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GENERAL STUDIES (TEST CODE : 844)

Name of Candidate	VARNIT NEGI		
Medium Hindi/Eng.	ENGLISH	Registration Number	21647
Center	ORN	Date	08/11/2016

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	12.5	
2	12.5	
3	12.5	
4	12.5	
5	12.5	
6	12.5	
7	12.5	
8	12.5	
9	12.5	
10	12.5	
11	12.5	
12	12.5	
13	12.5	
14	12.5	
15	12.5	
16	12.5	
17	12.5	
18	12.5	
19	12.5	
20	12.5	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
   उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are TWENTY questions printed in HINDI and ENGLISH.
   इसमें बीस प्रश्न हैं तथा हिन्दी और अंग्रेजी दोनों में छपे हैं।
3. All questions are compulsory.
   सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
   प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. 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 that the authorized one.
   प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
   प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
   उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

EVALUATION INDICATORS

1. Alignment Competence
2. Context Competence
3. Content Competence
4. Language Competence
5. Introduction Competence
6. Structure - Presentation Competence
7. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

All the Best

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Answer all the questions in NOT MORE THAN 200 WORDS each. Content of the answers is more important than its length. All questions carry equal marks.

12.5X20=250

1. It has been assessed that radicalisation is a security threat to India. Explain the basis of such an assessment with examples. What are the key pillars of the counter radicalisation strategy of the government?

प्रायः यह आकलित किया जाता है कि कट्टरता (रेडिक्लाईजेशन) भारत के लिए एक सुरक्षा संबंधी खतरा है। इस तरह के आकलन के मूलाधारों की उदाहरण सहित व्याख्या कीजिए। कट्टरता से निपटने के लिए सरकार की रणनीति के प्रमुख आधार स्तंभ क्या हैं?

Growing tide of ISIS led radicalization has made headwinds in India too. Radicalization is the phenomenon of moulding a person's ideological and belief system on orthodox and extreme communal grounds.

It is being said that growing radicalization poses threat to security in India because ——

1) India is a multi-religious country. There is no scope of communalism to thrive in India.

2) Kerela — Under the growing funding of Wahabism ideologues and radical elements 13 youths (well educated and well to do families) joined ISIS in Syria.

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3) Kashmir – Due to Saudi led propagation of Wahabi ideology, as many as 700 mosques have been reformed into old orthodox state. Its influence can be seen as more youths agitating against Burhan Wani's death and burning down of schools.

4) Beef and communalism – dadri lynching and una riots by radical Hindu groups leading to destruction of harmony.

Counter-radicalization

1) Skill development and employment of youth

2) Education – moral and liberal values

3) Schemes of national integration – 'Nai Manzil' and Ustaad

4) Good governance

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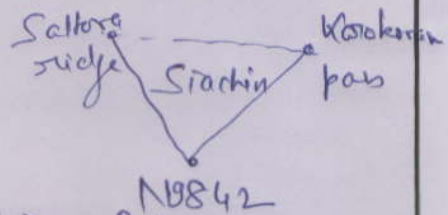
2. Arguments on Siachen issue often move around the idea of demilitarisation. Examining the key attributes of the Siachen issue explain the basis of arguments regarding its demilitarisation? Also highlight the arguments against such an idea.

सियाचिन मुद्दे पर प्रस्तुत तर्क अक्सर विसैन्यीकरण के विचार के आस-पास मंडराता रहता है। सियाचिन मुद्दे से जुड़े प्रमुख पहलुओं का परीक्षण करते हुए इसके विसैन्यीकरण संबंधी तर्कों के मूलाधारों की व्याख्या कीजिए? साथ ही इस तरह के विचार के खिलाफ दिए जाने वाले तर्कों पर भी प्रकाश डालिए।



Siachin issue

It is a junction of China, Pakistan and India. The peace agreement did not delianate beyond pillar NJ9842 leaving scope for conflict.

Pakistan says it extends from NJ9842 to saltora ridge while India says same line will extend further to Karakoram Pass. As of today, India occupies it.

Demilitarization

For: ① Sub-50°C is inhabitable
② No much strategic importance because India can not use it to stage any contact
③ Heavy casualty due to climate 846 died since ~~2003~~ 1984 – 2013.

