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GENERAL STUDIES (TEST CODE : 756)

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Medium Hindi/Eng.	ENGLISH	Registration Number	15577
Center	ORN	Date	1/11/2016.

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

- Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)।
- There are TWENTY questions printed in HINDI and ENGLISH.
इसमें बीस प्रश्न हैं तथा हिन्दी और अंग्रेजी दोनों में छपे हैं।
- All questions are compulsory.
सभी प्रश्न अनिवार्य हैं।
- The number of marks carried by a question/part is indicated against it.
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
- Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other than the authorized one.
प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (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. 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

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. India has recently acquired the membership of MTCR, whereas it aspires to enter the NSG. In this context, what is the significance of MTCR and NSG for India? Discuss the factors that are responsible for the different outcomes of India's effort to acquire the membership of these two.

भारत ने हाल ही में एम.टी.सी.आर. (प्रक्षेपास्त्र प्रौद्योगिकी नियंत्रण व्यवस्था) की सदस्यता ग्रहण की है तथा यह एन.एस.जी. (नाभिकीय आपूर्तिकर्ता समूह) में सम्मिलित होने की महत्वाकांक्षा रखता है। इस संदर्भ में भारत के लिए एम.टी.सी.आर. और एन.एस.जी. का महत्व क्या है? भारत द्वारा इन दोनों की सदस्यता प्राप्त करने के प्रयासों के भिन्न-भिन्न परिणामों के लिए जिम्मेदार कारकों की चर्चा कीजिए।

The year 2016 witnessed India's entry to MTCR group whereas, the plenary session in Seoul of NSG for India's proposed membership didnot yield results as desired.

The significance of joining an international group dealing with defence and nuclear security like MTCR and NSG are manifold as :-

- i) Entry of a non-NPT ^{NSG} signatory member heralds an ideological victory
- ii) Regularisation of India's nuclear program
- iii) Ease of access of nuclear fuel as NSG members have passed a resolution to restrict nuclear fuel export to non members.
- iv) Permission of nuclear fuel recycling
- v) India can import nuclear technology to other countries
- vi) Access to technology

vi) funding

vii) Help India to achieve its clean energy targets.

MTCR

i) Now India can build missile warhead of more than 300km range

ii) Access to new missile technologies

iii) Ease of acquiring Predator drones from the U.S.A.

iv) Can import BRAHMOS to countries like Vietnam

v) funding access.

NSG membership of India was questioned by many countries like Brazil, Ireland, New Zealand but was predominantly thwarted by China. The basis was India being a non signatory of NPT whereas, the group's requirement for membership is NPT signatory. Since the group works by consensus and not majority hence India lost its bid due to many objections.

However, MTCR is a voluntary grouping of 35 nations that do not insist of NPT's signatory or not. India joined MTCR by choice.

However, 38 out of 48 countries of NSG favouring India's entry due to its credentials mark an important turn in India's entry into the world stage as a country of impeccable track record.

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2. India's membership in SCO promises to be a win-win proposition for all the stakeholders including Central Asia, Russia and India. Comment. Can this move improve the security situation in Afghanistan?

एस.सी.ओ. (शंघाई सहयोग संगठन) में भारत की सदस्यता मध्य एशिया, रूस और भारत सहित सभी हितधारकों के लिए लाभकारी प्रस्ताव सिद्ध होने का वादा करती है। टिप्पणी कीजिए। क्या यह कदम अफगानिस्तान में सुरक्षा की स्थिति में सुधार कर सकता है?

SCO admitted India in 2016 as a full member. This elevation from the acceding state to full membership opens plethora of opportunities and potentials to be tapped.

As a military cooperation organisation in its start, it has turned to be a multilateral fora for regional problems and cooperation. It is a win-win situation for the region for the following reasons:-

- i) Ensures energy cooperation
- ii) Lies in the proposed 'One Belt One Road' initiative of China proposing enhanced connectivity
- iii) Opportunity for trade

Central Asia is oil rich needing importers hence this grouping ensures land based oil pipelines to supply energy at competitive rates to neighbouring countries.

