

# VISION IAS

www.visionias.in

## GENERAL STUDIES (TEST CODE : 2079)

Name of Candidate	Devanshi Saxena		
Medium Eng./Hindi	English	Registration Number	1017909
Center	Online	Date	29.1.23

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	
<b>Total Marks Obtained:</b>		
<b>Remarks:</b>		

## INSTRUCTIONS

- 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)।
- There are **TWENTY** questions printed in **HINDI & ENGLISH** इसमें बीस प्रश्न हैं हिन्दी और अंग्रेजी में छपे हैं।
- All questions are compulsory.**  
सभी प्रश्न अनिवार्य हैं।
- The number of marks carried by a question/part is indicated against it.  
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
- 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।
- Word limit in questions, if specified, should be adhered to.  
प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
- 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।

16-B, 2<sup>nd</sup> Floor, Above National Trust Building, Bada Bazar Marg, Old Rajinder Nagar, Delhi-110060

Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar  
Delhi- 110009

## 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.

VisionIAS

All the Best

1. परीक्षण कीजिए कि भारत में सार्वजनिक वितरण प्रणाली (PDS) के डिजिटल रूपांतरण ने इसे बाधित करने वाली चुनौतियों का समाधान करने में कैसे मदद की है। (150 शब्दों में उत्तर दें)

Examine how digital transformation of the Public Distribution System (PDS) in India has helped in addressing the challenges besetting it. (Answer in 150 words) 10

PDS in India has evolved as a mechanism for food grain distribution and management of emergency situations (as seen in COVID-19).

⇒ Necessity of digitalisation of PDS

- i). to counter exclusion and inclusion errors
- ii). prevent leakage of grains in open market
- iii). minimise loss to public exchequer

⇒ Components of digital PDS :-

- i). End-to-end computerisation of Targeted PDS
- ii). Digitised list of beneficiaries/ration cards
- iii). Supply chain automation in 31 states/UTs
- iv). SMS facility to inform beneficiaries

⇒ Digital transformation addressing the challenges of PDS :-

- i). Digitised ration card and Aadhaar

Linkage - eliminates ghost beneficiaries

ii) Grievance redressal portal and toll-free number :- provides fair access to raise complaints and seek resolution

iii) Digitisation prevents leakage - This saving in subsidy bill checks rising fiscal deficit

iv) Computerised Fair Price Shops :- records the amount of subsidised grains to family. Prevents black marketing

v) DBT :- cash transfer to beneficiary in lieu of foodgrain subsidy. Directly done to the bank account. Excludes middlemen.

vi) QPS :- tracks and monitors food grain ~~to~~ movement between depots and FPS. Prevents diversion

Digital transformation in PDS solidly affirms India's commitment to SDG 2 while focusing on grassroots, citizen-centric governance

2. चर्चा कीजिए कि किस प्रकार अनाज की वास्तविक कमी की तुलना में खराब खाद्यान्न प्रबंधन भारत में खाद्य सुरक्षा के समक्ष एक बड़ी चुनौती रहा है। (150 शब्दों में उत्तर दें)

Discuss how poor grain management has been a greater challenge to food security in India than the actual shortage of grains. (Answer in 150 words) 10

In the past two decades, India's food grain production has doubled, along with 4.5 times increase in GDP and threefold increase in consumption. Despite the commensurate growth, India has been unable to provide access to food to a large number of people.

⇒ Poor grain management poses the main challenge to food security in various ways:-

- i). Inefficient strategy: - eg. procurement of wheat and rice is open-ended but their stock disbursement is restricted to PDS
- ii). Lack of adequate storage: - FCI does not have space to accommodate surplus produce
- iii). Lack of facilities such as closed coverage, air conditioning in warehouses - leads to spoilage of grains, as has been noted in CAG audits.

- iv). Inadequate selling to private players :- is a drain on public resources. Liquidating excessive stocks through OMOs can provide necessary funds.
- v). Leakage of food grains - during transportation or due to FPS engaging in black marketing
- vi). Beneficiary identification is not fool-proof. As a result, many BPL families are excluded.

⇒ Resolving the challenges:-

- i). Shanta Kumar Panel recommendations :-
- maximum food subsidy only for Antyodaya category
  - private sector participation in grain management
  - proactive liquidation policy for surplus buffer stocks.

As food security is the crux of India's commitment to SDG 2, the push towards digital transformation through monitoring and DBT along with PPP model paves the way ahead

3. चारे की खराब गुणवत्ता और उसकी अपर्याप्त उपलब्धता भारत में पशुधन की कम उत्पादकता के पीछे प्रमुख कारण हैं। चर्चा कीजिए। (150 शब्दों में उत्तर दें)

Poor quality and inadequate availability of feeds and fodder are the major reasons behind the low productivity of the livestock in India. Discuss. (Answer in 150 words)

10

Livestock sector plays an important role in the Indian economy, serving as a source of livelihood for about ~~25~~ 30 million people, and contributing around 4% to India's GDP

⇒ Issues in the livestock sector:

- i). Sub-optimal productivity levels due to lack of quality fodder and feed.
  - ii). A study by Indian Grassland and Fodder Research Institute reported that India has a shortage of :-
    - 23.4 kg of dry fodder for every 100 kg feed required
    - 11.24 kg of green fodder for every 100 kg feed required
  - iii). Lack of fodder negatively affects milk's productivity
- As per a study, Indian livestock's milk productivity is 20-60% lower than global average
- iv). Regional feed disparity - eg. surplus straws are burnt in North Indian

states while other states deal with lack of dry roughage

⇒ Government initiatives to resolve the issue: —

i). Sub Mission on Fodder and Feed Development under National Livestock Mission

- 100% subsidy on fodder seed production

ii). Fodder entrepreneurship Programme

- ferment green fodder and convert it into silage
- create consistent supply chain of feed

iii). Special Livestock Sector Package by CCEA to boost growth in the sector

iv). Create a network of entrepreneurs to create models of silage making and selling

Good feeding is central to livestock productivity. This will not only empower the farmer but also build a sustainable agrarian economy.

