

IASbaba 60 Day Plan 2020 – Day 29 Science and Technology

Q.1) Pegasus was seen recently in news. Which of the following describes its nature as a cybersecurity threat?

- a) Trojan
- b) Ransomware
- c) Spyware
- d) Phishing

Q.1) Solution (c)

Spyware – It is a kind of malware that is designed to collect information and data on users and observe their activity without users' knowledge.

Pegasus

- It is a spyware developed by the Israeli cyber arms firm NSO Group Technologies.
- It mainly uses exploit links, clicking on which install Pegasus on the target's phone.

Q.2) Which of the following statements are correct regarding Distributed Denial of Service attacks?

1. It is a malware which creates a botnet and use that to ping a server at the same time.
2. It corrupts all the files linked with a server and deletes them from the device.
3. It overburdens a server and leads to its crashing.

Select the code from following:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

Q.2) Solution (c)

Distributed Denial Of Service

- A DDoS (Distributed Denial of Service) attack is an illegal large-scale cyber campaign where a big number of devices are used to create traffic to a certain server.
- If the number of devices involved is big enough, the overwhelming traffic would be more than what the targeted server is capable of handling.
- Malware first creates a network of bots — called a botnet — and then uses the botnet to ping a single server at the same time.
- In such a case, the server would get overburdened which would lead to crashes.

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- After a successful DDoS attack, the customers of the service that had its servers targeted would not be able to use/access the said service due to the server crash triggered by the DDoS attacks
- Unlike other kinds of Cyberattack, DoS assaults don't attempt to breach the security perimeter. Rather, they aim to make the website and servers unavailable to legitimate users.

Q.3) 'Broadband Readiness Index for States' will be released by which of the organisation?

- a) Niti Aayog
- b) Department of telecommunication
- c) Ministry in home affair in association with International Telecommunication Union.
- d) NASSCOM

Q.3) Solution (b)

BROADBAND READINESS INDEX FOR STATES

- Department of Telecommunications and Indian Council for Research on International Economic Relations (ICRIER) have signed a MoU to develop a Broadband Readiness Index for Indian states and Union Territories (UT).
- The index will include indicators such as percentage of households using computers/ laptops with internet connection, percentage of households with fixed broadband connection, internet users as a percentage of the population, smartphones density, percentage of households with at least one digitally literate member, etc.

Q.4) Consider the following pair –

Index	Releasing authority
1. ICT Development Index	OECD
2. The Global Cyber Security Index	International Telecommunication Union
3. Global Information Technology Report	World Bank
4. Network Readiness Index	World Economic Forum

Which of the above pair/pairs have been correctly matched?

- a) 1 and 2 only
- b) 1, 2 and 4 only
- c) 2 and 4 only

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d) 2, 3 and 4 only

Q.4) Solution (c)

Index	Releasing authority
1. ICT Development Index	International Telecommunication Union
2. The Global Cyber Security Index	International Telecommunication Union
3. Global Information Technology Report	World Economic Forum
4. Network Readiness Index	World Economic Forum

Q.5) Which of the following describes the 'Wi-Fi calling', a new concept in communication technology?

- Use of Wi-Fi router to directly make voice calls.
- Integration of Wi-Fi Network with the concept of Internet of Things.
- Use of high speed Internet connection to make and receive voice calls without using an app.
- Expansion of public Wi-Fi to all public places.

Q.5) Solution (c)

Wi-Fi CALLING

- It makes use of high speed Internet connection, available via broadband, to make and receive high definition (HD) voice calls.
- This is not much different from a voice call using WhatsApp or any other over-the-top messaging platform, but here the **call is from one number to another, and not using an app.**
- Wi-Fi Calling can be configured on compatible smartphones by upgrading operating systems to the version that supports Wi-Fi Calling, and enabling this in Settings.
- Airtel says it will soon be compatible with all broadband services and Wi-Fi hotspots, and rolled out in other locations.

Q.6) Consider the following statements regarding Indian Cyber Crime Coordination Centre (I4C) –

- It will be set up under the newly created Cyber and Information Security (CIS) division of the Ministry of Electronics and Information Technology.

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2. The body will have power of surveillance of individual and institutions, subjected to the approval of cabinet secretary.
3. It has been created under Information Technology Act, 2000

Which of the statements given above is/are correct?