Russia, after sanctions from the West, is in search of market to export oil, gas, arms, etc

to control Rouble from falling further and land based connectivity provides good option.

India benefits as a net energy importer nation. Benefits of enhanced security cooperation would also deepen the trust between India and China.

Afghanistan tends to benefit from the military cooperation through training, arms, etc so as to quell the anti-state actors and promote peaceful trade ties with the grouping. A regional grouping will help to enhance the status and the reconstruction efforts.

The predominance of China in SCO is a matter of thinking but the benefits outweigh the concerns. If managed tactfully, this grouping can lead to a lot of money to cash starved developing economies from China based AIIB, the Asia Infrastructure and Investment Bank.

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3. The Nano mission has not only established a good eco-system to pursue basic research but also nurtured application-oriented R&D, focused on useful technologies and products. Comment. Also examine the need of building a regulatory framework encompassing public safety to harness the advances made in nanotechnology.

नैनो मिशन ने न केवल आधारभूत शोध करने हेतु उपयुक्त पारितन्त्र की स्थापना की है, बल्कि उपयोगी प्रौद्योगिकियों और उत्पादों पर केंद्रित अनुप्रयोग-उन्मुख शोध एवं विकास को भी पोषित किया है। टिप्पणी कीजिए। साथ ही, नैनो प्रौद्योगिकी में हुई प्रगति का दोहन करने हेतु सार्वजनिक सुरक्षा से मुसज्जित नियामक ढांचे के निर्माण की आवश्यकता का परीक्षण भी कीजिए।

Nano Mission was started in 2007
is giving results in promoting a good research
environment along with useful R&D by good
ecosystem.

Nanotechnology is emerging fast as
a technology of future and in this aspect India's
NANO MISSION flagged back in 2007 is making
considerable advancements.

Nano mission has created an environment
of application-oriented R&D and like Quantum Dot
Technology application with regard to cancer and
other diseases.

~~The~~

The recently created nanoparticle using filter made of 'chitosan', an organic filter has made water purification systems cheaper and accessible to vastly poor population of India.

Creation of graphene based cells to food grade stain Tintorang, our R&D ecosystem has created wonders in bringing technology from labs to dooresteps. Enhanced funding to nanotechnology research projects and creation of incubator labs has promoted application oriented research.

There is a need to build a regulatory framework encompassing public safety as the nanotechnology field is new with revolutionary effects. Its consequences are not fully established, hence a regulatory authority overseeing the potential misuse and also promoting the field is required.



4. World Drug Report 2016 identifies India as a transit point for drugs headed for other destinations. Examine the causes and consequences of such a state of affairs in the context of rising spectre of drug consumption in some states in India.

विश्व मादक द्रव्य रिपोर्ट, 2016 ने अन्य गंतव्य स्थानों तक पहुँचने वाले मादक द्रव्यों के ट्रांजिट पाइंट (पारगमन बिन्दु) के रूप में भारत की पहचान की है। भारत के कुछ राज्यों में मादक द्रव्यों की खपत की बढ़ती समस्या के संदर्भ में कारणों और परिणामों का परीक्षण कीजिए।

The increasing menace of the drugs has made some states as 'Mexico' of India and this has been sealed by World Drug Report 2016 that states India as a drug transit point.

The border states of Punjab and the North Eastern States are affected by increased drug consumption due to the following reasons:-

- i) Porous border leading to smuggling
- ii) ~~Increased income and~~
- iii) Unemployment in green revolution belt due to droughts, land fragmentation, decreased water level and no jobs leading to frustration
- iv) Less development in North East causes alienation
- v) Some marginal cultural effects
- vi) Lack of political will
- vii) Police and drug control agencies' laxity.

Consequences of drug transit and consumption are:-

- i) Ruining of families
- ii) Irreparable loss of human lives.
- iii) Billion dollar industry leading to human trafficking and bonded labour
- iv) Loss of productive population to neurological diseases
- v) Parallel economy hurting state's revenues

Drug consumption has been a menace and has now become a larger concern as India has become the soft state for not only transit but to make people addict and thereby causing social and economic losses. Moreover, the problem is concentrated in border areas which raises suspicion and jeopardises National Security.