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Against: ① If India demitarizes and Pak-China joint occupation can hamper Laddakh front.

② Once lost it will be impo-ssible to regain it.

③ Better equipments can reduce casualty.

④ Symbolic importance of occupation

But, recent death of 11 soilders in an avalanche has again rekindled the debate on demilitarization. Mutual demilitarization by Pak - India is diffi-cult to achieve and lack of Trust is the main reason behind militarization

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3. Money laundering and terrorism have strong inter linkages. Illustrate. In this context, how far do the steps taken by the government confirm with the international commitments?

मनी लॉन्ड्रिंग और आतंकवाद मजबूती से एक-दुसरे से सम्बद्ध हैं। स्पष्ट कीजिए। इस संदर्भ में, सरकार द्वारा उठाए गए कदम किस हद तक अंतरराष्ट्रीय प्रतिबद्धताओं की पुष्टि करते हैं ?

Money laundering and Terrorism are illustrated from following examples—

1) Mumbai Blasts : Dawood used his black money to fund 1993 mumbai blasts that led to more than 100 casualties.

2) ISIS funding : Daesh is able to sustain such a long attack on so many fronts due to ill gotten money from oil and arms sales.

Black money is used to fund various terrorist activities because this money is unaccounted, unreported and hence untracable and it helps them to evade any intelligence.

3) Saudi fund for spreading extreme

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ideology of Wahabism in Kerala and Kashmir. Zakir Naik influenced many youth into radicalization eventually leading them to join IS.

Steps taken by government:

1) India Joined FATF in 2010 to fight against money laundering.
2) Black money bill passed in both the houses.
3) Prevention of Money laundry Act 2002.
4) Revised definition of Terrorism to include economic aspects of Unlawful Activities Prevention Act 1967
5) De-radicalization by schemes such as Nai Manzil.
6) Increased surveillence and NIA monitory of Saudi funding of religious institutions in India

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4. Lorgstanding issue of insurgency in the Northeast highlights the linkage between violence, remoteness, underdevelopment and alienation. Elaborate. Also, suggest some corrective measures for a lasting resolution of the conflicts in this region.

पूर्वोत्तर में लम्बे समय से विद्यमान उग्रवाद का मुद्दा वस्तुतः हिंसा, दूरी, अल्पविकास, और अलगाव की भावना के मध्य के संबंधों पर प्रकाश डालता है। सविस्तार व्याख्या कीजिये। इसके साथ ही इस क्षेत्र में संघर्ष के एक स्थायी समाधान के लिए कुछ सुधारात्मक उपायों का सुझाव भी दीजिए।

Insurgency issues in North-East are multi-faceted and multi-reasoned.

For example:

Assam — Due to migration and ethnic.

Nagaland — Policy of isolation, ethnic.

Manipur — Inter-Tribal, religious, Plain vs hilly areas, Tribal vs Non tribal.

But there are certain underlying commonalities in them such as —

(1) All are violent efforts — Easily available funding and arms from an open border of Myanmar and Bangladesh

(2) Remoteness, alienation and unequitable development — Due to difficult terrain, small chiken neck available for communication with mainland, these areas

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have failed to develop at a good pace. Intra-regional isolation, alienation and economic disparity is huge. Hilly areas inhabited by tribals have not recieved there share of pie. This has resulted in segmentation and mutual friction. National integration has not been successful in making any inroads into these areas.

Corrective measures —

1) Negotiation and dialogue to counter extreme ideology.
2) Good governance to restore faith and erode support base of insurgents.
3) Equitable and holistic development of all areas.
4) Make AFSPA less extreme and more accountable
5) Cut the funding and arms base of insurgents.

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5. While on the one hand China's One Road One Belt initiative poses security concerns and challenges for India, on the other, it can help improve India's connectivity to major markets and resource supplies. Discuss.

जहाँ एक ओर चीन की 'वन बेल्ट वन रोड' पहल भारत के लिए सुरक्षा संबंधी चिंताएं और चुनौतीयां खड़ा करता है, वहीं दूसरी ओर यह संसाधनों की आपूर्ति और प्रमुख बाजारों तक भारत की कनेक्टिविटी (संयोजकता) को बेहतर बनाने में भी मदद कर सकता है। चर्चा कीजिए।

China's initiative of linking old silk routes by new road, rail and maritime routes is called One Rodd - One belt. Ambitious OROB initiative has three main sub initiatives —

① Linking China to Europe via Russia and Central Asia by road and sea routes.

