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GENERAL STUDIES (TEST CODE : 1524)

Name of Candidate	Kantik Jivani		
Medium Eng./Hindi	English	Registration Number	13245
Center	Online	Date	25/12/20

INDEX TABLE			INSTRUCTIONS	
Q. No.	Maximum Marks	Marks Obtained		
1	10		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	10		2. There are TWENTY questions printed in ENGLISH & HINDI इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।	
3	10		3. All questions are compulsory. सभी प्रश्न अनिवार्य हैं।	
4	10		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	10		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	10		6. Word limit in questions, if specified, should be adhered to. प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।	
7	10		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।	
8	10			
9	10			
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16	15			
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18	15			
19	15			
20	15			
Total Marks Obtained:				
Remarks:				

EVALUATION INDICATORS

1. Contextual Competence
2. Content Competence
3. Language Competence
4. Introduction Competence
5. Structure - Presentation Competence
6. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

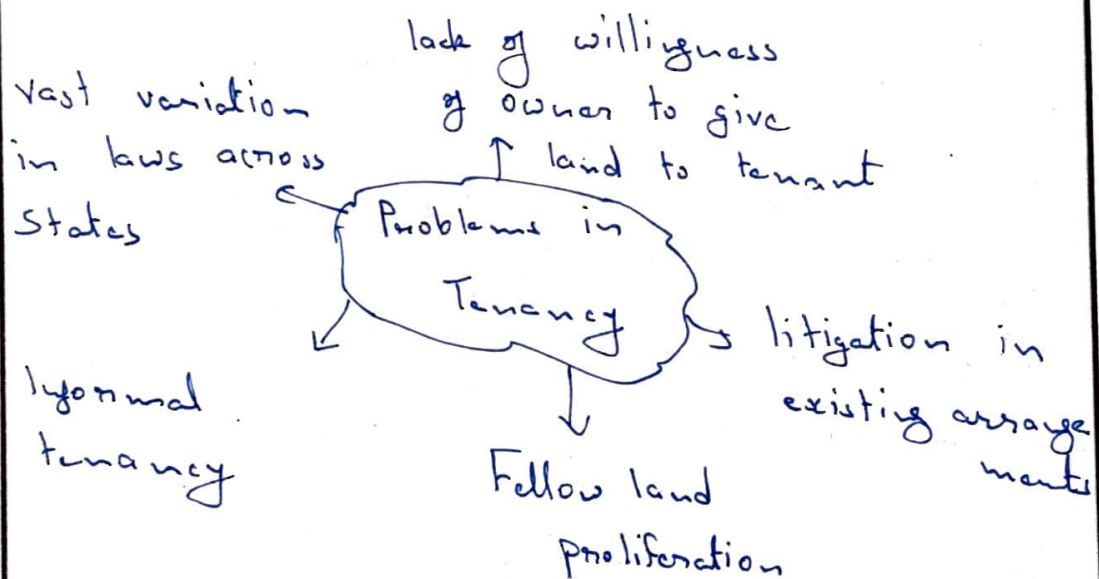
5.

6.

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।

Tenancy reforms refers to
Reforms in the relationship between
owner of agricultural land and tenants



How tenancy reforms will boost Agriculture?

- ① Will increase Area under cultivation by reducing fallow land
- ② Tenants would be able to avail

benefits of government schemes/programs
if they have formal agreement

- ③ Social / Economic Justice by giving land to the landless
- ④ Security of tenure to the tenant will lead to higher motivation and high productivity in farming

Model Land Leasing Act 2016 - Significance

↳ Prepared by Hag Committee
(NITI Aayog)

- ① Provides for Formal Agreement, thereby will help reduce informality
- ② Balances the interest of both owner as well as tenants through dispute redressal system, various clause etc.

Need today is for Centre to encourage states to adopt Model Act to realise 'Doubling Farmers' 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।

Share of Exports by MSMEs
account for margin ~40%, despite
they constituting bulk of enterprises/
companies in India.

Challenges by MSMEs to tap foreign
market

- ① Lack of Economies of scale, thereby lower competitiveness
- ② lack of skilled human resources with MSMEs. Mostly they employ unskilled/semi-skilled
- ③ Lack of awareness about export markets / demand in various jurisdictions
- ④ Weak credit availability for exports due to unorganised / informal nature

- ⑤ High logistic costs in India
(14% of GDP) reduces competitiveness
in global market
- ⑥ Lack of quality standard maintenance/
No brand building etc

Government Initiatives to boost MSME Exports

- ① Nisargat scheme/portal to facilitate
export by capacity building
- ② Zero Effect, Zero Defect scheme
for quality improvement of MSME
products
- ③ RoDTEP scheme to provide fiscal
incentive for MSME Exports
- ④ 'Rs 1 on loan in 59 minutes'
initiative for providing credit to MSME

More handholding support
is need of the hour to achieve
'Inclusive Growth' and increase Exports.

