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GENERAL STUDIES (TEST CODE : 1438)

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Medium Eng./Hindi	ENGLISH.	Registration Number	660223
Center		Date	12.08.2019

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
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20	15	

Total Marks Obtained:

Remarks:

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 **ENGLISH & HINDI** इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी 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।

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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.

2.

3.

4.

5.

6.

All the Best

1. By rebalancing project risks between the public and private sectors, the HAM model has encouraged investments in the road infrastructure sector. Discuss. (150 words) 10

सार्वजनिक और निजी क्षेत्रों के मध्य परियोजना जोखिमों को पुनर्संतुलित कर, HAM मॉडल ने सड़क अवसंरचना क्षेत्रक में निवेश को प्रोत्साहित किया है। चर्चा कीजिए।

Road infrastructure projects in India suffer inordinate delays owing to land acquisition delays, inappropriate financing models, clearance delay etc. Until recently, EPC (Engineer-Procure-Create) and BOT (Build Operate Transfer) were prevalent models.

Drawbacks:

- ① Under EPC, the government provided the entire funds that a contractor used for the project. But mobilising such huge funds are a burden for government and often lead to delays, and pose risk if contractor failed to perform.
- ② Under BOT, the onus for funds lay entirely on the contractor. But banks were unwilling to provide such huge loans, or charged high rates driving up costs. NPA's exacerbate this issue.

HAM (Hybrid Annuity Model) provides the best of both worlds by placing onus for 60% of funds on contractor while government provides 40% of funds on a milestone basis.

Thus the contractor finds it easier to raise a smaller amount, and government is happier with lower exposure to risk.

HAM has proven an appropriate model given the huge risks of cost and time over runs. The government has readily worked towards single window clearances, while contractor has moved towards expedite implementations.

2. Examine the need for a comprehensive policy on e-commerce in view of its domestic expansion as well as safeguarding India's interests globally.

(150 words) 10

ई-कॉमर्स पर एक व्यापक नीति की आवश्यकता का इसके घरेलू विस्तार के साथ-साथ वैश्विक स्तर पर भारत के हितों की सुरक्षा को देखते हुए परीक्षण कीजिए।

E-commerce sector in India has seen rapid growth recently with large players like Flipkart, Amazon etc and larger number of small players.

Domestic interests

- ① E-commerce has been disruptive in connecting small businesses with customers.
- ② In particular, traditional handicrafts, and embroidery paintings etc are finding customers in distant regions.
- ③ E-commerce is driving logistics industry with focus on reducing both time and cost.

But the predatory discounts coupled with exclusive sales have made the landscape tilted towards large e-commerce giants with deep pockets.

India's global interests

- ① E-commerce giants like Amazon and ~~Flip~~ Walmart are American companies. Recent measures to level the playing ground have invited US's wrath (GSP withdrawal etc).
- ② With data breaches ~~on~~ and concerns of data security rising, data localisation norms as recommended by BN Srikrishna panel could filter

add tension in ties with US.

Given the important domestic role and the stakes at international role, a comprehensive policy will ~~be~~ bring in transparency and reliability and enable systematic pursuit of India's interests.

3. Explaining the reasons behind India's lower female labour force participation rates (LFPR), list the steps that have been taken to augment it. What more needs to be done? **(150 Words) 10**

भारत की निम्न महिला श्रमबल भागीदारी दर (LFPR) के पीछे उत्तरदायी कारणों को स्पष्ट करते हुए, इसे बढ़ाने हेतु उठाए गए कदमों को सूचीबद्ध कीजिए। साथ ही, बताइए कि इस दिशा में और क्या किए जाने की आवश्यकता है?

NSSO's latest PLFS report indicates a dismal 18% LFPR for females.

