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GENERAL STUDIES (TEST CODE : 1698)

Name of Candidate	SAI MANASA NC		
Medium Eng./Hindi	Eng.	Registration Number	966377
Center	Online	Date	5-12-2020

INDEX TABLE			INSTRUCTIONS
Q. No.	Maximum Marks	Marks Obtained	
1	10		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 ENGLISH & HINDI इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी 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 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। 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।
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Total Marks Obtained:			
Remarks:			

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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.

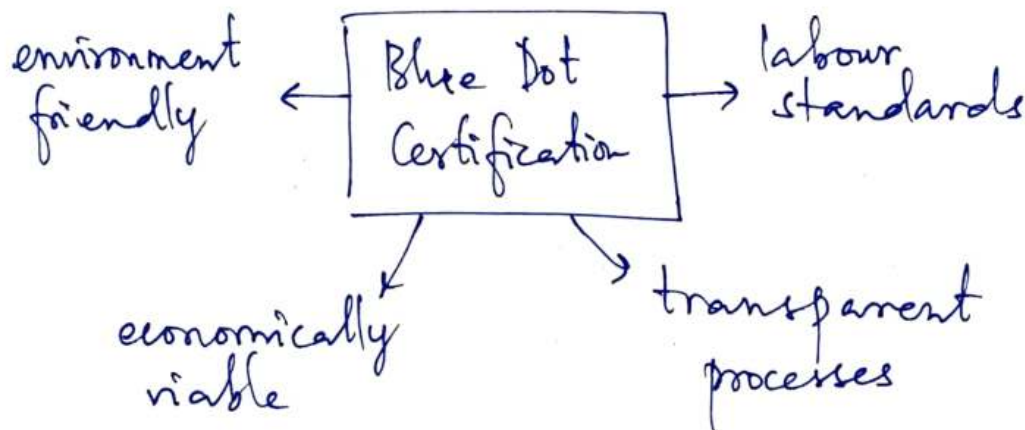
6.

1. What is Blue Dot Network? Assess its significance for India.

(150 words) 10

ब्लू डॉट नेटवर्क क्या है? भारत के लिए इसके महत्व का आकलन कीजिए।

Blue Dot Network is a grouping of countries such as Japan, USA, etc:- that certifies infrastructure projects around the world.



This is an alternative to the Belt & Road Initiative of China (BRI).

Issues with BRI:

- a) debt trap diplomacy by funding economically unviable projects.

- b) lack of transparency in negotiations, allegations of bribery
- c) environmental unsustainability.
- d) endangers national security.

Significance of Blue Dot Network for India:

1. Global funds will be channeled to certified projects by World Bank, ADB, etc:-
2. Containing influence of China as it provides benefits in refusing Chinese soft loans.
3. Indian projects such as Asia Africa Growth Corridor can get certification helping their completion.
4. Potential for cooperation with US, Japan, Australia, etc:- to safeguard rules-based international order

Thus, it is in line with SDG 17, i.e., partnerships for achieving SDGs.

2. An engaging feature of the current global situation is the transformation of the Sino-Russian relationship. Examine the potential of this evolving situation for India's foreign policy. (150 words) 10

चीन-रूस संबंधों का रूपांतरण, वर्तमान वैश्विक स्थिति की एक आकर्षक विशेषता है। भारत की विदेश नीति के लिए इस उभरती हुई स्थिति की संभावना का परीक्षण कीजिए।

Despite being communist and authoritarian countries, the Sino-Soviet relationship has seen several phases.

Till World War II: antagonistic neighbours

1945 to 1960s: Russia fuelled Chinese
communism

1960s onwards: Sino-Soviet split after
Stalin's death. This deepened India-
USSR relations as seen in 1971
friendship treaty.

1990s onwards, after end of Cold War:

- Russia and China are growing close again
- Western sanctions against Russia are pushing it into arms of China
- high economic dependence of Russia on China

[Potential for India's foreign policy]:

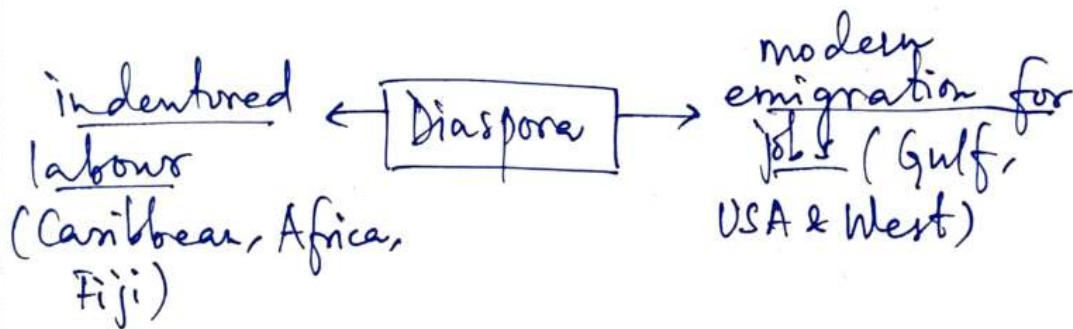
1. Indo-Russian ties may get hurt.
e.g: We can no longer rely on Russia
for UNSC veto on Kashmir.
2. India may have to ally with USA,
Japan and Australia (Quad) leading
to a bipolar world order.
3. Indian defence equipment is largely
Russian, posing security implications
in a potential war with China.
4. Russia and China have a frozen
border conflict in Siberia that India
can remind Russia.