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5. How is the Sagarmala project a concept in the direction of implementation of Blue revolution? Examine whether the Sagarmala project can also provide a balance to the Maritime Silk Road initiative by China.

सागरमाला परियोजना को नीली क्रांति के कार्यान्वयन की दिशा में एक विचार कैसे माना जा सकता है? परीक्षण कीजिए कि क्या सागरमाला परियोजना, चीन की समुद्री रेशम मार्ग पहल को मन्तुलित कर सकती है?

The concept of linking through ocean -
The Blue Revolution is pillared on the success of the Sagarmala Project which envision a port led holistic development.

The features of sagarmala Project are:-

- i) Building new ports along coastline
- ii) Upgrading the older ports
- iii) Development of inland waterway to connect rivers to ports
- iv) Establishing industrial parks along ports
- v) ~~It~~ Enhancing the Export Import Infrastructure along ports like - banking, berthing, easy clearance, etc.

It links our coastline into an integrated link of ports and provides for easy logistics and connectivity with other ports of the Indian Ocean Region linking the 'Blue Economy'

The maritime Silk Road initiative of China is based on the 'String of Pearls' concept of connecting the various ports in the Indian Ocean Region. It is difficult to counter China through our Sagarmala Project due to less infrastructural and credit strength, however, it can provide a balance. Sagarmala Project will lead to more enhanced cooperation among Indian ocean economies and hence it can make its presence felt in the area being already crowded by China.

However, the Blue revolution as envisaged through Sagarmala Project of enhancing India's economy through port led development and increased trade is possible when done in synergy with the massive infrastructural architecture of China. Using to its benefit, the Sagarmala Project can explore the hitherto unexplored potential of 7,500 km long coastline of India.

6. How is the "Human Genome Project-write" (HGP-write) different from the previous Human Genome Project? Examine the potential benefits of HGP-write for India. Also discuss the associated ethical and scientific concerns.

"मानव जीनोम परियोजना-राइट पिछली मानव जीनोम परियोजना से किस प्रकार भिन्न है? भारत के लिए एच.जी.पी.-राइट के संभावित लाभों का परीक्षण कीजिए। इससे सम्बद्ध नैतिक और वैज्ञानिक चिंताओं की चर्चा भी कीजिए।

HGP-write, which is now proposed is different from the previous Human Genome Project which was HGP-Read. HGP read was meant to read the genome, genetic sequences to create a data. It did ~~not~~ run successfully from 1995 to 2003. However, HGP-write intends to take it to a further level of manipulating with the genome by editing, deleting and inserting the concerned genes.

The potential benefits of HGP-write for India are:-

- i) Decrease in deadly diseases caused by genetic problems like Alzheimer's, CHARGE syndrome, etc
- ii) Creation of healthy babies
- iii) Producing healthy livestock
- iv) Altering with virus, bacteria, mosquito, ~~etc~~ gene to render them harmless.
- v) Desired quality plants

The ethical concerns surrounding this is of the commercialisation of designer babies, tampering with natural evolution process and the prospects of potential misuse.

The scientific concern is that since the technology is new and very intrusive, its effects on future environment, human life and planet is unknown. Hence, a calculated approach is needed.

HGP - White project though offering opportunities to enhance man's life from diseases offering better quality life, holds a concern if this tampering with natural process comes out to be destructive, this can wreak a havoc on humanity. Hence, a step by step guarded and extremely crucial cases should be dealt with this.

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7. In recent times, instances of lone wolf terrorist attacks have been on an increase. Examine the causes and suggest how India should prepare itself to avoid such attacks.

हाल के दिनों में, लोन वुल्फ आतंकवादी हमलों की घटनाओं में वृद्धि होती रही है। इसके कारणों का परीक्षण कीजिए और यह सुझाए कि इस प्रकार के हमलों से बचने हेतु भारत द्वारा स्वयं को किस प्रकार तैयार करना चाहिए।

The lone wolf terrorist attacks in the U.S.A. or in Peshawar or in Europe have come to acquire the forefront with new category of Do-it-yourself brand of terrorists.

