

SCIENCE & TECHNOLOGY + INTERNAL SECURITY

Time Allowed: 3 hrs.
Max. Marks: 250

Q.	Marks	<i>Instructions to Candidate</i>
1.		<ul style="list-style-type: none"> • There are 20 questions. • All questions are compulsory. • The number of marks carried by a question is indicated against it. : • Answers to questions no. 1 to 10 should be in 150 words, whereas answers to questions no. 11 to 20 should be in 250 words. • Keep the word limit indicated in the questions in mind. • Answers must be written within the space provided. • Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.
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18.		
19.		
20.		

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1. Invigilator Signature _____

2. Invigilator Signature _____

 Name SHIREEN PRAKASH

Roll No. _____

Mobile No. _____

Date _____

 Signature Shireen Prakash

REMARKS

GS SCORE
GS MAINS TEST SERIES 2020

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Section - A

Q1. The lack of essential nutrients in the diet makes growing children weak and undernourished. In this regard, explain food fortification. What are the advantages and limitations of food fortification? (10 Marks)

According to the global hunger Report, India ranks 103 out of 119 countries nuch below its neighbourhood. ^{peers in the} The Ministry of Health and Family Welfare Statistics show that 35.2% of children are malnourished and 19.2% are wasted.

Food fortification is the process of enhancing the nutritional status of staple foods like wheat, rice salt through agronomic practices or genetic engineering so as to provide vital micro nutrients to the population through their daily diet.
 example: Iodine fortified salt, Zinc fortified rice, etc.

Advantages of food fortification

- Combat hidden hunger: Low dietary diversity and poverty leads to deficiency of vital micro nutrients, especially in growing children reducing their physical and cognitive abilities. Food fortification offers a simpler solution due to ease of implementation in dietary practices than supplements.
- Easier to integrate into the government schemes like Public Distribution System, integrated child Development services. Provision of dietary

Remarks

Supplements or ready to eat therapeutic foods may not always be conducive to more efficient monitoring. Fortified foods can also reduce the inclusion/exclusion errors and shortages of dietary supplements. ensures the intake of appropriate quantity of nutrients

Fortified foods can boost immunity (zinc), improve health outcomes and combat malnutrition in the country.

However, there are certain limitations.

- lack of availability of quality germplasm for biofortified crops
- silos approach - agricultural practices and farmers not integrated into nutritional programmes
- quality assurance may be an issue.

Effective implementation of schemes

like Fortified grains (Zinc - Juamunathan foundation), Poshan Abhiyan and robust research are needed.

Points under concerns need to be properly addressed
 i.e. -> might not be consumed by all members of target population.
 -> less effective for young and infants etc.

Remarks

4

Q2. Gene editing is of great interest in the prevention and treatment of human diseases. What do you understand by gene editing? Mention the applications and concern associated with gene editing. (10 Marks)

Gene editing is one of the applications of genetic engineering or gene therapy. One of the most recent techniques has been CRISPR Cas-9 which is undergoing extensive trials.

Gene editing is the technique of making corrections in the genome of the individual who has a genetic disease or is susceptible to developing one (presence of marker).

So that, a vector (normally a virus with its disease causing genome removed) with the help of indicators (spacer DNA, etc.) ^{microRNAs} makes a cut in the diseased part of the individual's genome and inserts the correct sequence of DNA material (gene) in the space.

Applications • Gene editing offers a more permanent cure for diseases like cancer, Alzheimer's, HIV, AIDS, etc. and reduces the need for prolonged treatment like chemotherapy. It from time gene editing can reduce the risk of the future generations of developing genetic diseases.
• Gene editing techniques can also be used to study the progression of diseases, their development

Being it

Also Discuss its Application

CRISPR and livestock

Biomedicine

Industrial Biotechnology etc

Remarks

Revisits
Gaps
When
discussing
Next
part of
Yas
Sharma

the process of ageing, etc
 Agriculture can be used for insertion of genes to
 give desirable traits (CRISPR cas)
 concerns. All the functions of every gene are
 not yet known hence manipulating an individual's
 genome may have unintended consequences.

- The carriers (i.e. viruses) may produce consequences harmful to the individual. *Example*
- Ethical considerations in gene line gene therapy (China - CRISPR cas case)
- The role of other factors in diseases like lifestyle, etc ignored & can't be taken to account

The Department of biotechnology and research institutions should undertake extensive research for the appropriate applications of gene editing for health care.

3.5

under concerns / discuss - Commercial Aspects - Ecological and Social Risk etc

Q3. What do you understand by biosimilars? How are they different from traditional generic drugs? Enumerate the regulatory requirements for biosimilars present in India.

(10 Marks)

Biosimilars are ~~molecules or drugs~~ consisting of large, complex molecules made up from living or biological sources. Biosimilars have shown great promise in treatment of complex diseases like Alzheimer's, Cancer, HIV/AIDS.

composition of Biosimilars

Biosimilars	Traditional Generic Drugs
<ul style="list-style-type: none"> • large molecule made from living sources (biological process) • more difficult to manufacture and the level of similarity is not the same as in generic drugs • Extensive research and requirements in case of clinical trials, etc 	<ul style="list-style-type: none"> • smaller molecules synthesised chemically in the laboratory. • easier to manufacture and are exactly similar to the original drug. • less stringent requirements for clearance and approval.

easy to manufacture but provide examples

Regulatory Requirements for Biosimilars

• Drug and clinical trials rules, framed by the central drug standards and control organisation lay down stringent requirements in case of biosimilars with respect to clinical trials, etc

Remarks

{ Patent Act also regulates the grant of patents for the drugs.