Reasons:

- ① Socio-cultural norms that discourage women from going outside the home and working.
- ② As family incomes are rising, women are expected to sit at home and take care of the family.
- ③ The increased penetration of education has led to women increasingly opting for higher education instead of work.
- ④ The lack of adequate safety norms and rising rape statistics discourage women and families.
- ⑤ Women are further discouraged from travelling far away, and public transport has poor penetration (except in metro cities). This limits economic opportunities.

Steps taken:

- ① Improved maternity leave (12 weeks → 26 weeks), mandatory creche facilities etc.
- ② Mandatory Internal Complaint Committees as per

Sexual Harassment at Workplace Act etc.

- ③ Steps to promote women entrepreneurship - Standup India, women SHG promotion (eg: Kudumbashree) etc.
- ④ Distribution of rape kits to police, increased patrolling, surveillance, death penalty to heinous rape etc.

This has helped but we need sustained efforts along with behavioural change in ^{patriarchal} society, sensitisation of police, women scholarships etc.

4. The cropping pattern of a region is influenced by geo-climatic, socio-cultural, economic, historical and political factors. Substantiate with relevant examples. **(150 words) 10**

किसी क्षेत्र का शस्य प्रतिरूप भू-जलवायविक, सामाजिक-सांस्कृतिक, आर्थिक, ऐतिहासिक और राजनीतिक कारकों से प्रभावित होता है। प्रासंगिक उदाहरणों के साथ पुष्टि कीजिए।

India has a diverse cropping pattern ranging from water intensive paddy in plains, plantations in higher altitudes to dryland agriculture in ~~the~~ arid regions.

Influence of factors:

- ① Geo-climatic: The northern plains have fertile alluvial soil and adequate rain for paddy, jute, sugarcane etc. In Gujarat and Maharashtra see jowar, bajra, ragi etc. (temperature, rainfall, type of soil, terrain etc).
- ② Socio-cultural: The fragmentation of land holdings due to division of family land has forced subsistence farming. On the other hand, traditional practices like Pokkali paddy (Kerala) add tremendous value to farms.
- ③ Economic: Paddy and wheat are readily procured and offer remunerative returns. Thus farmers in north west India grow paddy and farmers in Maharashtra grow sugarcane despite water scarcity.
- ④ Historical: Farmers in Bihar were familiar with cash crops owing to indigo plantations. Thus they readily took to cash crops like jute, sugarcane that are grown even today.

⑤ Political: Sugarcane continues to fetch high ~~to~~ procurement prices (SAPs) due to sugarcane farmer pressure groups. This incentivises sugarcane cultivation, often in areas of low rainfall (eg: western UP) and far more than demand.

We must see that a complex mix of various factors decide what cropping patterns are followed. However there is a need to rationalise them in light of water crisis and environmental damage.

5. Reliance on borrowings for capital expenditure in railways reflects a weakening financial position. Comment on the statement and discuss ways in which better resource generation and utilisation can be achieved therein. **(150 words) 10**

रेलवे में पूंजीगत व्यय के लिए उधारी पर निर्भरता कमजोर होती वित्तीय स्थिति को प्रतिबिंबित करती है। इस कथन पर टिप्पणी कीजिए और उन उपायों पर चर्चा कीजिए जिनसे इसमें बेहतर संसाधन सृजन और उपयोगिता प्राप्त की जा सकती है।

Railways are considered the lifeline of India for being the cheapest means for long distance transport of goods and people.

Concerns on financial position:

- ① At operating ratio of 92 paise/rupee, railways have low returns for investment.
- ② To keep the passenger fare low, freight fares have risen dramatically.
- ③ The portion of non fare revenue continues to be low.

Due to the above reasons, railways have no funds to undertake capacity upgradation (Kakodkar committee). Thus it has to resort to borrowings for capital expenditure (~~no~~ upgrade stations, improve signaling, electrification etc).

What to do?

- ① Passenger fares have remained unsustainably low. These need to be rationalized together with better fares to freight.
- ② The portion of non fare revenue (advertisements, lease out spaces at stations etc) needs to be

increased (Bibek Debroy committee).