The reasons for the increase are :-

- i) Easy indoctrination of terrorists due to internet penetration
- ii) Anger and frustration in life leading to indoctrination
- iii) Very easy to hide hence this is promoted by terrorist organisations
- iv) Increased alienation of minorities
- v) Some nations have lax gun laws leading to easy access of weapons to indoctrinated disgruntled minds.

The relative ease of lone wolf attacks and their quick results have lured the fundamentalist

mind to do something for the "perceived" greater good.

To prepare itself India has taken measures like :-

- i) Introduction of Social Media Bill, 2016 to clamp down messages of fundamentalist, hateful nature
- ii) Asked states to form curriculum to counter rise of fundamentalism in schools.
- iii) Banning of suspicious preachers
- iv) Intense social checking
- v) Tracking of suspicious persons
- vi) Revival of NATGRID for intelligence sharing
- vii) Taking help from religious preachers to counter religious fundamentalism preached by nefarious preachers of the same sect.

The terror of lone wolf attack though hovers around India, however a pluralistic society has been able to subsume the negative tendencies and these measures would go a long way to preserve the peaceful ethos of the country.



8. The present global scenario makes it imperative that the Indian Ocean and Pacific Ocean must be seen as inter-connected entities. Discuss how India can leverage its position in the Indo-Pacific region to promote its interests.

वर्तमान वैश्विक परिदृश्य हेतु यह अत्यावश्यक है कि हिन्द महासागर और प्रशान्त महासागर को अंतर-संबंधित घटकों के रूप में ही देखा जाना चाहिए। भारत अपने हितों को बढ़ावा देने हेतु भारत-प्रशान्त क्षेत्र में अपनी स्थिति का लाभ किस प्रकार उठा सकता है। चर्चा कीजिए।

In the interconnected world, the two big oceans - Pacific and Indian presents unbound opportunities for cooperation.

Working in silos might not be favourable due to the expansion of interests and hence now Pacific Ocean and Indian Ocean must be seen as interconnected entities. The trade blocks like ASEAN and TPP already provide the potential for partnership. Connected through Malacca straits it provides immense opportunity for trade as it connects the developed countries (Japan, U.S.A.) to underdeveloped countries (Africa) via developing countries (South Asia). ~~Therefore~~

India, sadly being not a part of either ASEAN and the Trans Pacific Partnership needs to

flex its muscles to promote its interests in the Indo Pacific region.

India as a neutral rule bound democracy has always been pivot to any Asian rebalance. Also, its strategic location in the Indian Ocean region leverages its position. To utilise this, India can:-

- i) Join RCEP (Regional Comprehensive Economic Partnership) to not to be left out
- ii) Connect the Indian Ocean nations through maritime routes so as to enable easy cargo of Pacific to pass through it.
- iii) Enhance strategic military exercises eg. Malabar Exercise

Hence, India has to take maximum benefit lying on the middle of the potentially biggest trade route from U.S. to Africa via South Asian Nations by not only its capacity by Sagarmala Project but also by joining China's Maritime Silk Route and the various regional groupings.

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9. While LEDs have many advantages there are certain disadvantages and challenges in its use as well. Elaborate. Highlight the measures taken by the government to promote LEDs in India.

यद्यपि एल.ई.डी. के अनेक लाभ हो सकते हैं, तथापि इनके प्रयोग में कुछ हानियाँ और चुनौतियाँ भी हैं। विस्तार से बताइए। भारत में एल. ई. डी. को बढ़ावा देने के लिए सरकार द्वारा किए गए उपायों पर प्रकाश डालिए।

LEDs have revolutionised our energy consumption in the recent times. The most efficient technology available, it has many advantages and some disadvantages as follows:-

Advantages

- i) Very less power consumption
- ii) Long lasting $\Rightarrow$ 8000 times the normal bulb
- iii) Cheap
- iv) Bright white light emitted
- v) The bulb/tube does not get hot
- vi) Safer than CFLs that contains hazardous mercury

Disadvantages

- i) Disruptive to sleep cycle especially the Blue LED
- ii) Costly one time installation as compared to normal bulbs.

