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GENERAL STUDIES (TEST CODE : 755)

Name of Candidate	ARUSHI MISHRA		
Medium Hindi/Eng.	ENGLISH	Registration Number	15577
Center	ORN	Date	2/11/2016.

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

Don't write anything this margin (इस भाग में कुछ ना लिखें)

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. Explain the reasons for low organ donation in India. How can the Green Corridor concept smoothen the process of organ transplantation in India?

भारत में कम संख्या में अंग-दान के कारणों की व्याख्या कीजिए। हरित गलियारे (ग्रीन कॉरिडोर) की संकल्पना किस प्रकार भारत में अंग-प्रत्यारोपण की प्रक्रिया को सरल बना सकती है?

Organ donation still has not picked up in India despite the increased awareness.

The reasons for low organ donation are :-

i) Less awareness among people
ii) Less Emotions and social stigma attached
iii) Government regulation on non-related organ donation due to organ racket
iv) Less presence of proper channels for donation
v) Lack of transport and coordination

Due to this, organ donation which can save millions of lives each year has not picked up. Some states like Tamil Nadu has come up with an option of organ donation on accidental death in the driving license itself. This provides a channel for authorised and willing organ donations.

The Green corridor concept as envisaged proposes to build and designate roads for easy and fast transport of organs across the cities for transplant. Often the victims of road accident lie on road without proper medical aid and organ removal in case of death. This not only diminishes the life prospects of the victim but also the recieiver.

It also envisages helicopter service for quick pickup of organs and hence this could go a long way in organ harvesting. An organ harvested from going waste can save a life.

2. 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 stands for Navigation with Indian Constellation. A fleet of seven satellites, NAVIC is one of the most remarkable achievements of ISRO. It has the following features :-

i) Four geosynchronous and three geostationary satellites

ii) Providing 'Special Positioning services' for Civilian use and 'Restricted services' for military uses

iii) Covers Indian mainland and additional 1500 km area around it

iv) Imaging with precision of 10m on ground and 20m on water bodies.

v) Provides navigation as well as remote sensing.

vi) A frugal and yet remarkable engineering of only 1420 crores.

It is significant for India as it provides precise navigation system. Its 'Restricted Service' ensures national security in case the U.S. based GPS switches off its services for India. A self reliable network also would prevent crucial data theft.

GAGAN services were for small area and for specific users, whereas NAVIC provides a pan India service for every individual.

NAVIC can be a replacement of GPS in India within a few years. Currently, it has to rely on GPS as NAVIC is only a regional navigation system. But once it expands further, it can replace GPS with a self sufficient, secure and a more precise navigation system than GPS.

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3. Explain the concept of Internet of Things (IoT) with examples. How can IoT play a role in the transformation of India into a digital economy?

इंटरनेट ऑफ थिंग्स (आई.ओ.टी.) संकल्पना की उदाहरण सहित व्याख्या कीजिए। भारत को एक डिजिटल अर्थव्यवस्था में रूपांतरित करने में आई.ओ.टी. किस प्रकार अपनी भूमिका अदा कर सकता है?

Internet of Things (IoT) evolved as a concept of linking the physical world to the software systems. It implies the use of internet in digitising any aspect of life.

The recent launch of 'Industrial Internet' in 2018 ~~like~~ linking transport, manufacturing and other industrial activities with internet gives example of the concept of IoT being applied in industrial segment

With the world connecting to internet, IoT emerges as a new form of cooperation and utility. It can play various roles of transforming India into a digital economy as :-

i) Automatisation of hazardous and recurring work

ii) Connecting rural hinterland with cloud computing, telemedicine, teleeducation, etc

iii) Automatic cars, automatic rail/road network can enhance road safety.

iv) Digitally linked smart cities to improve life' standard.

v) Digital linking of India's hinterland to the world class facilities

eg: GIAN educational network.

Hence, India by taking terrestrial internet to satellite based internet can cause cheap and quick linking of the physical world to the digital revolution. It is the next new thing which makes work easier, faster and cheaper.

4. 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 Nanotubes

Don't write anything this margin (इस भाग में कुछ ना लिखें)

5. 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?

The recent detection by the U.S.A. based LIGO observatory of the Gravitational waves holds a possibility of new things as :-

i) studying outer space through Gravitational waves

ii) Understand formation of the Universe

iii) Listen to space sounds

iv) Frequency measurement of catallysmic events

v) Study merger of ~~dark~~ black holes, supernovae, etc

This is a very significant discovery that will change the universe studies forever. India was a part of the LIGO detection and hence Government has commissioned LIGO-India project.