- ③ Railways needs to outsource all but the core activities (eg: housing for employees).
- ④ Domestic manufacturing will enable better utilisation of resources (eg: Train 18 at ICF).
- ⑤ Analysis of feasibility of routes before beginning construction.

~~These~~ These measures will enable railways to perform their envisaged role while undertaking required upgrades in performance and safety.

6. Montreal Protocol is often considered as the most successful international environmental treaty. Highlighting the achievements of the protocol, discuss the reasons for its success. **(150 words) 10**

मांट्रियल प्रोटोकॉल को प्रायः सर्वाधिक सफल अंतर्राष्ट्रीय पर्यावरण संधि के रूप में माना जाता है। इस प्रोटोकॉल की उपलब्धियों पर प्रकाश डालते हुए, इसकी सफलता के कारणों पर चर्चा कीजिए।

Montreal protocol, signed in 1989, was to counter the growing "ozone hole" over Antarctica.

Achievements:

- ① Universal adoption among countries through ratification.
- ② The countries brought in initiatives to curb relevant compounds (CFCs).
- ③ The most visible achievement was reports of the ozone ~~to~~ concentration going back to normal recently.

Reasons:

- ① The "ozone hole" was ~~highly~~ quantifiably visible. This lent credibility to the threat.
- ②

7. What are nano-pharmaceuticals? Mention their application and highlight the need for regulating the nano-pharmaceuticals in India. (150 words) 10

नैनो-फार्मास्यूटिकल्स क्या हैं? उनके अनुप्रयोगों का उल्लेख कीजिए और भारत में नैनो-फार्मास्यूटिकल्स को विनियमित करने की आवश्यकता पर प्रकाश डालिए।

Nano pharmaceuticals are nano level (< 100nm size) compounds that can be used to perform healthcare functions - diagnosis, treatment etc.

Applications:

- ① Targeted drug delivery: equipped with appropriate receptors, they can bind to exact site and improve efficacy of drugs released. Additionally, the drug release is continuous, decreasing side-effects and boosting efficacy. eg: liposomes.
- ② Diagnosis: With nanotechnology, "lab on chip" enables diagnosis of many syndromes with a single drop of blood. These are more portable and easy to handle.
- ③ Poison/radioactivity treatment: Nanoparticles like EDTA, C-60 can effectively trap unwanted molecules and bring them out. These see application in anti-radioactivity kits.
- ④ Gene editing: Gold nanoparticles act as excellent carriers for injecting desired genes into a target DNA ("magic bullets").

Need for regulation:

- ① Being so small, they can cross the blood-brain barrier and result in unforeseen complications.
- ② Being expensive, they can worsen the divide in the society between haves and have nots.
- ③ The proliferation of nanoparticles can lead to waste management issue.

These nanopharmaceuticals offer a unique solution for healthcare but require effective regulation.

8. Explain the concept of Chandrasekhar Limit and highlight its significance in the field of astronomy. **(150 words) 10**

चंद्रशेखर सीमा की अवधारणा की व्याख्या कीजिए और खगोल विज्ञान के क्षेत्र में इसके महत्व पर प्रकाश डालिए।

9. India's internal security challenges are intricately linked with the security of the country's borders. Comment. **(150 words) 10**

भारत की आंतरिक सुरक्षा की चुनौतियां जटिल रूप से देश की सीमाओं की सुरक्षा से संबद्ध हैं। टिप्पणी कीजिए।

India's internal security challenges arise due to funds and arms funneling by hostile neighbours like China and Pakistan.

- ① 1984 secession in Punjab was fueled by ~~from~~ Pakistani support (annexation after loss of Bangladesh).
- ② LWE in central and eastern India are believed to be fueled by Chinese support.
- ③ Mujaheddin crisis of Kashmir in 1990s was masterminded by Pakistan sending ISI handlers into India.
- ④ Drug crisis in Punjab due to Pakistan's proxy war. Thus, FICN (fake Indian currency notes), arms, drugs etc are smuggled across porous borders with Pakistan or China. At times they are routed through a third country like Nepal, Bangladesh.