India has offered a \$1 billion line
of credit to Russian Far East. In
future, India has to restrict the
Sino-Russian ties.

3. Highlighting the significance of the Indian diaspora, enumerate the initiatives taken by the government for engaging the Indian Diaspora around the world. (150 words) 10

भारतीय डायस्पोरा के महत्व को रेखांकित करते हुए, सम्पूर्ण विश्व से भारतीय डायस्पोरा को आकर्षित करने के लिए सरकार द्वारा की गई पहलों को सूचीबद्ध कीजिए।

Indian diaspora is among the largest in the world and is as old as the Roma.



Significance of diaspora:

1. source of soft power as they spread yoga, Bollywood, Indian cuisine, etc.
2. source of FDI that is long term.
eg: Sam Pitroda in telecom
3. influence American foreign policy
eg: Hinduja group lobbied for Indo-US civil nuclear deal.

4. deepen India's ties with host country by reaching top posts. eg: Kamala Harris.
5. send remittances.

Initiatives

1. Pravasi Bhartiya Diwas biennially
2. Operation Vande Bharat to repatriate them during pandemic
3. Outreach by Modi eg: Madison Park, Howdy Modi
4. OCI Cardholder status for benefits like adopting Indian children.

Hence, diaspora is an important angle of policy-making.

Recommendations of L.M. Singhvi committee have to be followed such as setting up standing committee in Parliament for diaspora and considering dual citizenship.

4. Emerging technologies are increasingly playing a key role in international relations. Discuss in the context of MEA's decision of setting up of a new division on New and Emerging Strategic Technologies (NEST).

(150 words) 10

उभरती प्रौद्योगिकियां उत्तरोत्तर अंतर्राष्ट्रीय संबंधों में महत्वपूर्ण भूमिका निभा रही हैं। नई एवं उभरती सामरिक प्रौद्योगिकियों (NEST) पर एक नया प्रभाग स्थापित करने के MEA के निर्णय के संदर्भ में विवेचना कीजिए।

Prof. Klaus Schwab of WEF recently held that we have entered "globalisation 4.0" where technologies of the 4th industrial revolution like AI and Big Data play a key role.

Significance in International relations :

- a) increasing interconnectedness due to faster internet speed with 5G.
- b) privacy and espionage concerns affecting national security. Eg: Natanz nuclear facility was attacked by Israel through software in Iran.

c) disinformation wars fuel authoritarianism. eg: Chinese crackdown in Hong Kong

d) dominance of IT companies such as Google and Amazon that affects state security and rights of citizens.

The proactive establishment of NEST division at MEA will help by:

1. improving research and study on emerging tech and implications on security. eg: IoT, robotics
2. help cooperate with trusted partners such as Japan to ensure safe development of tech.
3. making India a global power in these technologies.

Hence, we have entered the age of technological hegemony and must keep abreast.

5. Why are shell companies seen as attractive vehicles for those seeking to launder money or conduct illicit activity? Highlight some steps that have been taken by the government in recent times to curb shell companies in India. (150 words) 10

जो लोग धनशोधन या अवैध गतिविधियां संचालित करना चाहते हैं, उनके द्वारा शेल कंपनियों को आकर्षक माध्यम के रूप में क्यों देखा जाता है? भारत में शेल कंपनियों पर अंकुश लगाने के लिए हाल के दिनों में सरकार द्वारा उठाए गए कुछ कदमों पर प्रकाश डालिए।

Shell companies are companies that have no productive activity but exist solely to obfuscate financial information or conduct illegal activities.

They are attractive vehicles to launder money and conduct illicit activity since:

- a) the information is layered to hinder tracing of the money.
- b) can escape tax authorities by shifting to a different country.
- c) specialised agencies exist in tax havens to help launder money as

exposed in Panama Papers.

Steps taken :

1. SEBI tightened norms on P-notes, hiking the fee to \$1,000.
2. Prevention of Money Laundering Act, 2002 and FEMA enacted
3. Enforcement Directorate and Finance Intelligence Unit ensure law is followed.
4. OECD's Base Erosion & Profit Shifting signed.
5. Automatic information exchange agreements with tax havens like Switzerland.
6. Financial Action Task Force participation.

However, shell companies must be traced to curb terrorism & organised crime and increase government revenue.

6. Non-state actors are significant conduits in many important national security challenges faced by India. Explain with examples. (150 words) 10
गैर-राज्य अभिकर्ता भारत द्वारा सामना की जाने वाली अनेक महत्वपूर्ण राष्ट्रीय सुरक्षा चुनौतियों में उल्लेखनीय वाहक हैं। उदाहरण सहित स्पष्ट कीजिए।

Non-state actors are those outside the government. They have increased in the age of globalisation.