② CPEC — China Pakistan Economic Corridor. Linking Xinjiang province to Gawadar Port of China.

③ Linking china to South Asia via Nanjing - Singapore road.

Security concerns for India

CPEC linking Xinjiang province to Gawadar Port passes through POK area of Balhistan claimed by India

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Closeness to the Indian border and disputed territory raises India's security concerns.

Possible Benefits :

① Closeness of India to CPEC and Nanjing – Singapore corridor can be used by India to exploit benefit for North East regions rich in oil and Gas and develop viable market for Kashmir area.

② China – Europe road and rail link can be accessed by India via trade relations with Central Asian countries

Thus, they can be used by India to access European Market and South asian market and also serve the needs of resources to North Eastern states.

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6. NATGRID was an ambitious step involving intelligence reforms, however, it remained a non-starter. Explain. In the context of recent initiatives to revive the NATGRID and the challenges it faced previously what steps are required to make it effective?

नेटग्रिड (NATGRID) इंटेलिजेंस सुधारों से सम्बंधित एक महत्वाकांक्षी कदम था, हालांकि यह शुरू नहीं हो पाया। व्याख्या कीजिए। नेटग्रिड को पुनर्जीवित करने की हाल की पहल और पूर्व में इसके द्वारा सामना की गयी चुनौतियों के संदर्भ में, इसे प्रभावी बनाने के लिए कौन-से कदम उठाए जाने की आवश्यकता है?

NATGRID — National Intelligence Grid was envisaged by P. Chidambram in 2009 post Mumbai attacks in 2008

Main features:

1) Common platform for 11 different investigating agencies for sharing data.

2) Data related to credit usage, potential threats, intelligence could have proved to be effective in avoiding terror attacks

3) Co-ordinated and common efforts would have fostered anti-terror operations

But, it failed to take off because of following reasons —

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1) RAW and IB objected on intelligence data sharing with others.
2) No investigating agency wanted to come under others subordination
3) After initial outburst and enthusiasm government will subsequently reduced.

Recently post Pathankot attack and criticism of un-co-ordinated manner of handling terror attack, government decided to revive NATGRID and work on National Security Doctrine.

Challenges:

All previous impediments of supiority, mis-trust are still prevalent among intelligence agencies.

Steps to be taken:

1) Negotiation with all agencies.
2) Unified command centre
3) SOP should be developed.

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7. India's national security architecture faces a difficult task in detecting digital intrusion in cyberspace. What are the challenges India faces w.r.t. Digital Intrusion? How can these challenges be overcome?

भारत की राष्ट्रीय सुरक्षा अवसंरचना ,साइबर स्पेस में डिजिटल घुसपैठ का पता लगाने में मुश्किलों का सामना कर रही है। डिजिटल घुसपैठ के सन्दर्भ में भारत किन चुनौतियों का सामना कर रहा है? इन चुनौतियों को कैसे दूर किया जा सकता है?

India enacted National Cyber Policy in 2013. But, it failed to address many challenges mentioned below—

1) Cyber intrusion is a multi-location, multi-layered. Thus, it is difficult to trace the origin.

2) Prime source is always located out of the country. India has not acceded to Budapest Convention of UN on cyber crime. Thus, even if traced, India can do nothing.

3) Cyber crime is fast and has virtual identity and digital finger prints are removed very fast.

4) Isolation of Indian network is not possible. Hence, it is always susceptible for intrusion

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5) Cyber Security professionals can not match to the new technological variations.

These challenges can be overcomed by—

1) Unified command centre for all cyber related breaches either in NCIIP or CERT-in.
2) Regular revision of Policy and Acts.
3) Technology developments to meet pace with criminals.
4) Open source to be used as they are not hackable.
5) International co-operation
6) Local Servers and local network such as NKN.

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8. Relations with Iran hold a lot of potential for India's ambitions for West Asia and beyond, however, realising this potential also involves certain global and regional challenges. Examine.