Discuss
Law and Policy framed
for its Regulation
like → Drugs and Cosmetics
Act 1940.
AMO etc

3

Remarks

Q4. Has anti-India sentiments in Nepal and Bangladesh provided a fertile ground for non-state actors to wage a proxy war against India, utilizing these two land frontiers? How should India attempt to eliminate this peril? (10 Marks)

India shares around 4096 km long boundary with Bangladesh and four states share the open border with Nepal. India's internal security issues are significantly affected by the developments along these two borders.

The Bangladesh Nationalist Party (BNP), now in opposition, harbours anti-India sentiments advocating close ties with Pakistan. In Nepal, the Maoist and left parties advocate for a closer cooperation with China due to India's 'big brother' attitude.

Implications for internal security

• Porous borders with a vis Nepal (open border-1950 agreement), Bangladesh (borders runs across fields and lineage stretches, hence difficult to undertake robust surveillance).

• In this situation, anti-India sentiments have been used by countries like Pakistan and China to support non-state actors. Bangladesh border was used by Pakistan's ISI for carrying out counterfeiting currency operations in India and for providing finance and support to insurgency outfits in the North East.

Majorly discuss the factors that led to Rise in Anti India Sentiments like Rise of Nationalism etc

Good Points
Comments

Remarks

◦ Similarly, Nepal borders have also been used to infiltrate India with state sponsored terrorists. China has also been known to use these borders to provide support to maoists and Naxalites during the 1960s and 1970s

◦ Smuggling, counterfeit currency, organised crime like drug trafficking (Bangladeshi) have been used to create financial and political instability which has also got the support of urban elements due to their antagonistic sentiments towards India.

Way forward:

◦ Robust border surveillance - capacity building of border forces, use of drones, sensors (CIBMS) in border management

◦ Resolution of boundary dispute with Nepal (Kalapani area) which is used by China to instigate certain section of Nepalese to agitate for greater Nag Nepal

◦ Socio economic development along both sides of the border through international cooperation

◦ Robust enforcement of laws.

3.5

You can also Add
 ✓
 → Increasing sense of connectivity
 → linking support
 - when needed etc

Q5. What do you understand by 5G technology? What are the advantages/applications and challenges to adapt 5G in India? (10 Marks)

5G is the next generation mobile cellular technology which is greatly engineered to greatly increase the speed of communication across machines and between the physical and virtual world, ^{almost merging into two.}

~~Advant~~ 5G → high communication speed - peak of 100Gbps. higher than current peak of 1Gbps
 → ultra low latency (low time lag)
 → Backbone of Internet of Things (IoT) (machine to machine communication)

Advantages of 5G

- ° economic benefits - Faster communication and greater connectivity through 5G is expected to add more than \$1 Trillion to the economy by 2035.
- ° Faster machine to machine communication through 5G will fuel the IoT revolution and will have many applications such as
 - a) health care - facilitating sensor based health tracking - faster diagnosis, treatment by enabling tele robotic surgery, etc
 - b) logistics - real time monitoring, vehicle fleet management, warehouse tracking will

Good Introduction
 lots of key components
 with 4G network as well

you can also mention about incorporating AI in daily life

Remarks

Significantly reduce logistics cost improving cost competitiveness

c) agriculture - faster dissemination of information related to weather, forecasting, market information for better price discovery, etc

d) finance for automated fund flow management, fintech for financial inclusion, enhanced customer experience

e) government services - real time fund tracking, improving quality of service delivery, smart utilities, etc

f) entertainment - downloading & K movies, ultra HD, ^{video} streaming, etc

However, there are certain concerns

It will require investment of around \$50-60 billion which is difficult due to the poor financial position of the telecom industry
lack of efficient infrastructure for connectivity
digital exclusion, particularly in rural areas.

Also discuss
Concerns
to Security &
Privacy Policy, 2018,
issue

The National Digital Communications Policy, 2018, 5G forum, and etc are steps in the right direction.

→ Incompetent
Technological Support
AS well etc

4

◦ India's neighbourhood and the challenge of a two and a half front war with China (growing space power) and Pakistan -

◦ space security policy will demonstrate India's commitment to the peaceful uses of outer space for the benefit of mankind and enhance its position in negotiations on the placement of weapons in Outer space (PAROS)

◦ Leadership for developing nations: with India being a prominent player in space can safeguard developmental uses and also prevent a ground conflict from escalating in outer space
enhance international awareness in space

India has taken several steps like Cyber Defence Space agency, Anti Satellite Tech. etc in the recent years and also undertakes Collision Avoidance Analysis, Space Object awareness
A coherent policy is the need of the hour.