They are conduits of national security challenges such as:

- ① Terrorism - terrorist organisations such as LeT and JeM target civilians (2008 Mumbai attacks) and military personnel (Uri, Pathankot, Pulwama attacks)
- ② Insurgency & separatism - e.g: ULFA, NSCN and NDFB in North East, JKLF, Hizbul-ul-Mujahideen in JK.
- ③ Espionage - outsourcing of government functions due to neoliberal model

gives powers to private companies.
eg: Zhenhua database leak.

④ Riots and protests. eg: NGOs funded by China and USA were instigating protests against Kudankulam nuclear plant.

Hence, non-state actors affect human security and sovereignty of state.

Recently, disinformation wars to rig elections were discovered due to the Cambridge Analytica scandal.

As former NSA Shirshankar Menon suggested, India must increase capabilities to deal with non-state actors through technology upgradation, capacity building of personnel and international cooperation in FATF and UNSC.

7. Data Protection is not just a privacy issue, it is also a national security issue. Discuss. (150 words) 10

डाटा संरक्षण सिर्फ निजता का मुद्दा नहीं है, अपितु यह राष्ट्रीय सुरक्षा का भी एक मुद्दा है। चर्चा कीजिए।

In 2017, data surpassed oil as the most valuable resource.

Kutuswamy judgement has recognised right to privacy as a fundamental right and called for strong data protection as:

- a) Personal data should be the property of the individual
- b) surveillance capacities of state (Aadhaar) and big corporations (Google GPS tracking, etc.) must not impinge on right to privacy and personal liberty.

However, data protection is also an issue of national security since:

- a) hostile states can use it through espionage against India
(e.g: Zhenhua data leak showing records on Indian leaders)
- b) law enforcement needs easy access to data, requiring data localisation
- c) financial data, data on critical facilities like nuclear plants, army and dams can cripple the nation if leaked.

Steps taken

1. RBI's "data diktat" for localisation of financial data
2. CERT-In promotes cyber security.
3. awareness campaigns on data protection.

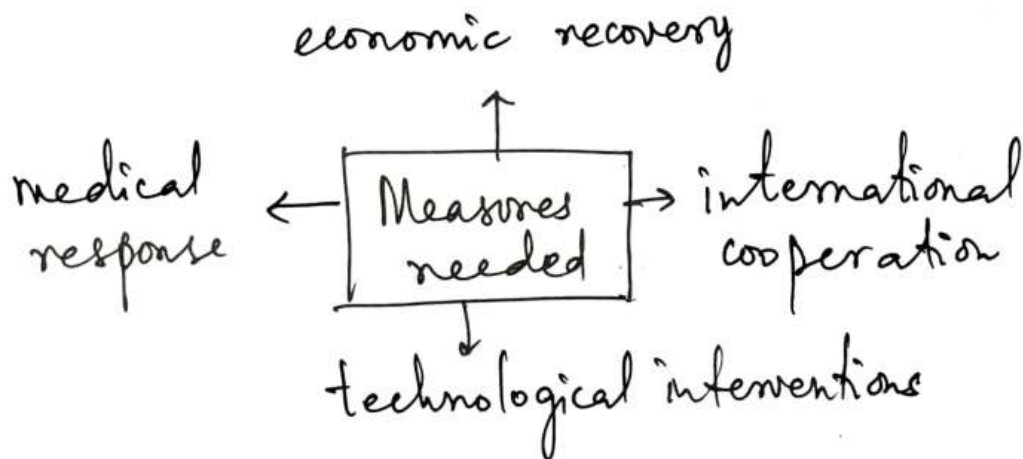
The Personal Data Protection Bill on Srikrishna Committee report must be passed without delay.

8. Along with other measures, technological interventions are crucial in dealing with the Covid-19 pandemic and its after effects. Explain.

(150 words) 10

अन्य उपायों के साथ-साथ, कोविड-19 महामारी और इसके पश्च-प्रभावों से निपटने में तकनीकी हस्तक्षेप महत्वपूर्ण हैं। व्याख्या कीजिए।

The COVID-19 pandemic is known as the worst global disaster since World War II.



Technological interventions are needed such as:

- tracking infected people and ensuring strict quarantine. eg: Aarogya Setu App.
- contact tracing through social media and Google GPS.

- c) digital solutions to replace physical contact such as online services through MyGov, e-newspapers.
- d) information dissemination through mass media - TV, radio, social media
- e) databases to ensure efficient use of resources. eg: SAARC database on medical supplies and requirement
- f) vaccine development - some use mRNA technology that is novel.

Thus, technology can provide a solution. However, we must improve digital infrastructure, bridge the digital divide and invest in tech to utilise it optimally.

9. Highlighting the significance of genome mapping in India, discuss the associated challenges with the Genome India Project. (150 words) 10

भारत में जीनोम मैपिंग के महत्व पर प्रकाश डालते हुए, जीनोम इंडिया प्रोजेक्ट से जुड़ी चुनौतियों की विवेचना कीजिए।

Genome mapping is an exercise that finds the sequence of an individual's genome or genetic information set. A human has 3 billion base pairs in DNA so genome mapping is a complex task.

Significance in India:

- ① Identify causes of genetic disorders such as Thalassaemia that are high in India.
- ② Historical - trace ancestry, map population trends and demographic changes
- ③ help develop precision medicine, suited for the Indian genome.