A comprehensive border security management system (like CIBMS) will go a long way in eliminating this smuggling. BOLD-OIT in Bangladeshi borders enables all terrain surveillance using sensors. This could be followed along other borders of India as well.

As the illegal movement of people, arms, currency is reduced, most internal security problems will automatically wither away.

10. Bring out the importance of international cooperation in fighting terrorism. In this context, throw light on UN Global Counter-Terrorism Strategy.

(150 words) 10

आतंकवाद से मुकाबला करने में अंतर्राष्ट्रीय सहयोग के महत्व को रेखांकित कीजिए। इस संदर्भ में, संयुक्त राष्ट्र की वैश्विक आतंकवाद-रोधी रणनीति पर प्रकाश डालिए।

Terrorism is a truly international problem that is only getting worse (^{three times more} ~~more~~ people killed in last decade compared to the one before).

Importance of international cooperation:

- ① With ISIS, Al Qaeda demonstrating capability to strike nations while not leaving their home, information sharing is critical.
- ② Nations need to unite to curb fund financing and ensure other nations recognise terror organisations and place sanctions on them.
eg: Pakistan
- ③ If nations work in isolation, a terrorist can simply escape to another country after committing an act and enjoy safe haven.
- ④ Developing nations need aid in security challenges to ensure their internal instability does not flow out as terrorism, like in Syria

UN Global Counter-Terrorism Strategy (UNGCTS) is a unique initiative to ~~identify~~ enable nations to come together and discuss terrorism. This has components of information sharing

(Indian intelligence could have prevented Easter attacks in Sri Lanka), and agreement on organisations and individuals that need to be sanctioned.

Thus it offers a great opportunity to act together to counter terrorism, provided it gets the nations on a consensus.

11. One of the goals that a developing economy aspires for is to bring down the Incremental Capital-Output Ratio (ICOR). In this context, what are the constraints that underlie the efficient conversion of savings rate to investments in the Indian economy? Also suggest some measures to improve this efficiency. (250 words) 15

एक विकासशील अर्थव्यवस्था जिन लक्ष्यों की आकांक्षा रखती है उनमें से एक वृद्धिशील पूंजी-उत्पादन अनुपात (इंक्रिमेंटल कैपिटल-आउटपुट रेश्यो: ICOR) में कमी लाना है। इस संदर्भ में, भारतीय अर्थव्यवस्था में बचत दर के निवेश में कुशल रूपांतरण के समक्ष आने वाली बाधाएँ क्या हैं? साथ ही, इस कुशलता में सुधार हेतु कुछ उपायों का भी सुझाव दीजिए।

Incremental Capital Output Ratio is a measure of efficiency in economy - how much capital is required for ^{additional} unit of output. Despite a healthy savings rate, investments are below par.

Constraints in Indian economy:

① Infrastructure constraints:

① Prevalence of black money: This untracked money drives consumption but ~~prevents~~ efficient it cannot be tracked. It prevents real policy-making.

② Tendency to invest in gold, real estates instead of financial markets. Gold drives up CAGR while real estate is rife with black money, corruption.

③ Low financial inclusion (~40%) means a significant population holds their savings in cash. This makes them vulnerable to inflation and denies them financial services, while denying Indian economy the investment it needs.

④ REPS, treaty shopping etc ~~do~~ lead to profits being drained out of the country without even paying the tax on it.

Measures:

- ① Further financial inclusion and financial literacy. PM Jan Shan Yojana opened 20 crore bank accounts but most are dormant. Unique awareness campaigns are needed to nudge behavioural change.
- ② Income Declaration schemes were effective. Demonetisation mobilised black money in the economy but it remains to analyse the returns to identify those who are paying less returns.
- ③ LoB has been introduced in DTAA, GAAR have been framed to reduce REPS. These need to be effectively implemented and monitored to identify effectiveness and improvements.
- ④ Alternate investments like mutual funds, Real Estate Investment Trusts (REITs) need to be promoted so that money is invested transparently and economy receives investments.