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।

'Inclusive Growth' refers to the growth process whereby every section contributes as well as benefits equitably out of growth process.

Inclusive Growth
Strategy of India

How it helps
realise SDG
(17 Goals and
169 targets)

- ① Agricultural development ⇒ helps realise SDG 1 (poverty reduction) as major poverty concentrated among farmers
- like PMKSY, PM KISAN, PMFBY etc.
- ⇒ Helps realise SDG 2 (Hunger elimination) by increasing Agriculture production

- ② Women empowerment through initiatives like Nibhaye Fund, Maternity Benefit Act etc. Helps realise SDG 5 (Gender Equality)
- ③ Job creation through initiatives like Stand Up India, PM Mudra Yojna etc. helps realise SDG 8 (Economic growth and decent employment for All)
- ④ Promotion of Rural infrastructure development through PURA, PM Gram Sadak Yojna helps realise SDG 9 (Industry, Infrastructure and innovation)
- ⑤ Capacity building of humans via New Education Policy 2020, Ayushman Bharat SDG 3 (Health & well being for All)
SDG 4 (lifelong learning opportunity)

Need of the hour is to sustain this momentum to realise 'Sabka Saath, Sabka Vikaas'

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?

Rules of Origin refers to comprehensive Rules delineating how to determine country of origin of goods/service, based on minimum value addition percentage in a given country.

Why Rules of Origin (RoO) needed in Regional trading arrangements?

- ① To check dumping by a particular country
- ② To ensure Fairness in trading arrangement
- ③ Without RoO, third country may exploit duty free access

Ex China may sell its products to India by packaging it in Bangladesh

and thereby benefitting under SAFTA for duty free access

- ④ May threaten domestic industries/farmers if RoO framework is weak

Steps taken by India in this regard

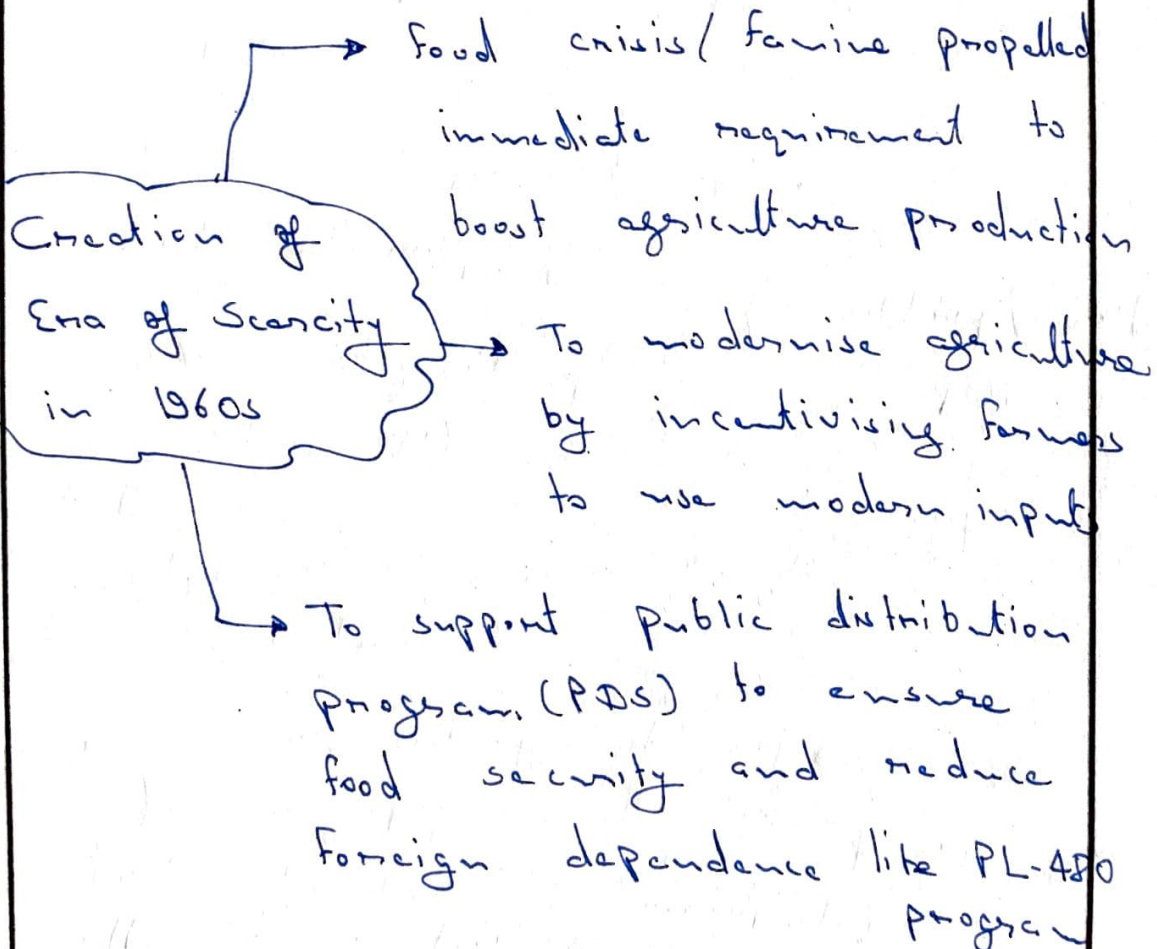
- ① India refused to sign RCEP as RoO framework was weak in nature
 - ② Ministry of Commerce and Industry has come out with detailed Rules to determine RoO containing provisions like
 - ↳ Minimum value addition requirement in a particular country
 - ↳ framework of Anti-dumping duty if provisions not adhered to
- India must insist on robust RoO framework in future negotiations to protect domestic industries