Measures taken by the Government

to promote LEDs in India are :-

- i) Giving tax benefits/relaxation for to the manufacturers
- ii) Assured procurement by Government at a profitable price for public distribution
- iii) LED program by DELP and Bureau of Energy Efficiency to provide subsidised LED bulbs to every household to increase its penetration.

The LED bulb penetration would decrease the energy demand manifold and hence help Government reduce its import bill on energy supplies. Also the manufacturing promotion will lead to increased cost effective exports to help India earn foreign currency. Hence, a win-win opportunity needs rigorous promotion.

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10. India accounts for one of the largest HIV infected population in the world. Explain the major reasons for such high prevalence. Also examine the steps taken by the government over the years to curb the spread of HIV.

भारत में विश्व की सर्वाधिक विशाल एच.आई.वी. संक्रमित जनसंख्या पायी जाती है। इस प्रकार के उच्च प्रसार के प्रमुख कारणों की व्याख्या कीजिए। एच.आई.वी. का प्रसार रोकने के लिए सरकार द्वारा पिछले वर्षों के दौरान उठाए गए कदमों का परीक्षण भी कीजिए।

HIV infection has crippled India for long. As an autoimmune disease it renders a lot of social and economic hardships to the patients and the nation as well.

Reasons for its prevalence are :-

- i) Poverty leading to ignorance
- ii) Unsafe sexual intercourse due to ignorance
- iii) use of infected syringes, blades in hospitals
- iv) use of syringes for drug administration - a part of drug problem too.
- v) Stigma attached to it leading to less disclosure and hence decreased access to drugs.
- vi) Costly antiretroviral therapy.
- vii) Shortage of drugs though provided free by the government.

The steps taken by the Government for curbing HIV spread are :-

- i) Tightening control of drugs by NACO, the apex authority for AIDS in India
- ii) Free antiretroviral therapy to patients
- iii) Collaborating with W.H.O. for awareness drive
- iv) ~~Go~~ 'Mission Sunrise' in North Eastern states to curb drug use through syringes causing AIDS.

These interventions have had the positive effect with the recent W.H.O. report reporting a decline in the number of AIDS patients in India, the only country in the world to start the back trajectory in the control of the deadly disease.

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11. At a time when all major countries are deepening their ties with Africa, establishing economic and strategic relations with it poses a distinct challenge for India. Comment.

ऐसे समय में जब सभी प्रमुख देश अफ्रीका के साथ अपने संबंधों को प्रगाढ़ कर रहे हैं, इसके साथ आर्थिक और सामरिक संबंधों की स्थापना भारत के लिए एक विशिष्ट चुनौती बन गयी है। टिप्पणी कीजिए।

African continent full of resources and developmental opportunities forms the new landscape of competing investments by various countries with China and U.S.A. having established strong presence in Africa through trade pacts and investment agreements, it became imperative to India to expand its footprint in the African subcontinent.

When Indian economy is growing but needs investments in its own country for development, it becomes challenging for India to compete with the level of investments like of China. However, the historically good ties of India with Africa and suspicion towards interfering Chinese investments opens doors for India.

Some challenges in establishing economic and strategic relations are:-

- i) No land connectivity
- ii) Sea route prone to piracy
- iii) Need allot of capital for investments
- iv) Crowding by China, U.S.A., E.U., etc.

However, the 3rd India Africa Meeting restored the ~~best~~ faith in the workability of India Africa tie as seen by

- eg:-
- Pelindaba treaty — Namibia
 - Solar Mamas — Tanzania

India's soft power with cooperative and non intrusive investments can help building trade ties and providing energy security and market to India.

12. The issue of Intellectual Property Rights (IPR) as seen in the 'Special 301' list, remains a bone of contention in otherwise burgeoning Indo-US ties. What is the significance of India being put in the Priority Watch List? Examine the merits of WTO dispute settlement mechanism over bilateral negotiations in the context of IPR issue between India and United States.