As a developing country, India is bound to have a savings-investment gap. But the gap is exacerbated by these inefficiencies. Effectively locking them could put Indian track for \$5 trillion economy by 2024.

12. Why has the contribution of manufacturing sector, as a percentage of the GDP, remained stagnant in the recent years? In this context, analyse the achievements of National Manufacturing Policy, 2011 with regards to its intended objectives. **(250 words) 15**

विगत वर्षों में GDP के प्रतिशत के रूप में विनिर्माण क्षेत्र का योगदान स्थिर क्यों रहा है? इस संदर्भ में, इसके लक्षित उद्देश्यों के संबंध में राष्ट्रीय विनिर्माण नीति, 2011 की उपलब्धियों का विश्लेषण कीजिए।

As per Economic Survey 2018-19, the contribution of manufacturing continued to be 15% of GDP. This has been stagnant since late 1990s.

Reasons for stagnancy:

- ① Infrastructure constraints: Erratic power supply, congested transport sector, poor connectivity in less urban regions.
- ② Quality of labour: >95% labour lacks formal skilling of any kind. This translates to poor productivity.
- ③ Technological constraints: India continues to depend on imports for engineering goods. These are often not cutting edge, lowering competitiveness.
- ④ Red tapism: Despite liberalisation reforms, bureaucratic red tapism (lack of single window clearances), delays in permits etc stall industries.
- ⑤ Unstable policy regime: Government has faced frequent criticism for reverting on its policy stance. eg: stand on hybrid electric vehicles.

⑥ Land acquisition delays: Locals often see industries as encroaching on their lands, ignoring the economic benefits they bring. Politicians happily turn this into an issue. eg: Tata factory issue at Singur.

⑦ Rising stiff competition from countries like Bangladesh, Vietnam on account of cheaper labour.

⑧ Banks riddled with NPA's

Thus, all of these factors make Indian manufacturing less competitive and have prevented rise of manufacturing India.

National Manufacturing Policy, 2011, was launched with the following objectives:

- ① MSME promotion for manufacturing with aid in marketing, technology upgradation.
- ② Streamlining clearances and permits with shift towards single window clearances.
- ③ NIMZs to be set up to promote liberalised norms for manufacturing.

The policy has achieved regular growth in manufacturing but has failed to achieve labour intensive growth.

13. Elaborate the strategic and operational elements of the Agriculture Export Policy, 2018 and discuss the role it can play to achieve the target of doubling farmers' income by 2022. **(250 words) 15**

कृषि निर्यात नीति, 2018 के रणनीतिक एवं परिचालन-संबंधी तत्वों का सविस्तार वर्णन कीजिए और 2022 तक किसानों की आय को दोगुना करने के लक्ष्य को प्राप्त करने में इसके द्वारा निभायी जा सकने वाली भूमिका की विवेचना कीजिए।

14. The contribution of coal based power generation is not expected to substantially go down in the next few decades, despite growing importance of renewables. Comment on the statement in light of increasing demand for power in India. **(250 words) 15**

नवीकरणीय संसाधनों के बढ़ते महत्व के बावजूद, कोयला आधारित विद्युत उत्पादन के योगदान में अगले कुछ दशकों में पर्याप्त कमी आने की उम्मीद नहीं है। भारत में विद्युत की बढ़ती मांग के आलोक में इस कथन पर टिप्पणी कीजिए।

India has committed towards generating 175GW renewable energy by 2022. This has been visible in:

- ① India champions the cause of solar energy through ISA, and has launched National Solar Mission for 100 GW solar target by 2022 (upgraded from 40GW).
- ② India has launched schemes like ~~Sua~~ Kusun (solarisation of pumps), Sambhagya (off grid solar for remote areas), Sigiyaon (solar street lighting etc).
- ③ ~~India has been promoting biofuel based~~
- ③ The focus on small hydro plants has materialised in Shahpur Kandi, Rang Kibhanga etc. We are importing cheap hydro electricity from Bhutan
- ④ India has been looking to increase gas based power plants (currently 7%) by importing from Qatar, Myanmar etc.
- ⑤ Civilian nuclear deals with France, Russia, Japan have resulted in nuclear plants set up

all over India. Many more are upcoming - Gorakhpur, Mahi Banswada, Jaitpur etc.

⑥ Through wind farms in Karnataka, Tamil Nadu, Gujarat, we are generating 11% of our power. ~~through~~ The potential is estimated to be 200 GW.

⑦ Mandatory RPOs (Renewable Power Obligations).
Thus there has been a conscious shift towards renewable power sector. But with the growing demand for power, coal is not going away any time soon:

① Coal plants offer a stable long term power as opposed to variable power by ~~sun~~ weather dependent solar and wind.

② The coal plants are running at a low plant load factor (PLF) ~~to~~ which indicates a higher potential for them at demand rises.

③ Coal plants are cheapest to setup and don't require advanced technology (renewables all require high capital and technological investments).

④ With UMPP (Ultra Mega Power Plants), the regulatory burden will be eased and economies of scale can be leveraged.

~~the~~ We know that coal based power plants contribute a whopping 55% of India's power

min. Once coal block allocations are finalized, they shall be required to function at high load to meet the growing needs of Indian economy.

15. Write a brief note on 'Dry Ports' and their significance in mitigating logistic challenges in India. Also, discuss the challenges in their development and measures needed to address them. **(250 words) 15**

भारत में लॉजिस्टिक्स की चुनौतियों को कम करने में 'शुष्क पत्तनों' एवं उनके महत्व पर एक संक्षिप्त टिप्पणी लिखिए। साथ ही, उनके विकास में आने वाली चुनौतियों और उनके समाधान हेतु आवश्यक उपायों पर चर्चा कीजिए।

16. Discuss the vulnerabilities of urban areas to disasters. What measures have been taken to minimise the losses in such areas during disasters? What further improvements would you suggest to make them more resilient?

(250 words) 15

आपदाओं के प्रति शहरी क्षेत्रों की सुभेद्यताओं पर चर्चा कीजिए। आपदाओं के दौरान ऐसे क्षेत्रों में होने वाली क्षति को न्यून करने के लिए क्या उपाय किए गए हैं? आप उन्हें और अधिक लचीला (रिज़िलियन्ट) बनाने के लिए क्या उपाय सुझाएंगे?

The urban areas have seen shrinking green areas and water bodies. Together with climate change, they have wreaked havoc in the following ~~ways~~ disasters:

① Floods:

- Green areas act as percolation spaces for water. In their absence, the water floods the concrete jungles.
- Rapid growth and improper planning have led to inefficient drainage. eg: annual floods in Mumbai.

② Draughts:

- While parts of country are engulfed in floods, other parts face acute water shortage. eg: Chennai needs to buy water from Kerala.
- The lack of percolation area has prevented recharge of aquifers and water bodies.
- Hyper extraction of ground water for agriculture of water intensive crops in drier regions has stressed ground water blocks (67% stressed). eg: Sugarcane in Maharashtra.

- ③ Extreme weather events like cyclones, cloud bursts, thunder storms have increased in frequency.
eg: → thunderstorms in April 2018 killed 100 people in north India.

Measures taken:

① Floods:

→ Construction of dams to check flow of river.

→ Flood vulnerability map in Odisha.

② Draughts:

→ Focus on sustainable water management (eg: PM Krishi Sinchai Yojana)

→ Awareness campaigns on rain water harvesting,

→ Compensatory Afforestation (CAMPA led).