4. शहरी कृषि से आप क्या समझते हैं और इसके विभिन्न प्रकारों का वर्णन कीजिए। साथ ही, भारत के संदर्भ में इसके महत्व पर चर्चा कीजिए। (150 शब्दों में उत्तर दें)

Explain what you understand by urban agriculture and state its types. Also, discuss its significance in the context of India. (Answer in 150 words) 10

Urban agriculture is the practice of cultivating, processing and distributing food in and around urban areas.

⇒ Some types of urban agriculture are: -

- i). Residential and community farming - eg. rooftop and kitchen gardens
- ii). Vacant land for agricultural use
- iii). rearing livestock
- iv). aquaculture and apiculture
- v). aromatic and medicinal herbs cultivation
- vi). Street landscaping
- vii). Vertical farms
- viii). Greenhouse

⇒ Significance in Indian context:-

- i). Food security:- urban areas have around 55% of global population and consume 80% of food produced. Urban agriculture is the way to address this demand for food.

- ii). Sustainable food systems - can be created through urban gardening. It is an important shock absorber
- iii). Urban agriculture provides a critical shift in urban planning, paving the way for sustainable urbanisation
- iv). Counter negative effects of climate change :- through the formation of green oasis in unsustainable urban planning
- v). Livelihood generation - especially for women. It offers an opportunity to earn sustainable livelihood amid employment risks.
- vi). Poverty alleviation - as urban agriculture paves the way for income generation

Pune's city farming, Green India Mission and Urban and Regional Development Plans Formulations and Implementation (URDPFI) are the way ahead for resilient, sustainable urban systems in line with SDG 11.

5. जलवायु परिवर्तन में वृद्धि से मोटे अनाज की खेती का पुनरुद्धार हो रहा है। चर्चा कीजिए। साथ ही, भारत में मोटे अनाज के उत्पादन को गति देने के लिए सरकार द्वारा उठाए गए कदमों का उल्लेख कीजिए। (150 शब्दों में उत्तर दें)

The advent of climate change is leading to the revival of cultivation of millets. Discuss. Also, mention the steps taken by the government to give an impetus to millet production in India. (Answer in 150 words) 10

The FAO has declared 2023 as the International Year of millets. India has played a major role in pushing the case of millets, focusing on their nutritive properties and agronomic characteristics on a global stage.

⇒ Climate change and revival of millets :-

- i) Climate-resilient :- millets are drought-resistant, require less water and can grow in poor soil conditions
- ii) Sustainable and environment friendly :- as they are grown using traditional farming methods
- iii) Biofuel - millets offer cost advantage over maize for bio-ethanol production
- iv) Less pressure on ecosystem :- Millets drought resistant qualities and minimal use of fertilisers put less pressure on ecosystem as compared to other crops.

v). Food security - millet has a short rotation period and great nutrition potential with protein, fibre, and micronutrients

⇒ Government steps to promote millets

i). Crop diversification program in 2013 to shift from paddy to alternate crops such as millets

ii). 2018 - Millets declared as nutri-cereals. 2018 observed as National Year of Millets.

iii). Millet Mission (under NFSM) - develop farm-gate processing and empower farmers using FPOs

iv). Inclusion of millets in PDS and Poshan Abhiyaan.

v). Millet Startup Innovation challenge :- to promote innovation driven agricultural solutions

In the face of climate-change driven vagaries of food insecurity, ecosystem pressure, millet is a global solution. Millet is also India's way ahead to fulfill mandates of SDG.

6. विश्व आर्थिक मंच (WEF) ने अपनी नवीनतम रिपोर्ट में कहा है कि ड्रोन में भारतीय कृषि के "प्रौद्योगिकी-आधारित परिवर्तन" का अग्रदूत बनने की क्षमता है। चर्चा कीजिए। (150 शब्दों में उत्तर दें)

The World Economic Forum (WEF) in its latest report stated that drones have the potential to be the harbinger of "technology-led transformation" of Indian agriculture. Discuss. (Answer in 150 words) 10

Drones are becoming an important tool of technological transformation in agriculture. Recently Kisan Drones were flagged off in different cities to be used in agriculture.

⇒ Drones and Indian agriculture:

- i). Better land use planning: based on drone-collected data. This will boost productivity and efficiency of agriculture.
- ii). Mapping of farm lands - to resolve ownership issues and enable credit access
- iii). Application of inputs - such as pesticides, fertilisers and nutrients in an effective and harmless manner
- iv). Improve crop assessment by providing data for market intervention planning
- v). Improve irrigation planning -

by mapping the watershed area.

vi). Enable farm mechanisation :-  
beyond the conventional farm  
machinery

vii). Efficient crop planning :- by  
determining ~~that~~ spatial distribution  
and pattern

viii). Robust monitoring - through  
live tracking from remote locations  
as well

⇒ However, some concerns remain:-

- sceptical farmers
- how to utilise drone technology  
most effectively when farmers  
lack the technical knowledge.

⇒ Government initiatives to address  
the challenges/concerns :-

- i). Drone Rules 2021 and issuance  
of SOP for application of inputs
- ii). PLI scheme for drone and its  
components
- iii) Kisan Drone Suvidha

Drones are India's step towards  
precision agriculture and agri-research  
that is sustainable, inclusive and  
responsive to climate change's impact on agriculture.