- a) 1 and 2 only
- b) 2 and 3 only
- c) 3 only
- d) None of the above

Q.6) Solution (d)

Statement 1 is incorrect - It will be set up under the newly created Cyber and Information Security (CIS) division of the **Ministry of Home Affair**.

Statement 2 is incorrect – It will act as a nodal point in the fight against cybercrime. However it has no power of surveillance against anyone.

Statement 3 is incorrect – It is not a statutory body.

INDIAN CYBER CRIME COORDINATION CENTRE (I4C)

- The Indian Cyber Crime Coordination Centre (I4C) was recently inaugurated by the government. It will be set up under the newly created Cyber and Information Security (CIS) division of the **Ministry of Home Affair**.

COMPONENTS

- National Cyber Crime Threat Analytics Unit
- National Cyber Crime Reporting Portal
- National Cyber Crime Training Centre
- Cyber Crime Ecosystem Management Unit
- National Cyber Crime Research and Innovation Centre
- National Cyber Crime Forensic Laboratory Ecosystem
- Platform for Joint Cyber Crime Investigation Team

Objectives:

1. To act as a nodal point in the fight against cybercrime

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2. Identify the research problems/needs of LEAs and take up R&D activities in developing new technologies and forensic tools in collaboration with academia / research institutes within India and abroad
3. To prevent misuse of cyber space for furthering the cause of extremist and terrorist groups
4. Suggest amendments, if required, in cyber laws to keep pace with fast changing technologies and International cooperation
5. To coordinate all activities related to implementation of Mutual Legal Assistance Treaties (MLAT) with other countries related to cybercrimes in consultation with the concerned nodal authority in MHA.

Q.7) Which of the following statements most appropriately describes *Quantum supremacy*?

- a) Explanation of physical phenomenon through quantum mechanics that otherwise cannot be done by classical mechanics.
- b) Supremacy in financial sector due to fast communication bus.
- c) Cyber capability, both offensive and defensive, of a nation.
- d) Demonstrating that a quantum device can solve a problem that classical computers practically cannot.

Q.7) Solution (d)

Quantum Supremacy refers to a problem-solving process by the quantum computer that cannot be solved by a classical computer in its normal lifetime.

SYCAMORE

- Google announced that it had reached quantum supremacy and made quantum computer called Sycamore.
- Sycamore completed a task in 200 seconds that Google claimed would take a state-of-the-art supercomputer 10,000 years to finish.

Q.8) Which of the following statement is incorrect regarding quantum computers?

1. They do not follow classical physics like Newton's laws of motion.
2. It was posited by Richard Feynman
3. 'Mission on Quantum computing' under the 'National Supercomputing Mission' is led by Centre for Development of Advanced Computing, IISc and Department of Science and Technology (DST).

Select the correct option –

- a) 2 only

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- b) 2 and 3 only
- c) 1 and 3 only
- d) 3 only

Q.8) Solution (d)

Statement 1 and 2 are correct as a matter of fact.

Statement 3 is incorrect as there is no such mission under National Supercomputing Mission.

QUANTUM COMPUTER

- Quantum computer runs on the laws of quantum physics as opposed to the classical computers (i.e. phones and laptops), which run on classical physics like Newton's laws of motion and utilizing the flow of electricity.
- It uses the laws that govern the behaviour of atoms and subatomic particles. At that tiny scale, many laws of classical physics do not apply, and the unique laws of quantum physics come into play.
- The quantum computer was posited by Richard Feynman.

Q.9) Consider the following statements regarding 'Open Application programming interfaces –

1. They provide an open architecture, allowing anyone to access data and functionality without any association with the API providers.
2. Government of India has open API policy for programmes like Aadhaar, eKYC, eSign, and Unified Payments Interface (UPI).

Select the correct answer using the code given below:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.9) Solution (c)

OPEN API (APPLICATION PROGRAMMING INTERFACES)

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- They provide an open architecture, allowing any business to access data and functionality without any association with the API providers.
- Open APIs can bring in the profound changes in the overall digital ecosystem. Open APIs basically allow data to be accessible to larger institutions.
- Government of India has open API policy for programmes like Aadhaar, eKYC, eSign, and Unified Payments Interface (UPI) among others.
- Though Aadhaar data is handled by Unique Identification Authority of India (UIDAI) and banks have no control over the data, still banks are able to use the data. For instance, banks use Aadhaar-enabled biometric authentication to open bank accounts.
- An open API also gives banks the ability to monetize your data. But that doesn't mean all your information is made public. The data exchange in open APIs happens in a controlled manner.
- However, security does seem to be a concern with open APIs. Hence, not many banks currently offer them. But they are still works in progress and you can't rule out the possibility that someday, any bank would be able to fetch your data from any bank, of course, with your consent.