बौद्धिक संपदा अधिकार (आई.पी.आर.) के मुद्दे को 'विशेष 301' सूची में जिस प्रकार देखा गया है, वह अन्यथा निरंतर विकसित होने वाले भारत-अमेरिका संबंधों में विवाद का विषय बना हुआ है। भारत को प्राथमिकता निगरानी सूची में रखे जाने का क्या महत्व है? भारत और संयुक्त राज्य अमेरिका के बीच बौद्धिक सम्पदा अधिकार (आई.पी.आर.) की समस्या पर द्विपक्षीय संधिवाताओं की तुलना में डब्ल्यू.टी.ओ. के विवाद निपटान तंत्र की श्रेष्ठता का परीक्षण कीजिए।

Being put in the 'Priority watch list' of the 'Annual special 301 list' consequently for the second time has strained the ties a bit.

The dispute between the ~~the~~ TRIPS compliant yet contentious clauses of Section 3(D) of Indian Patents Act and Compulsory Licensing is the major bone in the issue. The recent case of Gleevec and Novartis made U.S.A. go to the WTO dispute settlement mechanism.

India being put in the 'Priority watch List' leads to degradation of the status of India as a robust IPR policy nation. It invites considerable restrictions in the trade ties if India

creates any trouble. It even permits USTR,
the US's apex body dealing with IPR issues to
sue India for unfavourable trade practices..

This leads to contention between both
the nations as Indian rules are WTO compliant,
but USA wants stricter IPR regime which is
unfair to Indian social, economic issues.

The merits of WTO dispute settlement
mechanism over bilateral mechanism of dispute
settlement in the context of IPR issue is that
it listens impartially to the arguments and
promotes the international norm rather than the
interests of the powerful country.

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13. NISAR is being celebrated as the biggest collaboration between NASA and ISRO. Elaborate upon the purpose, special features and future prospects of this mission.

निसार (NISAR), नासा और इसरो के बीच सबसे बड़े सहयोग के रूप माना जा रहा है। इस मिशन के उद्देश्य, विशेषताओं और भावी संभावनाओं के संबंध विस्तार से बताइए।

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14. Taking example of Google Street View, discuss the importance as well as challenges posed by the availability of Geospatial information. Also, analyse the important features of the Geospatial Information Bill, 2015.

गूगल स्ट्रीट व्यू का उदाहरण लेते हुए, भू-स्थानिक सूचना की उपलब्धता का महत्व एवं साथ ही साथ इसके द्वारा उत्पन्न की गयी चुनौतियों की चर्चा कीजिए। भू-स्थानिक सूचना विधेयक, 2015 की महत्वपूर्ण विशेषताओं का विश्लेषण भी कीजिए।

The recent rejection of the proposal of 'Google street view' to provide geospatial information online brings this issue at forefront. Google street view offered the maps of the places in the entire country for easy navigation and search.

The importance of availability of the Geospatial Information is :-

- i) Map the terrain, places for easy access
- ii) Boosts connectivity
- iii) Help disaster relief efforts
- iv) Boosts tourism
- v) Easy navigation.

The challenges are :-

- i) can be misused by nonstate actors
- ii) Mapping of strategic places can be used by terrorists eg: one in Pathankot attack
- iii) Privacy issues.

The important features of the Geospatial Information Bill 2016 are:-

- i) Need permission for maps - online and offline
- ii) Licence from Security Vetting Authority
- iii) Non mapping of strategic areas
- iv) Any discription mistake to invite fines upto 100 crore and jail term upto 7 years.
- v) No disputed territory to be shown as part of ~~Ind~~ Pakistan and China.

Some features of this bill are a little tough than the Geospatial Regulation Policy 2015 passed to regulate as well as promote geospatial mapping that holds a powerful tool for a plethora of market services available in the era of Information Technology.

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15. What are technology business incubators? Elaborate upon the challenges faced by startups in India. How can the Atal Innovation Mission help in promoting technology business incubators in India?