7. क्षेत्रीय कनेक्टिविटी योजना (RCS) को कुछ समय पूर्व पांच वर्ष पूर्ण हुए हैं। इस संदर्भ में, अपने घोषित उद्देश्यों को प्राप्त करने में योजना की सफलता का मूल्यांकन कीजिए। (150 शब्दों में उत्तर दें)

The regional connectivity scheme (RCS) completed five years some time back. In this context, evaluate the success of the scheme in achieving its stated objectives. (Answer in 150 words)

10

RCS, also known as the UDAN scheme is a key component of National Civil Aviation Policy that seeks to improve air connectivity to tier-2 and tier-3 cities through revival of unused and underused airports

⇒ Objectives of RCS :-

- i) To develop regional aviation market
- ii) To provide affordable air travel
  - connecting regional routes
  - economically viable air travel for common populace

⇒ Evaluation of 5 years of RCS :-

- i) Till mid-July 2022, UDAN has operationalised 425 routes, providing affordable air travel to around 10 million people

- ii). Democratized air travel that had been an elite prerogative
- iii). Equitable growth in aviation sector :- as the share of non-metro airports in the domestic passenger circuit has increased
- iv). Hon'ble PM has turned it as growth through inclusion for RCS's framework reduces rural-urban disparity.
- v). Expanded the scope of aviation sector - with an increase in number of airports from 74 in 2014 to 141 in 2022. Like railways, this holds potential for employment and economic growth

⇒ Certain challenges :-

- i). Poor financial health of regional carriers
  - ii). Infrastructure not at par with the requirements of UDAN's targets.
- RCS, no doubt, has been an example of collaboration, inclusivity and resilient vision. A targeted focus now on preventing monopolisation of routes by big airlines and robust infrastructural investment is the way ahead.

8. फर्टिगेशन मौलिक रूप से जल जैसे कीमती संसाधनों के उपयोग और पर्यावरण के पोषक तत्वों की क्षति को कम करते हुए बदलती जलवायु में स्थायी रूप से अधिक खाद्यान्नों के उत्पादन में मदद कर सकता है। चर्चा कीजिए। (150 शब्दों में उत्तर दें)

Fertigation can help sustainably grow more food in a changing climate while radically reducing the use of precious resources such as water and minimising nutrient losses to the environment. Discuss. (Answer in 150 words) 10

Fertigation method combines application of fertilisers with irrigation. It ascribes to the principles of 4 R Nutrient Stewardship: right source at the right rate, time and place.

⇒ Fertigation in the current scenario :-

- i). Precision farming - is enabled through fertigation in combination with GPS and wireless sensor technologies
- ii). Higher yields - as targeted irrigation along with fertiliser usage can increase crop productivity by 20-90% depending on the crop.
- iii). Rational fertiliser usage - as targeted application means :-
  - less fertiliser wastage
  - fertiliser efficiency
  - scientific and specific fertiliser usage

iv). Reduce nutrient losses - as fertigation facilitates water and nutrient supply in the active root zone.

v). As per WEF, fertigation as a sustainable farming technique can address the issue of global hunger by boosting agricultural production and food security.

vi). In the face of climate change, fertigation fosters energy efficiency and water saving. Both facets are useful for sustainable agriculture.

⇒ Yet, some challenges remain

i). Fertigation is expensive, considering in India, farmers are small and marginal.

ii). Unsustainable on small landholdings, as is the case in India.

iii). Scientific and precise expertise required to administer fertigation. This is challenging as many small farmers might be unaware about this.

Considering fertigation's potential, a public awareness drive along with incorporation into PMKSY forms the way ahead to unlock the capabilities of fertigation in sustainable agriculture.

9. एकीकृत कीट प्रबंधन (IPM) क्या है? IPM के उद्देश्यों पर प्रकाश डालते हुए, इसके विभिन्न घटकों पर चर्चा कीजिए। (150 शब्दों में उत्तर दें)

What is Integrated Pest Management (IPM)? Highlighting its objectives, discuss the various components of IPM. (Answer in 150 words) 10

IPM is an eco-friendly approach of pest control that utilises a combination of cultural, mechanical and biological methods along with an emphasis on bio-pesticides such as neem formulation.

⇒ Objectives of IPM :-

- i). Maximise crop production with minimum input costs
- ii). Minimise pesticide-induced air, water and soil pollution
- iii). Minimise occupational health hazards due to chemical pesticides
- iv). Conserve ecosystem and maintain ecological equilibrium
- v). Reduce pesticide residues by judicious use of chemical fertilisers.

⇒ Components of IPM :-

- i). Cultural control - such as :-
  - optimum fertiliser usage
  - proper water and weed management
  - crop rotation
- ii). Mechanical control :- such as

- pheromone traps
  - mechanical removal and destruction of eggs, larvae etc. of insect pests
- iii). Biological control - deliberate use of pathogens, predators and parasitoids to maintain pest population
- iv). Chemical control - chemical pesticides to be used judiciously and only as a last resort
- v). Regulatory methods :- based on regulatory rules framed by the Government
- restricts movement of infested seed and plant material inter as well as intra-country.

IPM is central to sustainable and climate smart agriculture.

~~National~~ National Policy on IPM is the way ahead to bolster Indian economy with good agricultural practices that cause least disturbance to ecosystem.