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।

Minimum Support Price refers to the price announced for 23 crops by Cabinet committee on economic affairs before each season (Kharif, Rabi) to support farmers via Floor Price



Relevance of MSP Regime today

- ① Majority farmers (86%) small and marginal, thereby requires government support for sustenance
- ② Required to run PDS program to realise commitment under NFSA, 2013
- ③ Required to maintain Buffer stock and thereby control price volatility in market

Issues/problems in MSP

- against crop diversification as only promotes wheat/rice
- only benefitting ~6% farmers (Shanta Kumar committee)
- ecological concerns - water depletion, soil hardening etc.

Way Forward

- Promote effective procurement for other crops as well
- Reforms in FCI, PDS based on Abhijeet Sen committee suggestion

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

(150 words) 10

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

India, along with other South Asian / Middle East countries witnessed one of the worst locust attacks in 2020, primarily owing to Climate Change.

Link of Locust Attack with Climate Change

① Climate change has increased frequency and intensity of Cyclones in Indian Ocean.

cyclone in Oman / Yemen



led to moist soil / land creation



Favourable environment for locust breeding

② Climate change has increased

Frequency of Indian Ocean Dipole,
(IOD)

IOD = periodic reversal of temperature/pressure between Western and Eastern Indian Ocean



Warm Western Indian Ocean
more suitable for Tropical Cyclone



More Locust breeding

- ③ Climate change has altered Wind pattern globally. ~~It~~ strong Wind from East to West i.e. West Asian Region to India, brought Locust swarm in India.

Link between Climate change and Locust Attack is well established. Need is for global cooperation under FAO to address future attacks.

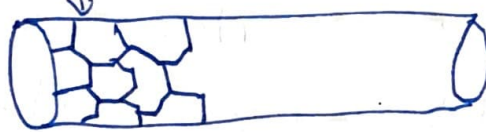
7. Highlighting the properties of Carbon Nanotubes, discuss its applications.

(150 words) 10

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

Carbon Nanotube is
3-D nanomaterial in the shape of
tube, having distinctive properties,
thereby finding wide applications
across various sectors.

carbon-carbon bonds



Lateral
dimension
in nm
i.e. 10^{-9} m
order

Carbon Nanotube
structure

Properties

- ① High strength to weight ratio
- ② High thermal conductivity
- ③ High ductility / toughness
- ④ Good Optical properties like transparency
- ⑤ Favourable Electrical properties like

non conductivity, high resistance to current flow

⑥ Non magnetic in nature

Applications

- ① Medical Application: small size enables Targeted drug delivery and thereby reduces collateral damage to other tissues
- ② Water Purification - Nano filters created using nanotube
- ③ Nano sensors for detection of small temperature change
- ④ PV modules can be created having dust & repellence, high efficiency etc.
- ⑤ Nano composite material finding application in Aerospace/ automobile/ sports goods etc.

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।

Indian patent regime
constitutes Patent Act, 1970, Patent
Rules as well as National IPR policy
2016.

How patent regime privileges public health?

① Prevents Evergreening of patent
as witnessed during Novartis Glivec
case 2013

② Contains clauses for Compulsory
Licensing i.e. government can issue
license to manufacture drug to
non patent holder to tide over
unavailability / unaffordability of
drug

Ex Compulsory license granted to
NATCO to manufacture cancer drug in past

③ National IPR policy 2016 categorically reaffirmed India's stance of prioritising public health, much to the opposition of Western nations like US, EU etc.

④ Indian patent law doesn't contain data exclusivity principles, long period of patent protection (like 25 years in USA) etc. It reflects India's commitment of public health over pharma industry's interests.

Reasons for it

→ High poverty in India requires government support to ensure Health for All

→ One of the Highest Disease Burden globally (Lancet Report)

Prioritising public health is a welcome step. But also heeding to pharma industry's interest in a fair manner is required to boost new drug

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।

~~Kargil Review~~

'One Border, One force' refers to the principle of deploying only one force on a given border with a particular nation.

One Border
One Force
principle

→ One Border to be manned exclusively by one force only

→ One Force not to be diverted to any other duties except for guarding a particular border

Arguments for it

- ① Recommended by Kargil Review committee, GoMs reviewing KRC report, Modhaker Gupta committee etc.