Q.10) Which of the following is/are statutory body formed under Information Technology act, 2000?

1. National Critical Information Infrastructure Protection Centre
2. Indian Computer Emergency Response Team – Cert-In
3. Data Security Council of India

Select the correct option –

- a) 2 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.10) Solution (b)

NATIONAL CRITICAL INFORMATION INFRASTRUCTURE PROTECTION CENTRE

- Established under Information Technology Act, 2000 to secure India's critical information infrastructure.
- It is designated as the National Nodal Agency in respect of Critical Information Infrastructure Protection.

INDIAN COMPUTER EMERGENCY RESPONSE TEAM – CERT-IN

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- National nodal agency for responding to computer security incidents as and when they occur
- Under the Information Technology Amendment Act 2008, CERT- In has been designated to serve as the national agency to perform the following functions in the area of cyber security:
 1. Collection, analysis and dissemination of information on cyber incidents.
 2. Forecast and alerts of cyber security incidents
 3. Emergency measures for handling cyber security incidents
 4. Coordination of cyber incident response activities.
 5. Issue guidelines, advisories, vulnerability notes and whitepapers relating to information security practices, procedures, prevention, response and reporting of cyber incidents.
 6. Such other functions relating to cyber security as may be prescribed

DATA SECURITY COUNCIL OF INDIA

- a) It is a not-for-profit premier industry body on data protection in India.
- b) It has been setup by NASSCOM

Q.11) Lithium-ion battery is emerging as a promising technology for batteries. In this regard consider the following statements:

1. Lithium-ion batteries can handle hundreds of charge/discharge cycles.
2. Self-discharge is less than half compared to nickel-cadmium.
3. Faultily designed lithium-ion battery can turn into a miniature bomb.
4. India imports around 60% of Lithium-ion batteries from South America.

Which of the statements given above is/are correct?

- a) 1 and 2 only
- b) 1, 2 and 3 only
- c) 1, 3 and 4 only
- d) All of the above

Q.11) Solution (b)

Lithium-ion batteries (Nobel Chemistry 2019)

- Rechargeable, lightweight batteries.

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- Lithium triangle—Majority of the world's lithium reserve are concentrated in lithium triangle countries Argentina, Bolivia, Chile (ABC countries – Mnemonics)

CHARACTERISTICS

- Light weight
- High energy density
- Safer energy-storage devices
- Low rate of self-discharge
- Low maintenance

India imports Li-ion batteries from China, Japan and South Korea and is among the largest importers in the world.

China dominates the Li-ion battery market. Around three-quarters of battery cell manufacturing capacity is in China, and Chinese companies have unparalleled control of required domestic and foreign battery raw materials and processing facilities.

Q.12) Which of the following is correct regarding DNA Data storage technology?

- a) The Personal Data Protection Bill, 2018 will legalise its use.
- b) CSIR has developed a prototype and dedicated it to the nation.
- c) Use of DNA to store data as alternate data storage to binary data storage
- d) History of genetic disorder in human beings can be traced using this technology

Q.12) Solution (c)

DNA DATA STORAGE

- Use of DNA to store data as alternate data storage to binary data storage.
- Encoding and decoding binary data to and from synthesized strands of DNA.
- An alternative to hard drives storage system is progressing in the form of DNA-based data storage.
- DNA—which consists of long chains of the nucleotides A, T, C and G—is life's information-storage material.
- Data can be stored in the sequence of these letters, turning DNA into a new form of information technology.
- It is already routinely sequenced (read), synthesized (written to) and accurately copied with ease. Currently 16 GB of text from Wikipedia has been encoded into synthetic DNA.

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Q.13) Consider the following statements –

1. 'Paris Call' is an intergovernmental agreement on 'Trust and Security in Cyberspace'.
2. Cybersecurity Tech Accord is agreement among private tech companies.