Below this
Briefly discuss
An important
Components that
Should be
Emphasized in
Space Policy like
Development of
Space Technology
etc

Remarks

4

Q7. An indissoluble tincture to "Naxalism" lies in abrogating the alienation of the tribals. Elaborate. (10 Marks)

Naxalism is one of the most potent internal security threats in India and signifies the linkage between development and extremism.

Lack of socio economic development of the tribal areas and the tribal population ~~is~~ ^{is} used by the Naxal cadres to incite disaffection among the tribals.

Post independence, a number of measures were taken by the government like Tribal Panchsheel Policy, the fifth and sixth schedule to facilitate development while safeguarding autonomy.

However, there have largely not yielded substantial results as

→ loss of tribal lands to non tribals continued

→ tribals had to bear huge cost of rehabilitation displacement from their lands due to poor rehabilitation strategies in large developmental projects like dams, mineral mining, etc

→ exploitation by moneylenders, middlemen,

→ poor implementation of land reforms and loss of land titles etc.

→ the government also restricted access to the forests - their sole source of livelihood

As Home
Good
Knowledge of
Issue but
Concise form
Points of
And Also
discuss
Alienation
through
Cultural
differences
etc

Remarks

→ ~~poor economic devel~~ → poor governance - backwardness in health and education, corruption among the lower levels of administration, etc.

These factors were used by the Naxalites to instigate the tribals against the government. The ~~best~~ bulk of the left wing extremism affected districts lie in the tribal belts of the country - Jharkhand, Chhattisgarh, etc.

Steps taken by the government:

- Forest Rights Act, 2006
- Protection of Scheduled Areas Act, 1996
- Scheduled Tribes Sub plan
- Prevention of Atrocities Act

You need to elaborate your points on steps taken by -

Both Development and security related measures along with tribal welfare and participation are essential for ~~the~~ defeating Naxalism.

4

Remarks

Q5. While the cynosure on the Rohingya refugee catastrophe is justified, the insouciance to the plight of Sri Lankan refugees is condemnable. Comment. (10 Marks)

Although India is not a signatory to the Refugee Convention of 1951 and its 1967 protocol, it houses ^{refugees from} many countries - Sri Lanka, Tamil Refugees and Myanmar Rohingyas ^{have} ~~have been~~ ^{been} some of them.

Rohingyas are stateless people ^{Muslims} persecuted by ~~the~~ Myanmar where they are legally not entitled to be citizens. India houses around ^{40,000} 80,000 Rohingyas. Some of them are posing a security issue.

It has been found that Pakistan ISI has been training some Rohingya refugees in their camps for carrying out armed attacks in India. Some Rohingyas are suspected to be behind the Bodh Gaya attacks in 2012.

Hence, the government is seeking the repatriation and deportation of some Rohingyas.

On the other hand, the Sri Lankan Tamil Refugees have fled ^{religious} persecution by Sri Lanka and have been largely peaceful.

Also
Briefly
mention
the
causes
that
led
to
this
And
How
this
Movement
attracted
Global
attention
of
West

Remarks

in F. They do not have access to basic amenities like housing, sanitation, health and education services

Briefly explain the history of Sri Lanka Refugees

And measures undertaken by Gov to tackle this issue

Ans - Ensuring proper livelihood opportunities etc

3

→ Also discuss double standard on both sides

Q9. Elaborate the concept of Internet of Thing (IOT). What are the opportunities and challenges of this new technology? (10 Marks)

Internet of Things (IOT) network refers to the embedding of sensors, actuators, etc in physical objects which allows these objects to be tracked, controlled and monitored across the internet or any network.

IOT has myriad applications due to its ability to facilitate ^{seamless} interaction with the physical and virtual world.

Opportunities

• Health care: Sensors can track critical health indicators of persons with chronic diseases facilitating timely care. Similarly, IOT networks can also be used to track drug and vaccination supply chain networks and reduce the prevalence of counterfeit drugs. Thus, IOT can enhance the quality of health care in India.

• Manufacturing: IOT enabled devices and machines can increase the efficiencies in the supply chain, reduce redundancies and wastage leading to cost competitiveness and more sustainable manufacturing.

Explain IOT with the help of Example

Good Information Knowledge

All can also talk about Smart Surveillance

Imparting Industrial Engineering etc

Remarks

- Logistics sector: Sensors and actuators can monitor the quality of products say agricultural produce in warehouses and cold storages, streamline the supply chain. Real time tracking and vehicle fleet management can also be possible
- Agriculture and dairy sector: Sensors can optimise the application of water, nutrients (fertiliser) in the field and can also monitor animal health, quality of feed and milk produce in the dairy sector.
- Governance: IoT can enable the government to monitor the quality of public infrastructure

Concerns ◦ privacy since IoT devices would collect a lot of personal information

◦ heavy consumption of power and seamless connectivity required.

◦ R&D in IoT in India still lacking.