10. पशुधन रोगों से उत्पन्न चुनौतियों के आलोक में सरकार द्वारा उनके समाधान के लिए उठाए गए कदमों पर चर्चा कीजिए। (150 शब्दों में उत्तर दें)

In light of the challenges posed by livestock diseases, discuss the steps taken by the government to address them. (Answer in 150 words) 10

The breakout of the Lumpy Skin Disease among cattles in 2022 highlighted the repercussions of livestock disease on an entire economic sector.

⇒ Challenges posed by livestock diseases :-

i). Economic :-

(a). Reduced productivity : eg. dairy sector affected because of reduced milk production in case of Lumpy Skin Disease

(b). Animal washing - due to Foot and Mouth Diseases, Influenza etc. leads to loss of income for livestock owners

(c). Value chain and export losses :- as concern over diseases like brucellosis impedes export of bovine meat that India largely exports.

ii). Health concerns :-

(a). Zoonosis - Livestock diseases such as anthrax and brucellosis can be transmitted to humans.

(b) • Nutrition and protein intake - negatively affected as meat intake suffers

iii) • Social :- Livestock and cattle are often the support system of rural people. Diseases affect and disrupt the emotional, affecive and cultural value of animals in rural life.

⇒ Steps taken by the Government:

i). National Animal Disease Control Programme - launched 2019 to combat FMD and Brucellosis

ii). National Digital Livestock Mission - to ensure identification for policy programmes and trade

iii). National Livestock Mission :- for sustainable development of the livestock sector

iv). Creation of animal disease free zones :- to boost value added meat products

v). ICAR developed indigenous vaccine for lumpy skin Disease

Animal health is the backbone of rural economy. A concerted effort to maintain it will further boost the livestock sector's contribution to agrarian GDP

11. कोयला निष्कर्षण संबंधी बुनियादी ढांचे को उन्नत बनाने और कोयले की गमग्र प्रतिस्पर्धात्मकता में सुधार हेतु माल ढुलाई लागत को कम करने के लिए हस्तक्षेप की आवश्यकता है। भारत के संदर्भ में चर्चा कीजिए। (250 शब्दों में उत्तर दें)

There is a need for interventions to enhance the coal evacuation infrastructure and reduce the freight cost to improve the overall competitiveness of coal. Discuss in the context of India. (Answer in 250 words) 15

Coal accounts for 55% of India's energy need. In line with its significance, Government's Coal Logistics Policy aims to develop an integrated, resilient, cost-effective, technologically enabled logistics system in the sector.

⇒ Need to improve coal competitiveness because :-

- i). Potential crisis of blackouts due to low coal inventory at thermal power plants in Delhi, Rajasthan.
- ii). Energy usage expected to rise with expanding economy and rising population.
- iii). Demand-supply mismatch: India dependent on coking coal imports for its industries.
- iv). Existing market structure in coal industry lacks growth and innovation.

⇒ Ways to improve coal competitiveness :-

- i). First Mile Connectivity ~~Proj~~ (FMC) projects in coal industry - to transport coal from pitheads to dispatch points with least glitches
- ii). Alternate transport methods - such as mechanised conveyor systems and computerised loading on to railway rakes
- iii). Reduce manual intervention and loading time - by incorporating technological interventions
- iv). Dedicated corridors - for coal transportation
- v). Integrated evacuation :- that is eco-friendly and fulfills the demands of multi-modal national coal evacuation infrastructure.

⇒ Benefits of improved coal competitiveness :-

- i). Energy security
- ii). End import dependence

- iii). lower carbon emissions
- iv). Reduce dependence on road transport that is costlier
- v). provide last-mile energy connectivity
- vi). Optimises current requirements while promoting sustainability
- vii). Reduced freight costs - create economies of scale

Coal's centrality to Indian economy is indisputable. PM Gati Shakti Mission and integrated infrastructure under it along with coal dispatch projects in Chhattisgarh and Odisha pave the way ahead for a resilient, cost-effective, competitive Indian coal sector.

12. डिजिटल कृषि अर्थव्यवस्था की क्षमता को साकार करने में आने वाली चुनौतियों को रेखांकित कीजिए। इस संबंध में सार्वजनिक-निजी भागीदारी (PPP) की भूमिका पर चर्चा कीजिए। (250 शब्दों में उत्तर दें)

Highlight the challenges faced in realizing the potential of digital agricultural economy. Discuss the role of public-private partnership (PPP) in this regard.  
(Answer in 250 words) 15

Despite engaging around 45% of India's workforce, agriculture's contribution to GDP remains as low as 17-19%. In such a scenario, digital agriculture holds the promise of unlocking potential worth \$50-70 billion.

⇒ Yet, the road to digital agricultural economy is beset with challenges:

i). Scarcity of data sets required by machine learning.

eg. Early pest detection through ML will require large, indexed and standardised data sets that are lacking

ii). Small size of land holdings - render mechanisation unviable for farmers.

iii). The awareness, knowledge component and basic infrastructure for precision farming and point-to-point connectivity is missing.

- iv). Concerns regarding data privacy of farmers and safeguards over who can access the personal data in the agrarian digital architecture.
- v). Lack of access to credit or unreliable credit mechanisms
- vi). Indian agriculture's dependence on silted irrigation and outdated cultivation tools impedes transformation.