ईरान के साथ संबंध वस्तुतः पश्चिम एशिया और उससे परे भारत की महत्वाकांक्षा के लिए संभावनाओं से परिपूर्ण हैं, तथापि इस संभावना को साकार करने के मार्ग में कुछ वैश्विक तथा क्षेत्रीय चुनौतियां भी हैं। परीक्षण कीजिए।

Strategic importance of Iran

1) India import most of its oil and gas from Iran. Thus dependent for energy security.

2) India developed port of Chabahar in Iran and has signed a pact for SEZ in the port city. This will give India ability to easily access Central Asia and Europe

3) Iran can also help India in civil nuclear technology.

Global regional challenges

1) Afghanistan: Stability of Afghanistan is must for peace in the region and India can play a healthy role in Afghanistan only via Iran.

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2) Saudi - Iran conflict : Saudi is Sunni dominated and Iran is Shia dominated. Both want to exert dominion over arab world. India has good relations with both; maintaining it would be a challenge.

3) Iran - Israel : India has good relations with both but they have antagonistic relations

4) ISIS in Syria, Iraq : Global terrorism is a threat to all countries

5) Turkey - Although India does not have substantial trade relations with Turkey by peace of Turkey is also important ~~of~~ for the peace of the region

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9. The internal crisis in Nepal over the past few years has given concrete shape to the fears of China gaining upper hand vis-a-vis a traditionally influential India. Elaborate. What can India do to further strengthen its ties with the Himalayan nation?

पिछले कुछ वर्षों में नेपाल के आतंरिक संकट ने पारंपरिक रूप से प्रभाव रखने वाले भारत पर चीन द्वारा बढ़त लिए जाने के भय को ठोस आकार प्रदान किया है। विस्तारपूर्वक बताईए। इस हिमालयी राष्ट्र के साथ अपने संबंधों को अधिक मजबूत करने हेतु भारत और क्या कर सकता है?

Recent adoption of new constitution by Nepal government raised many issues where plain area habited by Madhesis alleged due-mal-delimitation by hilly people (minority) to retain dominance.

Madhesi areas are contagious to the Indian borders. Protests and Indian response to Constitution was taken in a negative tone by the newly elected Oli government and they alleged -

(i) Blockade by India for basic supplies.

(ii) Unnecessarily interference in internal matters of governance by India.

This led to Nepal government to talk to China to built alternative routes for trade and supplies.

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Nepal also became aware of its over-dependency on India and available China-card to arm-twist India.

China has shown interest in developing and extending the road and rail network in Nepal via Tibet. But it is quite unusual for China to open up Tibet to foreign country.

Possible alternatives for India

1) Enhance dialogue and negotiation
2) Increase aid for rebuilding assets post earth quake to garner goodwill.
3) Assure no such backing to blockade by the government.
4) Resolve to maintain and respect sovereignty of Nepal.

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10. The Trans-Pacific Partnership agreement (TPP), touted as the world's biggest trade deal to date, has danger of bending the WTO rules. In this cor text, discuss the impact TPP can have on India's foreign trade. What are the options that India has to deal with the issues arising out of the TPP?

विश्व के सबसे बड़े व्यापार समझौते के रूप में प्रचारित ट्रांस-पेसिफ़िक पार्टनरशिप (टी.पी.पी.) समझौते द्वारा डब्ल्यू.टी.ओ. के नियमों को प्रभावित करने की आशंका है। इस परिप्रेक्ष्य मे भारत के विदेश व्यापार पर टी.पी.पी. के संभावित प्रभावों की चर्चा कीजिए। टी.पी.पी. से उत्पन्न मुद्दों से निपटने के लिए भारत के पास क्या विकल्प हैं?

WTO formed in 1994 is a common forum for trade and economic activities.
TTP is an envisaged Free Trade Agreement allowed under WTO rules between Pacific boundary countries and America which will trade almost half of world trade.

Over the years, WTO has significantly lost its ground over various issues such as IPR, SSM, stockholding, export subsidies etc. Doha round fcs failed to address and precipitate into a common drop acceptable to all.

Growing segmentation (G77, G4, G7 etc) have led to inconclusive Doha round of WTO.