Also
 You can
 Platforms
 Segmentation
 Data
 Storage
 etc

The government should facilitate

- draft policy on IoT to encourage IoT networks
- in a sustainable and ethical manner

4.5

Q10. Critically examine the emergence of AI powered cyber weapons as the weapons of next cold war. (10 Marks)

Artificial intelligence is the simulation of human intelligence by a machine. AI has found several military uses and is being touted as the weapon of choice in the next cold war likely between US and China (both are investing heavily in AI)

Emergence of cyber defence weapons

- Lethal Autonomous Weapons systems (LAWS): in the field of cyber space can be immensely powerful as they do not require any human intervention for their operation
- AI powered cyber weapons can always remain one step ahead of the adversary as due to their autonomous learning algorithms and can minimise damage to critical infrastructure
- Can also be used as an effective tool of surveillance and track any anomalies and suspicious transactions in cyber space
- AI powered cyber weapons can also upple the defence and critical infrastructure of rival nations in significantly less time

Good introduction, but mention Russia as well with China

You are explaining points well, but include some relevant examples as well

stunnet vision etc

Remarks

their retaliation capabilities.

Concerns

o AI divide - AI cyber defence weapons will propagate asymmetric warfare with nations like India which are still in their nascent stages at a disadvantage.

o Non ethical issues will arise

o Lack of a specific treaty governing the use of AI cyber weapons

o Susceptible to hacking and may turn against the

Good, but can also talk about New Arms Race, use of AI weapons in hands of criminals, terrorists etc.

in hands of criminals, terrorists etc.

International cooperation in

formulating effective regulatory regime is necessary

Plan suggest way ahead as well

can describe Proposed Geneva Convention to limit Digital AI Conflict

4

Section - B

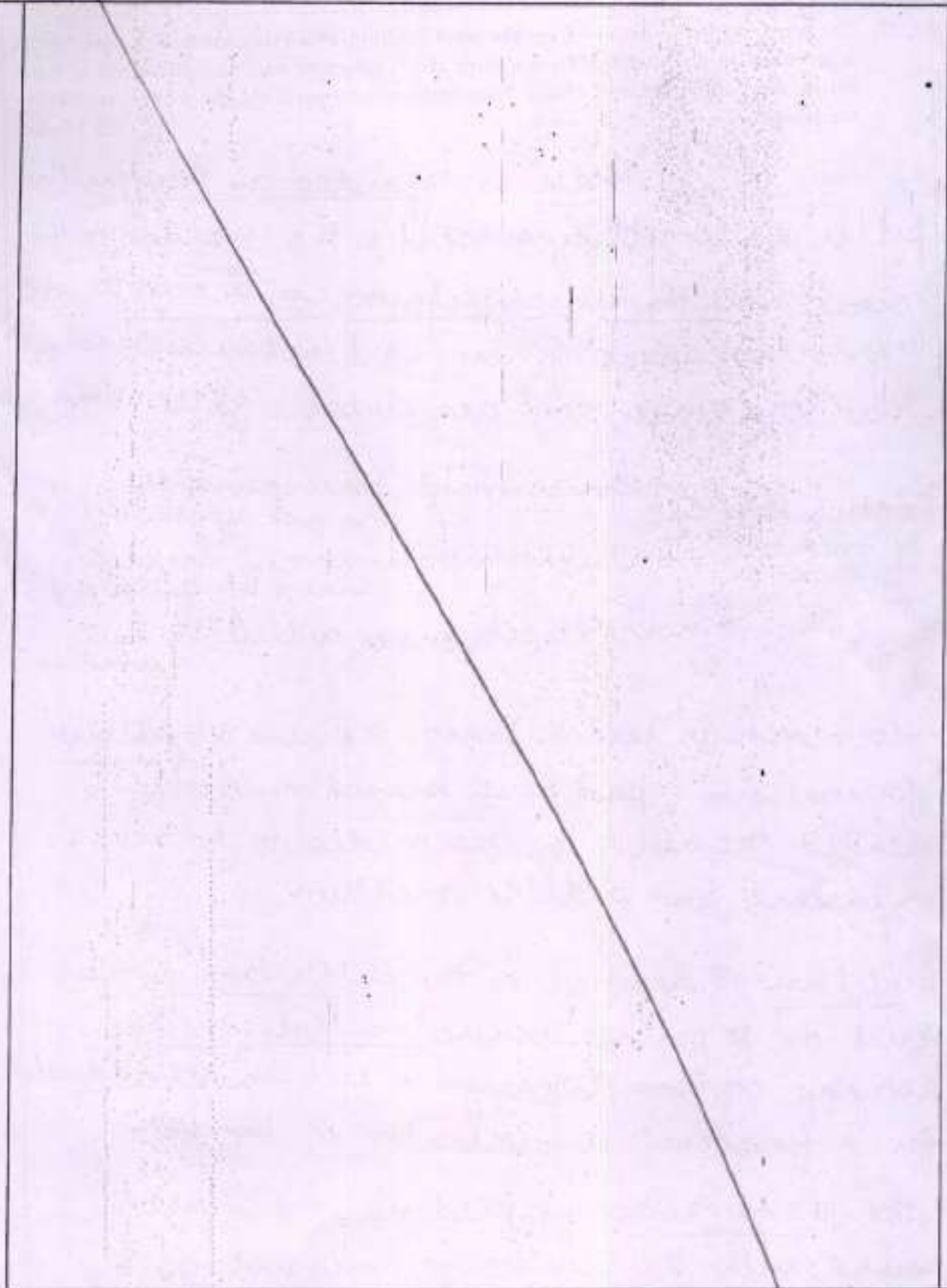
Q11. What are optical tweezers? Highlight their applications and limitations along with relevant examples. (15 Marks)

Optical Tweezers ~~are~~ is a technique which uses of visible light to

Remarks

A large rectangular area defined by a thin black border. A diagonal line runs from the top-left corner to the bottom-right corner, dividing the space into two triangles. This area is intended for the student to write their answers.