The Genome India project by CSIR etc:- maps genome of volunteers from all across India.

Challenges:

1. Data privacy - their DNA information must be secured
2. expensive - requires significant resources to purchase equipment, train personnel.
3. Indian genome is not homogenous and varies across ethnicities, requiring vast samples and parallel mapping.

While there are challenges, it is a significant step ~~is~~ and will further medical research.

10. Explaining how the 5G mobile communication technology works, discuss its differences with LTE. Discuss the challenges being faced in its rollout.

(150 words) 10

यह स्पष्ट करते हुए कि 5G मोबाइल संचार प्रौद्योगिकी किस प्रकार कार्य करती है, LTE से इसके अंतरों की विवेचना कीजिए। इसे आरंभ करने में आने वाली चुनौतियों पर चर्चा कीजिए।

The 5th generation (5G) mobile communication technology has taken the world by storm.

Features as opposed to Long Term Evolution (4G):

1. broader bandwidth, higher speeds
eg: 100Gbps is a stretch for LTE
whereas 5G can easily achieve it
2. lower frequencies, allowing longer distances and stronger connections
3. allows fractionation of spectrum and creation of multiple virtual networks on same infrastructure.

Thus 5G is faster, and better. It allows development of IoT and data transfer

intensive technology like self-driving cars.

Challenges :

- ① Domination by China - leads to concerns of :
 - espionage and data insecurity
 - increase dependence on Chinese firms like Huawei.
 - ② existing mobile phones and electronics will not work, leading to e-waste and loss of opportunity for poor if they cannot afford another.
 - ③ geopolitical tensions such as US-China rivalry affect its smooth rollout
 - ④ Poor infrastructure in India - more investment needed for towers, etc.
- However 5G will boost economic growth and the Make in India program.

11. Why did India decide not to join the Regional Comprehensive Economic Partnership (RCEP)? Discuss in the context of domestic interests, India's experience of the free trade agreements and prevailing realities of external trade. (250 words) 15

भारत ने क्षेत्रीय व्यापक आर्थिक भागीदारी (RCEP) में सम्मिलित न होने का निर्णय क्यों लिया? घरेलू हितों, मुक्त व्यापार समझौतों के संबंध में भारत के अनुभव और बाह्य व्यापार की मौजूदा वास्तविकताओं के संदर्भ में विवेचना कीजिए।

RCEP is a trading ~~agmt~~ agreement between 10 ASEAN countries and their FTA partners: Japan, China, South Korea, Australia and New Zealand.

India decided to opt out of it in the Bangkok Summit in 2019.

Reasons :

1. fears of deepening trade deficit with China and ASEAN countries, hurting domestic industry.

Economic Survey 2019-20 stated that while India has gained overall from FTAs, it has not taken advantage of existing ones with Southeast Asia

and has lost out to foreign companies.

2. Indian dairy sector that is largely informal and unorganised cannot compete with Australian dairy farms.
3. Indian farmers use outdated techniques and produce lower yields per acre. They will face stiff competition from ASEAN agricultural produce, especially plantation goods like rubber, coffee.
4. High logistical costs in shipments, clearances, etc:- makes India's manufacturing sector uncompetitive.
5. Weak country of origin rules
6. free trade in services not expedited, where India has advantage.

Hence, India did not join

Way Forward

India must strengthen its domestic industry by :

- a) reforming factors like land & labour (eg: recent labour codes)
- b) increasing logistical performance and ease of doing business
- c) boost Make in India (e.g: PLI scheme for electronics).

This will help our exports become competitive.

In the ~~to~~ medium term, we must join trading blocs to participate in global supply chains, especially since WTO has collapsed and regional agreements are the norm.

12. It has been argued that the ties between India and Bangladesh are currently passing through a golden chapter. Critically discuss.

(250 words) 15

यह तर्क दिया जाता है कि भारत और बांग्लादेश के मध्य संबंध वर्तमान समय में स्वर्णिम दौर से गुजर रहे हैं। समालोचनात्मक चर्चा कीजिए।

India and Bangladesh have a shared history, culture and deep relations.

Since India helped the creation of Bangladesh in 1971, the ties were warm initially. However, the ties were affected due to:

- a) Sheikh-^{Mujib}ur-Rehman's assassination by Zia and BNP party
- b) coup by General Ershad
- c) rising religious extremism stoked by Pakistan
- d) sanctuary to terrorists/insurgents in North East given in Chittagong hill tracts.

However, the current chapter of relations seems to be the golden one as:

1. Deep personal friendship of Sheikh Hasina towards Indians and Modi.
2. Land Boundary Agreement has been resolved exchanging enclaves
3. Bangladesh has cooperated in anti-insurgency operations.
4. Cooperation in electricity, trade and transit eg: Kaladan project using inland waterways.
5. Allowing villages in Tripura to draw river water.

However, the picture is not entirely rosy. Sticking points in the ties are:

- a) illegal immigration into North East that Bangladesh does not acknowledge. Assam NRC has heightened tensions.
- b) CAA has been criticised as questioning the secular nature of Bangladesh by suggesting its minorities are not safe.
- c) Teesta issue with West Bengal not agreeing on a settlement
- d) Increasing influence of China in defence cooperation, etc.