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Interestingly during the same period US has developed new strategy to force its will on developing countries via FTA. All partner countries have to maintain strict IPR standards.

Thus, India will be forced to loose its IPR stand on compulsory licensing and evergreening or it will loose its market for generic medicines in CLMVT countries which are a part of TTP.

Options available to India

1) Accede to better IPR standards
2) SPS standards need to be adhered.
3) Enhance capability and quality of products to make them competitive.
4) RCEP with ASEAN + Six countries can be a game changer for India.

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11. Legal proceedings initiated by the Marshall Islands against India, Pakistan and Britain over nuclear weapons in the International Court of Justice highlights the issues of jurisidiction of the court. What is India's position vis-a-vis the jurisdiction of the ICJ? Also differentiate between binding and advisory pronunciations of the court with suitable examples.

अंतर्राष्ट्रीय न्यायालय (आई.सी.जे.) में मार्शल द्वीपसमूह द्वारा भारत, पाकिस्तान तथा ब्रिटेन के खिलाफ़ परमाणु हथियारों को ले कर आरम्भ की गयी कानूनी कार्यवाहियाँ वस्तुतः इस न्यायालय के क्षेत्राधिकार के मुद्दे को उजागर करती हैं। अंतर्राष्ट्रीय न्यायालय के क्षेत्राधिकार के संदर्भ में भारत का क्या रुख है? साथ ही उचित उदहारण प्रस्तुत करते हुए न्यायालय के बाध्यकारी तथा सलाहकारी निर्णयों के बीच अंतर स्पष्ट कीजिए।

Recently, ICJ ruled out against Marshall Islands proceedy in order to implicate India Pakistan and UK over possession of nuclear weapons. But it raises serious concerns over the jurisdiction of ICJ over internal defense matters of countries.

India's position:

India strongly refuted on the point that ICJ cannot allow proceedings on the internal matters of a country just on the basis of possible threats.

International Court of Justice is a UN body and has following two

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roles to play —

(I) Issue binding pronouncement

Eg. Italy Marine case. ICJ allowed Marine to be allowed to go to Italy till the judgement is decided.

(II) Issue advisory pronouncements

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12. Even though the refugee crisis in Europe does not affect India directly, it presents an opportunity for India to showcase its commitment and capability to take greater responsibility in dealing with global issues. Comment in light of India's strengths, experience and international commitments regarding refugees.

यद्यपि, यूरोपीय शरणार्थी संकट का भारत पर कोई प्रत्यक्ष प्रभाव नहीं है, लेकिन यह भारत के लिए वैश्विक मुद्दों से निपटने हेतु अधिक बड़ी ज़िम्मेदारी ग्रहण करने संबंधी प्रतिबद्धता तथा क्षमता को प्रदर्शित करने का अवसर प्रदान करता है। शरणार्थी संबंधी भारत के सामर्थ्य, अनुभव तथा अंतर्राष्ट्रीय प्रतिबद्धताओं के आलोक में इस पर टिप्पणी कीजिए।

Post Arab Spring, many countries such as Libiya, Syria etc are war torn and has seen mass exodus by people trying to make an inway into Europe via sea routes. It has led to a refugee crisis where many countries have refused to accept refugees.

In dealing with such situation India has better strengths such as —

(i) India is a multi-ethnic, multi cultural country with thriving democracy.

(ii) India has in the past successfully been a peaceful refuge —

1. For Parsis during Medieval period
2. For Tibetans.
3. For Tamilians from Srilanka.

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Although India has not acceded to the UN convention on Refugees, 1961 but still India accepts refugees as per the ethos of human governance.

India is trying to talk and negotiate a deal with Bangladesh to take back its 1971 war refugees.

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13. India is endowed with an amazing variety and wealth of soft power resources. Providing examples, illustrate the utilisation of soft power in diplomatic initiatives of the recent past. What are the limitations of the soft power approach in diplomacy in case of a developing country such as India?

भारत सॉफ्ट पावर (मृदु शक्ति) संसाधनों की आश्चर्यजनक विविधता एवं बहुलता से संपन्न है। उदहारण प्रस्तुत करते हुए, हाल के कूटनीतिक पहलों में सॉफ्ट पावर के उपयोग का वर्णन कीजिए। भारत जैसे किसी विकासशील देश के लिए कूटनीति में सॉफ्ट पावर एप्रोच (मृदु शक्ति उपागम) की क्या सीमाएं हैं?