⇒ Role of PPP in facilitating digital agricultural economy:-

- i). Investing in smarter value chains:- by
- providing farm extension services
  - enhance price realisation
  - improved backward and forward linkages
  - cut out intermediaries
- ii). Improved access to credit, ~~technology~~ and markets:-
- connect farmers with market-places and financial institutions
  - facilitate micro-funding

iii). Build farmers' resilience to environmental shocks : eg. PPP project in Maharashtra developing ~~integrated~~ value chains that also support farmers through insurance

iv). Technological push : - use of IT and biotechnology to raise production and output levels

- knowledge on crop rotation, fertiliser usage and weather patterns

v). Focus on sustainability - through practices such as :-

- Integrated pest management
- Better utilisation of water resources
- focus on nutrition

As India aspires to move from Green to Evergreen Revolution, the Digital Agriculture Mission and e-Governance Plan in Agriculture are the way ahead for a resilient, Aatmanirbhar Indian agriculture.

13. फसल कटाई के बाद की मूल्य श्रृंखला में अक्षमता के कारण लघु और सीमांत किसानों की आजीविका पर अत्यधिक प्रतिकूल प्रभाव पड़ने के साथ-साथ फसल की हानि हो रही है। भारत के संदर्भ में चर्चा कीजिए। इन चिंताओं को दूर करने के लिए सरकार ने क्या कदम उठाए हैं? (250 शब्दों में उत्तर दें)

The inefficiencies in post-harvest value chain are leading to crop losses, with significant adverse impact on the livelihood of small and marginal farmers. Discuss in the context of India. What steps has the government taken to address these concerns? (Answer in 250 words)

15

As per FAO, the post-harvest system encompasses the delivery of a crop from harvest to consumption. A robust post-harvest system ensures minimum loss, maximum efficiency and maximum returns.

⇒ India's post-harvest value chain:-

- i). Lagging in agri-logistics
- ii). Existing cold storage is confined to certain crops and not integrated with other requirements.
- iii). Only 16% of the target set for integrated pack houses and cold storage etc. has been met
- iv). 84-99% gap in meeting requirements of storage and transportation

⇒ Impact of inefficient post-harvest value chain:-

- i). Farmers incur ₹ 92,651 crore

post-harvest losses per year.

ii'). Delay in harvest reaching the market - affects farmers' ability to monetise the produce

iii'). farmers lose around ₹ 63,000 crore for not being able to sell the harvest in which they have already invested

iv'). Quantitative and qualitative agro-food losses due to inadequate storage and distribution

v'). creates food insecurity despite sufficient production

⇒ Government's steps to address the concerns

i). MoFPI mandated to create post harvesting infrastructure to counter the losses

ii'). e-NAM - pan-India electronic trading portal to remove information asymmetry and address real time demand and supply.

iii'). Kisan Rath :- mobile application to facilitate farmers' and FPO's

access to vehicles for agri-produce transportation

- iv). Kisan Rail services - for transport of perishables
- v). Cold storage Referral park - in Dadri, Nashik etc. to create integrated storage systems
- vi). National Logistics Policy - to counter post-harvest losses and guarantee income security for farmers

Dalwai Committee recommendations on Doubling of Farmers income along with the National Logistics Policy are India's way ahead to an inclusive, sustainable agriculture that fulfills SDG 2 and empowers small economy.

14. दुनिया के सबसे बड़े रेलवे नेटवर्कों में से एक होने के बावजूद, भारतीय ट्रेनों की गति विकसित देशों की तुलना में कम है। इसके लिए उत्तरदायी कारणों को स्पष्ट कीजिए तथा इस संबंध में सरकार द्वारा उठाए जा रहे कदमों का उल्लेख कीजिए। (250 शब्दों में उत्तर दें)

Despite having one of the largest railway networks in the world, the speed of Indian trains lags behind in comparison to developed nations. Explain the reasons behind this and mention the steps being taken by the government in this regard.  
(Answer in 250 words) 15

With its 4th longest rail network and a major source of employment, Indian railways is the lifeline of Indian economy, polity and society.

⇒ However, the speed and efficiency of the Indian railways have been lagging as per global standards

⇒ Reasons for inefficient speed :-

i). Heavy congestion on railway track :- leads to delay in clearances as trains pass through a single track line

ii). The clash in routes of Express and passenger trains :- Express trains are halted when the passenger trains are ahead. The speed of the passenger inhibits the movement of Express train

iii). Weak infrastructure :-  
• main line tracks can not sustain

high speed trains of 110-130 km/hr  
Speed

- insufficient number of platforms
- terrain does not have a straight track

iv). Train design :-

- chain and buffer coupling system is outdated
- heavy rail coaches slow down modern-built engines
- open door and windows further impede speed

v). Speed regulations - vary in different regions such as hilly area, populated region, station etc. This variation prevents maximum speed utilisation

vi). Train timetable - in India is defined by railway congestion. western model of distance-based speed regulation and set timetable can be useful here.

⇒ Government steps for efficient railways :-

- i). Mission Raftaar :- envisaged in Union Budget 2016-17 to improve speed by :-
  - revision of speed restrictions

- construction of road over bridges and under bridges
- ii). Vande Bharat: - GPS-based modern infrastructure that makes it speedier and sustainable
- iii). Freight trains switching to aluminium wagons: - to modernise rail design with lighter and durable material that enhances speed
- iv). Kavach i.e. Automatic Train Protection System: - to ensure safety parameters with high speed
- v). National Rail Plan 2030 - to ramp up the rail infrastructure to meet the traffic ~~and~~ and speed requirements
- vi). Vision 2024: - Capacity enhancement and multi-tracking are the prime focus of railway infrastructure

Railways are not just an economic infrastructure but the core of Indian ethos. An inclusive, sustainable rail development is the step towards a Aatmanirbhar, resilient Bharat.