② Better Accountability could be realised as multiple forces in a particular border leads to blame game

③ Better efficiency in border management. Thereby enabling to check smuggling, arms trafficking, drug trafficking etc.

④ Multiple forces lead to non-coordination and thereby ineffective management

Ex India-China border manned by Army (J&K), ITBP, Assam Rifles (North east)

⑤ Diversion of Force to other duties lead to ineffectiveness

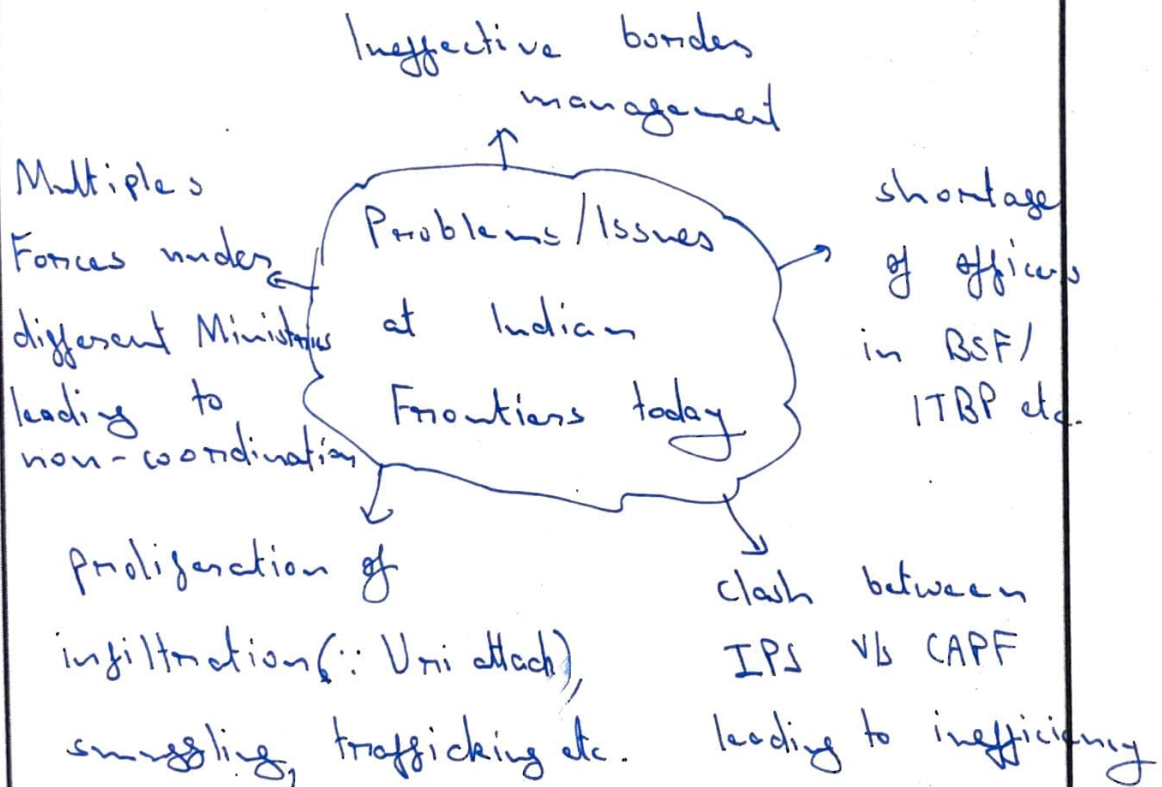
Ex ITBP, BSF diverted for Election duty

Need is to implement this principle in letter and spirit for better border management and thereby check internal security

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 the proposed system by several strategic experts as a dedicated Central Service to guard Indian borders.



How IFAS can be helpful?

- ① Frontier management is a specialised task requiring thorough knowledge

of borders, expertise, requisite skills etc.
IFAS can help in this regard.

- ② IFAS can possibly head all border force posts, thereby checking IPS v/s CAPF clashes
- ③ Uniformity in border management could be ensured as opposed to present day ad-hocism in each border

