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GENERAL STUDIES (TEST CODE : 2905)

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Medium Eng./Hindi	ENGLISH	Registration Number	45933652
Center	ONLINE	Date	23-08-2024

INDEX TABLE			INSTRUCTIONS	
Q. No.	Maximum Marks	Marks Obtained	<p>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)।</p> <p>2. There are TWENTY questions printed in HINDI & ENGLISH. इसमें बीस प्रश्न हैं हिन्दी और अंग्रेजी में छपे हैं।</p> <p>3. All questions are compulsory. सभी प्रश्न अनिवार्य हैं।</p> <p>4. The number of marks carried by a question/part is indicated against it. प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।</p> <p>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।</p> <p>6. Word limit in questions, if specified, should be adhered to. प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।</p> <p>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।</p>	
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Total Marks Obtained:			Is student recommended for One-to-One mentoring?	
Remarks:				
			Recommended	
			Strongly Recommended	

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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.

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6.

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All the Best

Q1.

स्पष्ट कीजिए कि पूंजीगत व्यय में उल्लेखनीय वृद्धि के बावजूद भारतीय रेलवे के परिचालन अनुपात में कोई सुधार क्यों नहीं हुआ है। (150 शब्दों में उत्तर दीजिए)

Explain why there has been no improvement in the operating ratio of the Indian Railways despite the marked increase in its capital expenditure. (Answer in 150 words) 10

In recent years, the operating ratio of the railways has been stagnant at around 97-98%.

Reasons for lack of improvement in OR

- ① Heavy subsidisation of prices for public transit → around 58%.
- ② Muted revenue from goods transport due to shift towards highways.
- ③ competition from newer modes of transport on longer routes.
- ④ slow pace of track network expansion
- ⑤ Heavy expenditure on maintenance of tracks increasing fixed costs

Measures to augment operating ratio

- ① Privatisation along select routes to reduce operational costs.
- ② gradual enhancement of prices for consumer transit
- ③ Reduce cross-subsidisation through freight to make it more lucrative.
- ④ Better linkages to and among major ports
- ⑤ Revenue maximisation from auxiliary services like catering, tour packages etc.

Thus, the lifeline of the country can be made more sustainable through minor enhancements in revenue generation.

Q2.

मानव पूंजी और आर्थिक संवृद्धि के बीच संबंध का परीक्षण कीजिए। भारत में मानव पूंजी निर्माण को प्रभावित करने वाले मुद्दों पर चर्चा कीजिए। (150 शब्दों में उत्तर दीजिए)

Examine the relationship between human capital and economic growth. Discuss the issues affecting human capital formation in India. (Answer in 150 words) 10

In recent years the government has laid great stress on human capital formation through a saturation approach of welfare schemes.

Relationship of human capital & economic growth

① Quality skilling is a prerequisite for industrial growth as less than 20% of Indians are skilled.

② Better healthcare translates to reduced sickness - enhanced productivity

③ social safety of women directly affects female LFPR (currently ~38%)

④ Better education and literacy for better awareness of rights.

⑤ social stability is crucial to gain more foreign investment.

Factors affecting human capital formation

① Regional disparities in access to basic services.

② Rural - urban divide manifests through shortage of teachers and doctors.

③ caste based disabilities

eg. 48% of tribals are multi-dimensionally poor.

④ availability of basic physical infrastructure.

⑤ availability of benefits at the ground level - leakages, etc.

Thus, there is a need to focus on GYAN → gaurav, yuva, Annadala & Nari to boost our human capital formation.

Q3.

चर्चा कीजिए कि भारत अपने जलवायु संबंधी लक्ष्यों को प्राप्त करने और संधारणीय विकास को समर्थन प्रदान करने के लिए हरित वित्त-पोषण तक पहुंच में कैसे वृद्धि कर सकता है? (उत्तर 150 शब्दों में दीजिए)

Discuss how India can increase access to green financing to achieve its climate targets and support sustainable development? (Answer in 150 words) 10

It is estimated that the developing world needs around 6 Trn USD by 2030 to reach even half of their INDCs [Economic Survey 2024]

Need for green financing

- ① Enable just and equitable transition from fossil fuels.
- ② Promote R&D into green energy via National green H₂ mission
- ③ Focus on adaptation measures to mitigate losses.
- ④ Balancing sustainable growth and climate equity.
- ⑤ Less and damage to communities already facing harm.

Measures to augment green finance

- ① global recognised green Bonds issued by the sovereign.
- ② Tools at domestic level like:
 - green credits (under MoEFCC)
 - Carbon trading scheme (by electricity Act, 2001)
- ③ considering a just energy Transition Partnership (JETP) like Indonesia has done.
- ④ Insisting on equitable finance flows from developed world at COP-29
- ⑤ Innovative products like municipal green Bonds eg Indore in 2023.

Thus, by accessing more green finance, India can achieve the goals of SDGs - 13, 14 & 15 on an equitable basis.