15. भारत में समावेशी विकास और निर्धनता उन्मूलन के लिए भूमि तक पहुंच और उग पर प्रभावी नियंत्रण महत्वपूर्ण हैं। सविस्तार वर्णन कीजिए। साथ ही, समावेशी विकास गुनिश्चित करने के लिए हाल के दिनों में भारत में अपनाए गए भूमि सुधार उपायों पर भी चर्चा कीजिए। (250 शब्दों में उत्तर दें)

Access to land and effective control over it are crucial for inclusive growth and poverty eradication in India. Elaborate. Also, discuss the land reform measures adopted in India in recent times to ensure inclusive growth. (Answer in 250 words) 15

Land reform measures include tenets such as regulation of ownership, operation, leasing, sale and inheritance of land with the aim of equitable redistribution, land control and ownership

⇒ Centrality of land to inclusive growth and poverty eradication:

- i). India's agrarian economy is riddled with socio-economic inequalities.

Land reforms is the way to foster social justice through equitable redistribution

- ii) Enhance land productivity:- by improving economic conditions of farmers/land owners.

- iii). System of peasant proprietorship:- motto of land to the tiller

- iv). Income transfer - from few to many - create demand for consumer

goods to push the economy

v). ~~Remove~~ Rural empowerment :-

by removing -

- rural poverty
- social inequality - eg. land reforms post-independence empowered DBCs such as Jats, Yadavs etc.

vi). Transfer land to non-agriculture usage :- to foster urbanisation, industrialisation and infrastructure creation

⇒ Land Reform measures in recent times :-

i). Digitisation of land records under Digital India Land Records Modernisation Programme to :-

- provide clear titles of land ownership
- facilitate quicker transactions

ii). Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 :-

ensures that land acquisition is not arbitrary and settlers' rights are safeguarded

- iii). Model Agricultural Land Leasing Act, 2016
- to improve land access to marginal farmers
  - enable access to loans to farmers through institutional credit
- iv). Draft Model Contract Farming Act, 2018 :- to provide regulatory oversight
- v). SWAMITVA scheme - to ensure property record maintenance
- vi). India's aim to reclaim 26 million hectares of degraded land by 2030 :- put wasteland to economic use.

Land reforms uphold the DPSP's mandate of social inclusion and social justice. At the same time, they are also the step to India's realisation of the aim of being a \$5 trillion economy by 2025 by upholding the tenets of SDG.

16. ऊर्जा क्षेत्र के संदर्भ में डीकार्बोनाइजेशन, विकेंद्रीकरण और डिजिटलीकरण की प्रवृत्तियां तेजी से उभर रही हैं। चर्चा कीजिए। (250 शब्दों में उत्तर दें)

When it comes to the energy sector, the trends of decarbonisation, decentralisation and digitisation are fast emerging. Discuss. (Answer in 250 words) 15

As per the World Economic Forum, COVID-19 pushed the case for a much needed energy transition around the globe that ~~is~~ can generate gains for both climate and society. Crucial to this energy transition are the 3 Ds :- Decarbonisation, Decentralisation and Digitisation.

⇒ Decarbonisation :-

- i). It is the process of reducing the amount of carbon, mainly CO<sub>2</sub> released in the atmosphere.
- ii). It aims to achieve a low-emission global economy
- iii). Globally, governments are pushing for hydrogen strategy to harness energy eg. EU, USA
- iv). India for decarbonisation - has 5 pillars :-
  - 500 GW non-fossil energy capacity by 2030
  - 50% energy requirement to be met with renewable energy by 2030

- reduce carbon emission by 1 billion tonnes by 2030
- Reduce carbon intensity by 45% by 2030
- net zero by 2070

### ⇒ Decentralisation :-

- i). It marks a shift from traditional monopolist business utility models to democratic, inclusive models
- ii). In Asia-Pacific, it holds the promise for :-
  - rural electrification
  - accommodate various energy sources depending on local contexts
- iii). In India, it holds the potential to reduce subsidy expenditure on centralised renewable energy
- iv). Off-grid development is crucial for financial gains and social inclusion

### ⇒ Digitisation :-

- i). Involves use of high degree of automation and analytics to

manage a system of varied energy sources

- ii). Includes aspects of AI, ML, IoT, Blockchain - to analyse demand and adjust power consumption
- iii). Can minimise energy losses
- iv). Virtual power plants, Cloud computing solutions are included under this
- v). In India, e-governance and NITI Aayog's finding of 'India's Trillion Dollar Digital Economy' herald a futuristic vision for digitisation of energy

An IEA report mentioned how India is set to see the largest increase in energy demand over the next ~~up~~ 20 years. In such a scenario, the 3Ds are the roadmap for accelerating clean energy transition

17. यद्यपि कृषि मन्त्रिालय ने किसानों की आय में वृद्धि की है, तथापि इन्होंने पर्यावरणीय निम्नीकरण और जैव विविधता के ह्रास में भी योगदान दिया है। भारत के संदर्भ में चर्चा कीजिए। (250 शब्दों में उत्तर दें)

While agricultural subsidies have supported farmers' income, they have also contributed to environmental degradation and biodiversity loss. Discuss in the context of India. (Answer in 250 words) 15

Farm subsidies have garnered a lot of ~~immense~~ debate, with criticism surrounding leakages and negative impact on cropping patterns. Yet, given the nature of Indian agriculture, subsidies are important, initiating the need for their rationalisation.

⇒ Major farm subsidies in India:-

on fertiliser  
purchase

→ PM-KISAN

Subsidies

→ MSP

on electricity  
bill

⇒ Agricultural subsidies benefitting farmers' income:-

i). Cash support to offset farmer distress - e.g. PM-KISAN, KALIA in Odisha, Rythu Bandhu in Telangana

ii). Bridging the income divide-

As per FAO, 70% of Indian small households depend on agriculture. Thus, subsidy ~~of~~ support aids small and marginal farmers to bridge the income gap.

iii). Increase in farmer income addresses malnutrition, improves living standard thereby boosting HDI.