- ③ → Doppler radars to forecast thunder storms,
→ Early warning systems and evacuation procedures for cyclones (10000 deaths in 1990s → 50 deaths in 2018 due to Ghera).

Further improvements:

① Floods:

→ Need SOPs for timely release of water ^{from dams} and prevent a scenario like Kerala floods

→ Study prospects of river linking projects: would solve ~~problems~~ ^{problems} of both floods, draughts.

② Drainage:

- Need to promote cultivation based on water availability (agro climatic zones) through rationalisation of power subsidy (Salwai committee)
- CAMPA funds lying unutilised/diverted. Need to check that.

③ Doppler radars not working, need repairs and study of locations where they need to be added.

Cyclones in India offer a unique case study of controlling the havoc. This needs to be emulated in other disasters too.

17. What is seabed mining and why is it important for India? Highlight the environmental challenges associated with seabed mining and discuss how these can be addressed. (250 words) 15

सीबेड माइनिंग क्या है और यह भारत के लिए क्यों महत्वपूर्ण है? सीबेड माइनिंग से जुड़ी पर्यावरणीय चुनौतियों पर प्रकाश डालिए और चर्चा कीजिए कि इनसे कैसे निपटा जा सकता है।

Seabed mining refers to extraction of metals from Poly Metallic Nodules (PMNs) present on the sea bed of oceans. They are rich in Manganese and rare earth minerals.

Importance for India:

- ① India has a 7500 km long coastline and consequently a huge EEZ access to seabeds.
- ② These areas are ^{extremely} rich in minerals. It is estimated that 10% extraction could be enough to meet India's needs for next 100 years.
- ③ There are rich in rare earth metals ^(REMs) which are critical for advanced technologies like 5G, electric vehicles, IoT etc. We currently import these REMs.

Consequently India has acted fast to renew an exclusive license to mine in central Indian Ocean from International Seabed Authority and launched a Deep Ocean Mission to study the prospects.

Environmental challenges:

- ① Many critical species (benthos) survive on seabed of oceans. Scraping it for minerals would threaten their existence.
- ② The activity of extraction would raise temperature of area concerned. This could result in coral bleaching and affect phytoplanktons.
- ③ The activity could lead to gas hydrate being released from the sea bed. The resultant ~~global warming~~ would methane gas would exacerbate climate change.

How to address?

- ① Need to perform ~~the activity~~ mining on a controlled basis to study the exact effects before pursuing it fully.
- ② The technology should be modern to minimise scraping damage to sea beds.

Thus seabed mining holds a lot of potential for India but the environmental concerns need to be suitably addressed before we go ~~for~~ all guns blazing.

18. Compare and contrast fifth generation (5G) of wireless telecom technology with 4G technology. What challenges need to be overcome for 5G's pan-India rollout? **(250 words) 15**

4G प्रौद्योगिकी के साथ पांचवी पीढ़ी (5G) की वायरलेस दूरसंचार तकनीक की तुलना कीजिए और उनके मध्य अंतर बताइए। 5G के अखिल भारतीय क्रियान्वयन हेतु किन चुनौतियों से निपटने की आवश्यकता है?

5G is an upcoming wireless telecom technology crucial for scaling connectivity for self driving cars, smart cities, ^{IoT} etc in addition to better consumer experience.

4G

- ① Max throughput of 1 gigabits per second.
- ② Latency of 1 millisecond
- ③ Not much focus on scalability.

5G

- Max throughput of 100 gigabits per second.
- Latency of 0.1 millisecond.
- Focus on scalability, enables IoT, smart cities etc.

Thus 4G was revolutionary for the use of smartphone, laptop etc, 5G promises faster speeds ~~at~~ for him along with promising scalability.