Q4.

विकेंद्रीकृत नवीकरणीय ऊर्जा (DRE) को अपनाने की स्थिति क्या है? इसे अपनाने में आने वाली चुनौतियों का परीक्षण कीजिए। (उत्तर 150 शब्दों में दीजिए)

What is the status of adoption of Decentralized Renewable Energy (DRE)? Examine the challenges faced in its adoption. (Answer in 150 words) 10

Decentralised Renewable Energy (DRE) refers to the adoption of small scale energy generation technologies that reduce the distance between the energy source and market.

Status of Adoption of DRE

- ① The Green Hydrogen mission focuses on a grid model to generate 5 MMT GH₂ by 2030.
- ② Budget 2021 has focussed on small modular reactors through PPP.
- ③ schemes like SATAT, GroBARdhan and waste to energy for biofuels at local levels.
- ④ Progress on geothermal energy is slow.

Challenges to adoption

- ① Biggest challenge → economics of scale
as these are not cost effective.
- ② low levels of R&D in new tech
like green H₂.
- ③ will require significant private sector
participation. Eg SHIP project
- ④ For some sources of energy like
green H₂ & biogas, safe storage
is also a concern.

Way forward

- Incentives to private sector
to participate.
- collaboration with global
key players.
- green credits to incentivise
production.

Thus, DRE has a bright future in
our journey towards achieving our
Panchsheel goals including
a net zero by 2070.

Q5.

भारत, विश्व का सबसे बड़ा दाल उत्पादक और उपभोक्ता देश है, लेकिन विडंबना यह है कि वह अपनी मांग को पूरा करने के लिए आयात पर निर्भर है। इस असंतुलन के लिए उत्तरदायी प्रमुख कारणों का परीक्षण कीजिए। (उत्तर 150 शब्दों में दीजिए)

India, the world's largest producer and consumer of pulses, ironically relies on imports to meet its demand. Examine the major reasons for this imbalance. (Answer in 150 words) 10

India imports $\frac{1}{6}^{\text{th}}$ of global production of pulses despite being a major producer herself.

Reasons for import dependence

- ① Rice / wheat bias in farming
- ② low access to HYVs in most pulses limits output
- ③ vegetarian demand for protein in India - heavy reliance on pulses.
- ④ land largely limited to dryland farming areas. Rajasthan is the largest producer.
- ⑤ higher MSP on pulses has failed in signalling changing requirements.

Way forward

- ① Promotion of more R&D to develop new HYVs.
- ② State level incentives to switch to pulses. Eg as done by Haryana
- ③ Promoting cultivation of pulses beyond dryland areas.
- ④ Prevent adverse climate impacts of excess heat that reduce productivity.
- ⑤ Promoting rotational cropping to ~~pro~~ boost soil health as well as production.

Thus, India can become a net exporter in pulses too through technological interventions and augmenting supply side measures.

Q6.

भारत जैसे विकासशील देश के लिए संसाधन दक्षता एवं चक्रीयता क्यों महत्वपूर्ण है? (उत्तर 150 शब्दों में दीजिए)

Why is resource efficiency and circularity significant for a developing country like India? (Answer in 150 words) 10

At COP-26, India made a global pitch for circularity and use efficiency by launching the LiFE movement.

Significance of resource efficiency and circularity

- ① Economic Survey 2024 → can help meet 20% of decarbonisation target.
- ② Reduce dependence on other nations for critical minerals.
eg china - 90% of all lithium processing.
- ③ Plugging access gaps due to wastage
- ④ lowers the ICOR (Incremental cost to output ratio) of industries.
- ⑤ Reduces environmental externalities created from wastage

- ⑥ Reduces the cost of clean energy transition.

Way forward to boost RVE & circularity

- ① Promoting the right to repair movement Reg MOCI portal for R2R
- ② Incentivising transition to clean energy Reg surya yash scheme
- ③ Adopt the targets of the LIFE movement
- ④ Ministry of Power's AC @ 24°C campaign.
- ⑤ Investing in R&D for recycling of critical minerals.
- ⑥ Promoting waste to energy tech

Thus, we can balance ecological sustainability and economic growth through resource efficiency and circularity

Q7.

भारत आपदा नियोजन, शमन और प्रतिक्रिया संबंधी अपनी कार्यविधि को बेहतर बनाने के लिए भौगोलिक सूचना प्रणाली (GIS) की क्षमताओं का उपयोग किस प्रकार कर सकता है? (उत्तर 150 शब्दों में दीजिए)
(उत्तर 150 शब्दों में दें)

How can India harness the capabilities of Geographic Information Systems (GIS) to enhance its approach to disaster planning, mitigation, and response? (Answer in 150 words)

10

The development of BIS technology can have a transformative impact on all stages of disaster management to prevent loss of lives, livelihoods and property.