Select the correct option –

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.13) Solution (b)

Paris call

- 51 countries, 130 companies and 90 universities and non-governmental groups signed the 'Paris Call for Trust and Security in Cyberspace', a non-binding declaration initiated by President Macron, calling for protection from cyber-attacks.
- It aims to protect civilians, to keep external actors from interfering with elections, to preserve intellectual property etc.
- The US was one of the few Western nations who refused to sign the declaration.
- The Paris Call has been likened to a digital version of the Geneva Convention and praised as an important step for democracy.

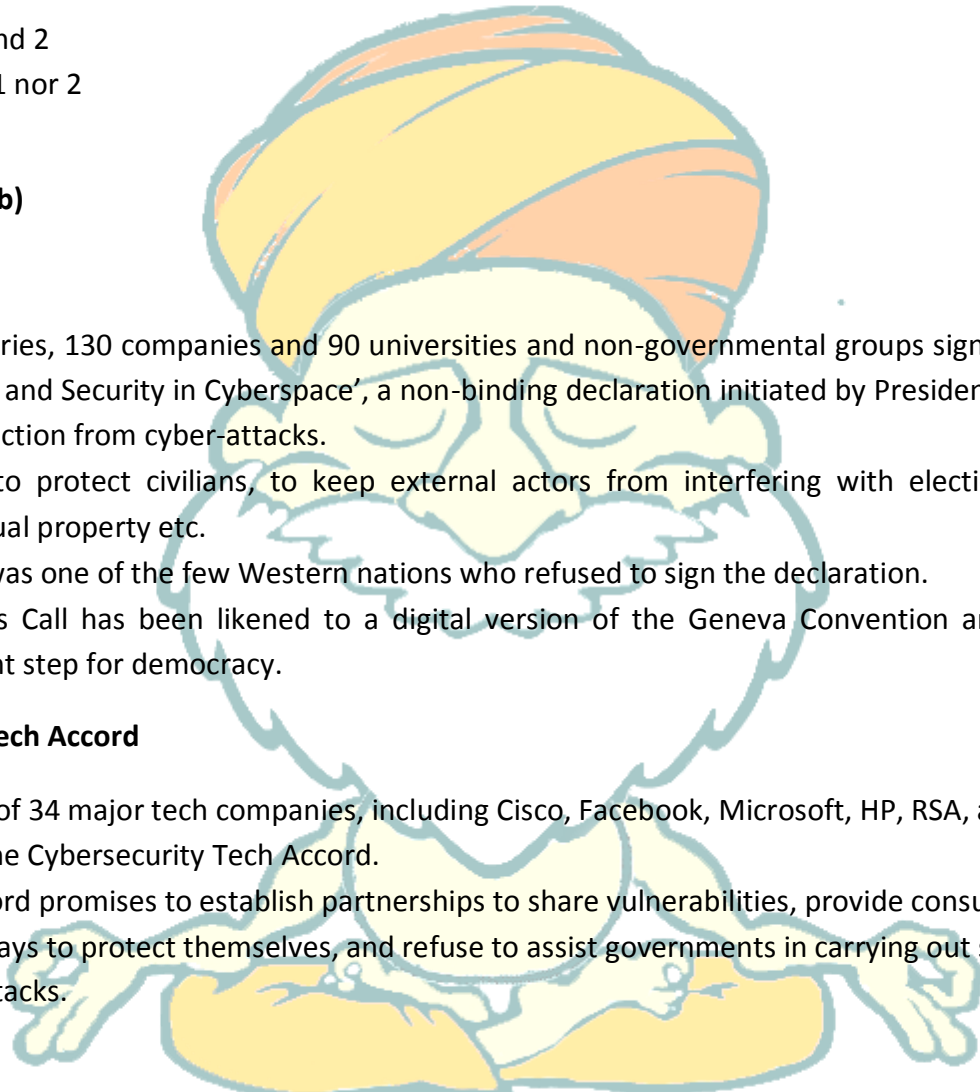
Cybersecurity Tech Accord

- A group of 34 major tech companies, including Cisco, Facebook, Microsoft, HP, RSA, and Oracle, have signed the Cybersecurity Tech Accord.
- This accord promises to establish partnerships to share vulnerabilities, provide consumers with better ways to protect themselves, and refuse to assist governments in carrying out state sponsored cyber-attacks.