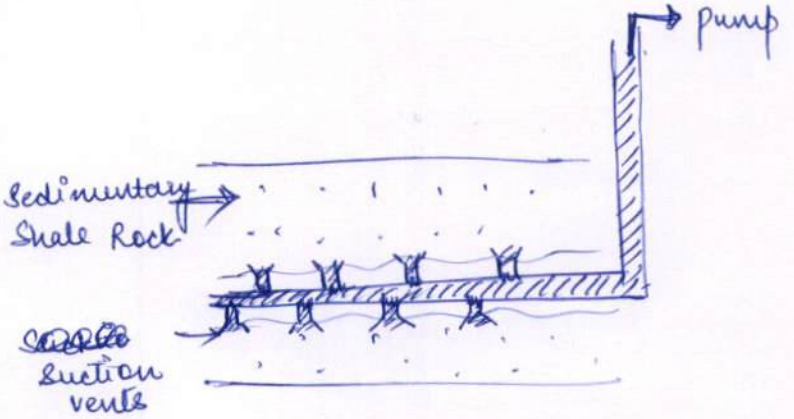
The LIGO-India observatory is to be made perpendicular to the US Virgo US-LIGO and work in unison to detect further Gravitational waves by celestial phenomenon. It provides Indian scientists for new avenues of knowledge through collaboration with the U.S.A.

India would advance in the scientific research that holds the key to further studies. It would promote scientific temper and absorption of new technologies. By standing shoulder to shoulder with the developed world, India stands ahead of many countries in technological advancements which holds the key to a significant booster to economy through applicational research.

6. Fracking is key to shale gas extraction. Explain. Enumerate the steps taken by India in recent times for shale development. Also discuss the challenges that India faces in shale gas extraction.

फ्रैकिंग, शेल गैस निष्कर्षण की कुंजी है। व्याख्या कीजिए। हाल के दिनों में भारत द्वारा शेल गैस के विकास के लिए उठाए गए कदमों का वर्णन कीजिए। इसके अतिरिक्त शैल गैस निष्कर्षण में भारत के समक्ष विद्यमान चुनौतियों की चर्चा कीजिए।

Shale Gas remains deep under the rock bed covered by methane. It lies in the sedimentary rocks - shale and hence as such no trapped resource is there. Therefore, fracking as a concept comes that injects high pressure water in the underbed pores and then sucks the shale gas by appying pressure.



FRACKING.

fracking as has to be done deep inside the Earth with a lot of pressure needs expertise and is costly. Therefore only a few countries like USA, India have succeeded in this.

Recently, Government of India has introduced NELP - New Exploration Licence Policy that promotes Shale Gas Extration. Further, subsidies and tax benefits have been given.

India faces the following challenges:-

i) Too much capital required
ii) Have less efficient technology
iii) Uncertainity of reserves therefore less private sector interest
iv) Indian shale reserves found in deep sea hence needs further expertise.

∴ However, the promotion by the

Government is promoting the discoveries in the Krishna Godavari basin and Kutch are of India.

7. In recent years India is said to be facing a health epidemic with the rise in number of diabetics. Explain the reasons for prevalence of such a high number of diabetics in India. In which areas should efforts be directed to control this problem?

हाल के वर्षों में मधुमेह के रोगियों की संख्या में वृद्धि के कारण कहा जा रहा है कि भारत स्वास्थ्य संबंधी एक महामारी का सामना कर रहा है। इतनी अधिक संख्या में भारत में मधुमेह रोगियों की उपस्थिति के कारणों की व्याख्या कीजिए। इस समस्या को नियंत्रित करने हेतु किस दिशा में प्रयास किए जाने चाहिए?

India is overburdened due to the increase in diabetes especially Type II - Diabetes Mellitus. The recent WHO reports India to be in the top 5 countries of people having diabetes.

Reasons for prevalence are :-

i) Unhealthy lifestyle of over sugar consumption
ii) Sedentary lifestyles on rise
iii) Packaged foods' intrusive consumption
iv) Inefficient Government intervention

This has led to India overburdened under the heath epidemic of diabetes.

Areas where diabetes control efforts can be directed could be :-

i) Packaged food industry
   - to mandatorily mention sugar content in bold

ii) Awareness
   - campaign on lines of antibiotics - red line campaign
   - roping NGOs and panchayats
   - promote active lifestyles

iii) Government
   - provision of effective medicines
   - regular health checkups
   - imposition of taxes on the lines of Kerala Government : the Obesity Tax.