Methods of leveraging GIS in DRR

① Planning techniques

↳ Zonation using ISRO's Bhuvan portal

↳ Detection of steep slopes and dangerous topography.

↳ ISRO's experimental BIS in Uttarakhand for landslides can help plan evacuation.

② Mitigation

↳ use of IRNSS data for management of traffic flows in hazard affected areas.

↳ sharing information on shelters and rehabilitation facilities through GPS.

↳ Better EIA in high risk zones

③ Response

↳ use of GPS to detect trapped persons eg what3words app

↳ use of Infrared and LiDAR to find bodies

↳ provisioning & monitoring aid in affected areas.

Thus, GIS can help reduce the impact on human lives and better manage vulnerabilities.

Q8.

भारतीय कृषि में वैज्ञानिक अनुसंधान एवं तकनीकी नवाचार संबंधी एम.एस. स्वामीनाथन के योगदान पर चर्चा कीजिए। (उत्तर 150 शब्दों में दें)

Discuss the contribution of M.S. Swaminathan to scientific research and technological innovation in Indian agriculture. (Answer in 150 words) 10

Shri M.S. Swaminathan is a Bharat
Ratna awardee (2024) for his
transformative impact on India's
agricultural sector

Contributions of Shri Swaminathan

- ① Research on HYVs that aided
the success of green revolution.
- ② Helping farmers adopt modern
and scientific practices in
farming.
- ③ M.S. Swaminathan committee made
recommendations to make farming
more sustainable, including the
Swaminathan formula. (2X1.5)
- ④ Argued for Evergreen Revolution

to make farming more resilient.

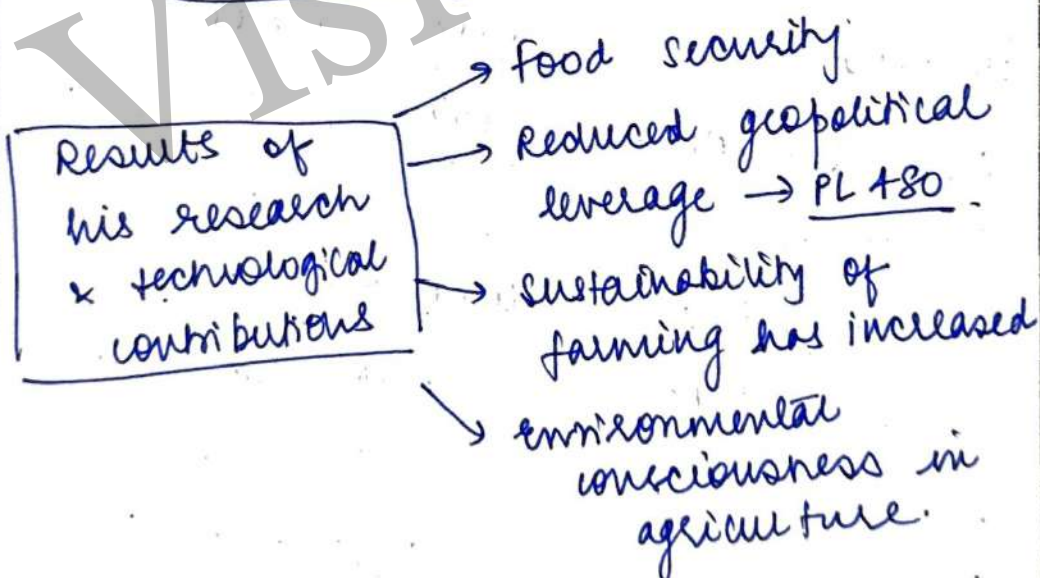
⑥ Swaminathan Institute, Bangalore

continues to aid the development
of agriculture.

↳ Development of hybrids.

⑦ Promoted global cooperation and
foundation of ICRISAT, Hyderabad.

⑧ Major role in formulation of
NICRA policy, 2011.



Thus, Mr. Swaminathan's contributions to agriculture are unparalleled by any other personality.

Q9.

डीपफेक तकनीक से उत्पन्न होने वाले सुरक्षा संबंधी खतरों पर चर्चा कीजिए। इन खतरों से निपटने के लिए आवश्यक उपाय सुझाइए। (उत्तर 150 शब्दों में दीजिए)

Discuss the security threats arising out of deepfake technology. Suggest measures that are needed to tackle these threats. (Answer in 150 words) 10

Deepfakes refer to the imposition of visual traits on visual media representing a person using AI techniques.

Security threats from deepfakes

- ① Tool of grey zone warfare
- ② Inflame political tensions through doctored videos.
- ③ Massive amplification of fake news and propaganda.
- ④ Identify theft and impersonation of security officials.
- ⑤ Damage to diplomatic relations & global image.

Measures to tackle deepfakes

- ① mandatory watermarking of deepfakes Reg As done by OpenAI.
- ② adopt Asilomar principles on safe use of generative AI.
- ③ strengthen global cooperation based on the Bletchley Declaration on Frontier AI.
- ④ ~~stricter~~ stricter laws on impersonation and identity theft.
- ⑤ Use AI/ML on social media to flag deepfakes.