Q.14) Consider the following statements regarding National Supercomputing Mission –

1. It is jointly steered by MEITY and Department of Science and Technology (DST).
2. The mission was started during the tenure of Prime Minister Rajiv Gandhi.
3. So far 70 supercomputers have been integrated into the National Knowledge Network.

Select the correct option –



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- a) 1 and 2 only
- b) 1 only
- c) 1 and 3 only
- d) All of the above

Q.14) Solution (b)

Statement 1 is correct

Statement 2 is incorrect – India's supercomputer program was started in late 1980s because Cray supercomputers could not be imported into India due to an arms embargo imposed on India, as it was a dual-use technology and could be used for developing nuclear weapons. However The National Supercomputing Mission was announced in March 2015.

Statement 3 is incorrect – installation of vast supercomputing grid comprising of 70 high performance computing facilities is the aim of the mission. Not achieved yet.

NATIONAL SUPERCOMPUTING MISSION

- Jointly steered by MEITY and Department of Science and Technology (DST).
- Implemented by Centre for Development of Advanced Computing (CDAC) and IISc.
- Aims to empower our national academic and R&D institutions spread over the country by installing a vast supercomputing grid comprising of 70 high performance computing facilities.
- The target of the mission was set to establish a network of supercomputers ranging from a few Tera Flops (TF) to Hundreds of Tera Flops (TF) and three systems with greater than or equal to 3 Peta Flops (PF) in academic and research institutions of National importance across the country by 2022.
- The first supercomputer assembled indigenously, called Param Shivay, was installed in IIT (BHU).
- Similar systems Param Shakti and Param Brahma were installed at IIT-Kharagpur and IISER, Pune. They are equipped with applications from domains like Weather and Climate, Computational Fluid Dynamics, Bioinformatics, and Material science.
- These supercomputers will also be networked on the National Supercomputing grid over the National Knowledge Network.

SHAKTI PROCESSOR PROGRAM

- India's first indigenously developed microprocessor that can be used in mobile computing, networking, wireless systems, and may be even for country's nuclear systems.
- Developed and booting by Indian Institute of Technology Madras.

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- Note: India's first Indigenous Semiconductor Chips by Bengaluru based semiconductor company Signalchip for 4G/LTE and 5G

Q.15) Which of the following statements regarding 'Quantum Dots' are correct?

1. Quantum dots display unique electronic properties, intermediate between those of bulk semiconductors and discrete molecules.
2. They can be made to emit or absorb specific wavelengths of light by controlling their size.
3. They are nontoxic and can be injected in the blood stream and help in detecting the cancer cells present in body by illuminating them under an MRI.

Select the code from following

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

Q.15) Solution (a)

- Nanoparticles of semiconductors – quantum dots – were theorized in the 1970s and initially created in the early 1980s. If semiconductor particles are made small enough, quantum effects come into play, which limit the energies at which electrons and holes (the absence of an electron) can exist in the particles. As energy is related to wavelength (or color), this means that the optical properties of the particle can be finely tuned depending on its size. Thus, particles can be made to emit or absorb specific wavelengths (colors) of light, merely by controlling their size.
- Quantum dots are artificial nanostructures that can possess many varied properties, depending on their material and shape. For instance, due to their particular electronic properties they can be used as active materials in single-electron transistors.
- The properties of a quantum dot are not only determined by its size but also by its shape, composition, and structure, for instance if it's solid or hollow. A reliable manufacturing technology that makes use of quantum dots' properties – for a wide-ranging number of applications in such areas as catalysis, electronics, photonics, information storage, imaging, medicine, or sensing – needs to be capable of churning out large quantities of nanocrystals where each batch is produced according to the exactly same parameters.
- Quantum dots enable researchers to study cell processes at the level of a single molecule and may significantly improve the diagnosis and treatment of diseases such as cancers. QDs are either used as active sensor elements in high-resolution cellular imaging, where the fluorescence properties of the

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quantum dots are changed upon reaction with the analyte, or in passive label probes where selective receptor molecules such as antibodies have been conjugated to the surface of the dots.

- Quantum dots could revolutionize medicine. Unfortunately, most of them are toxic. Ironically, the existence of heavy metals in QDs such as cadmium, a well-established human toxicant and carcinogen, poses potential dangers especially for future medical application, where Q-dots are deliberately injected into the body.
- Union telecom ministry had announced 5G technology will be rolled out from 2020.