Remarks



Remarks

Q12. The word 'media' is derived from the word medium, signifying mode or carrier. Media is intended to reach and address a large target group or audience. Comment to what extent the paid news and media biasedness has jeopardized the overall credibility framework. (15 Marks)

Media is regarded as the fourth pillar of democracy since it is the medium of the mode through which citizens can access to information about government activities and hold the government accountable for its actions.

Contribution of media → government transparency and accountability
 → citizen empowerment through access to information
 → voice to citizens to articulate their grievances

However, in recent years, the rise of yellow journalism (paid news, biased media etc) has diminished the ability of the media to be an impartial and credible medium.

Paid News is defined as the publication of news items or giving undue partial coverage, denying correct coverage to certain individuals for a financial consideration or benefit.

• The phenomenon of paid news has been rising with the Electron Commissioner reporting

Remarks

Also mention Role of Media in Creating Awareness And Shaping public opinion

Also mention various forms of Media as well

more than 2000 cases of paid news in the 2014 Lok Sabha elections.

◦ Similarly, issues of media bias have also been rising with positive ^(favourable) coverage of certain individuals, politicians, etc while ~~also~~ unnecessary maligning reputation of certain individuals.

Reasons for the rise of yellow journalism

◦ deterioration of work conditions of journalism where most of them mostly work on contract wages with poor job security which makes monitoring difficult

◦ issues regarding separation of ownership and editors ^(different entities) of media houses

◦ lack of robust regulatory framework for reporting of suspect financial transactions by media houses

◦ Conflict of interest in media watchdogs and regulatory bodies which makes them toothless

◦ Non transparency in electoral funding which encourages the use of black money and under the table transactions

◦ Rise of media of new ecologies and uncontrollable real time generation of news content online

Not Asked
Buy it

Implications on the loss of credibility

◦ Non transparent, partial and one sided reporting

Remarks

Focus Year
Discussion Name
on How Paid
News → after last foels
→ Issues like Poverty
unemployment etc
are not addressed

interferes with the citizens right to have access to true information about the government.

Political parties and politicians

It encourages more corruption in the political arena by establishing quid pro quo between the media and the parties jeopardising free and fair elections.

Loss of reputation in the international media.

Strengthening the regulatory bodies, formulation of ^{stringent} requirements in political ad reporting, etc are needed. The Senha!

committee recommendations on paid news can be useful in this regard.

H

Remarks

Red and green zones with no permission to fly
 drones in red areas (Parliament, strategic
 locations, etc)

→ Permission and informing the local police
 authorities

Non Military application of Drones

• Health care: Drones can be used for the delivery
 of critical medicines and vaccines in difficult
 terrain like the hilly areas. ^{Provided} ~~Examples~~ ^{as well}

• Drones can also be used for urban management,
forestry and agriculture activities A) In agriculture,

drones can be used for ascertaining crop
^{assessing crop damage}
 production, and reduce the number of crop cutting
 experiments in case of insurance claims. Drones
 can also be used for giving timely warning in
 case of locust and pest attack along with ~~get~~
 local weather forecasting

• b) In urban management, drones with
 hyper spectral imagery can map urban assets
 and help in their maintenance. ~~along with~~ and
 also formulate detailed urban maps.

• Disaster management for assessing damage to
 infrastructure and search and rescue operations.

Remarks

Good
 Coverage
 of
 Data

o Mineral mapping and prospecting: Drones can be used for mapping of unexplored sedimentary basins to pinpoint exact locations for mining.

o e-commerce: Drones presently are being used to enable faster delivery to customers. E-commerce platforms like Amazon

o Scientific studies: assessing the ^{changing} climate conditions, pollution levels in the atmosphere, etc.

Good

Drones have significant civilian applications which must be utilised for sustainable development. Drone Regulations 1.0 are a good step in this regard.

5.5

Q14. The phrase "digital divide" refers to the unequal and disproportionate pace of development in societies having access to digital infrastructure and services. Analyze the extent and prevalence of digital divide in India. List the measures taken to bridge this divide. (15 Marks)

Digital tools are increasingly being used in many areas - finance, governance, education, health, business, etc significantly improving access ~~concern~~ convenience and autonomy.

However, digital divide which is marked by unequal access to digital infrastructure for certain sections of society poses a challenge to inclusive growth.

Digital Divide in India

Although India has the second largest subscriber and user base, a significant section of our population is deprived of internet access.

According to India Internet Report (IAMAI-2019) and Nasscom data,

- Only 49% of Indians have access to the internet
- Only 20% of 1 in 5 persons in rural areas are connected to the internet (Rural-urban digital divide)
- less than 50% of females have used the internet or believe the internet to be a useful tool (gender divide)

Remarks

Briefly
Mention
About
Digital divide
Among
Rural-urban
on basis
of
Region
etc
Good
Point

for digital literacy

- Bharatnet programme: for broadband connectivity to all gram Panchayats by March 2020
- Encouraging digital financial transactions -
UPI, Acs, Bhim Aadhaar pay
- Direct Benefit Transfer for disbursement of government benefits and subsidies.

