

## GENERAL STUDIES (Test Code : 422)

Name of Candidate  Registration No.

Schedule

Module

Place  Time  Date

Classroom  Distance Learning  Classroom & Distance Learning

### INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
2	10	
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9	10	
10	10	
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24	10	
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### INSTRUCTIONS

- Do furnish the appropriate details in the answer sheet (viz. Name, ID Number and Test Code).  
उत्तर-पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक नम्बर आदि।)
- There are TWENTY-FIVE questions printed both in HINDI and in ENGLISH.  
इसमें पच्चीस प्रश्न हैं तथा हिन्दी और अंग्रेजी दोनों 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 (क्यू सी ए) पुस्तिका के मुख-पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिखे गए उत्तर पर कोई अंक नहीं मिलेगा।
- 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।

Total Marks Obtained

Remarks:

Signature of Examiner

**GENERAL STUDIES (Test Code : 422)**

**Overall Macro comments / feedback / suggestions on Answer Booklet:**

1.

2.

3.

4.

5.

**All The Best**

All questions are compulsory and carry equal marks. Answer the questions in NOT MORE than 200 words each. Content of the answer is more important than its length.

1. The Supreme Court of India on the reckless media coverage of the 26/11 attacks noted that - "By covering the attack live, the Indian TV channels were not serving any national interest or social cause. On the contrary, they were acting in their own commercial interests, putting national security in jeopardy." In the light of the above observation, mention the principles and concerns that mass media should keep in mind while reporting sensitive and dangerous issues. 10

भारत के उच्चतम न्यायालय ने 26/11 हमले के गैर-जिम्मेदार मीडिया कवरेज पर उल्लेख करते हुए कहा कि - "हमले का सीधा प्रसारण कर भारतीय टीवी चैनल किसी राष्ट्रीय हित अथवा सामाजिक कार्य में सेवारत नहीं थे, इसके विपरीत वे राष्ट्रीय सुरक्षा को खतरे में डालकर अपने वाणिज्यिक हितों के लिए कार्य कर रहे थे।" उपर्युक्त अवलोकन के प्रकाश में उन सिद्धांतों और चिन्ताओं का उल्लेख कीजिये जिनका ध्यान मीडिया को संवेदनशील और खतरनाक मुद्दों की रिपोर्टिंग के समय रखना चाहिए।

Media freedom is one of the Fundamental Rights guaranteed under Article 19 of the Constitution. This is not an unqualified right and is subject to reasonable restrictions in the interest of public order under Article 19(2).

There is no denying of the importance of media coverage in the case of dangerous and current events. We have seen how media reports led the passengers of Flight 93 rise in revolt during 9/11 and prevent an even

greater tragedy. However sometimes this enthusiasm goes overboard and jeopardises public safety.

The Press Council of India mandates that media coverage should not be sensationalistic and biased.

Keeping this in mind, the following steps may be suggested.

- \* No airing of unsubstantiated rumours that may inflame dangerous passions.
- \* No disclosure of security plans as was seen during the siege at the Taj Hotel.
- \* No free publicity for the perpetrators by airing their interviews.
- \* Not complicating matters for the security forces by deliberately

putting themselves in dangerous situations.

\* No Speculation about the identity of terrorists as these feed rumours later on.

Cumulatively, these steps can ensure a reasonable balance between right to report and security concerns.

2. What started off as a movement for land reform today poses the greatest internal security challenge to India. Analyse the role of external state and non-state actors in fuelling naxalism across the country. 10

यह एक भूमि सुधार आन्दोलन के रूप में प्रारंभ हुआ था किन्तु आज यह भारत की सबसे बड़ी आंतरिक सुरक्षा चुनौती बन गया है। देश भर में तक्सलवाद को बढ़ावा देने में बाह्य राज्य ताकतों और गैर-राज्य ताकतों की भूमिका का विश्लेषण कीजिये।

In the four decades that Naxalism has been around, it has changed character quite often. The recent strengthening of the movement has its roots in the merger of the MCC and the PWG in early 2000s.

Much of the physical weapons and infrastructure used by the Naxals comes from outside India. Some of their linkages with external actors are :-

a) modern weaponry secured from Chinese sources that are infiltrated through the porous borders in the North-East. Security agencies speculate on the role of Chinese Intelligence Agency (NAICHO) behind this.

b) Support from the establishment in Pakistan in the form of funding and from the allies of the BNP Government in Bangladesh when it was in power.

c) linkages with the Communist Party of Nepal during their armed rebellion till 2005.

d) Possible links with the LTTE in the last decade especially in the field relating to training in guerilla warfare.

It would be a mistake however to paint Naxalism as a purely law and order problem. It draws sustenance from real grievances among the tribals across interior India. The external support merely provides them the arms and ammunition necessary.

3. Why is agricultural diversification essential for sustainable livelihood? Bring out the importance of allied activities associated with agriculture as a source of diversification. 10

निर्वहनीय आजीविका के लिए कृषि विविधीकरण क्यों आवश्यक है? विविधीकरण के एक स्रोत रूप में कृषि के साथ सम्बद्ध क्रियाओं के महत्व को दर्शाइए।

Agricultural diversification in the plainest terms relates to a move away from monoculture towards a more mixed growing pattern.

