that is only set to increase)

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