Digital Inclusion can act as aid
socio economic progress.

Good knowledge
of answer

5.5

Remarks

Q15. What do you understand by the terms biotechnology and Big data. Why does biotechnology need big data? Write a note on the features and significance of the National Biotechnology Development Strategy 2015-2020 programme. (15 Marks)

Biotechnology can be understood as the application of biological processes in medicine, agriculture, industry, etc. Big Data is data so large and complex in volume and ultra fast in generation that it can't be handled using traditional data management methods.

Why does biotechnology need big data?

• Big Data can enable development of drugs, and gene therapy and other genetic treatment methods in health care. Data relating to disease prevalence, drug trials, epidemiological surveillance can enhance the efficacy of drugs and treatment.

• In agriculture, big data is collected on soil health, pest prevalence, etc. can aid in the development of GM crops, pesticides, using biotechnology, enhance genetic makeup of breeds, etc. Information generated about biological processes can be used in bioinformatics and biometrics.

Keeping in view the importance of biotechnology for sustainable development,

Diversify
Your
Points
Also mention

its use in

→ Animal Husbandry
→ Climate Change and Biodiversity etc

Remarks

The Department of Biotechnology has formulated the National Biotechnology Development Strategy 2015-20 programme.

Features

- Encourage R&D in thrust areas of biotechnology through a network of institutions along with involvement by the public and private sector
- Facilitate the development of human resources in the field of biotechnology along with introduction of state of the art courses in the curriculum
- Increase funding both public and private by the concerned institutions and authorities in the field
- Develop an integrated vision with relevant sectors like agriculture, health care establishing linkages as also the potential applications of IoT, Artificial Intelligence etc in the field of biotechnology
- State of the art laboratories and equipment
- Introduce conducive provisions to and simplify procedures to encourage filing of patents in the area

Good
You can

Also
Include

Ensure
transparent

efficient
System

Building
Skilled

Workforce
And leadership

etc

Remarks

◦ International collaboration should be encouraged.

Significance:

◦ The programme aims to make India a world leader in biotechnology and utilise its scientific manpower to carry out cutting edge research

◦ It will also encourage the use of biotechnology for sustainable agriculture, affordable healthcare, etc

Investment to boost creation of biotech products, Commercialization, Empowering HR, Cheap medicines etc

5

Discuss
Major
facts
like

Remarks

Q16. The prognosis that Artificially-Intelligent (AI) machines will get to a point where humanity could, in theory, be made redundant has triggered squabble even between the leading technological giants and experts. In this context, critically examine the implications of AI technology. (15 Marks)

In Intro
You Need
to briefly
discuss
the
controversy
of AI
Adoption

Artificial Intelligence is the simulation of human intelligence by a machine. While speech and language recognition software, search engines etc have been used for a long time, deep learning as part of AI is posing significant questions on the future of humans vis a vis AI.

Sectors	use of AI	threat of humanity becoming redundant and possible fallouts
Health care	<ul style="list-style-type: none"> o diagnosis, of diseases o genome sequencing, telemedicine, drug discovery, etc o facilitating best rule healthcare 	<ul style="list-style-type: none"> o human element in the form of doctor patient interaction missing - may have a psychological impact due to inability of AI to understand different socio economic background of patients
Industry	<ul style="list-style-type: none"> o performance of repetitive tasks with efficiency and accuracy more than human being. 	<ul style="list-style-type: none"> o threat of job losses upon a large particularly in India. With low levels of AI readiness and skill development

Remarks

Try to provide
 Examples AS well
 for your
 discussion

streamlining of supply chain, logistics
 improving cost competitiveness
 eliminating waste and redundancies
 ex. Banking Chatbots to perform basic tasks
^{giving} account details, etc

Soft skills are in great demand to deal with the upheaval caused by AI

Real time tracking of funds and government schemes like Swachh Bharat, etc
 reducing corruption and improving service delivery

Reduction of human element in governance is beneficial to a certain extent. However, people to people interaction still retains importance keeping in view the latent of digital illiteracy, socio economic backwardness etc

Day to day human tasks

AI self driving cars, driverless
 AI powered robots.

ethical implications - driverless cars - have to make a choice between human lives vs passengers vs pedestrians

Military

lethal autonomous weapon systems, reduce loss of lives, better surveillance, etc

extent of collateral damage, AI dilemma in conflicts, etc

Remarks

Thus, while AI can mostly improve the efficiency and scale of tasks in different sectors, it can't completely replace human element, ^{also} ~~also~~ it will also be susceptible to racial or subjective biases of its makers making it more dangerous in terms of profiling.

Good Well Presented

5.5

Remarks

Q17. Shekatkar Committee on defence reforms has proposed to create three integrated theatre commands for better coordinated efforts of armed forces. In this context, elaborate on integrated theatre command and critically analyze its creations in highly diversified military needs of country. (15 Marks)

Shekatkar Committee on defence reforms has made ^{certain} recommendations to facilitate greater synergy and operational readiness in defence ~~reforms~~ forces keeping in view the probability of two and a half front war and hybrid warfare.