Its advantages for the farmer are:-

- a) Greater security: Crop failure due to disease does not mean the end of the road. The farmer is always assured that another kind of crop will be able to provide him with some income.
- b) Preserves soil fertility as rotation does not exhaust particular nutrients.
- c) Greater income as cash crops

have higher profit margins.

d) Environmentally friendly as crops suitable for the soil are grown.

e) leads to a year-long growing season and hence greater productivity.

An ideal agricultural diversification model would not restrict itself to mere crops but would also branch out into allied agricultural activities keeping in mind the local conditions. Some of these are :-

a) Fisheries - Do not require much investment. In areas where tank irrigation is common, this is a wonderful way to supplement income.

b) Animal husbandry - Can be carried out on unproductive land. Poultry

farming can sustain itself with minimal investment. Provides a ready source of milk, dairy products and eggs. It is not dependent on climatic conditions.

c) Horticulture - It has excellent profit margins and a short growing period. can be used as an ideal filler between the sowing seasons.

4. Government of India in its budget for 2014 has announced a hike in the FDI cap in Insurance. What are the likely benefits of FDI in Insurance for the Indian economy? What are the challenges that still remain to increase the insurance penetration in the country? 10

भारत सरकार ने 2014 के अपने बजट में बीमा के क्षेत्र में प्रत्यक्ष विदेशी निवेश (FDI) की सीमा को बढ़ाने कि घोषणा की है। भारतीय अर्थव्यवस्था के लिए बीमा में प्रत्यक्ष विदेशी निवेश के क्या संभावित लाभ हैं? देश में बीमा की पैठ बढ़ाने के समक्ष कौन सी चुनौतियां अभी भी विद्यमान हैं?

In opening the Insurance sector fully to foreign investors, the Govt. has tried to leverage the massive investment that may result from increase in insurance cover.

The benefits of FDI in Insurance are :-

- a) Greater penetration of insurance in order to mobilise funds from the population.
- b) Increased risk management in Indian business.
- c) Growth of life insurance sector as a viable mode of compulsory savings.
- d) Boost to domestic enterprise by enhanced insurance cover.

The challenges facing the Insurance Sector are

- a) Cultural preference for investing in Gold as long term savings.
- b) Lack of awareness among the lower income group

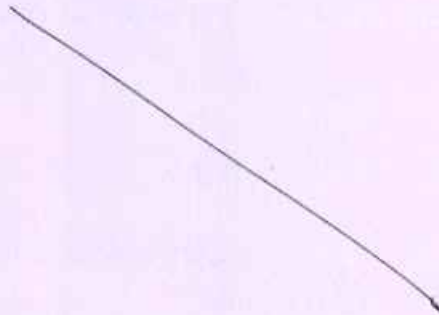
and the rural population regarding insurance.

c) High cost of premiums sought from the non-salaried classes.

d) ~~too~~ Risk aversion in business and consequent lack of interest in insurance.

e) Prevailing low rates of interest in the life insurance market.

f) Not enough penetration of the insurance infrastructure especially in rural India.



5. The recent RBI decision to give licenses to Small and Payments banks is seen as a positive step towards heralding financial inclusion. Explain how these banks will help in financial inclusion. What are the challenges these banks are likely to face? 10

लघु और भुगतान बैंकों (payments banks) को लाइसेंस देने सम्बन्धी भारतीय रिजर्व बैंक के हाल के निर्णय को वित्तीय समावेशन की घोषणा की दिशा में एक सकारात्मक कदम के रूप में देखा जा रहा है। ये बैंक किस प्रकार से वित्तीय समावेशन में मदद करेंगे, व्याख्या कीजिये? इन बैंकों के समक्ष आने वाली संभावित चुनौतियां क्या हैं?



6. Explain the backward and forward linkages across the supply chain in the Food Processing Sector. Also discuss their importance in ensuring the success of Supply Chain Management in the Food Processing Industry of India. 10

खाद्य प्रसंस्करण क्षेत्र में आपूर्ति श्रृंखला में अग्रगामी और पश्चगामी लिंकेज/कड़ियों की व्याख्या कीजिये। इसके साथ ही भारत के खाद्य प्रसंस्करण उद्योग में आपूर्ति श्रृंखला प्रबंधन की सफलता को सुनिश्चित करने में उनके महत्व की चर्चा कीजिये।

Backward and forward linkages across the supply chain in food processing help in harnessing the best produce while providing best rates to both the final consumer as well as the farmer. They manage this

by eliminating uncertainties in the supply chain and countering the effects of the middlemen.

The two most productive forms of backward linkages are :-

Contract Farming.

This involves a manufacturing company entering into agreement with certain farmers. The farmers are assured that all their produce will be bought at a pre-set price by the company while the company reciprocates by providing them agricultural best practices.

### Terminal Markets.

These are markets like e-Choupal where a variety of facilities like e-auction, temporary storage, product quality assessment etc are available.

Companies directly interact with farmers who use the information garnered to strengthen their bargaining position and secure competitive prices for their produce.

7. India has emerged as the world's largest PPP market with more than 900 projects in various stages of development yet challenges galore. Explain. How far would the '3P India' Initiative be able to address these challenges?