~~The fight for world d~~

The fight against diabetes is going on worldwide with many U.S. States' imposing Sugar Tax to decrease consumption of people and pave way for a healthy society.

8. Explain in brief the three staged nuclear program of India. What are the advantages of thorium over other nuclear fuels? Examine the hurdles in the way of large-scale deployment of thorium-fuelled reactors in India.

संक्षेप में भारत के तीन चरणों वाले नाभिकीय कार्यक्रम की व्याख्या कीजिए। थोरियम अन्य नाभिकीय ईंधनों से किस मायने में बेहतर है? भारत में वृहद् पैमाने पर थोरियम-ईंधन आधारित रिएक्टरों को स्थापित करने के मार्ग में उपस्थित चुनौतियों का परीक्षण कीजिए।

The three staged nuclear fuel program was envisaged by Homi J. Bhabha in 1964.

- The first stage — use of uranium based fuels
- The second stage — use of recycled uranium with plutonium as fuels in Pressurised Heavy water Reactors
- The third stage — use of thorium as fuel in Pressurised fast Breeder Reactors

Every stage of the reactor was meant to improve efficiency and self sustainability of the nuclear program of India.

Thorium as a fuel has certain advantages of other nuclear fuels as :-

i) It is locally found in India - Kerala's Monazite sand

ii) Needs less energy and gives higher efficiency

iii) Has less time for radioactive decay so radioactive wastes can be disposed off quickly.

iv) It is reusable to large extent.

However, India is facing hurdles in large-scale deployment of thorium based reactors due to two reasons :-

i) Need very efficient technology

ii) No precedent of thorium use worldover.

Hence these problems if overcome would lead to an energy secure nation ready on the path of development.

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9. What do you understand by Net Neutrality? Analyze the perspectives of various stakeholders on the issue. What do TRAI's 2016 regulations mean for net neutrality?

नेट तटस्थता (न्यूट्रलिटी) से आप क्या समझते हैं? इस मुद्दे पर विभिन्न हितधारकों के दृष्टिकोणों का विश्लेषण कीजिए। नेट तटस्थता के संदर्भ में ट्राई (टी.आर.ए.आइ.) के 2016 के विनियम क्या अर्थ रखते हैं?

Net neutrality means an open platform for equal use opportunity for everyone. The recent furore over launch of Free Basics and subsequently TRAI's consultation paper brought the light to the concept of Net neutrality which has been a pillar of internet freedom since its inception.

Facebook argue for a special access for some sites without a data plan would enhance internet connectivity.

However others argue that creating a special way to reach certain websites would erode the concept of net neutrality. It would lead to Facebook control the content flow. It

can also leave the small startups, students, investors from accessing the customers via internet as they would have to pay money for access through Free Basics. This nullifies the basic concept of freedom ~~by~~ of advertising space offered by internet.

In this backdrop the consultation paper of TRAI on differential pricing was circulated that formed the basis of TRAI's 2016 regulation which bans Free Basics as it violates net neutrality by cartelisation of the vibrant platform provided by Internet. Hence, ~~by~~ upholding of Net Neutrality Internet would remain free and equal for all.

/

10. 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 से निपटने के लिए भारत की तैयारियों का मूल्यांकन कीजिए।

For declaring a Public Health Emergency of International Concern, ~~the~~ ~~as~~ as a pandemic, WHO has to access if the disease has spread very quickly to one or more continents/countries and is not taming down by Governmental efforts.

~~The~~ The Ebola attack in West Africa ~~saw~~ saw a delayed response of WHO in declaring in a PHEIC which delayed international efforts and funding causing loss of lives.

Learning from this, Zika virus attack in the Latin American countries quickly got concern, medical aid and funding from WHO.

The Global Health Governance though good but is not robust when it comes to underdeveloped countries. Lack of power delays attention to aid and development of medicines. However, with developed countries it is working very quickly. Nevertheless, it has created a platform for medical advice, aid and funds that has helped strengthening health structures world over.

India has a strong security check measures and robust lessons like ending Polio epidemic, however due to widespread poverty and illiteracy there is a fear of any disease engulfing thousands. India needs following things to increase preparedness :-

i) Strengthen ~~prabh~~ primary health centers
ii) Spend in research of medicines
iii) Enhance medical checkups.
iv) Provide sanitation drive

India is not efficiently equipped to deal with such epidemics and need a complete overhaul for enhanced safety.