Q.16) 5G is a wireless communication technology and the next generation mobile networks technology after 4G LTE networks. Which of the following statements regarding 5G technology are correct?

1. It will provide 100 times more peak speed as compared to 4G.
2. The speed provided by 5G will be faster than current broadband cable network.
3. It will be able to support large number of interconnected devices making internet of things successful.

Select the code from following:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

Q.16) Solution (d)

- 5G is the fifth generation wireless network which promises ultra-reliable, very fast speeds and high bandwidth mobile connectivity and supports massive interconnected devices spread across wide areas like Internet of things (IoT). It made the worldwide debut in the winter Olympics at Pyeongchang, South Korea.
- Their major advantage is that 5G networks achieve much higher data rates than previous cellular networks, up to 10 Gbit/s; which is faster than current cable internet, and 100 times faster than the previous cellular technology, 4G LTE.
- Another advantage is lower network latency (faster response time), below 1 ms (millisecond), compared with 30 – 70 ms for 4G. Because of the higher data rates, 5G networks will serve not just cellphones but are also envisioned as a general home and office networking provider, competing with wired internet providers like cable. Previous cellular networks provided low data rate internet access suitable for cellphones, but a cell tower could not economically provide enough bandwidth to serve as a general internet provider for home computers.

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Q.17) Consider the following statements regarding ‘Cyber Surakshit Bharat’ Initiative:

1. It has been launched by Ministry of Home Affairs with National e – Governance Division and Industry Partners.
2. Cyber Surakshit Bharat will be operated on the three principles of Awareness, Education and Enablement.
3. Cyber Surakshit Bharat is a public-private partnership and will leverage the expertise of the IT industry in cybersecurity.

Which of the above statements are correct?

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

Q.17) Solution (d)

Cyber Surakshit Bharat

- Ministry of Electronics and Information Technology (MeitY), announced the Cyber Surakshit Bharat initiative in association with National e-Governance Division (NeGD) and industry partners
- An aim of the initiative is to spread awareness about cybercrime and building capacity for safety measures for Chief Information Security Officers (CISOs) and frontline IT staff across all government departments.
- Cyber Surakshit Bharat will be operated on the three principles of Awareness, Education and Enablement.
- It will include an awareness program on the importance of cybersecurity; a series of workshops on best practices and enablement of the officials with cybersecurity health tool kits to manage and mitigate cyber threats.
- Cyber Surakshit Bharat is the first public-private partnership of its kind and will leverage the expertise of the IT industry in cybersecurity.

Q.18) Consider the following statements:

1. TRAI is the authority to decide on matter of net-neutrality in India.
2. Reserve price, the highest price cap that is placed over spectrum above which it cannot be sold, is recommended by TRAI.

Which of the statements given above is/are correct?

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- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.18) Solution (b)

NET NEUTRALITY

- Net neutrality is the principle that internet service providers and governments regulating the internet should treat all data on the internet the same, and not discriminating or charging differentially on the basis of user, content, website, platform, application, type of attached equipment, or mode of communication.
- In 2016, TRAI took a revolutionary decision, prohibiting telecom service providers from levying discriminatory rates for data, thus ruling in favour of Net Neutrality in India. This move was welcomed by not just by millions of Indians but also by various political parties, businesspersons, and industry leaders.
- **However Department of Telecommunications approves net neutrality rules.**

RESERVE PRICE

It is the minimum amount set by the government from which auction starts i.e. it is the starting amount or base price from which auction starts. Reserve price is recommended by TRAI.

Why auction of spectrum is done?

- Spectrum is a scarce resource. It needs to be managed efficiently.
- Also, spectrum can't be used by many people. It has to be allocated to some persons who can manage the services under it. Hence it is auctioned.
- Government auctions it because spectrum is a resource & the ownership rights for it are vested in the Government of India. It is not a private property. So, government auctions it.
- Also, a lot of revenue is generated by selling the spectrum. That money can be used for developmental programs in India.

Q.19) Which of the following statements are correct regarding RFID tags?

1. These tags contain electronically stored information.
2. Like a barcode, the tag should be within the line of sight of the reader

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3. RFID provides a way for organizations to identify and manage stock, tools and equipment (asset tracking), etc. without manual data entry.

Select the code from following:

- a) 1,2 and 3
- b) 2 and 3
- c) 1 and 3
- d) 1 and 2

Q.19) Solution (c)

RFID

Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically-stored information.