10

900 से अधिक परियोजनाएँ जो कि अपने विकास की विभिन्न अवस्थाओं में है के साथ, भारत विश्व के सबसे बड़े PPP बाजार के रूप में उभरा है फिर भी चुनौतियाँ बहुतायत हैं। व्याख्या कीजिये। 3P पहल किस हद तक इन चुनौतियों का सामना करने में सक्षम होगी?

Close to  $2/3^{\text{rd}}$  of the total investment in India comes from the private sector (households + corporates).

It is to leverage this massive member that the PPP model was conceived. While some have achieved great success, others have not. Some of the problems faced by PPPs are :-

- a) Unavailability of infrastructure— Often the base infrastructure for starting a project is lacking. While the private partner expects the Govt. to provide this, the Govt. sees it as

a part of the PPP obligations.

b) Lack of debt financing by banks especially where public good projects are concerned. Their profit viability is doubtful.

c) Poorly drafted agreements leading to disputes regarding the nature of obligations.

d) Unwillingness of the private sector to comply with the strict norms mandated for public sector functioning by the judiciary. Other regulatory compli-  
-ances.

e) Lack of takers for long gestation period projects or where profit margin is low.

The 3P Initiative announced by the Finance minister in this year's budget will be a sort of non-profit corporation that will have trained

professionals to look into the whole gamut of regulatory issues, financial viability and other hindrances.

This should go a long way in taking care of these hurdles. It should however also look at making the contracts more flexible so that the rigid structure of PPPs can be addressed.

8. (a) Information Technology has a huge role to play in making agriculture a sustainable activity even for smallholder farmers by providing them with necessary information at every stage of farming at the right time. Discuss. 5
- सूचना प्रौद्योगिकी, किसानों को, यहाँ तक कि छोटे किसानों के लिए भी कृषि के प्रत्येक चरण में सही समय पर आवश्यक जानकारी उपलब्ध करा कर कृषि को एक निर्वहनीय या संतुलित गतिविधि बनाने में महत्वपूर्ण भूमिका निभा सकती है। चर्चा कीजिये।

Information Technology has the potential to revolutionise agriculture, if universal access to it is guaranteed. Some of the ways in which it can help farmers are :-

- a) Provide them with weather predictions before sowing. This is especially important for water

intensive crops like rice.

b) Provide information of the right dosage of fertilizer needed depending on the crop & soil type along with other best practices.

c) Inform them about the solution to various pest and insect infestations.

d) Inform them of the prevailing market prices along with futures trading prices. This will enable the farmer to make informed choices about how long to hold the grains and how much to sell it for at the mandi.

8. (b) An expert committee to look into the issue of Rhino poaching has proposed dehorning of Rhinos as a solution to stop poaching of Rhinos. Critically analyse the viability of this measure to stop poaching of Rhinos. 5 गैंडों के अवैध शिकार के मुद्दे पर गौर करने के लिए बनी एक विशेषज्ञ समिति ने गैंडों के अवैध शिकार को रोकने के एक समाधान के रूप में गैंडों को सींग विहीन करने का प्रस्ताव दिया है। गैंडों के अवैध शिकार को रोकने के लिए इस उपाय के व्यवहार्यता कि आलोचनात्मक विवेचना कीजिये।

India is home to the largest population of the One-Horned Rhinoceros in the world. Every year more than three dozen of these are killed by poachers in the Kaziranga Reserve alone.

Dehorning the rhinos is a process through which tranquilized rhinos are deprived of their horns in order to make them useless for poachers.

while the process has met with limited success in Africa, its long term implications need to be studied. It tinkers with ecology as the rhino now lacks a tool used by it in territorial battles.

There is no saying when another part of the rhino may become attractive to Chinese consumers.

It is also a project that may end up harming the rhino in the long run.

The only foolproof way to combat poaching is to increase the manpower on the ground and impose harsh punishments on the whole supply chain.

9. Managing borders is more than just stopping infiltration of terrorists. What other security challenges, apart from terrorism, does India face in its border areas?

10  
सीमा प्रबंधन सिर्फ आतंकवादियों की घुसपैठ रोकने से कहीं अधिक है। आतंकवाद के अलावा सीमा क्षेत्रों में भारत किन अन्य सुरक्षा चुनौतियों का सामना करता है?

Border management is a wide field of which terrorism control is but one aspect. The other major security challenges faced by India in this field are :-

a) Illegal Drug Running — India lies at the junction of the

two major drug related triangles  
- the opium network (Iran, Pakistan, Afghanistan) and the Heroin Golden Triangle (Burma, Thailand & Laos).

Efficient border management includes preventing India from becoming a conduit to the international drug trade.

b) Immigration - India has long porous borders in its east. This attracts a large number of unregulated asylum seekers and illegal immigrants. This has led to social tensions and demographic imbalances which need to be countered.

c) Arms running - Arms from the

Western borders are illegally infiltrated into India for organised crime purposes.

d) Smuggling of otherwise legal goods via the sea to escape custom barriers.

e) Cattle smuggling to feed the booming beef industry in Bangladesh.

f) Asylum seeking criminals who desire a temporary safe refuge in Nepal.