टेक्नॉलजी बिज़नेस इन्क्यूबेटर क्या हैं? भारत में स्टार्टअप्स द्वारा सामना की जाने वाली चुनौतियों पर प्रकाश डालिए। अटल नवोन्मेष मिशन भारत में टेक्नॉलजी बिज़नेस इन्क्यूबेटरों को बढ़ावा देने में किस प्रकार सहयोग कर सकता है?

Technology business incubators are a form of concentrated platform for service and help to be given by the government to facilitate business models relating to technology. It is a part of the larger research and innovation incubation drive in India.

Startups face numerous challenges owing to their small & muscle flexing capability in difficult work environment.

- i) Paucity of funding and high taxes
- ii) Bureaucratic red tape
- iii) Difficult registration
- iv) Tough closing down a business
- v) Need platform for innovators and professionals meeting ground
- vi) Low internet penetration
- vii) Tough and costly IPR registration

These problems were recently recognised as more than 80% of Indian startups chose to start from a different country than India. Hence, Aatmanirbhar Innovation Mission was introduced to promote technology business incubators which promotes startups. It provides funding, facilities for research, meetings of innovators and fundings, etc and hence it provides an ideal way to kick start the leggendary yet strong startup culture of India.

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16. The 2016 Nuclear Security Summit marks the end of a process that began in 2010 with the aim to "secure all vulnerable nuclear material around the world within four years". Although it has failed to achieve its stated goal but its failure has been nevertheless a glorious failure. Discuss.

परमाणु सुरक्षा शिखर सम्मेलन, "चार वर्ष के भीतर विश्व की सारी संवेदनशील परमाणु सामग्री को सुरक्षित करने" के उद्देश्य के साथ 2010 में आरम्भ हुई प्रक्रिया की समाप्ति को चिह्नित करता है। हालांकि यह अपने घोषित लक्ष्य को प्राप्त करने में विफल रहा, फिर भी इसने उल्लेखनीय सफलता को प्राप्त किया। चर्चा कीजिए।

Nuclear Security Summit culminated in U.S.A. in 2016 as a glorious failure, taking forward the task which was hitherto untouched since decades.

It was a restricted summit ~~it~~ concerned with the civilian nuclear material and not military. It also didnot include Russia which held the maximum nuclear warheads. Hence, to judge by holistic perspective it can sound like a failure but constraining judgement to the prescribed criteria turns it to be a 'glorious failure'.

Though it did not secure all vulnerable nuclear material in four years, yet it achieved considerable success in :-

- i) Bringing more civilian facilities under IAEA - International Atomic Energy Agency
- ii) Strengthening structural and physical barriers to nuclear fuels in countries
- iii) Tightening of regulations of sale and upkeep.
- iv) Most importantly, it helped in phasing Highly Enriched Uranium (HEU) from 13 countries.
- v) Did set up a fund to promote low enriched Uranium fuels and safe nuclear practices.

Hence, though unable to achieve its stated objective, it made a tiny step towards the right direction of atleast securing civilian nuclear material lest it falls in bad hands for distasteful purposes.

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17. India's achievements in the space sector have not only pushed our scientific frontiers but are also critical in ensuring our national security. In the above context, discuss the role of various space missions and the need to develop a space security policy.

अंतरिक्ष के क्षेत्र में भारत की उपलब्धियों ने न केवल हमारी वैज्ञानिक सीमाओं को विस्तार दिया है, बल्कि वे हमारी राष्ट्रीय सुरक्षा की सुनिश्चितता के लिए भी महत्वपूर्ण हैं। उपर्युक्त संदर्भ में, विभिन्न अंतरिक्ष मिशनों की भूमिका और अंतरिक्ष सुरक्षा नीति विकसित करने की आवश्यकता पर चर्चा कीजिए।

The launch of SCATSAT-1, 8 payloads in two different orbits by one rocket launch, makes India the ONLY country in the world to achieve this.

Indian space missions everytime pushes our scientific frontiers to another level. Often, national security gets enhanced once ISRO achieves another launch.