India must take advantage of the friendly Awami government to iron out disagreements. It must fast track projects like Ruppur power plant and strengthen interdependence.

13. India has consistently argued for nuclear disarmament yet has not signed some of the most significant global treaties in this context. What are the reasons for the same? Do you think its time to revisit India's stand on the issue? (250 words) 15

भारत ने निरंतर परमाणु निरस्त्रीकरण का समर्थन किया है, किन्तु फिर भी इस संदर्भ में कुछ सर्वाधिक महत्वपूर्ण वैश्विक संधियों पर हस्ताक्षर नहीं किए हैं। इसका क्या कारण है? क्या आप मानते हैं कि यह इस मुद्दे पर भारत के रुख पर पुनर्विचार किए जाने का समय है?

"Nuclear weapons are the most diabolical use of science" - Gandhi.

Since its independence, India has advocated nuclear disarmament to ensure world peace.

The Rajiv Gandhi Plan of Action in 1988 included:

- complete and time-bound nuclear disarmament.
- strict scouting under IAEA safeguards.
- no stockpiling by existing de jure nuclear powers.

However, India has not signed the treaties for disarmament as :

a) Non-Proliferation Treaty (NPT) only prohibits horizontal proliferation and allows existing nuclear powers to increase their stockpiles. This leads to :

- a world of nuclear haves & have-nots
- fear of nuclear blackmail

Hence, India acquired nuclear weapons in 1998 to deter China.

b) Comprehensive Test Ban Treaty:

- major powers like USA have not ratified it
- China, US and Russia already have ability for simulated testing that is not covered.

- it tries to solidify existing asymmetries between the P5 and rising powers.

c) Nuclear Test Ban Treaty:

- this is negotiated at UN where $\frac{2}{3}$ majority is enough instead of Conference of Disarmament where consensus is required
- major powers like USA, China have not signed it.

Recently, it is suggested that India revisit the stand, since a nuclear war in South Asia is highly likely.

India has agreed to sign Fissile Material Cut Off Treaty and is part of Wassenaar Arrangement. However, the basic stand of complete disarmament of all must be maintained to ensure national security.

14. In the context of India-China ties, explain the term 'Panchsheel'. In view of the argument that China has persistently violated these principles, argue whether the longstanding approach requires changes. (250 words) 15
- भारत-चीन संबंधों के संदर्भ में, 'पंचशील' शब्द को स्पष्ट कीजिए। इस वाद-विवाद के आलोक में कि चीन ने इन सिद्धांतों का बारंबार उल्लंघन किया है, तर्क प्रस्तुत कीजिए क्या इस दीर्घकालिक दृष्टिकोण में परिवर्तन की आवश्यकता है।

Panchsheel, inspired by Buddhism, was ideated by Nehru as a model to govern international relations.

5 principles :

1. non-interference in domestic affairs
2. respect for sovereignty and territorial integrity
3. equality for mutual benefit
4. peaceful coexistence.
5. mutual non-aggression.

In 1954, India and China agreed to follow the principles of Panchsheel in bilateral relations.

However, China has persistently violated these principles as seen in:

1. support to armed insurgents in North East and Naxalites
2. aggression on border during 1962 war, 2017 (Doklam), 2020 (LAC standoff) etc:-
3. illegal occupation of Indian territory in Aksai Chin
4. Support to Pakistan on Indian territory in Gilgit - Baltistan
5. data espionage as revealed by Zhenhua database on Indian leaders
6. refusing India's entry into NSG & UNSC.

Thus, China does not follow Panchsheel in practice. It is suggested that India's approach must also change.

[Way Forward]:

1. India must cooperate with countries seeking to contain China such as Japan, USA, Vietnam, Indonesia, etc:-
2. Necklace of Diamonds strategy to counter China's string of pearls.
3. reform multilateral fora like UNSC for Indian representation.
4. India also holds the "Tibet card" with Dalai Lama and could reignite Tibetan insurgency.
5. expose Chinese oppression of Uighurs, Tibetans and Cantonese to the world.

India and China have lived in peace for millenia and in hostility only for decades. In the short term, we should contain China, in long term ensure peace.

15. The ongoing Covid-19 pandemic has expanded and rearranged the concept of national security, making it more inclusive, and foregrounded human security in a more holistic manner. Comment. (250 words) 15

वर्तमान कोविड-19 महामारी ने राष्ट्रीय सुरक्षा को और अधिक समावेशी बनाते हुए इसकी अवधारणा का विस्तार एवं पुनर्निर्माण किया है तथा अधिक समग्र रीति से मानव सुरक्षा को सर्वाधिक महत्वपूर्ण बनाया है। टिप्पणी कीजिए।

The COVID-19 pandemic is the most pressing challenge to national security that India faces today.

Issues

- health crisis, endangering lives of vulnerable sections
- economic crisis due to measures to curb infection spread
- hostile neighbours taking advantage of our crisis - e.g: LAC standoff due to Chinese aggression, Nepali revised maps
- security of livelihood for the poor due to out of pocket expenditure on health and loss of jobs.