Passive tags collect energy from a nearby RFID reader's interrogating radio waves. Active tags have a local power source (such as a battery) and may operate hundreds of meters from the RFID reader.

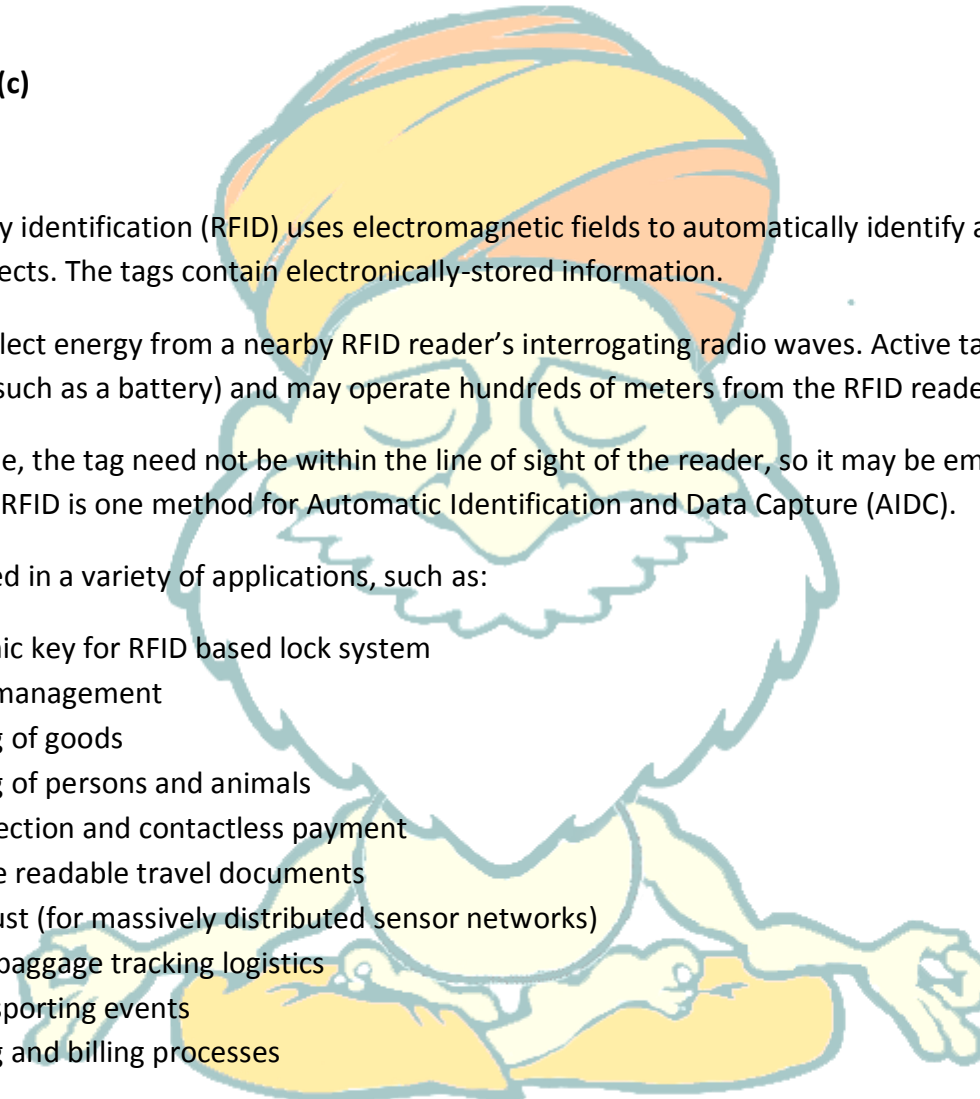
Unlike a barcode, the tag need not be within the line of sight of the reader, so it may be embedded in the tracked object. RFID is one method for Automatic Identification and Data Capture (AIDC).

RFID can be used in a variety of applications, such as:

- Electronic key for RFID based lock system
- Access management
- Tracking of goods
- Tracking of persons and animals
- Toll collection and contactless payment
- Machine readable travel documents
- Smartdust (for massively distributed sensor networks)
- Airport baggage tracking logistics
- Timing sporting events
- Tracking and billing processes

RFID provides a way for organizations to identify and manage stock, tools and equipment (asset tracking), etc. without manual data entry.