10. Today's terrorist organisations succeed on the basis of a sound underlying business model of organised crimes. Why do terrorist organisations find it beneficial to enter into organised crimes or partner with organised criminals? Illustrate.

10

आज के आतंकवादी संगठन, संगठित अपराध के एक अंतर्निहित व्यापार मॉडल के आधार पर सफल हैं। अतंकी संगठन क्यों संगठित अपराध अथवा संगठित अपराधियों के साथ भागीदारी को लाभप्रद पाते हैं? उदहारण देकर स्पष्ट कीजिये।

Terrorist organisations are multinational entities today. While they have the necessary manpower to operate, they lack the all important local knowledge and domestic weaponry to carry out their aims. It is to get hold of these domestic advantages that they tap into the organised crime network.

The earliest such instance was seen in the 1993 Bombay

Blasts where the ISI only supplied the RDX needed. The material was conveyed through the Underworld's smuggling network that bribed its way through local customs. It was then assembled using local men who had been sent on a piece of targets. The final planting was also done by them. The funding was managed through the Hawala network - also a branch of the Underworld.

11. (a) What are floating solar panels? What are its major advantages compared to conventional solar panels?

5

तैरते हुए सौर पैनल क्या हैं? पारंपरिक सौर पैनलों कि तुलना में इनके प्रमुख लाभ क्या हैं?



11. (b) What is "Drishti" System? How will it help in enhancing aviation safety? 5  
दृष्टि (Drisht) प्रणाली क्या है? विमानन सुरक्षा को बढ़ाने में यह किस प्रकार सहायता करेगी?

Drishti is a form of aviation aid developed by the National Aerospace Labs.

It aids aircraft operations to take place even in conditions of poor visibility by ensuring that the instrument landing system can be effectively used.

It is thus extremely useful during the winter and monsoon months when the minima for aircraft operations falls to its base levels.

12. The Prime Minister of India has given a call for 'Make in India' campaign. What are the challenges faced by India's manufacturing sector if it seeks to become a global manufacturing hub? 10

भारत के प्रधानमंत्री ने 'भारत में बनाओ' अभियान का आह्वान किया है। यदि भारत वैश्विक विनिर्माण की धुरी बनना चाहता है तो भारत के विनिर्माण क्षेत्र के समक्ष प्रमुख चुनौतियाँ क्या हैं?

The major challenges faced by the Indian manufacturing sector are :-

- a) Lack of financial incentives - Tax breaks and preferential treatment are missing. This makes manufacturing abroad much cheaper than in India.

b) Antiquated red tapism and delays  
- There is no single window system of clearance. Multiple permissions and permits are required which is extremely time consuming and breeds corruption.

c) ~~A~~ Unreformed labour laws lead to periodic strikes and lockdowns. Hire and fire ~~test~~ is made difficult due to numerous compliances. The Apprentices Act also makes tapping into unskilled labour difficult.

d) Infrastructure - Basic infrastructure like power and raw materials are extremely

expensive and unreliable. Importing requires heavy custom duties which makes the whole enterprise cost prohibitive.

- e) Outdated machinery - Capital controls restrict imports of the latest machinery. This means that the domestic industry cannot acquire the sort of cost competitiveness and economies of scale that Chinese Industries do.
- b) Protectionism and preferential treatment has restricted MSMEs to small scale operations that cannot survive competition in the open market in the post WTO era.

13. Mumbai attacks brought into sharp focus India's unpreparedness in coastal security. Identify various security concerns related to our maritime boundaries. What steps have been taken by India to improve its coastal security? 10

मुंबई हमलों ने भारत की तटीय सुरक्षा की तैयारी में कमी को स्पष्ट रूप से उजागर किया है। हमारी समुद्री सीमाओं से संबंधित विभिन्न सुरक्षा चिंताओं की पहचान कीजिये। भारत द्वारा अपनी तटीय सुरक्षा को सुधारने के लिए क्या कदम उठाये गए हैं?



14. (a) 'India finally made it to the 'Cryo Club' with successful launch of GSLV-D5'. Explain in brief the cryogenic technology and its advantages. 5  
 SLV-D5' के सफलतापूर्वक प्रमोचन के साथ भारत अंततः cryo-समूह में सम्मिलित हो गया है। संक्षेप में ब्रायोजेनिक तकनीक और इसके लाभों कि व्याख्या कीजिये।

Cryogenic rocket engines are a form of liquid propellant engines that use oxygen and another gas as fuels. These gases are cooled down to cryogenic temperatures and stored in the liquid form

During takeoff, these burn and provide the necessary thrust.

Storing these fuels as gases would lead to a great increase in the mass of the rocket and thus reduce efficiency enormously.

Cryogenic engines therefore provide much greater thrust power with much lesser weight. They are therefore very important in inter-planetary missions.

14. (b) What is ZMapp and why was it in news recently?  
ZMapp क्या है और हाल ही में यह चर्चा में क्यों था ?

5

ZMapp is an experimental drug that has been used with some success in combating the current outbreak of Ebola virus in West Africa.

It has been recommended as a possible cure by the US Govt. but has not been subject to the usual drug checks.