Thus, the pandemic has expanded the notion of national security to include human security. It has been realised that for the nation to continue on its growth trajectory,

- health of the people is of prime importance
- social security must be strengthened
- reliance on other countries for essentials like PPEs and APIs must be curbed.

Hence, the pandemic is a lesson on security.

Steps taken :

1. Atmanirbhar package to reduce reliance on China, boost domestic

industry and create jobs.

2. Banning of Chinese apps and restricting hostile takeovers of Indian companies by Chinese ones due to low stock prices.
3. Enhancing PDS quantity of grains
4. New Labour Code on Social Security, 2020

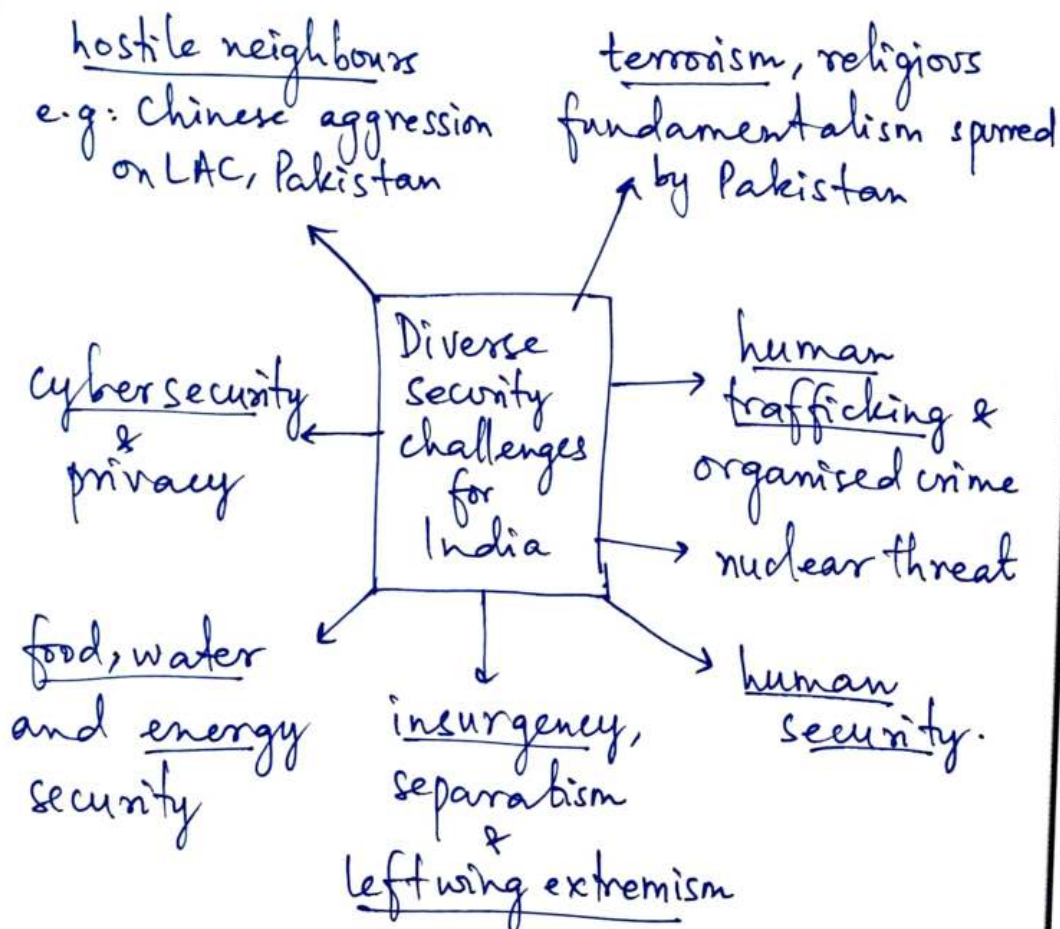
The people are the ultimate essence of a nation and national security thus has to be centered on human security.

16. Given the diverse security challenges as well as external and internal linkages, developing a National Security Strategy for India requires a comprehensive approach. Explain.

(250 words) 15

विविध सुरक्षा चुनौतियों के साथ-साथ बाह्य और आंतरिक जुड़ाव को देखते हुए, भारत के लिए राष्ट्रीय सुरक्षा रणनीति विकसित करने हेतु एक व्यापक दृष्टिकोण अपनाए जाने की आवश्यकता है। स्पष्ट कीजिए।

National security is of prime importance in order to ensure safety of the people and development.



Thus, India faces diverse security threats. These have external linkages due to:

- globalisation and interflow of goods, people and ideas across borders
- hostile neighbours like China and Pakistan

This requires development of a comprehensive National Security Strategy.

This would ensure:

- ① military preparedness - to deter and manage threats from neighbours
eg.: • nuclear triad
 - border infrastructure - roads, helipads
 - intelligence, surveillance and reconnaissance.
- ② prompt detection of security challenges
 - improved coordination between intelligence agencies like IB, RAW.

- periodic testing of critical software to detect bugs and malware.
- cooperation with other countries through INTERPOL, FATF, UN Office on Drugs and Crime, etc:-

③ Develop capability of swift response:

- CERT-In for cyber security should have increased resources, manpower
- coordination between enforcement agencies such as ED, CBI, CRPF, forest department, local police, NIA, etc:-

④ Protect Critical Information Infrastructure and ensure reliability of food, water and energy resources.