Thus, governments and private companies need to keep pace the development of countermeasures to prevent address security threats from deepfakes.

Q10.

भारत की समुद्री सुरक्षा को बनाए रखने में भारतीय तटरक्षक बल (ICG) क्या भूमिका निभाता है? (उत्तर 150 शब्दों में दीजिए)

What is the role played by the Indian Coast Guard (ICG) in safeguarding the maritime security of India? (Answer in 150 words) 10

Indian coast guard was raised in
1977 as the nodal agency for
safety of our territorial waters,
EEZ and maritime boundaries.

Significance of ICG to maritime security

- ① Patrolling the territorial sea (12 nautical miles) & EEZ (200 nautical miles)
- ② complementing the role of the Indian Navy in the EEZ.
- ③ Hot pursuit of rappers and criminals.
- ④ enforcement of anti-piracy provisions of UNCLOS, 1982
↳ Articles 100-102

⑤ Provide aid to fishermen who
sometimes breach marine borders.

~~Fig~~ along Pak & Sri Lanka
marine borders.

⑥ Providing HADR in coastal areas.

Some recommendations to augment role

① Theatricalation to form integrated
Maritime command.

② complete jurisdiction be given
over ~~both~~ both territorial sea
& EEZ.

③ strengthen coordination with
state Maritime Police

④ Technology upgradation of vessels
and peraphernalia.

Thus, the ICG is a crucial cog in
the wheel of our SAGAR aspiration.

Q11.

कामकाजी आयु वर्ग की बढ़ती जनसंख्या हेतु रोजगार सृजित करने के लिए श्रम-गहन विनिर्माण का मार्ग अपनाने में भारत द्वारा सामना की जाने वाली बाधाओं पर चर्चा कीजिए। (उत्तर 250 शब्दों में दीजिए)

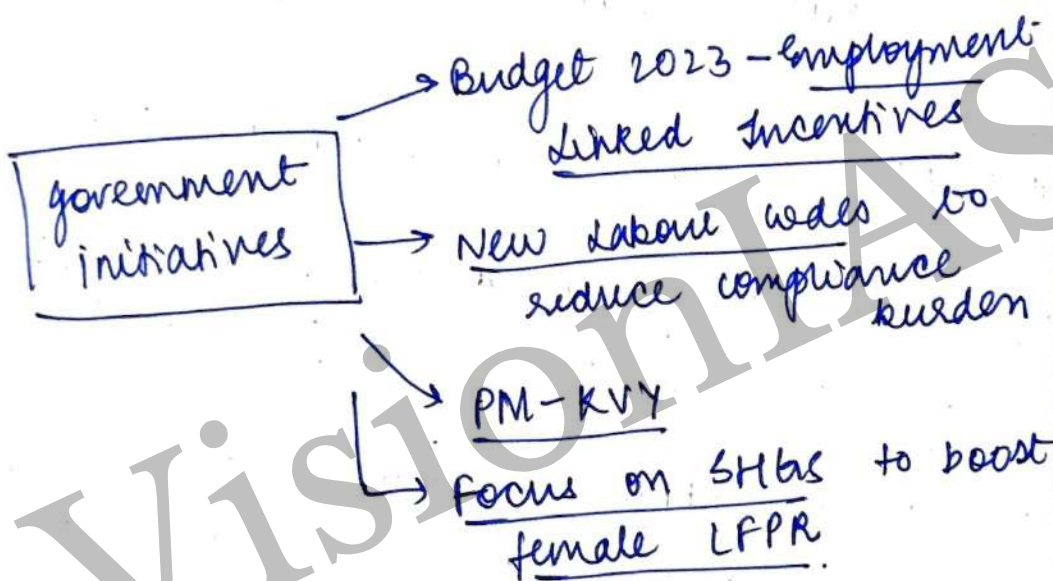
Discuss the hindrances that India faces in following the path of labour-intensive manufacturing to generate employment for the rising working age population. (Answer in 250 words) 15

In recent years, India's employment elasticity has dropped to 0.15% per 1% GDP growth (Labour Bureau data).

Challenges in labour intensive employment

- ① low levels of formal skilling → less than 20% in 2022.
- ② low female LFPR especially in urban areas (total ~38% in 2023)
- ③ Declining FDI due to global adverse economic condition.
- ④ Weak infrastructure and regional disparities
- ⑤ MSME dwarfism as highlighted by economic survey.

- ⑥ Declining quality of jobs
- ⑦ Low levels of formalisation of the economy. (90% informal jobs as per labour Bureau)



Way forward

- ① expedite adoption of new labour laws by all states
- ② Implement NEP, 2020 measures to focus on vocational education.