It was a controversial decision as the drug was initially administered to Africans in violation of all accepted precedents. That American and European Ebola patients were not prescribed the drug was

cited as evidence of racism  
even in science.

15. Why is micronutrient malnutrition fast becoming a significant problem in India? Critically analyse the utility of 'Food Fortification' in fighting this menace. 10

भारत में सूक्ष्मपोषक कुपोषण क्यों तेजी से उभरती हुयी एक महत्वपूर्ण समस्या बनता जा रहा है ? इस खतरे से निवटने में खाद्य सुदृढीकरण की उपयोगिता का आलोचनात्मक विवेचन कीजिये ।

Micronutrient malnutrition refers to a phenomenon where tiny chemical elements that play a vital role in the body's internal mechanism are not sufficiently present in a person's diet.

The main reasons for this

are :-

- a) The Green Revolution standardized Indian diet and eliminated many elements of it that supplied these essential ~~to~~ substances.
- b) Food norms in India mean that non-vegetarian food is not eaten by a large section. The elements missed out here need to be supplemented.
- c) Geographical conditions also influence the diet - for eg lack of iodine in mountain soils.

The result is that more than half of India's Child Mortality

Rate can be ascribed to this. It also leads to hormonal issues like retarded growth, goitre etc.

India was among the first to start food fortification. This involves adding folic acid supplements, iodine to common salt etc. Awareness needs to increase regarding the importance of a balanced diet and the utility of these minute quantities of essential elements in daily food.

16. Explain EPC model of investment in the infrastructure sector. Why has the government been favouring the EPC model over PPP in recent years? 10  
आधारभूत संरचना के क्षेत्र में निवेश के ईपीसी मॉडल की व्याख्या कीजिये। हाल के वर्षों में सरकार ने क्यों पीपीपी मॉडल की अपेक्षा ईपीसी मॉडल को अधिक वरीयता दी है?



17. Discuss the various causes of floods in the Brahmaputra valley region. Contrast these with the causes of recent floods in J&K. How is Flood Plain Zoning used for flood management? 10
- ब्रह्मपुत्र घाटी क्षेत्र में बाढ़ के विभिन्न कारणों की चर्चा कीजिये। इन कारणों की तुलना हाल ही में जम्मू एवं कश्मीर में आई बाढ़ के कारणों से कीजिये। बाढ़ के मैदानों की जोनिंग का उपयोग बाढ़ प्रबंधन के लिए कैसे किया जाता है?

The Brahmaputra valley floods are the result of mainly natural reasons. The massive rainfall received in the Eastern Himalayas and the Brahmaputra's ever changing river channel are the causes why floods occur every year. The great quantity

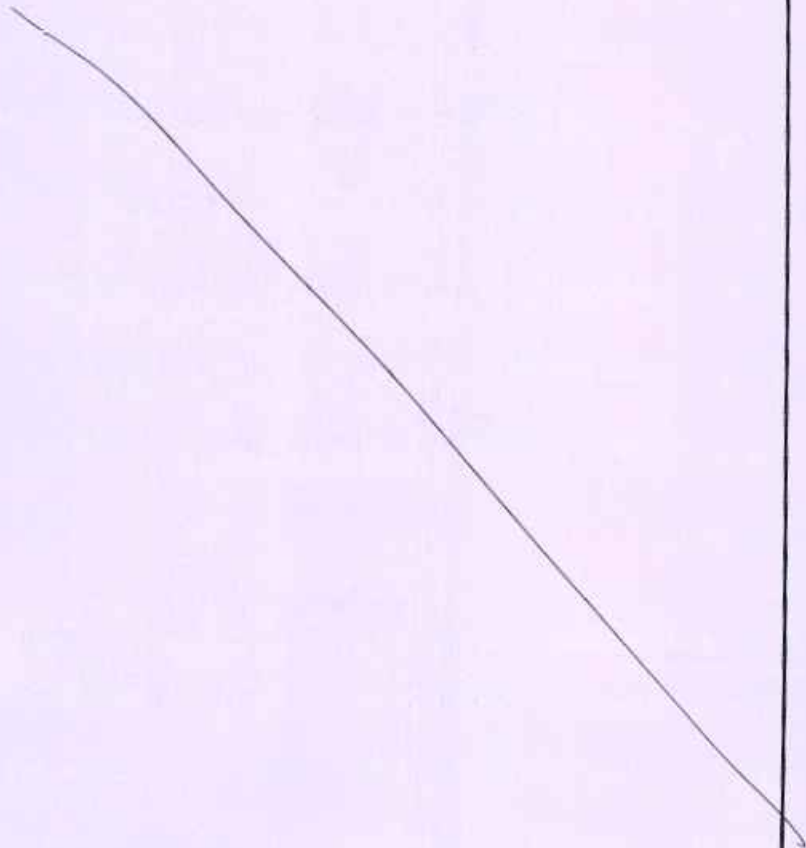
of silt carried from Tibet makes the river bed shallow and leads to a widening of it every year.

The floods in Kashmir however were mostly man-made. Large scale unauthorised construction has blocked the natural drainage pattern and channels and resulted in water logging due to above average rainfall. Deforestation in the upper course also played a major role.