- develop dam capacity
- protect Sea Lanes of Communication
- strengthen firewalls.

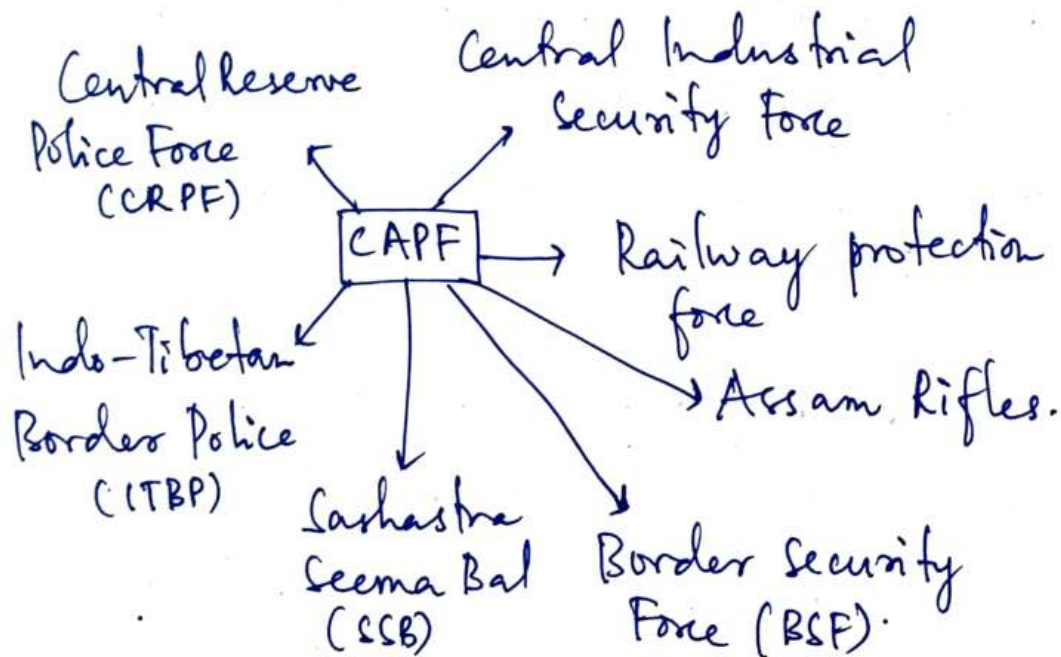
Thus, a holistic security strategy must be framed, spearheaded by National Security Council.

17. It is widely recognised that India's Central Armed Police Forces (CAPF) are in urgent need of overhaul. Discuss in the context of issues associated with personnel, infrastructure and service conditions of these forces.

(250 words) 15

यह व्यापक रूप से माना जाता है कि भारत के केंद्रीय सशस्त्र पुलिस बलों (CAPFs) में आमूल-चूल परिवर्तन की तत्काल आवश्यकता है। कार्मिक, अवसंरचना और इन बलों की सेवा-शर्तों से जुड़े मुद्दों के संदर्भ में चर्चा कीजिए।

Central Armed Police Forces (CAPF) are the paramilitary forces of the country, largely under the Home Ministry.



They perform varied functions such as:

- border vigilance - BSF, ITBP, SSB, Assam rifles
- internal maintenance of law & order: CRPF

- protection of critical infrastructure - CISF, RPF.

Issues:

1. Shortage of manpower and trained personnel:
 - battalions are deployed for diverse purposes and are shared.
 - inadequate training - e.g: how to handle physically challenged during disasters, lack of sensitisation to local issues.
2. Infrastructure:
 - poor infrastructure such as proper border posts, night surveillance equipment, mobile communication infrastructure, medical facilities.
 - poor coordination and inadherence to SOPs leads to mishaps like IED blasts slipping through the radar eg: Pulwama attack on CRPF convoy.

3. Service Conditions:

- poor quality of food - as suggested by CRPF jawan in viral video
- long hours and low leaves
- issues in pensions due to dual control of Home & Defence Ministries
eg: Assam Rifles.

Hence, there is need of urgent over-haul:

- a) Improve infrastructure through Border Area Development Program, increased budgetary allocation.
- b) capacity building for tackling diverse security threats, improve service conditions
- c) rationalising border forces - e.g:
Assam Rifles can handle Indo-China border in North East, solve jurisdictional issues.

Hence, CAPF need to be revamped.

18. What do you understand by Critical Information Infrastructure? Highlight the significance of Critical Information Protection and state the measures taken to ensure the same. (250 words) 15

महत्वपूर्ण सूचना अवसंरचना से आप क्या समझते हैं? महत्वपूर्ण सूचना संरक्षण के महत्व पर प्रकाश डालिए और इसे सुनिश्चित करने के लिए उठाए गए कदमों का उल्लेख कीजिए।

Critical Information Infrastructure is the vital infrastructure that keeps a nation running smoothly such as transport and communication, banking services, etc:-

Significance of its protection:

- a) Due to the growth of the economy, disruptions in areas like mobile telecom signals, rail lines, stock markets can cause large-scale economic loss, riots and even endanger lives.
- b) It is prone to security threats especially cyberwarfare eg: Israeli

attack on Iran's software in the
Natanz nuclear facility.