Challenges / counter Arguments

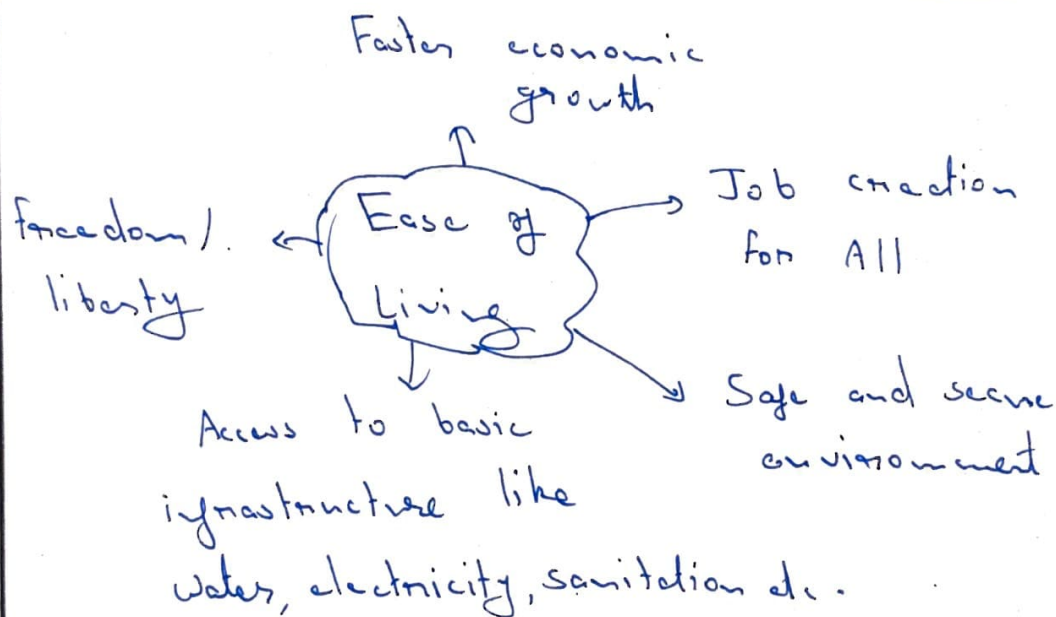
- ① May just add to already existing too many services, thereby against 'Minimum government, Maximum governance' motto
- ② Resistance from IPS as well as CAPFs like ITBP, SSM etc.

Idea of dedicated IFAS is a welcome step to ensure better frontier management. Debate in this regard should be initiated

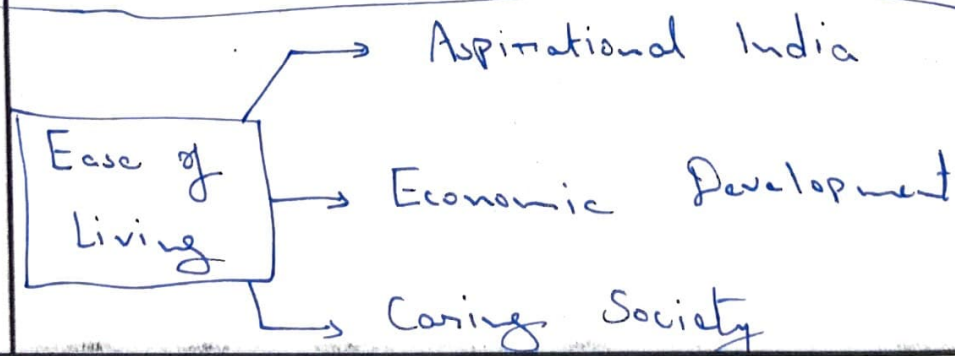
11. The main objective of Union Budget 2020-21 is to provide "Ease of Living" to all citizens. Analyse the framework proposed in the Budget 2020-21 to achieve this objective. **(250 words) 15**

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।

Union Budget 2020-21 Focused
on a central theme of ensuring
'Ease of Living' for all citizens.
(EoL)



Budget Framework to realise EoL



① Aspirational India

↳ Purpose: To cater to aspirations of various sections of Indian society

Agriculture / Farmer:

↳ 'Agri rail' and 'Agri flight' announced to provide cold storage and transport

↳ e-NAM and GrAms to cover more APMC Mandis to realise Doubling Farmers income

Women:

↳ 'One stop Sakhi centres' to be expanded - to ~~provide~~ meet all needs of women in one place.

② Economic Development

Start Up promotion:

↳ Definition of startups changed to benefit more number of startups

Corporate Tax Reduction

↳ To promote 'EoDS' and ultimately 'EoL' due to higher infrastructure creation, jobs etc.

Infrastructure:

↳ National Infrastructure Pipeline of 121 lakh cr announced to reduce EoL

③ Caring Society

↳ PM Maan dhan yojna expanded to small vendors, unorganised sectors etc

↳ Kisan Credit Card expanded to cover allied activities like fisheries

↳ Education initiatives like distance learning degree by top education institutes

Budget 2020 has laid the foundation for EoL. Strong political will is needed to implement it through firm actions.

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।

Government has undertaken
Agricultural marketing reforms through
3 laws viz. Farmers Produce and
Marketing Act 2020, Farmers Assurance of
price and contract Act 2020, Amend-
ment to Essential commodities Act
1955.

Potential Benefits of the Reforms

- ① Farmer Empowerment - They will be able to sell anywhere as per their choice to realise best returns
- ② Contract Farming would enable crop diversification, assured market and price for farmers, higher agricultural productivity due to technological input etc.

- ③ Changes in Essential commodities Act would spur agricultural exports, higher investment in Food processing Industries etc. thereby leading to higher income to farmers, better yield etc.