Also mention who whom provision the committee was set up.

The creation of integrated theatre commands will enable operational synergy and coordination. The Kargil Review Committee in the aftermath of the Kargil conflict pointed out the lack of coordination among the forces which delayed response time.

An integrated theatre command will comprise of all the three forces - Air force, Army and Navy (joint forces) under the command of a single commanding officer. One such command

Try to provide a subheading when discussing a segment of

Remarks

has been created in the Andaman and Nicobar Islands.

An integrated theatre command will

- facilitate harmonisation and coordination of operations
- optimisation of defence forces and acquisition
- It will pave the way for the creation of more integrated battle groups (IBGs) in strategic positions and enable quicker and more damaging retaliation (Surgical strike) in case of enemy action.

◦ Integrated Theatre commands will enhance situational awareness and enable effective surveillance particularly on the sea lanes of communication.

◦ It goes in line with the government's move to establish Chief of Defence Staff for jointness in operations

◦ International military exercises - effective participation

Explain
with
suitable
example

Remarks

However, inter service rivalry, gaps in seamless integration of technology systems along with front face of defense acquisition can reduce the efficacy of these commands.

The newly appointed CDS can facilitate a holistic discussion on the establishment of these commands.

You need to also cover

points discussing

arguments Against the Committee

like not geographically large enough to be Divided etc

4

Remarks

Q18. Elaborate on Hawala system. Discuss its status in India and how it is linked to militancy in India. (15 Marks)

Begin by discussing the operating process of Hawala system

Hawala system is an informal channel of performing monetary transactions. The receipt and transfer of money takes place without any physical transactions through Hawala intermediaries in both nations/ areas

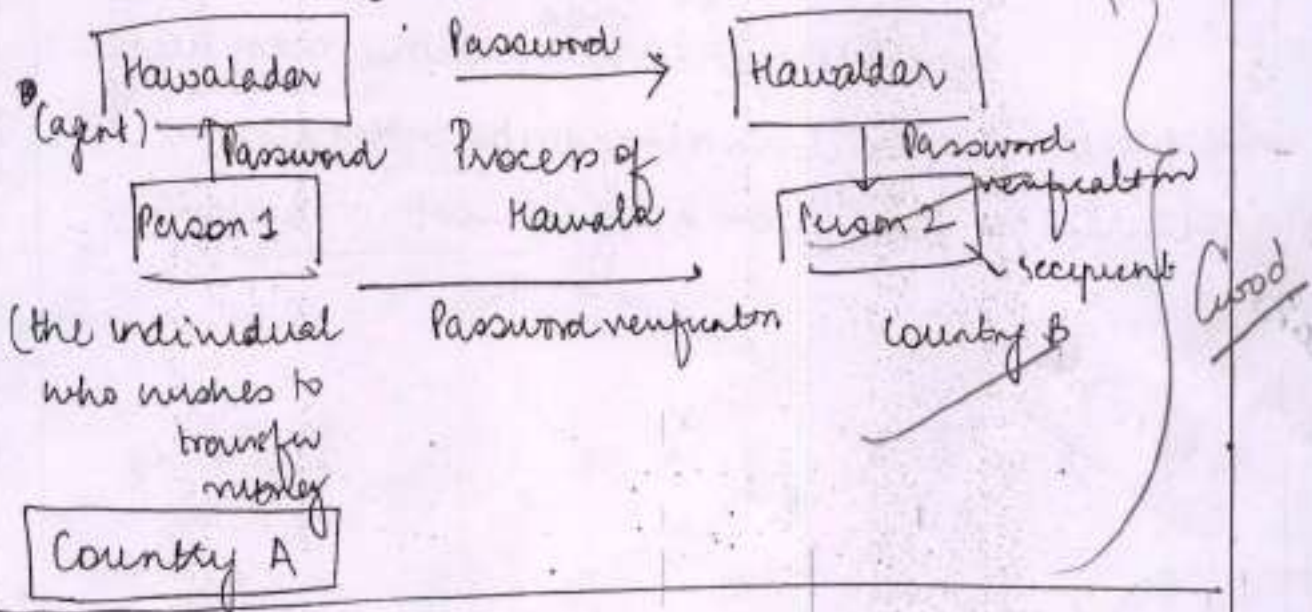
Status of Hawala system in India

- Hawala is used both legally and illegally to transfer money in India. It is generally also used by migrants to transfer remittances to their home country to avoid paying any tax or coming under the scrutiny of government authorities.
- It is also used by some businessmen to transfer funds and indulging in tax avoidance and tax evasion.
- However, the most potent and destabilising use of Hawala has been for funding terrorism and insurgency in Jammu and Kashmir.

Further legislation framed by Indian Gov. towards it

Remarks

o The Anti Insurgency wing in the 1990s and recently the National Intelligence Agency have found the extensive use of Hawala in funding terrorism, ^{arms} smuggling and counterfeit currency in Jammu and Kashmir.



o Certain terror outfits like Lashkar-e-Taiba (LeT) Hizbut Mujahideen get around 85% of their funds from Hawala transfers.

o NIA also found evidence of businessmen in Saudi Arabia, Pakistan etc using Hawala route for funding stone pelling activities in Kashmir.