Q.

Measures taken

- ① National Cyber Security Policy of 2013
provides for establishment of a
National Critical Information Infrastruc-
ture Protection Centre (NCIIPC).
- ② Computer Emergency Response Team
(CERT-In) for tackling cyber
attacks
- ③ informal adherence to Budapest
Convention on Cybersecurity.
- ④ Central Industrial Security Force to
protect power plants, etc:-

In the age of Industrial Revolution 4.0, the new front of war is information warfare in the cyberspace.

India must enhance its measures to include:

- a) indigenisation of software in critical facilities to reduce scope for hacking
- b) capabilities of containing damage must be in place such as denying services if a data breach is located.
- c) capacity building of personnel.

The National Cyber Security Policy of 2013 must be fully implemented.

19. Explaining how quantum computers work, discuss the challenges that need to be addressed for the scalable development of this technology. Also, highlight significance of the recently launched National Mission on Quantum Technologies & Applications (NM-QTA). (250 words) 15

यह स्पष्ट करते हुए कि क्वांटम कंप्यूटर्स किस प्रकार कार्य करते हैं, उन चुनौतियों की विवेचना कीजिए जिन्हें इस तकनीक के आरोह्य (स्केलेबल) विकास हेतु दूर किए जाने की आवश्यकता है। साथ ही, हाल ही में आरंभ किए गए क्वांटम प्रौद्योगिकी और अनुप्रयोग पर राष्ट्रीय मिशन (NM-QTA) के महत्व पर प्रकाश डालिए।

Quantum computers are a revolutionary innovation.

Functioning:

- ① Instead of using boolean format of 0 or 1 to store data in bits, qubits store a range of 0 to 1.

This enables storage of massive amounts of data.

- ② electrons at quantum state are very unstable and produce probabilities instead of concrete results. Hence, a calculation has to be run thousands of times.

② They reduce the time taken to solve complex problems. For e.g., Google's Sycamore has claimed quantum supremacy, stating that it solved a calculation that would take thousands of years on a normal computer in just 200 seconds.

Challenges:

1. Significant investment needed to set up the ideal conditions to ensure quantum state.
2. Quantum computers can easily crack existing end to end encryption based on public and private key infrastructure (P2Q issue)

Significance of National Mission on Quantum Technologies & Applications :

- a) India can acquire capabilities.
Since it requires enormous investment, private companies may not be willing.
- b) boost to space programme, defence capabilities, etc:-
- c) a service sharing network will enable academic and R&D institutions to use them to improve research.

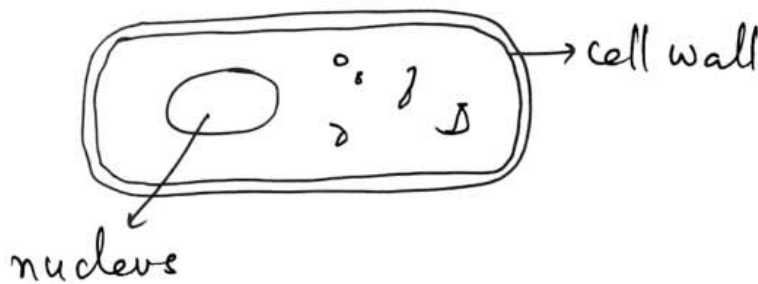
Thus, quantum computers are revolutionary. However, India has to proactively invest. We also have to improve security systems to avoid the Y2Q problem.

20. Bring out the differences between bacteria and viruses. Also, explaining why antibiotics can work against bacteria but not viruses describe the general working of vaccines designed to attack certain viruses.

(250 words) 15

जीवाणु और विषाणु के मध्य अंतर स्पष्ट कीजिए। साथ ही, यह स्पष्ट करते हुए कि क्यों प्रतिजैविक दवाएं जीवाणुओं के विरुद्ध काम कर सकती हैं, लेकिन विषाणुओं के विरुद्ध नहीं, कुछ निश्चित विषाणुओं पर वार करने के लिए तैयार किए गए टीकों की सामान्य कार्यप्रणाली का वर्णन कीजिए।

Bacteria are cellular organisms that are living creatures.



They have a cell wall that protects them and a nucleus with mitochondria for metabolism.

Viruses on the other hand are without a proper cell structure.

They are enclosed by a protein or lipid layer like the SARS-CoV-2.

Viruses cannot live on their own and need a host to provide energy.

Antibiotics

- Antibiotics work by breaking the cell wall of an organism. Hence, they are effective against bacteria but not against viruses.
- Common bacterial infections like TB, pneumonia can be cured through anti-biotics but not viral infections like the common cold.

Vaccines

Vaccines are the preferred method to tackle viral infections. They generally work by:

- improving the immunity of the

individual through exposure to a weakened or inactive virus or by mRNA which enables cells to produce particular immune cells.

- They only work against a specific viral strain as opposed to anti-biotics that work on most bacteria

The recent COVID-19 pandemic has required large-scale vaccination of populations to achieve herd immunity.