India has a rich history of civilization that continues till today. Over this period India has acquired many softpowers such as —

1) Yoga — healing exercise
2) Ayurveda — healing without side effects
3) Medical tourism
4) Intellectual ability
5) IT and BPO
6) Heritage and traditional ties
7) Most importantly Social Capital.

India has used these soft powers in various diplomatic initiatives in the past. Yoga was propagated at the UNGA. Ayurveda is a

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matter of research for medicinal benefits. Heritage and traditional ties, common culture with many nations and diplomatic ability of India.

Limitations of soft power diplomacy:

1) Limited economic capacity to propagate soft power.
2) Limited acceptance amongst various countries.
3) Developed countries can exploit India's soft power for their benefit like patenting Yoga, Bio-piracy.

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14. Highlight the features of NAVIC and bring out its significance for India. How is it different from GAGAN? Examine whether NAVIC can be a replacement of GPS for India.

नाविक (NAVIC) की विशेषताओं पर प्रकाश डालिए तथा भारत के लिए इसके महत्व को उजागर कीजिए। यह गगन (GAGAN) से किस प्रकार भिन्न है? परीक्षण कीजिए कि क्या नाविक भारत के लिए जी.पी.एस. को प्रतिस्थापित कर सकता है।

NAVIC is an initiative of Department of S&T. It is an indegenous Navigation and positioning system.

ISRO has recently launched GSAT-G the seventh satellite into the space as a part of NAVIC.

Features:

1) It involves 9 satellites — 4 in geo synchronous orbit, 3 in geo stationary and 2 on standby.

2) Better positioning than GPS — 10m accuracy

3) Two services — (i) Global Positioning System for all.
(ii) Restricted Positioning System for Defense purposes

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4) Region covered – 1500 km from Indian borders.

Significance for India:

1) Indigenous and hence reliable. US during Kargil war denied India GPS facility
2) Accurate
3) Can be used for —
   - Irrigation
   - Agricultural activities
   - Business activities
   - Research and survey
4) It will cover areas ranging from 1500 km boundary of India thus cover other, South Asian countries Australia, Indian Ocean Region, Central Asian and West Asian countries.
5) Thus, it will ~~aid~~ aid regional integration of IOR and increase India's dominance in the region.

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Due to high accuracy of 10 m and reliability, NAVIC can act as replacement of GPS in India.

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15. What are Carbon Nanotubes (CNTs) and how are they an improvement over carbon fibres? Highlight the various unique properties of CNTs which makes them suitable to the manufacturing industry.

कार्बन नैनोट्यूब (सी.एन.टी.) क्या होते हैं तथा वे किस प्रकार कार्बन फाइबर से श्रेष्ठ हैं। सी.एन.टी. के उन विशिष्ट गुणधर्मों पर प्रकाश डालिए जो इसे विनिर्माण उद्योग हेतु उपयुक्त बनाते हैं।

Carbon nano tubes are cylindrical hollow pipe like nano structures made of Carbon atoms.

CNTs are light due to hallowness, strong due to flattice structural arrangement of atoms in hexagonal pattern. Thus, the are more light and stronger than carbon fibres. Here an improvement over the Carbon fibres.

Unique features of CNT are—

1) Light weight
2) Strength is higher than steel.
3) Flexible
4) Inert to major chemicals and corrosive environments.
5) Mouldable into any shape and size.

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These features can be used by the manufacturing industry for various products such as —

1) Air planes, Cars, bikes - frame to reduce weight

2) Badminton rackets etc due to strength and light weight.

Because of mouldability, mert, light and strong they can be used by almost every manufacturing industry

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16. Explain the significance of gravitational waves recently detected by LIGO. What are the objectives of the recently envisaged LIGO-India project and what benefits will India accrue from it?

हाल ही में एल.आई.जी.ओ. (लिगो) द्वारा खोजे गए गुरुत्वीय तरंगों के महत्व की व्याख्या कीजिए। हाल ही में परिकल्पित एल.आई.जी.ओ.-इंडिया प्रोजेक्ट (लिगो-भारत परियोजना) के क्या उद्देश्य हैं, तथा भारत को इससे क्या लाभ होंगे?