- ③ Nudging private capital formation to generate more jobs through multiplier effects.
- ④ economic survey 2024 recommends the german / swiss model of apprenticeship.
- ⑤ Focus on scaling up SHGs and MSMEs. + promoting formalisation
- ⑥ Focus on sunrise sectors like fertiliser, pharma, etc.
via PM-MITRA scheme.

Thus, the surest way to reap our demographic dividend and to become viksit Bharat by 2047 is through maximising employment avenues for inclusive growth.

Q12.

मिडिल इनकम ट्रैप क्या है? भारत स्वयं को इस ट्रैप में फंसने से कैसे बचा सकता है? (उत्तर 250 शब्दों में दीजिए)

What is middle-income trap? How can India prevent itself from falling in the trap? (Answer in 250 words) 15

Middle income trap refers to a ~~to~~ range of per-capita GDP beyond which a very few nations are able to progress. due to slowing down of economic growth.

Causes of middle income trap

- ① jobless growth characterised by weak employment elasticity.
- ② low growth in real wages due to runaway inflation ~~for~~ Argentina
- ③ stagnant GDP growth ~~for~~ Brazil
- ④ failure to reap demographic dividend for economic growth
- ⑤ untenable sovereign debt levels.

Risks for India

- ① low levels of growth in quality employment
- ② stagnant wages in the agricultural sector + disguised unemployment
- ③ wide regional disparities in economic output
eg Maha v. Bihar despite comparable populations
- ④ Persistent ~~in~~ informalisation of economic growth
- ⑤ Low employability
eg only 52% of Indian workers are employable.

Measures to prevent falling into the trap

- ① leverage the crowding-in potential of infrastructural development.

- ② Accelerate transition to employment
intensive growth through industrial
sector.
- ③ Explore PPP models for better
skilling. eg Singapore model.
- ④ PI ^{benefits} ~~targets~~ should be linked
to employment generation targets.
- ⑤ Focus on boosting productivity
through mechanisation.
- ⑥ Augment the economic participation
of women.

thus, as Dr. Jitendra Yashwanth argues
India should focus on generating
more employment in the medium
term to prevent the middle
income trap.

Q13.

भारत में भू-स्वत्वाधिकार (Land titles) अस्पष्ट क्यों हैं? स्पष्ट भू-स्वत्वाधिकार भारत के सामाजिक-आर्थिक लक्ष्यों को प्राप्त करने में कैसे गति प्रदान कर सकते हैं? (उत्तर 250 शब्दों में दीजिए)

Why are land titles in India unclear? How can clear land titles provide an impetus to achieve India's socio-economic goals? (Answer in 250 words) 15

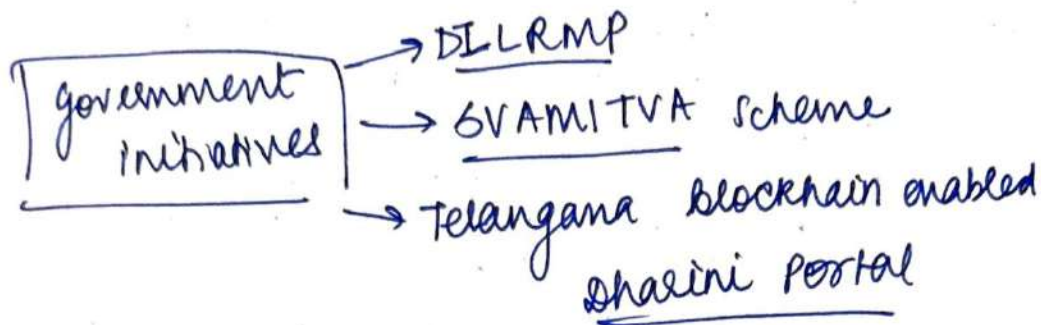
India still follows the age-old system of presumptive model of land titling, but strides are being made towards conclusive titling of land.

Reason for unclear titling

- ① Non-updation of colonial era land records.
- ② Low pace of digitisation of the records.
- ③ Previously high levels of informal tenancy and subinfeudation.
- ④ Abuse of Benami land transfers.
- ⑤ Botched land reforms failed due to limited ground level impact.

Significance of conclusive & clear titling of land records

- ① Reduce litigation that goes on for decades.
- ② easy collateralisation of land will enable credit access to farmers.
- ③ liquidity of land as an asset increases.
- ④ Land acquisition becomes less ~~or~~ ambrosome.
- ⑤ Reduced land grabbing from the poor & vulnerable.
- ⑥ Promotes easy land pooling for increasing productivity.
eg Haryana model of land pooling.



Way forward

- ① expediting the pace of creation of digital land records.
 - ② Budget 2024 → digitise cadastral maps
 - ③ establish land banks based on the digitised lands.
 - ④ Adopt Telangana model of using blockchain (mentioned above)
 - ⑤ create a transparent digital database of land ownership.
 - ⑥ Bhu - Aadhar generation
- Thus, conclusive titling can help to make land a more productive asset and reduce constraints of land for infrastructural growth.