Handwritten note: 1000 Million Amount of Business Operates in India via Hawala

Remarks

o Circulation of Fake Money

How Money is being divided etc

◦ Lack of a robust enforcement framework in India has also been responsible for the use of hawala with the Foreign Exchange Management Act treating it as a civil offence and not criminal.

Add points to make your conclusion explanatory

Stringent ^{anti} tax evasion, monitoring suspicious transactions along with international cooperation has become of utmost importance

4.5

Q19. There has been significant rise in victims of human trafficking especially women and children. What are reasons for this increase? Discuss the main provisions of Trafficking of Persons (Prevention, Protection and Rehabilitation) Bill, 2018 to curb the menace of human trafficking. (15 Marks)

Remarks

SCORE

Remarks

Remarks

Q20. Money Laundering helps in flourishing organized crime and has debilitating impact on economy as well as on society. In this context, discuss the key recommendations of Financial Action Task Forces (FATF) to curb the menace. Also, discuss the case of making the Money Laundering a separate criminal offence in India. (15 Marks)

Money laundering is the process by which illegally acquired money (drug trafficking, tax evasion, etc) is converted into legitimate money through the three step procedure of Placement, Layering and Integration.

Money laundering has a debilitating impact on the economy since it enables the flourishing of a ^{parallel} "black" economy with significant losses due to tax evasion and funds terrorism, ^{illegal} drug trade, smuggling, etc.

The Financial Action Task force was established in 1988 on the recommendations of the G7 to formulate legal, and regulatory measures to combat money laundering and terrorist financing in member states. It monitors and assists the countries in the implementation of these regulations.

Remarks

- PMLA etc

Also mention
 laws like
 - FERA
 - FEMA

The FATF has given 40 (+9 on Terrorist financing) recommendations on ^{Anti} Money laundering. Some of them are:

a) Criminalise money laundering and treat it as a separate offence

b) Confiscation and proceeds of assets acquired by money laundering activities

c) Monitoring and maintaining records along with customer reporting for suspicious financial transactions by both financial and non financial organisations

d) Set up a financial intelligence unit in the country

e) International cooperation and alignment with the international provisions on anti money laundering

Case of making money laundering a separate offence in India.

3 IBs
Recommendation
Also Includes
Points like
↓
Prohibit
Anonymous
Account
Apply
Appropriate
Counter
Measures
etc

Explain and Elaborate your arguments

India presently has the Prevention of Money Laundering Act, 2002 to prevent this offence. However, provisions are also scattered in the IPC Income Tax

and Money Laundering provisions.

Steps taken by Gov to Make Money Laundering Separate Criminal offence

4.5

Remarks

**SCIENCE & TECHNOLOGY
 + INTERNAL SECURITY**

Time Allowed: 3 hrs.

Max Marks: 200

Q.	Marks
1.	
2.	
3.	
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18.	
19.	
20.	

Instructions to Candidate

- There are 20 questions.
- All questions are compulsory.
- The number of marks carried by a question is indicated against it.
- Answers to questions no. 1 to 10 should be in 150 words whereas answers to questions no. 11 to 20 should be in 250 words.
- Keep the word limit indicated in the questions in mind.
- Answers should be written within the space provided.
- A portion of the page left blank in the Question-cum-Answer sheet must be clearly struck off.

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1. Invigilator Signature
 2. Invigilator Signature

Name V. Deepak Kumar
 Roll No. 23239
 Mobile No. 9700626271
 Date 15/01/2019
 Signature [Signature]

REMARKS

Note
Each subpart of Question should be explained comprehensively.
→ Bring multi-dimensional approach in your answer.
→ Try to cover all important parts of topic.

Section - A

Q1. The lack of essential nutrients in the diet makes growing children weak and undernourished. In this regard, explain food fortification. What are the advantages and limitations of food fortification? (10 Marks)

The food fortification is the process of adding certain micronutrients into food to address the nutrient deficiency. It involves addition of zinc, vitamin A, iron to staple foods like rice, wheat, oil, milk etc.

The micronutrient deficiency also known as the hidden hunger is a serious health risk that is plaguing the developing nations.

Advantages:

→ Food fortification has high benefit to cost ratio.

→ Adding micronutrients to the staple food can improve the health of a large portion of the population in short span of time.

→ It is a safe method that is used to improve the nutrition of the people as it poses no health risk.

Link Yam
Point
With essential
fom food
And undernourished
children

Try to diversify
Yam
Points
Also Add
Does Not Require
change in
existing food
pattern

Remarks

→ Helps in
achieving
the goal of 'Sick com-
pellens'
etc

→ It is a socially and culturally neutral & delivers the nutrients to the people.

Limitations:

→ There is a requirement of multiple micro nutrients but the fortified food is often rich in macro micro nutrient example

→ There are technical issues related to appropriate levels of nutrients? Explain

→ More research is needed to understand the impact of interaction among nutrients.

3

↳ Very Important issues are

↳ Less effective to young and infants who consume less

↳ This food may not be consumed by target population etc

Remarks