⇒ Agricultural subsidies triggering environmental degradation and biodiversity loss:-

- i). Fertiliser subsidies - lead to Urea and DAP overuse. This causes water and soil pollution.
- ii). Eutrophication - is the result of fertiliser-laden agricultural runoff to the streams. This pollutes natural water resources.
- iii). Urea - is cheapest form of nitrogen based fertiliser due to subsidies. It volatilises, releasing ammonia into air. This leads to air, water and soil pollution.

- iv). Free power and water - under subsidies - leads to undue focus on rice in water-stressed areas such as Punjab and Haryana.
- v). Often fertiliser subsidies lead to non-judicious use of fertilisers. This affects soil and soil organisms e.g. earthworms. negatively.
- vi). Invasive alien species - proliferate as soil's character is affected. This contributes to biodiversity loss.
- vii). IPCC report - mentions that agriculture accounts for 70% of global fresh water use and 1/3rd of GHG emissions. Also leads to 80% of global deforestation.
- viii). Cheap fertiliser subsidies make it easier to burn stubble than recycle it. This has an unprecedented negative impact on air quality.
- farm subsidies being a double-edged sword, a move toward judicious rationalisation and investment-based strategy such as PMKSY, Climate Smart Agriculture is the way ahead.

18. भारत में अनाज और दालों की खरीद एवं विपणन से जुड़ी वर्तमान समस्याओं को दुग्ध क्षेत्रक के सफल मॉडल के माध्यम से हल किया जा सकता है। चर्चा कीजिए। (250 शब्दों में उत्तर दें)

The persistent problems around the procurement and marketing of cereals and pulses in India can be solved by the success model of the milk sector. Discuss.  
(Answer in 250 words)

15

As India ranked 107 out of 121 countries on the Global Hunger Index, experts have pointed out that a concerted push towards cereals and pulses has the potential to address the issue of hunger.

⇒ Despite the importance of cereals and pulses, their procurement and marketing is riddled with problems :-

- i). Seasonality of the production cycle leads to an unmanageable, sheer volume. Procurement options are episodic and fractured.
- ii). Absence of grading/sorting machines at procurement centres - leads to flouting of fair average quality norms
- iii). NAFED and State marketing agencies :- lack effective forward and backward linkages
- iv). Cash crunch is a major issue

for NAFED and FCI because of their dependence on budget line. As a result, middlemen abound.

v). Outdated processes and technologies in the cereals and pulses sector when compared to the robust domain expertise in the milk cooperatives.

⇒ In stark comparison to this is the successful milk sector model that holds a lot of potential for cereals and pulses sector in India! —

i). Focus on quality : — through use of machines such as centrifuge etc. at primary procurement centre. Fixing of cereals and pulses' price based on quality will incentivise quality production.

ii). Build domain expertise to ensure robust forward and backward linkages — eg. of AMUL can be emulated. This will ensure sufficiency in cereals/pulses production

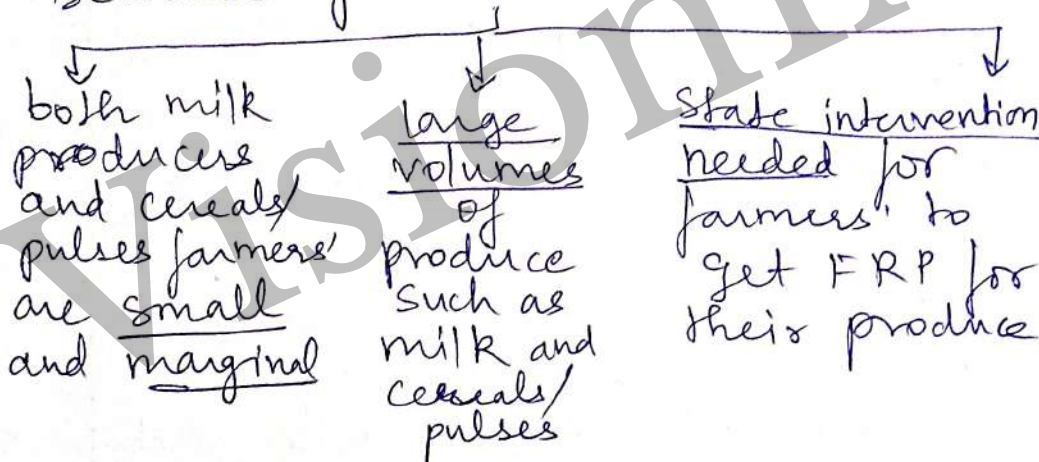
iii). Bringing co-operative model in

pulses and cereals sector. This will strengthen the equity base and increase bargaining power of farmers

iv). Building Infrastructure: such as cold storage and improved input-output ratio. This will ensure better internal functioning and improved funding, and marketing.

⇒ Why should milk sector model be applied to cereals and pulses?

Because of similarities between them:



The creation of Ministry of Co-operation holds immense potential for the development of co-operatives sector. Transparency, fairness and use of technology based cooperatives sector is the way ahead for a revamped cereals and pulses sector.