Challenges:

- ① Migrating to 5G would require huge expenditure on part of telecom providers that would need to upgrade non-modular hardware

- ② Consumer devices are not ready for 5G. This would require a costly upgrade on their part.
- ③ The telecom sector is stressed and indebted due to stiff competition. They complain about high spectrum auction charges by TRAI. (2-3 times higher than auction in South Korea).
- ④ The leading 5G chip maker Huawei is facing American sanctions. It would be tough for India to decide where it wishes to procure relevant technology from.
- ⑤ Domestic chip manufacturing is not competitive enough. This makes India a mere assembly hub, and increase costs.

We thus see that 5G technology holds a lot of promises for a technology oriented India. It also offers a chance for Make in India (National Electronics Policy, 2018). But the above challenges will need to be overcome ~~with~~ to get there.

19. Despite various initiatives, critical gaps in Indian maritime security architecture have remained. Examine. Suggest some policy measures to address the challenges of maritime security of India. (250 words) 15

विभिन्न पहलों के बावजूद, भारतीय समुद्री सुरक्षा की संरचना में महत्वपूर्ण अंतराल विद्यमान हैं। परीक्षण कीजिए। भारत की समुद्री सुरक्षा की चुनौतियों से निपटने हेतु कुछ नीतिगत उपायों का सुझाव दीजिए।

India face maritime security threats from pirates, terrorists, enemy nations etc. Accordingly she has taken initiatives to safeguard the same:

- ① Automatic vessel identification radars installed on both coastlines.
- ② Information Fusion Centre-IOK established at IMAC Guwahati to collect information shared under white shipping agreements signed with other nations.
- ③ Initiatives like IORA, IONS to develop maritime cooperation and trust building in IOR region.
- ④ Multi-party maritime exercises like Sea MILLEX, Sea Vigil along with bilateral exercises like Malabar, JIMEX etc.
- ⑤ Mission Based Deployments (MBDs) at critical points like Malacca, Hormuz, Andaman etc.

However despite these, critical gaps remain:

- ① India has just one aircraft carrier. Each one acts as a ~~the~~ huge deterrent (eg: Vikrant in 1971 war).



20. A fine balance between security and developmental measures needs to be attained for tackling the menace of Left Wing Extremism (LWE) in India. Analyse. (250 words) 15

भारत में वामपंथी उग्रवाद (LWE) के खतरे से निपटने हेतु सुरक्षा और विकासात्मक उपायों के मध्य एक उत्कृष्ट संतुलन स्थापित करने की आवश्यकता है। विश्लेषण कीजिए।

LWE ~~is~~ grew to prominence in 1960s and continued to plague states like Jharkhand, West Bengal, Madhya Pradesh, Chhattisgarh etc. Their aim is to establish an alternative system of governance. India has adopted a dual pronged solution:

Security measures:

- ① It is needed to check their strength and curtail their areas of influence.
- ② Any development measures alone would be destroyed in LWE areas. eg: telecom towers destroyed in Jharkhand.
- ③ These would send a strong message to LWE groups about their limited strength and resource and force them to consider surrendering.
- ④ These involve border security to check flow of arms and funds, and use of force to eliminate LWE.

Developmental measures:

However security measures alone are not enough. A war against LWE is also an ideological war, and victory can be attained only by convincing citizens that the elected government offers them more sustainable solutions.

① Development of highways, bridges, railway lines to link LWE areas with mainstream areas. eg: Odisha saw a bridge connecting an area for first time with rest.

② Education to prevent brainwashing of young minds and showing them possibilities through peaceful means. Santowada remains an inspiring example in this regard.

③ Skill development of ^{residents in} affected areas to enable them to pursue constructive activities. eg: Rohini is an excellent initiative.

④ Periodic elections (ballots, not bullets) and careful inculcation of democratic values and institutions shall reap fruits in long run, as they learn to govern themselves.

In the short run, perhaps greater autonomy could be considered for trust building.

⑤ Public expenditure will be required in agriculture, industries to create jobs for the residents. This will instill positive emotions as they will realise peaceful methods towards growth.

We thus see that both security and developmental measures are needed to check LWE. Only peace would make LWE a hydra-kill one and another take his place.