Challenges which need to be addressed

- ① Perception management to assure farmers through dialogue, awareness as to how these Acts will benefit them in the long run

- ② Strong political will to implement it in letter and spirit

Ex Recent onion export ban sends wrong signal to private exporters/FPIs

- ③ lack of infrastructure in post harvest

stage i.e. rural roads, quality testing infrastructure, storage infrastructure etc. may hinder potential benefits realisation

- ④ Indian farming dominated by small and marginal farmers (86%). Thus, contract farming may be difficult (due to dealing with multiple farmers)

Way Forward

- ① Promote FPOs (Farmer produces organisation) to realise contract farming to the fullest
- ② Expeditions rollout of e-NAM to truly empower farmers
- ③ Promote Marketing Infrastructure investment by higher budgetary allocation, encouraging private sectors via fiscal incentives

All these will be a step forward in realising 'Doubling farmers income'

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 से जुड़ी चुनौतियां और अवसर क्या हैं?

Multimodal transport ~~means~~
refers to transportation of people /
goods by connecting and integrating
variety of modes viz rail, road,
air, port, inland water navigation etc.

Multimodal transport - Multiple Integrations

- ① Requires connectivity in a seamless fashion

Ex goods transported via railway
has to be connected to end-
destination through good quality
road connectivity from station
to end point

- ② Requires freight rationalisation
across different modes

Ex High Air cargo charges prevent robust rail-road-air multimodal transport

③ Requires co-ordination in timing

Ex If train frequency is very less, cargo would be stockpiled in station only leading to delay.

Challenges in Multimodal transport

① Different Ministries / Departments overseeing different modes

Ministry of Railway → Rail

Civil Aviation Ministry → Air

Shipping Ministry → Port

② lack of connectivity among various modes

Ex Poor evacuation road/rail infrastructure from ports

③ Competition rather than cooperation among different modes

Ex Railway reforms like Tejas express
to get back air passengers to
Railways

- ④ ~~be~~ Too many Regulators for different
modes leading to inconsistency

Opportunities

- ① Robust Infrastructure across various
modes may bode well for
integration
- ② strong political will towards this
direction. Ex Road Ministry and
Shipping Ministry headed by same
Minister
- ③ Could be transformational to reduce
logistic cost, boost exports, Promote
Make in India etc.

British / UK's model of merger
of all transport related Ministries along
with coherent Policy / Regulation is need
of the hour.

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.

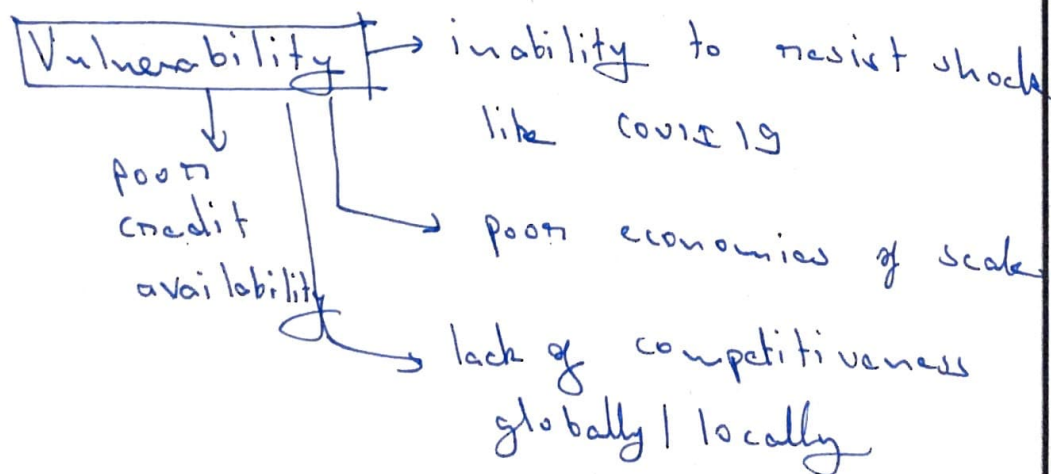
(250 words) 15

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।

COVID 19 exposed informal nature of Indian economy and associated woes as reflected from high job losses, lack of social security, mass exodus of migrants etc.

Vulnerability of Informal sector and its labour force

- ① ~90% of Indian economy is informal as per Economic Survey.



② Vulnerability of informal labour force

- ↳ lack of social security like pension, health insurance etc.
- ↳ lack of job security
- ↳ ~~poor~~ lack of opportunity for skill expansion.
- ↳ exploitation through long working hours, no minimum wage, unsafe working environment etc.

How COVID19 provides opportunity to formalise economy?