19. भारत में भूमि अभिलेखों से संबंधित मौजूदा मुद्दों पर प्रकाश डालते हुए, चर्चा कीजिए कि भूमि अभिलेखों का डिजिटलीकरण और 'लैंड टाइटलिंग' (भू-स्वामित्व का निर्धारण) इनके समाधान में कैसे मदद कर सकता है। (250 शब्दों में उत्तर दें)

Highlighting the existing issues related to land records in India, discuss how digitisation of land records and conclusive 'land titling' can help in addressing them. (Answer in 250 words)

15

Land as an asset and source of livelihood is important for a huge chunk of Indian population, especially those engaged in agrarian economy. The Land Records Modernisation Program has been an effort in the direction to ensure efficient upkeep of land records.

⇒ Issues related to land records:

i). Lack of updated land record data due to :-

- heterogeneous rules/regulation
- poor synergy across land record departments
- failure to evolve from British-era land policies

ii). Poor quality land records - as they do not reflect ground position and abound in discrepancies

iii). Accessing land records - is a cumbersome, inefficient process that causes delays

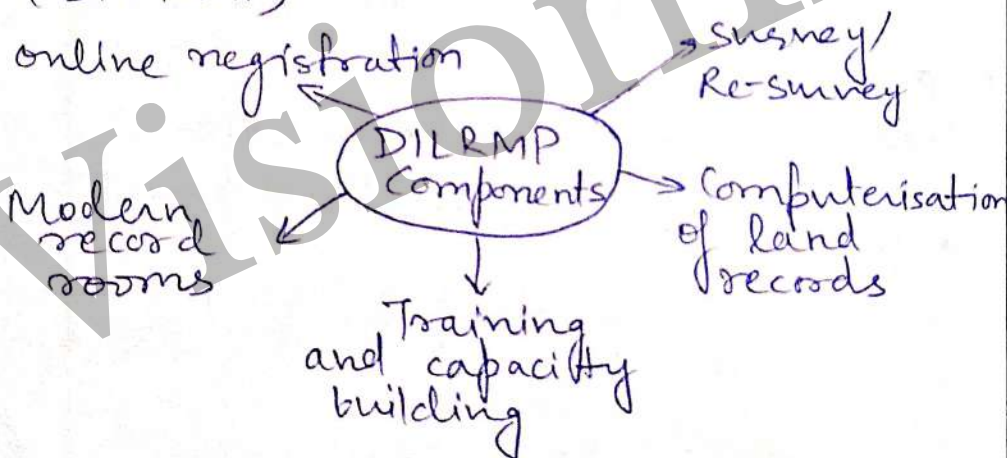
iv). Lack of suitable facility to modify records on the same day as registration.

v). Unclear and outdated land records lead to :-

- property disputes
- denial of access to formal loans
- discrepancies in accessing public relief programs

⇒ These issues can be best addressed through the Digital India Land Records Modernisation Program:

(DILRMP)



⇒ Digitisation and conclusive land titling to resolve the issues of land records :-

i). Improved accessibility to records will provide efficiency and save time and cost

- ii) Automatic and automated mutation (update on registration) :- will reduce scope of fraudulent property deals
- iii) Ligitation will reduce - as a result of conclusive titling
- iv) Accessibility to land-based certificates such as domicile, income will be improved
- v) Land fraud - will be prevented under initiatives such as conclusive land titling and Unique Land Parcel Identification Number.
- vi) web-enabled single-window service to obtain record of rights. This will facilitate :-
- agricultural credit
  - new infrastructural development
  - Transparent real-estate transaction.

Use of technology such as GPS and cadastral mapping for land record digitisation and titling holds the potential for a revamped rural economy that is inclusive, visionary and ultimately drives macroeconomic growth.

20. सड़क क्षेत्रक में बुनियादी ढांचे के वित्त-गोपण को सुब्यवस्थित करने के लिए कई उपायों को अपनाए जाने के बावजूद, निजी निवेश ने सीमित भूमिका निभाई है। चर्चा कीजिए। (250 शब्दों में उत्तर दें)  
Despite adoption of numerous measures to streamline financing of infrastructure in the road sector, private investment has played a limited role. Discuss. (Answer in 250 words) 15

India has the second largest road network in the world. Yet, as Asian Development Bank has reported, despite the quantity, the quality of road infrastructure is sub-par. Private investment has the potential to bridge the quality and financing gap in road infrastructure.

⇒ However, despite policy support, private investment has played a limited role in building the road infrastructure.

⇒ Reasons for limited role of private investment in road sector:

i). Land acquisition-related issues:

lead to → delays  
→ increase in costs  
→ losses for private investor

ii). Stretched balance sheet of many infrastructure developers

iii). Lack of debt products that can

be aligned to revenue models of highway projects

iv). Regulatory bottlenecks such as unclear exit policy for road developer.

v). Conflict of interest in case of arbitration - as NHAI is both the developer and also the regulator

⇒ The need for private investment in road sector :-

Private investment

- plug financing gap
- bring technical expertise
- make road transport safer (as per WB)

⇒ Channelising and attracting private investment :-

i). Stable revenue flow assurances should be offered to investors through :-

- In VITs
- DFIs
- NIF

- ii). Robust regulatory system :-
- transparent legal ecosystem and procedural comfort
  - independent regulator for arbitration
- iii). Overcome behavioural challenges
- public entity should ~~embrace~~ address risk-avoidance.
  - private partner should look beyond rent-seeking
- iv). Timely land acquisition clearances from MOEFCC and others to utilise the visionary mandate of Bharatmala and foster PPP approach.
- v). Restructuring of models - such as HAM ~~more~~ for a more context-driven, equitable public-private partnership.

Roads are central to India's infrastructure development, and ultimately the goal of being a US\$ 5 trillion economy by 2025. Vijay Kelkar Committee's recommendations on PPP reform pave the way ahead to unlock the potential of private sector in road infrastructure.