11. How is the recently launched Unified Payments Interface (UPI) system different from the prevailing funds transfer systems? Discuss its potential to change the payments landscape in India, with special reference to financial inclusion.

हाल ही में आरम्भ की गयी एकीकृत भुगतान इंटरफेस (यू.पी.आइ.) प्रणाली वर्तमान निधि अंतरण प्रणालियों से किस प्रकार भिन्न है? वित्तीय समावेशन के विशेष सन्दर्भ में इस प्रणाली द्वारा भारत में भुगतान परिदृश्य को बदल सकने की संभावना पर चर्चा कीजिए।

12. Discuss the key challenges associated with global internet governance? What is India's stand with respect to it?

वैश्विक इंटरनेट गवर्नेंस के साथ संबद्ध मुख्य चुनौतियों पर चर्चा कीजिए। इस संबंध में भारत का क्या रुख है?

The shifting of ICANN from U.S. controlled model to a multistakeholder model is a major change in the internet governance.

Global internet governance is faced with challenges like hegemony of U.S. and net-neutrality.

Internet evolved from the USA as a free platform. It was governed by its laws then. Now a multistakeholder model though provides hope but still has challenges like:-

i) Judicial control on ICANN rests with U.S.A.

ii) Governed by U.S.'s laws

iii) Multistakeholders are countries and big industrialists mainly from U.S.A.

iv) Even IANA – a body that provides regional I.P. addresses is under U.S.' laws.

These issues make internet under control of U.S.A. which can clamp down anything when desired. Multistakeholder model has loosened the control but more needs to be done.

~~India has accepted the~~

India has welcomed the new model but wants a more representative form of stakeholding by every country. It prefers bringing internet under an independent global authority like International Telecommunication union for fair global internet governance.

13. Whereas various policy measures over the years have put emphasis on innovation yet India lags behind globally on the innovation indices. Examining the factors contributing to such a scenario, identify the steps taken in recent years to address the issue.

पिछले वर्षों में विविध नीतिगत उपायों ने नवोन्मेष पर बल दिया है, फिर भी भारत नवोन्मेष सूचकांक में वैश्विक रूप से पीछे है। इस परिदृश्य के लिए उत्तरदायी कारकों का परीक्षण करते हुए, इस मुद्दे के समाधान के लिए हाल ही में उठाए गए कदमों की पहचान कीजिए।

India scores low when it comes to innovation. ~~It is due to the~~ Despite many interventions India still lags globally due to the following reasons :-

i) Culture of favouring job not innovative ideas

ii) ~~Too~~ Less funding to research and education ~~Indian expenditure~~

iii) ~~Not~~ promoting research

iv) Lack of favourable structure to lead to professionalising the innovation

India lags in innovation which has become a hurdle of it becoming a manufacturing superpower despite being a knowledge hub. India being a capital of frugal engineering

needs better environment to innovate. Some recent steps by the Government to address this issue are :-

i) Launch of Atal Innovation Mission
ii) MANAK awards – professionalising GO ideas
iii) Incubation Centers formation
iv) Easy IPR process
v) Promotion of start-ups
vi) Increasing awareness and interest.

By easing the process by removing the roadblocks, India aims to become a cost effective innovation hub.

14. 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 – gene editing technology is the new technology of targeted mutation that uses DNA- RNA base pairing to change the genetic sequence.

In this the RNA guides the CRISPR enzyme to cut the DNA and insert the required sequence. It is a cost effective and precise technology. It has the potential to insert, delete, change the genetic sequence for the benefit of humanity.

In modern biology, this gene editing technique can cause revolution as it can be used in :-

i) Genetically healthy babies
ii) Elimination of diseases from human line.
iii) Can eliminate virus, bacteria by making them sterile eg. Mosquitos

In agriculture, it can lead to healthier plants with more output and pest resistance. It can help reduce food shortage in future. It can help in bio fortification of crops for nutritional security.

However with great potentials comes great concerns as the effect of this technology on the ecosystem is not known and can also lead to many ethical issues of designer babies, etc. Hence, caution needs to be given for the technology to be used for constructive negotiation with the nature.

15. 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 the enormous amount of data created by digitisation. It is characterised by 3Vs :-

i) Variety
ii) Volume
iii) Velocity

More than 90% of the data has been created within two years. The enormity of this huge amount of data presents opportunities and challenges.

In the area of effective implementation of public policy such as SDG goals, Big Data can :-

i) Professionalise results by decreasing faults
ii) Combining database and applying filter to identify beneficiary.

iii) Develop drugs by data churning
iv) Help in problem area identification by analysing
v) Link database for real time fast delivery.