① Opportunity for Data Creation to comprehensively understand Indian economy especially since migrant workers have moved to their hometown

② Bring about Structural reforms in labour laws, companies Act etc. as it's

likely to face less resistance owing to COVID19 from both companies private sector as well as labour



Suggestions / Way Forward

- ① Promote Social Security benefits for all esp. marginalised like gig workers, street vendor, domestic workers etc
- ② Change MSME related laws to formalise it and make them big as opposed to 'dwarf' nature today
- ③ ^{sector-specific} government intervention to formalise economy as was done recently for Food processing Industry through 'PM formalisation of micro FPI scheme'

Formal economy is crucial for economic growth, inclusive growth and thus must be pursued.

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।

Gas based economy refers to an economy powered by gas i.e. increasing share of gas in primary Energy Mix by increasing its application in transport, power generation, cooking, industry etc.

Drivers of gas based economy

① Increasing demand for gas from consumers due to initiatives like PM Ujjwala yojna

② strong political will to pursue gas based economy as reflected from various steps, policies, targets etc.

Ex Target of gas's share of 15%.

by 2030 in India's primary Energy basket.

- ③ New areas having potential gas identified Ex K-G basin
- ④ Government's push towards clean and sustainable development bodes well towards growth of gas based economy.

Challenges

- ① Lack of private sector interest due to policy unpredictability
- ② cheaper alternative like coal prevents wide spread use of gas for power generation
- ③ Administered pricing Mechanism in gas (based on Rangarajan formula) dissuades private investment
- ④ Gas pipe infrastructure is insufficient in India.

Steps taken

- ① City Gas Distribution Network scheme expanded to ~400 districts
- ② 50 LNG Fnd stations unveiled recently on National Highways
- ③ HELP policy and Open Acreage policy to boost private investment
- ④ PM Ujjwala yojna covered ~8 cr households
- ⑤ Pricing reform suggested by PNGRB to provide for Uniform tariff structure

NITI Aayog has proposed comprehensive reforms like policy, regulatory changes etc. which need to be implemented to achieve ~~the~~ ^{clean} SDG 7 (Energy for All)

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।

As per 5th Assessment Report of IPCC, Climate change is likely to have catastrophic consequences for coastal population across the world.

Climate change and associated events

- Rising Sea level
- Increasing frequency and intensity of cyclones, storm surges etc.
- Ocean Acidification
- Marine Heat waves

Danger to Marine Ecosystem due to Climate Change

- ① Decrease in Marine productivity due to decrease in biomass

- ② Coral bleaching due to rise in temperature
- ③ Loss of marine biodiversity and killing of marine animals due to Ocean Acidification, temperature rise etc.
- ④ Affects Ocean current, thermohaline circulation etc- due to differential thermal stratification, loss of ice and change in surface salinity etc.

Danger to coastal Ecosystem due to Climate Change

- ① Seagrass loss due to increase in cyclone / storm surges
- ② coastal erosion due to increased wave intensity
- ③ Loss of fisheries

Increase in coastal population vulnerability

- ① Forced migration due to increase in coastal flooding, cyclone etc.
- ② salt water intrusion leading to fresh water salination, soil salinity etc. thereby posing water stress
- ③ Forced displacement due to rise in sea level
- ④ Agricultural yield loss posing threat for food security

Need is to have comprehensive study on ecosystem and population owing to climate change and take suitable Adoption measures to mitigate the adverse impacts.

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 Ecosystem refers to variety of ecosystems including forest, mangroves, wetlands etc. which have huge potential for hazard Mitigation.

Natural Ecosystem	Hazard Mitigation functions
① <u>Forests</u>	→ Reduces runoff of rainwater ⇒ reduces <u>flood</u> likelihood → promotes groundwater recharge, thereby reduces likelihood of <u>drought</u> → binds soil together and thus checks <u>desertification/soil erosion</u>

→ provides stability to slope through binding effect of roots → reduces likelihood of landslide

② Mangroves:

→ Reduces the impact of tsunami
Ex witnessed during 2004 Tsunami

→ Reduces wind speed of cyclones and thus helps dissipate it
Ex Cyclone Amphan's damage was partly mitigated due to Sunderban Mangrove

③ Wetlands:

① Acts as cushion against high rainfall and thus checks flooding

Ex Chennai flood 2015 got worst due to encroachment on wetland

② Promotes groundwater recharge

and thus mitigates against drought

④ Coral Reefs:

- ① It reduces the speed and Energy of waves and thus protect coasts from storm surges/ tsunami

Ex Great Barrier Reef, Australia protects North-West Australian coast from deadly waves.

Relationship between Natural

Ecosystem and hazard Mitigation is well established. Need is to protect the same by implementing Kastur

committee
margin ↓ Report on Western Ghats,

Green India Mission etc. to realise

Disaster Risk Reduction as envisaged under Sendai Framework.

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।

Genome Sequencing refers to identifying order of DNA base pairs of an Organism, to completely characterise the genetic material.