The launch of Chandrayaan-1 and Mangalyaan in maiden launch with frugal engineering made India stand in the league of scientifically advanced nations. This status has earned India foreign currency by launching various satellites of even advanced countries at low cost.

The launch of NAVIC constellation for navigation services has enhanced national security by reducing dependence on GPS. The 'Restricted Service' of NAVIC will help security agencies navigate even in case of war. Also the launch of Satellites like CARTOSAT, INSAT provides essential communication networks which helps to maintain link even when problems occur.

There is a need to develop a space security policy for following reasons:-

- i) vast space, mostly unregulated
- ii) future of the world lies there
- iii) Potential of hacking, misuse of satellites
- iv) Promotion of our ~~satellite~~ space industry
- v) Prevent accumulating space debris.

Hence, a strong space security policy is needed for India to be a strong and efficient player in the \$300 billion space industry.

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18. What do you mean by cloud seeding? Critically examine its utility as a substitute for bad monsoon.

क्लाउड सीडिंग से आप क्या समझते हैं? खराब मानसून के विकल्प के रूप में इसकी उपयोगिता का समालोचनात्मक परीक्षण करें।

Cloud seeding is the technology of seeding the clouds artificially by using silver iodide particles. This provides as a condensation nuclei for precipitation to occur.

Due to global warming and climate change, ^{Indian} ~~our~~ monsoon is not as strong as it used to be thereby leading to droughts.

Using cloud seeding as a substitute for bad monsoon can have following advantages and disadvantages.

Advantages

- i) Can have rainfall where and when desired
- ii) Easing drought pressure leading to large scale deaths, poverty and migration

Disadvantages

- i) Changing the natural course of the environment
- ii) This technology has so far not given consistent results.

The use of any technological intervention to substitute natural process can be used as an exception but should not be used as a rule. There should be focus on natural interventions like afforestation, water management, etc.

Any technology cannot be an absolute substitute for a natural process especially as large as a MONSOON that covers an entire subcontinent. Hence, it can help in parts but to substitute it for monsoon is not a feasible solution.

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19. What is Li-Fi and how does it differ from Wi-fi technology? Explain the advantages, limitations and potential applications of Li-Fi technology.

लाई-फाई (Li-Fi) क्या है और यह वाई-फाई (Wi-Fi) प्रौद्योगिकी से किस प्रकार भिन्न है? लाई-फाई प्रौद्योगिकी के लाभ, इसकी सीमाओं और संभावित अनुप्रयोगों की व्याख्या कीजिए।

Li-Fi is the short form of Light - Fidelity which is a technology that provides internet connectivity through photons (light).

It differs from Wi-Fi in the manner of its transmission via photons and the spectral efficiency of its transmission. Wi-Fi uses communication bandwidth whereas Li-Fi uses spectral bandwidth.

The new technology brings a host of advantages as :-

- i) Very low cost
- ii) Can work with even a dimly lit bulb
- iii) Faster speed than Wi-Fi
- iv) High efficiency
- v) Can spread to every nook and corner where electricity is, therefore can provide internet connectivity in the hinterland.

However, there are some limitations as:-

- i) Can work only where light can reach
- ii) No inter-room connectivity
- iii) Difficult to prepare network.

Potential applications of the Li-fi technology rests with the spread of internet to the rural areas with electricity. It can revolutionise the world of which still 2/3rd remain out of internet connectivity. Still in the nascent stage, this technology provides avenues for new age internet connectivity lowering digital divide.

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20. It has been argued that India and Latin America need to enlarge and strengthen existing agreements in order to mutually gain from the potential of their partnership. Discuss with special reference to India- MERCOSUR Preferential Trade Agreement.

यह तर्क दिया जाता रहा है कि अपनी साझेदारी की क्षमता का पारस्परिक लाभ प्राप्त करने हेतु भारत और लैटिन अमेरिका को वर्तमान समझौतों को विस्तारित और सुदृढ़ करने की आवश्यकता है। भारत-मर्कोसुर प्रेफरेंशियल व्यापार समझौते के विशेष संदर्भ में इस पर चर्चा कीजिए।