Flood plain zoning seeks to address both these situations. It demarcates all land that has even a minute chance of getting flooded and restricts

all construction activity therein  
allowing natural floods.

Existing occupants are either  
provided incentives to move  
out or are made aware of  
the real risk they are in.



18. The fact that Ganga is a holy river has, ironically, been a major factor responsible for its increasing pollution. Comment. Critically analyze the success of the steps taken by the Government to make Ganga pollution free?

10

वास्तविकता यह है कि गंगा एक पवित्र नदी है परन्तु विडम्बना यह है कि इसकी पवित्रता ही इसके बढ़ते प्रदूषण हेतु प्रमुख रूप से उत्तरदायी है। सरकार के द्वारा गंगा को प्रदूषण मुक्त बनाने के लिए उठाये गए कदमों का आलोचनात्मक विश्लेषण कीजिये।

The Ganga's holy status in Indian culture has contributed to its massive pollution levels. Some of these causes are :-

- a) Disposal of semi-burnt dead bodies - Thousands of cremations occur daily on the banks of the Ganges, especially at Varanasi. Many of these half burnt bodies are disposed off directly in the river leading to proliferation of bacterial growth.

- b) Inorganic and organic wastes

offerings made to the Ganga include flowers, lamps etc. many of these contain harmful substances like plastics, lead paints, oils and the like. These have a harmful effect on the flora and fauna. Organic wastes disposed off lead to algal blooms that adversely affect animal life.

The Government has through the Ganga Action Plan sought to clean the Ganga by imposing restrictions on effluents from industries and untreated sewage released into the river. But these changes are merely

cosmetic or half hearted like the beautification projects. The massive population pressure on the Ganga means that human and animal wastes keep finding their way into the river. Only a massive sanitation project can help tackle this menace.

19. What are the major characteristics of a good irrigation system (for application of water and not source)? Discuss sprinkler and micro-sprinkler based irrigation systems with respect to these characteristics. 10  
एक अच्छी सिंचाई प्रणाली के प्रमुख लक्षण क्या हैं (जल के सदुपयोग के संदर्भ में और स्रोत के संदर्भ में नहीं)? इन प्रमुख लक्षणों के संदर्भ में स्प्रिंकलर और लघु स्प्रिंकलर प्रणालियों की चर्चा कीजिये।

A good irrigation system has the following characteristics

- No wastage of water.
- Dispersal of water to all corners of the field.
- Optimum utilisation of water according to needs.
- Cost effective.

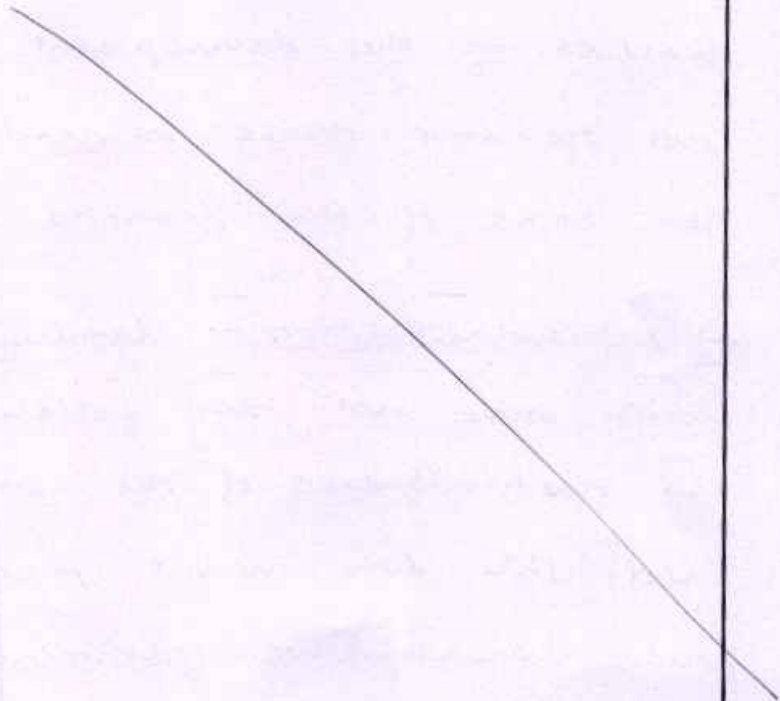
### \* Sprinkler system.

Sprinklers seek to mimic rainfall by dispersing water drop by drop. A central pivot rotates around sprinkling water on the crops in a circular fashion. This eliminates water logging and wastage.

### \* micro-sprinkler.

These are smaller forms of the sprinkler system. They are of a lesser height and spread water over a smaller area. They are used in plantations to water the roots of plants.

surrounding them. They are unproductive for large farms owing to the need to install multiple pieces to cover large areas.