Challenges faced by the big data is that current systems are trying to cope up with too much data, finding difficult to analyse. Huge volume of data generation is making Big analytics come to fore. Unless efficiently controlled it can crash our systems.

Some measures can be taken to overcome the issue are:-

i) Upgrading computer systems
ii) Cloud computing
iii) Promoting big data analytics
iv) Training of professionals.

With the 'Big Data' as the new thing, India needs to strengthen its capability to churn and analyse Bigdata to fulfill its dream of Digital India.

16. In context of space technology, what is a Reusable Launch Vehicle? Examine the rationale behind its development. Discuss the technological and economic challenges that RLV development faces in India.

अंतरिक्ष प्रौद्योगिकी के सन्दर्भ में, पुनर्प्रयोज्य प्रक्षेपण यान (रियूजेबल लॉन्च व्हीकल-आर.एल.वी.) से आपका आशय क्या है? इसके विकास के पीछे अन्तर्निहित उद्देश्य का परीक्षण कीजिए। भारत में, आर.एल.वी. के विकास के समक्ष आने वाली प्रौद्योगिकीय तथा आर्थिक चुनौतियों पर चर्चा कीजिए।

Reusable Launch Vehicle is a proposed launch vehicle and rocket developed to launch missions/satellites and then be reused again. It is a form of Two Set to Orbit plan.

It was recently tested in India as a technology demonstration mission. It is developed for the following reasons:-

i) Decrease cost due to reuse
ii) Reduction in space debris
iii) Uses SCRAMJET engine which uses oxygen from outside making it faster and lighter
iv) To make launching easy and cost effective thereby turning a global service provider.

RLV testing and development need a lot of technological expertise and money which would lead to its final development by 2030.

RLV to develop needs to:

i) Re-entry technology.
ii) Ability to withstand heat during re-entry
iii) Develop SCRAMJET engine
iv) Need landing technology
v) Need to build hypersonic speed capability.

All these technological challenges would take time to develop, a project that is retired by India when it was abandoned by the world.

17. Discuss the grounds on which introduction of genetically modified crops are resisted in India. Can focus on traditional farming practices provide an alternative to GM crops in dealing with the problem of food shortage?

भारत में आनुवंशिक रूप से संशोधित फसलों की कृषि को प्रारम्भ का जिन आधारों पर प्रतिरोध किया जाता है, उनकी चर्चा कीजिए। क्या खाद्य की कमी की समस्या के समाधान हेतु पारंपरिक कृषि प्रथाओं पर बल देना, जी.एम. फसलों का एक विकल्प हो सकता हैं?

Genetically modified crops are being resisted in India as seen from blocking the introduction of DMH-11 Mustard despite field trials being completed.

Genetically modified crops are being resisted due to our bitter experience with Monsanto funnelling the seeds. The dependency that can be caused is resisted as:-

i) Do not know its effects on ecology
ii) Can cause imbalance among farmers who hold and do not hold the seeds.
iii) Their safety still not known.
iv) Can lead to seed monopolisation

India is already a 4th country in the world with area under cultivation of genetically modified seeds – of cotton only. World is moving towards genetically modified crops with USA and China leading it.

The effect of climate change causing ~~failing~~ droughts, increased pest resist attacks, failing monsoons, huge population provides a case for revolutionary Technology to address food shortage in future.

With pressure on land increasing as seen by farmers suicide and GEAC, the apex body of India for genetic research taking considerable precautions, India can move to Genetically ~~&~~ modified crops in a controlled manner. The shift of people from agriculture needs high yielding varieties to feed large population from less hands which is less possible in traditional farming practices.

18. 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।

The proposed import of the Shinkansen High Speed Rail technology from Japan to build High speed Rail projects across major Indian corridors like Delhi - Mumbai brings new avenues of opportunities and challenges.

HSR facilitates technology transfer to India to modify its own systems. It promotes manufacturing of spare parts and rails, etc needed for them. Overall, ~~HSR~~ high technology enhances economy and life standard in general.

However, the large infrastructural projects like HSR comes with challenges like :-

i) Large land clearance required
ii) Large scale displacement of people causing revolts
iii) Damage to natural ecology
iv) Very expensive to build and maintain
v) Need electricity for working thereby increasing energy demand.