Recently, LIGO detected gravitational waves from a Black hole explosion 13 billion light years ago.

Einstein envisaged it in 1949.

Significance of detection of Gravitational waves —

1. Proving Einstein's hypothesis
2. It can shed light on the evolution of universe.
3. Once proved, future research in this field can resolve many mysteries of Universe

Objectives of LIGO-India project

1. To create a world class technology laboratory in India.

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2. To promote research in basic sciences.
3. To attract youth to research and innovations
4. To create capabilities in the field of science

Benefits of LIGO-India

1. Research ecosystem
2. Youth will be attracted to science
3. Regain India leadership in science.
4. Develop research capabilities.

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17. What are the criteria employed for a pandemic to be declared a Public Health Emergency of International Concern (PHEIC) by the WHO? In the wake of recent Ebola and Zika virus outbreaks examine the efficacy of the prevalent architecture of global health governance. Also, assess India's preparedness in handling such global epidemics.

डब्ल्यू.एच.ओ. द्वारा किसी महामारी को पब्लिक हेल्थ इमरजेंसी ऑफ़ इंटरनेशनल कंसर्न (PHEIC) के रूप में घोषित करने के लिए क्या मानदंड अपनाए जाते हैं? हाल ही में इबोला तथा ज़ीका विषाणु के प्रसार के सन्दर्भ में वैश्विक स्वास्थ्य प्रबंधन की प्रभावोत्पादकता की जाँच कीजिए। ऐसी वैश्विक महामारियों मे निपटने के लिए भारत की तैयारियों का मूल्यांकन कीजिए।

WHO declares an epidemic as a pandemic under Public Health Emergency of International Concern (PHEIC) on the basis of following criteria —

(i) Substantial loss to human lives

(ii) Multi-country or multi-regional aspect of contamination and spread.

Recently, WHO declared Ebola and Zika as a pandemic. But, it has raised various concerns —

1. Delay in declaration and acceptance of epidemic and the state of emergency by WHO. By the time WHO declared Ebola as pandemic, already 30,000 lives were lost.

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2. WHO is mainly dominated by developed countries and thus is not purely representative.

3. Governance of WHO is not democratic and often biased in the favour of developed countries.

4. Rich pharmaceutical enjoy good level of influence in various aspects of WHO governance.

India preparedness to handle such epidemic:

1. Lack of monitoring and data collection in health sector makes it vulnerable to negligience.

2. Lack of adequate nutrition and sanitation further amplifies chances of easy contamination and spread of disease

3. Inadequate and illequipped health centres and professional

4. Over dependence of on Private sector

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5. Povery – major roadblock in access to good health care

Recent efforts by government such as Swach Bharat Abhiyan are potentially good efforts to reduce India's succeptibility to epidemics.

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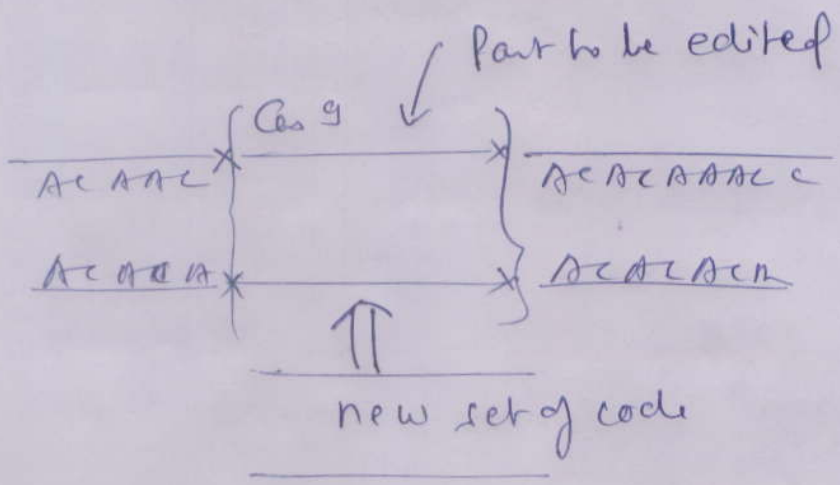
18. Give a brief explanation of CRISPR - gene editing technology. Also discuss its significance in modern biology and agriculture.