Q14.

भारत में सार्वजनिक वितरण प्रणाली (PDS) के सामने आने वाली विभिन्न चुनौतियों के लिए PDS का डिजिटलीकरण कैसे एक अचूक समाधान बनकर उभरा है? इस संबंध में 'स्मार्ट-पीडीएस' पहल की क्षमता पर टिप्पणी कीजिए। (उत्तर 250 शब्दों में दीजिए)

How has digitization of Public Distribution System (PDS) emerged as a panacea for various challenges faced by the PDS in India? Comment on the potential of 'SMART-PDS' initiative in this regard. (Answer in 250 words) 15

The Shanta Kumar committee had noted upto 60% diversion of PDS grains in 2016. However, this problem appears to be declining through digital reforms.

Digital PDS as a panacea

- ① Reduction of leakages of PDS grains during distribution
- ② Data on utilization of PDS at various points of sale
- ③ Better outcome management through target tracking.
- ④ Wastage can be reduced through regular point-based checks.

- ⑤ generate ^{aggregated} an profile of beneficiaries
on ~~the~~ the basis of radhar data

Features of SMART PDS

- ① Use of smart ration cards
- ② Recording of fingerprint data to
reduce inclusion errors.
- ③ Automation of the PDS process
to reduce human intervention.

Potential of SMART-PDS

- ① Reduce the diversion by intermediaries
during the supply process.
- ② enhanced T-PDS system for better
supply management.
- ③ greater transparency & accountability
of fair price shops.

Online grievance redressal based
on the record of transactions.



Thus, SMART-PDS can have a
transformative impact by promoting
the economy, efficiency & effectiveness
of the PDS system to achieve
~~SDG-2~~ SDG-2 (Zero hunger).

Q15.

भारत में भूस्खलन के शमन और इसे रोकने में विद्यमान चुनौतियों का उल्लेख कीजिए। राष्ट्रीय भूस्खलन जोखिम प्रबंधन रणनीति, भूस्खलन आपदा संबंधी तैयारियों और शमन को किस प्रकार मजबूत कर सकती है और मुख्यधारा में ला सकती है? (उत्तर 250 शब्दों में दीजिए)

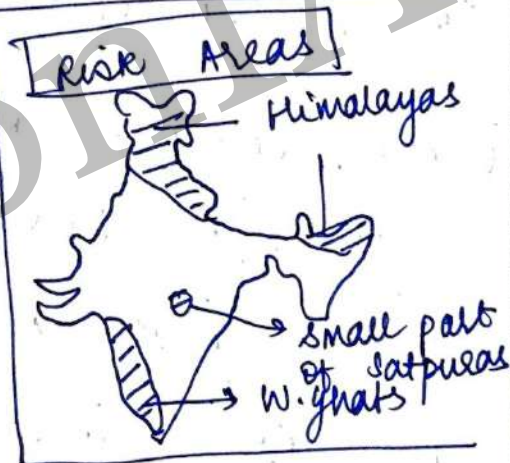
Mention the challenges in landslide mitigation and prevention in India. How can the National Landslide Risk Management Strategy strengthen and mainstream landslide disaster preparedness and mitigation? (Answer in 250 words) 15

As per GIS data around 15% of
our landmass is prone to
landslides.

Challenges to mitigation and prevention

① Unconsolidated
name of soil
in the Himalayas.

② tectonic activity
and presence of
fault lines



eg. Maikila fault near
Jashimabli

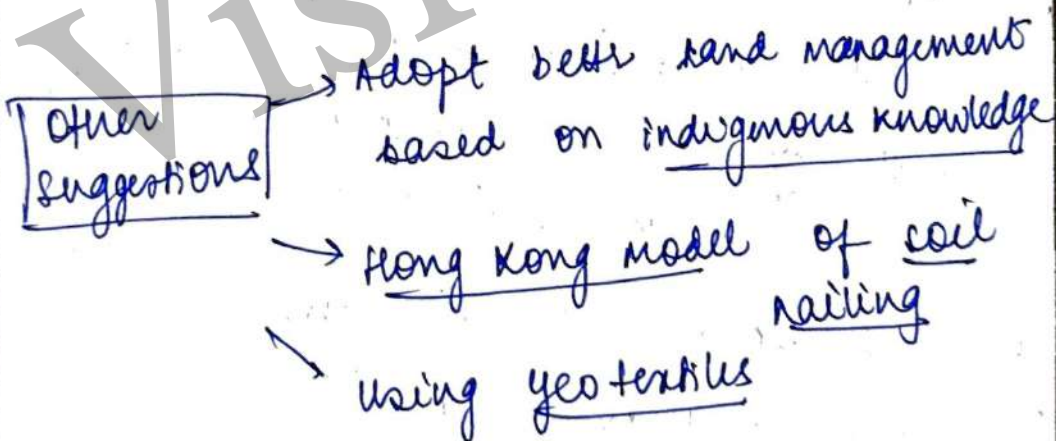
③ steep slopes and escarpments in
the western ghats.