20. Land reforms in India have only benefitted certain sections of the farming community. For the landless in the country, land reforms are still a distant dream. Examine. 10

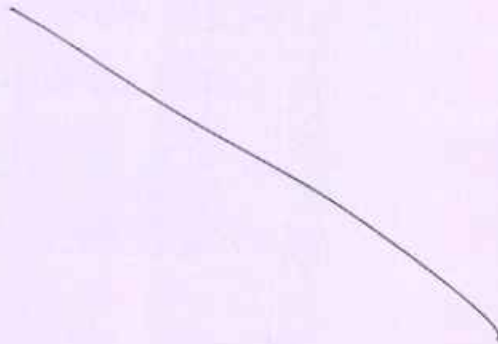
भारत में भूमि सुधारों ने कृषक समुदाय के केवल कुछ वर्गों को ही लाभान्वित किया है। देश के भूमिहीनों के लिए भूमि सुधार अभी भी एक दूर का सपना है। परिक्षण कीजिये।

Land reforms in India have never been carried out to their final extent. except in two or three states. This has meant that the benefits of the development have not reached those in need of it. Some of the reasons are:-

- a) No redistribution — Land ceiling limits have not been followed by redistribution of the surplus land. This has meant that the prior owners have remained in de-facto possession of the land and the landless have not secured any land.

- b) Lack of ownership rights - The absence of a post reforms land survey has meant that tenants have not had their names entered in the pattadar land records. Thus their condition remains as tenuous as ever.
- c) Family ceilings - Relaxed norms in land holdings by families have led to massive fake transfers in the name of relations thus negating the whole concept of land ceilings.
- d) Exemptions provided for plantations and estates has prompted pseudo change in cultivation patterns by Zamindars

thus ensuring that land is not seized from them.



21. What are Wetland Ecosystems? What are the functions performed by them in maintaining the ecosystem of an area? What are the reasons responsible for decrease in their size? 10

आर्द्रभूमि पारिस्थितिक तंत्र क्या होते हैं? एक क्षेत्र के पारिस्थितिक तंत्र को बनाये रखने के लिए इनके द्वारा निष्पादित कार्य क्या हैं? इनके आकार/क्षेत्र में कमी के लिए उत्तरदायी कारण क्या हैं?

Wetland Ecosystems refer to the ecosystems found around permanent or temporary water bodies which may be either saline or freshwater based. This includes not only the water body itself but also the vegetation and the fauna dependent on them.

Critical wetland ecosystems in India include the Chilika Lake, the Kolleru Lake in Andhra, Rann of Kachch in Gujarat, Loktak in Manipur and Wular in Kashmir.

Wetlands perform the following functions:-

- a) Maintain the water table of the surrounding land.
- b) Prevent flooding by acting as a sink for run-off water.
- c) Maintain the fertility of the soil.
- d) Support large avian migrant populations and large scale fisheries.
- e) Maintain salinity at low levels in the soil.

Today wetlands around the world are diminishing at a fast pace. The reasons behind this are :-

- a) Damming of rivers that flow into them thus decreasing their inflow-
- b) Excessive use of their water for irrigation through canals and minor irrigation projects.
- c) Encroachments onto the lake bed and catchment area in the form of agriculture, construction etc.

22. "DNA Computing along with use of Nanobots is revolutionizing the field of targeted drug delivery". Explain DNA Computing and DNA Nanobots and their utility in targeted drug delivery. 10

"नैनोबोट्स के उपयोग के साथ डीएनए कम्प्यूटिंग लक्षित दवा डिलीवरी के क्षेत्र में क्रांति है।" डीएनए कम्प्यूटिंग एवं डीएनए नैनोबोट्स तथा लक्षित दवा डिलीवरी के लिए इनके उपयोग की व्याख्या कीजिये।

\* DNA Computing - This is a development in the field of biotechnology that fuses molecular biology with computing. In short, it involves replacing the silicon chips in a computer processor with molecular particles.

\* DNA Nanobots - This is a form of biological nanotechnology where DNA enzymes are used to discharge certain functions on a molecular level based on outside stimulus.

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Targeted drug delivery using DNA nanoparticles has the advantage of reaching hard to reach and inaccessible tumours. The nanoparticles attach themselves to the outer layer of the tumors and release their drugs that are then absorbed through osmosis. This can help in negating many of the ~~up~~ unpleasant side effects of chemotherapy as is conventionally used today or harmful radiation therapy.