जीन एडिटिंग प्रौद्योगिकी - सी.आर.आई.एस.पी.आर. (CRISPR) की संक्षिप्त व्याख्या प्रस्तुत कीजिए। आधुनिक जीव-विज्ञान तथा कृषि में इसके महत्व पर भी चर्चा कीजिए।

CRISPR- Cas9 is a new technology to edit genes. This method is called transcription. It is inspired by natural gene editing of bacteria to guard against virus.

Process involved

1. Enzyme naturally obtained is inserted into the DNA.
2. After reaching the predestined location and site, Cas9 scisors out the genes to be replaced.
3. New gene is inserted at the site.



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Significance in modern biology —

1) It can be used to edit the stem cells genes and treat cancer, parkinson and other genetic disorders.

2) It can be used in agriculture technology to modify and make GM crops

3) It can be used to make bio-pesticides and bio-fertilizers.

4) It can be used to treat many probable genetic deficiencies that may arise in future.

5) It opens a new pandora box for research in bio-technology

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19. Even though large infrastructure projects like High Speed Rail (HSR) facilitate greater technological development, they come with their own set of challenges. Examine in the context of proposed HSR projects in India. Suggest some measures on how HSR can truly be 'Made in India'.

यद्यपि हाई स्पीड रेल (एच.एस.आर.) जैसी बड़ी अवसंरचना परियोजनाएं व्यापक स्तर पर प्रौद्योगिकीय विकास में सहायता करती हैं, लेकिन उनकी भी अपनी चुनौतियां होती हैं। भारत में प्रस्तावित एच.एस.आर. परियोजनायों के परिप्रेक्ष्य में परिक्षण कीजिए। कुछ उपाए बताईये कि कैसे सही मायने में एच.एस.आर. 'मेड इन इंडिया' हो सकता है।

High Speed rails such as Vacume Tube rail, bullet trains are often regarded as best alternatives for a country like India due to its vast geographical expanse. They come with their own technological advancements but also posses numerous challenges to Indian circumstances —

1) High cost of technology acquisition

2) They require seamless availability of power which is not available in India.

3) Requirement of new tracks also demand vast land which is difficult due to its cost and probable litigation and hindrances

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4) Usually they run short distances at high speed. India has a vast geography.

5) The curves of already existent railway lines are not designed for fast curves.

6) Uneven topography also creates challenge for such high speed trains.

Suggestive measures for Make in India:

1) Technology transfer and offset clause in contracts

2) Local sourcing and buying clause in contracts.

3) Skill development

4) Research and development of HSR as per the Indian needs

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20. What do you understand by Big-data? Using SDGs as an example, discuss its role in effective implementation of public policy. Also mention challenges faced in using Big-Data and measures to overcome them.

बिग-डेटा से आप क्या समझते हैं? एस.डी.जी. को एक उदाहरण के रूप में प्रस्तुत करते हुए सार्वजनिक नीतियों के प्रभावी कार्यान्वयन में इसके महत्व पर चर्चा कीजिए। इसके अतिरिक्त, बिग-डेटा के प्रयोग में आने वाली चुनौतियों तथा उनके समाधान के उपायों पर भी चर्चा कीजिए।

Big data is basically an term used to identify a huge set of unorganized digital data. It may be analysed to filter and generate useful trends.
~~and~~
For example: Data in Twitter and Facebook.

Analysis of Big Data can lead to effective implementation and good public opinion oriented public policies.

Huge data sets on various social networking platforms can be used to gauge public opinion about various SDG such as female - male participation, attitude of ~~people~~ sanitation measures, attitude of people towards education and women empowerment.

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Once analysed these can be used by the policymakers to shift their attention to those areas where the progress is slow.

Also, the policy makers and governments can use it as a tool to promote better sanitation measures, women empowerment measures and also monitor the progress.

Challenges faced in using Big Data

1. High end technology with high set of computing
2. Costly technology
3. Skilled professional to handle the high end technology
4. Difficult to analyse.
5. Chances of mis-interpretation
6. Litigation — Right to privacy issues.

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