- ④ Rising effect of GLOFs & cloud bursts that aid landslides.
- ⑤ erosional activity of rapid rivers and changing river courses.
eg Wayanad landslide, 2024.

Significance of National Landslide Risk Management Strategy (NLRMS)

- ① Proper zonation of high risk areas eg ISRO's BHUVAN portal.
- ② Capacity building & awareness generation among locals.
- ③ Augmenting preparedness against the disaster.
- ④ Use of digital technology to mitigate risk eg Goa SATARK App.

- ⑤ Reducing anthropogenic risk factors in such areas.
- ⑥ Reg through proper EIA in risky terrain.
- ⑦ Use of early warning systems to reduce impact.
- ⑧ Drill and exercises to aid evacuation and preparedness.
Reg ISRO's experimental EWS in Uttarakhand.



Thus, the NCRMs can help reduce vulnerability to landslides and promote a healthier relationship with the environment.

Q16.

नेट जीरो उत्सर्जन की ओर बढ़ने की आवश्यकता क्यों है? भारत ने नेट जीरो लक्ष्य को प्राप्त करने के लिए क्या रणनीति अपनाई है? (उत्तर 250 शब्दों में दें)

Why is there a need to move towards net zero emissions? What strategy has India adopted to achieve the net zero target? (Answer in 250 words) 15

The IPCC's synthesis report suggests that on our current trajectory, the global temperature can rise by up to 2.7°C by 2100, far breaching the Paris Agreement goals.

Need to move towards net zero

- ① Reduce rising environmental hazards due to global warming 50% increase already in Arabian sea cyclones.
- ② Prevent food insecurity caused by agricultural unsustainability.
- ③ Prevent a global refugee crisis induced by climate change.

- ④ Prevent impacts on vulnerable groups, like tribals, coastal communities, etc.
- ⑤ ~~✗~~ Ensure that economic growth is not jeopardised by reduced productivity and economic insecurity ~~✗~~ due to heatwaves.

India's Net Zero strategy

- ① Economic survey 2024 place a heavy emphasis on life movement as it can accelerate decarbonisation.
- ② Focus on just and orderly transition towards green energy.
- ③ Phasing down, not phasing out, fossil fuels.
- ④ Achieving 500 GW energy from non-fossil fuels by 2030.

- ⑤ Strengthening Nature Based Solutions
like mangroves, rural forestry,
etc.
- ⑥ LEAD - It 2.0 launched at COP-28
to promote industry transition
- ⑦ Promoting carbon sequestration
↳ 3 Bn tonnes carbon sink by 2030
- ⑧ Promoting local capacity in
solar energy, green hydrogen
small modular reactors etc.
- ⑨ Industry incentives through carbon
trading scheme & green credits
- ⑩ Promoting circular economy by
Gobardhan, SATAT, etc.

Thus, our approach is based on
the resilience of laws of nature to
move towards net zero by 2070.

Q17.

भारत में सटीक चिकित्सा (Precision medicine) को अपनाने से जुड़े लाभ और चुनौतियां क्या हैं?
(उत्तर 250 शब्दों में दीजिए)

What are the advantages and challenges associated with the adoption of precision medicine in India? (Answer in 250 words)

15

Precision medicine refers to the utilisation of information of the patients unique genetic & epigenetic traits for medical purposes.

Advantages of Precision medicine

- ① cure previously incurable conditions.
eg. Nexlar 19 leukaemia
- ② Very high success rate based on unique physiological traits.
- ③ Reduction of adverse effects created by general medicine.
- ④ can be used in cases of congenital diseases for prevention.
- ⑤ Faster and less painful recovery process.

Challenges to precision medicine

- ① Prohibitively high medical costs
eg CAR-T therapy costs Rs6Cr+ in UK.
- ② Unknown impacts on other body parts - limited R&D on adverse effects
- ③ Privacy of the patient sharing genetic information
- ④ ethical concerns of inequitable access barriers.
- ⑤ In India, availability of trained manpower is also a concern
- ⑥ consumers may take time to trust such procedures and give acceptance

Way forward

- ① Promoting more R&D into precision medicine
- ② develop PPP models for augmenting government capacity.
- ③ Boost collaboration with leading nations like Israel.
- ④ Creating strong safeguard mechanisms against misuse of genetic data.
- ⑤ Promoting skilling in the field to reduce manpower constraints

Thus, precision medicine can reduce the burden of life threatening diseases and offer less invasive procedures for healthcare

Q18.

वेब 3.0 के मूलभूत सिद्धांत और वे प्रमुख प्रौद्योगिकियां जिन पर यह आधारित है, क्या हैं? इसके संभावित लाभ बताइए। (उत्तर 250 शब्दों में दीजिए)

What are the foundational principles of Web 3.0 and the key technologies on which it is based? State its potential benefits. (Answer in 250 words) 15

Web 3.0 is a more inclusive and decentralised conception of the world wide web to address the contemporary challenges of equity, control & inclusiveness.