Challenges

- ① Lack of skilled human resource
- ② Lack of High computing facility
- ③ Privacy issues prevent large scale genome sequencing projects
- ④ Poor Data security framework
- ⑤ Adequate technology unavailable

Indigen Project

↳ Project of CSIR to sequence
genomes of ~1000 individuals

Benefits

- ① Helps understand Indian population's genomes
- ② Targeted drug development

19. India needs to avert radicalisation and societal dissention, 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 is increasingly witnessing internal security challenges viz. cyber crime, Naxalism, insurgency, terrorism etc. owing to feeling of relative deprivation among various sections being misutilised by certain organisations.

Internal faultlines = breeding ground for terrorism

① Frustration, anger of certain individuals is tapped to radicalise youths.

Eg Certain NGOs found to recruit disgruntled youths in valley to join militancy.

- ② Terrorist Organisations like ISIS propagating their ideology to tap into societal faultlines.

Ex ISIS ^{has} given Open call to youths to carry out 'lone wolf attack' globally including India.

- ③ Lack of job opportunity, poor living conditions, insecurity etc often tapped to radicalise youths.

Ex IB Report about ISI recruiting Rohingya refugees to carry out terror attacks

- ④ Communal tensions / fear of minority community often tapped to radicalise youths.

Ex ^{Allegedly} ISI circulated doctored communal riot video leading to Muzaffarnagar riot

Way Forward

- ① Social Media Labs (Mumbai police)
to be adopted by others to scan
social media to check extremism.
- ② Roping in Religious community leaders
to check youths tapping their energy
in wrong direction
- ③ Inclusive growth of all sections viz
schemes for minority, SCs, STs etc.
to check their involvement in
Naxalism / terrorism etc

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।

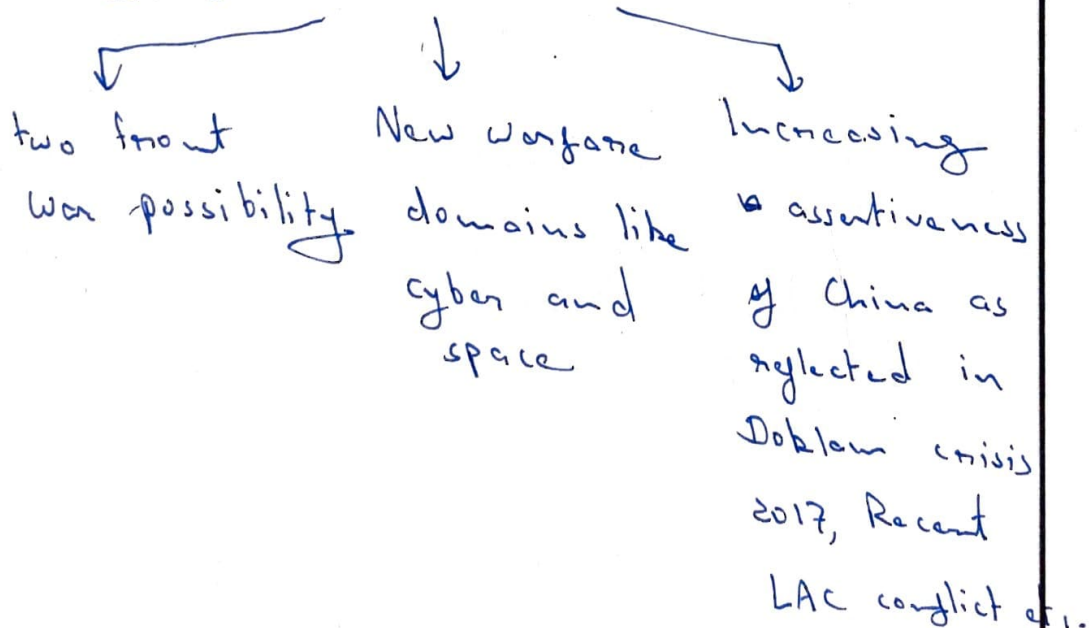
Integrated Theatre Command (ITC)

refers to the Command having personnel from all 3 armed forces wing i.e. army, navy, air force and put under administrative and military control of single commander.

Why ITC is need of the hour?

- ① Emerging security challenges necessitate

ITCs



- ② It's internationally recognised best practise ~~being~~ as reflected from U.S. and China's Army establishment structures.
- ③ Promotes effective utilisation of available resources like personnel, limited military equipments etc.
- ④ Enhances combat capability of armed forces due to jointness in planning action etc.
- ⑤ ITC needed due to rise in requirements of disaster relief/humanitarian crisis.
Ex Operation Neeb (Moldova)
 Operation Raahat (Middle East)
- ⑥ Will help in making armed forces leaner, which has expanded exponentially leading to huge fiscal burden.

Challenges in ITC creation

- ① Fear of Army domination among other two wings
- ② Work culture of all 3 wings is vastly different and thus integration is a big challenge
- ③ Resistance from individual wings of armed forces due to fear of loss of autonomy, existing privileges etc.

Creation of office of CDS is a welcome move to facilitate creation of ITCs to address security challenges in an effective way.