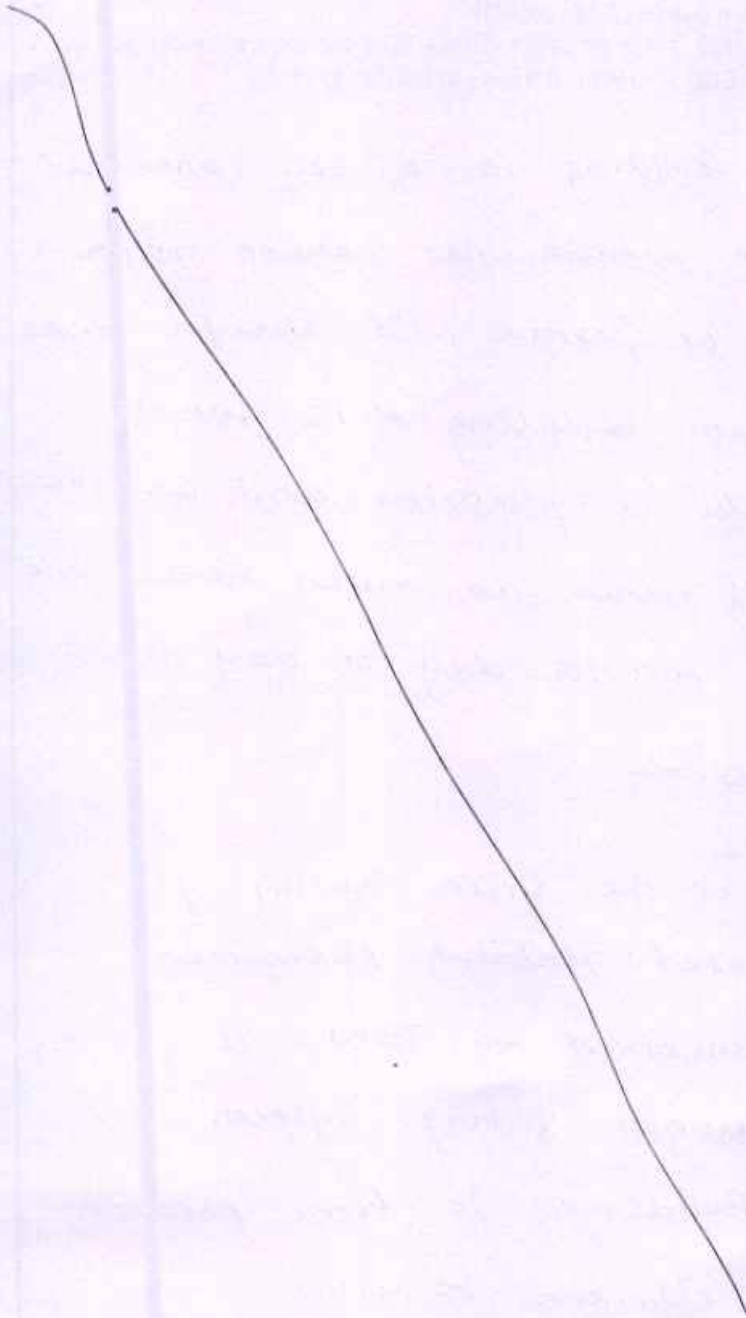
23. Indigenization of the Indian defence sector is important for addressing the long term security concerns of the nation. In reference to the above, mention the salient features of the Defence Procurement Procedure 2013 as promulgated by the Ministry of Defence. 10

भारतीय रक्षा क्षेत्र का स्वदेशीकरण राष्ट्र की दीर्घकालिक सुरक्षा चिंताओं के समाधान के लिए महत्वपूर्ण है। उपर्युक्त कथन के संदर्भ में रक्षा मंत्रालय द्वारा प्रख्यापित रक्षा खरीद प्रक्रिया 2013 की मुख्य विशेषताओं का उल्लेख कीजिये।

The Indian Defence Sector remains heavily dependent on imports even after seven decades of independence. This raises serious questions about our preparedness for war in case of external sanctions or the cutting off of our communication

links. - The Defence Procurement Procedure, 2013 seeks to address this lacuna. Its salient features are :-

- a) Separation Categorisation of preferences ranging from buy and make Indian at the top to buy from abroad at the bottom.
- b) Minimum 30% of indigenous content in everything purchased.
- c) Penalty for not meeting the domestic content threshold.
- d) Domestic content parameters now extend to every stage of the manufacturing process.
- e) Easing the process of acquiring domestically produced material.



24. What do you understand by Green Buildings? Explain how GRIHA ratings are proving to be more effective than the mandatory mechanisms like Energy Conservation Building Code (ECBC)? 10

आप ग्रीन बिल्डिंग से क्या समझते हैं? GRIHA रेटिंग कैसे अनिवार्य तंत्र जैसे उर्जा संरक्षण बिल्डिंग कोड (ECBC) की तुलना में अधिक प्रभावी साबित हो रहे हैं ?

A Green Building is a self contained structure whose net carbon footprint is zero or positive. It should make maximum recycling of its waste products a priority and ensure that it uses as much renewable energy for its day to day needs as possible.

GRIHA or the Green Rating for Integrated Habitat Assessment was conceived by TERI. It is now the National Rating System for Green Buildings. It has proven more effective because

- a) It evaluates the building's performance over its entire life cycle.
- b) It provides best practices for optimum resource utilisation and is therefore more efficient to adopt.
- c) Integrates all currently existing building codes.
- d) Compliance gets cash incentives on use of renewable energy sources.

25. What do you understand by radar gun? Discuss its components and working principle. Mention the various uses of radar system in everyday life. 10  
आप रडर बंदूक से क्या समझते हैं? इसके घटकों और कार्य-सिद्धांत की चर्चा कीजिये। दैनिक जीवन में रडर प्रणाली के विभिन्न उपयोगों का उल्लेख कीजिये।

Radar Guns are also known as Speed Guns.

They operate by sending out radio waves that strike a moving object and are reflected back.

Owing to the Doppler Effect, the frequency of these waves

differs in the case of moving objects. This allows it to gauge the speed of the said object.

The two main components of it are the radio transmitter broadcasting the waves and the receiver that receives it.

Radars are used in :-

- a) General aviation purposes to detect the actual position of planes in the airspace.
- b) Speed guns to detect over-speeding cases.
- c) Cardiograms
- d) Measuring speed in sports.