Foundational principles of web 3.0

- ① decentralised nature rather than total control by one entity.
- ② user autonomy based on primacy of consent.
- ③ democratic internet based on equal voice for all.
- ④ control over own data rather than unauthorised use.

- ⑤ ownership of all of the tools used in the digital space.

Key technologies

- ① Blockchain to ensure integrity of the data.
- ② creation of DAOs based on democratic principles.
- ③ edge computing rather than centralised processing.
- ④ cryptocurrency for transactions on web 3.0.
- ⑤ NFTs to evidence ownership, + creating contractual obligations
Reg tokenisation of e-contracts
 to ensure non-repudiation.

Potential Benefits

- ① Prevent data monopolisation by large corporations.
- ② More voice to the people in shaping the internet as per their needs & values.
- ③ Privacy and anonymity to prevent surveillance.
- ④ More safety in virtual spaces and ability to exercise the right to be forgotten.
- ⑤ Reduced threat of cybercrimes.

Thus, web 3.0 can make the internet more democratic & inclusive and uphold the primacy of users over their own data.

Q19.

वित्तीय लेन-देन की जटिलता और प्रौद्योगिकी के आपराधिक उपयोग के कारण परंपरागत एंटी-मनी लॉन्ड्रिंग (AML) रणनीतियाँ अपर्याप्त सिद्ध हो रही हैं। टिप्पणी कीजिए। (उत्तर 250 शब्दों में दीजिए)

Traditional anti-money laundering (AML) tactics are proving inadequate due to the complexity of financial transactions and the criminal use of technology.
Comment. (Answer in 250 words) 15

The World Bank warns that global money laundering may have exceeded USD 4 trillion, aided by new means of operation and technology.

Newer threats

- Use of cryptocurrency
- VPN & dark web to mask identity
- Hawala transactions have gone online
- FPIs and tax havens making accessibility.

constraints of traditional AML tactics

① ever evolving nature of technological advancements that reduce governmental oversight.

② Use of P-Notes, complex corporate structures and planning masks the source of funds.

Eg Paradise papers expose

③ Role of state actors like Pakistan in promoting money laundering and organised crime.

④ Privacy laws in developed nations weaken legal assistance treaties against money laundering.

⑤ Fragmented domestic infrastructure to tackle money laundering.

Way forward to tackle new challenges

① adopt wolfsberg principles of Transparency International against money laundering.

- ① stricter enforcement of BMLA, 2002 against crypto frauds.
- ② Use of AI/ML to intercept illicit flows of money.
- ③ strengthen KYC norms of RBI against ~~AAA~~ use of bank accounts.
- ④ educate the general public to not act as 'mules'.
- ⑤ stronger border management through CBMs to curb associated organised crimes.
- ⑥ strengthen global cooperation, especially with major tax havens.

Thus, addressing the emerging threats would require greater vigilance and cooperation among nations & among domestic agencies.

Q20.

सीमावर्ती क्षेत्रों में बुनियादी ढांचे का विकास न केवल सीमा सुरक्षा के संदर्भ में बल्कि क्षेत्र के विकास के लिए भी किस प्रकार गेम चेंजर सिद्ध हो सकता है? (उत्तर 250 शब्दों में दीजिए)

How can infrastructure development in the border areas be a game changer not only in terms of border security but also for the development of the region?
(Answer in 250 words) 15

In recent years, the government has been focussing on stronger border infrastructure through schemes like BADP, Vibrant Villages Programme & PM-DEVINE.

Significance of infra development to border security

- ① plug leakages in porous borders.
eg Myanmar border
- ② overcome challenges of difficult terrain. eg along the LAC.
- ③ Reduce organised crimes like drug trafficking or gun running.
- ④ deny safe haven to insurgents
eg NSCN(IM) fighters fleeing to Myanmar.

- ⑤ Better management of cultural linkages across borders. Eg. Kukis across India & Myanmar

Significance for regional growth

- ① Reduce conflict due to resource constraints
- ② Boost to Act East Policy and regional integration. Eg. IMT trilateral project
- ③ Reduce out migration from border areas. Eg. Vibrant Villages
- ④ Harness immense horticultural potential of the region.
- ⑤ Saturation of welfare schemes like Aspirational Districts Program through better infrastructure.

Way forward

- ① expedite the implementation of the Madhukar Gupta committee suggestions.
- ② Focussing on arterial roads and highways for flow of goods people & troops as required.
- ③ Promote local industry to bring private investment.
- ④ Following due process to prevent animosity in land acquisition.
- ⑤ Gradually ease AFSPA to promote regional integration.

Thus, the aspiration of 'Purodaya' requires crowding-in of capital formation to boost both security and economic growth.