Though technology is being transferred to India with proposed HSR developement projects by China and Japan, to make it truly a 'Make-in-India' project we need to encourage private sector participation first on small pilot projects and then on large scale. Inviting investors for joint venture with Indian private sector companies and not Government would make it truly Made in India.

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19. The rise of antibiotic resistant bacteria can be attributed to many factors and is a cause of global concern. Elaborate. Explain how surveillance, research and global cooperation are key in tackling this menace with special reference to India as a global pharmaceutical hub.

प्रतिजैविक-प्रतिरोधी जीवाणुओं (एंटीबायोटिक रेसिस्टेंट बैक्टीरिया) में वृद्धि के पीछे कई कारण हो सकते हैं तथा यह वैश्विक चिंता का भी विषय है। सविस्तार बताईए। एक वैश्विक औषधीय केंद्र के रूप में भारत को संदर्भित करते हुए, व्याख्या कीजिए कि किस प्रकार निगरानी, शोध तथा वैश्विक सहयोग वस्तुतः इस खतरे से निपटने हेतु आवश्यक है।

The recent finding of a colistin resistant SUPERBUG carrying MCR-1 gene in U.S.A. has caused concern. The fact is that gene is found in DNA plasmid capable of spreading to more bugs and humans has caused global concerns.

The factors for rise of antibiotic resistant bacteria are:-

i) Excessive use of antibiotics
ii) Profligate prescriptions
iii) Increased used for livestocks.

It is cause for global concern as antibiotic resistance is rising, effectivity of medicines decreasing and consumption rising. This is leading to a new post-antibiotic age of fatal superbugs of no cure.

India stands at the cusp of antibiotic consumption worldover. India being a global pharmaceutical hubs manufacture drugs for the whole world which increases its susceptibility and responsibility

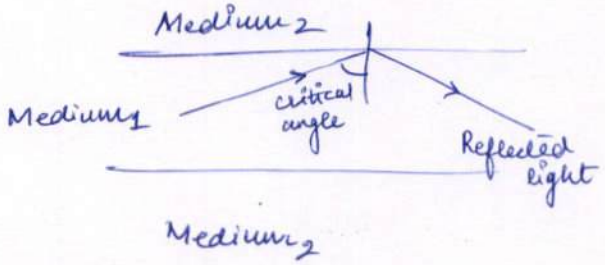
Enhanced surveillance is necessary as it provides the cue to overconsumption leading to clampdown. Research is needed in pharmaceutical sector to remain relevant to the world. As a pharmaceutical hub, India needs to fasttrack its research to develop cure of resistant strains.

India's 'Red Line Campaign' for stopping overconsumption of antibiotic is a positive step towards this direction. But this needs a global effort and recreation as it the globalised world, spread of strains is possible easily. Therefore a global cooperation on tackling antibiotic resistant bacteria has to be taken on war footing.

20. Explain the principle behind signal propagation in an Optical Fibre. Why is optical fibre network considered critical to meet the goals of Digital India Programme? Discuss the challenges being faced in implementation of NOFN/Bharatnet and give suggestions to overcome them.

किसी ऑप्टिकल फाइबर में संकेत के प्रसारण के सिद्धांत की व्याख्या कीजिए। डिजिटल भारत कार्यक्रम के लक्ष्यों को प्राप्त करने हेतु ऑप्टिकल फाइबर नेटवर्क को क्यों महत्वपूर्ण समझा जा रहा है? एन.ओ.एफ.एन./भारतनेट के कार्यान्वयन में सामना की जा रही चुनौतियों की चर्चा कीजिए तथा उनसे निपटने के लिए सुझाव प्रस्तुत कीजिए।

Signal in an optical fibre propogate through Total Internal Reflection concept. It transmits clear signals without energy loss. Any beam of light if travelling along a medium interface ~~now~~ gets reflected & beamed at a critical angle causing Total Internal Reflection.



Optical fibre network is considered to meet the goals of Digital India Programme as internet connectivity to large distances is possible by optical fibres. It can carry information

without intermixing, interference from noise and hence builds a platform for terrestrial internet.

Challenges faced by NOFN/Bharatnet's implementation are :-

i) Delay causing cost overruns
ii) Land clearance for optical fibre network

However, the speed of the project has picked up for connecting 2.5 lakh gram Panchayats by 2019.

Some suggestions are :-

- Outsourcing the work of laying optical fibre within a limited time framework could lead to quicker connectivity.

The digital revolution can be made possible by making 60% of the Indian population to Internet, a dream only possible by the spread of Bharatnet network.

Don't write anything this margin (इस भाग में कुछ ना लिखें)