RFID is used for item level tagging in retail stores. In addition to inventory control, this provides both protection against theft by customers (shoplifting) and employees ("shrinkage") by using electronic article surveillance (EAS), and a self-checkout process for customers.



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Yard management, shipping and freight and distribution centers use RFID tracking. In the railroad industry, RFID tags mounted on locomotives and rolling stock identify the owner, identification number and type of equipment and its characteristics. This can be used with a database to identify the lading, origin, destination, etc. of the commodities being carried.

Q.20) With the boom of the bitcoin – a variety of cryptocurrency – the blockchain technology has come into prominence. What does this technology promise to do, even though it is still in its infancy?

- a) Help facilitate secure, online transactions in a decentralized way
- b) Keep out malware
- c) Connect servers with common reasons for existence, remotely
- d) All of the above

Q.20) Solution (a)

Blockchain is the backbone technology on which bitcoins run. Simply put, it is a digital public ledger that records every transaction. Once a transaction is entered in the blockchain, it cannot be erased or modified. Blockchain removes the need for using a trusted third party such as a bank to make a transaction by directly connecting the customers and suppliers.

Each transaction is recorded to the ledger after verification by the network participants, mainly a chain of computers, called nodes.

While the origin of the technology is not clear, it is widely believed that a person or group of people by the pseudonym Satoshi Nakamoto, who invented bitcoins, released the technology to support cryptocurrency.

Bitcoin is just one of the applications for the technology, whose use is being tested across industries. It is witnessing a lot of traction within India, in sectors such as banking and insurance. In most of these industries, players are coming together to form a consortium to realise the benefits of blockchain at an industry level.

For example, in India, there is a consortium 'BankChain' which has about 27 banks from India (including State Bank of India or SBI and ICICI) and the Middle East as its members. The consortium is exploring using usage of Blockchain technology to make business safer, faster and cheaper.

The Institute for Development and Research in Banking Technology (IDRBT), an arm of the Reserve Bank of India (RBI), is developing a model platform for blockchain technology Blockchain is expected to improve the efficiency of a transaction by eliminating the middlemen, while also reducing the cost of all transactions. It is also likely to increase transparency and bring down fraud as every transaction would be recorded and

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distributed on a public ledger.

Q.21) 'Make in India Mittelstand' (MIIM) Programme aims to facilitate investment in India by which of the following?

- a) France
- b) Germany
- c) Netherland
- d) United Kingdom

Q.21) Solution (b)

- '**Make in India Mittelstand' (MIIM) Programme** aiming to facilitate investment by **German SMEs** into India.

Q.22) Consider the following pairs:

<i>Globally Important Agricultural Heritage Systems (GIAHS) systems of India</i>	<i>State</i>
1. Koraput	Sikkim
2. Pampore	Uttarakhand
3. Kuttanad	Kerala

Which of the pairs given above are *incorrectly* matched?

- a) 1 and 2 only
- b) 1 only
- c) 2 and 3 only
- d) 3 only

Q.22) Solution (a)

- **Globally Important Agricultural Heritage Systems (GIAHS)** are outstanding landscapes of aesthetic beauty that combine agricultural biodiversity, resilient ecosystems and a valuable cultural heritage.
- GIAHS programme was started by **FAO** in 2002 when it began awarding such designations to selected sites across the world.

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- Aim of GIAHS programme is to identify and safeguard eco-friendly **traditional farm practices** and their associated landscapes, agricultural biodiversity and knowledge systems of the local communities.
- Three agricultural systems from India have got GIAHS status.
 - i. **Koraput (Odisha)** - cultivation of traditional varieties of paddy, pulses, millets, oilseeds, and vegetables.
 - ii. **Pampore (Kashmir Valley)** - Saffron Heritage Site
 - iii. **Kuttanad (Kerala)** - lowland rice cultivation, below sea level.

Q.23) As per the Indian State of Forest Report (ISFR), 2019 which of the following statements is/are correct?

1. India's forest cover is about 24 percent of its total geographic area.
2. Karnataka saw the highest increase in forest cover among the other States compared to last assessment.
3. The forest cover in the North Eastern region increased marginally.

Select the correct answer using the code given below:

- a) 1 and 2 only
- b) 2 only
- c) 1 and 3 only
- d) 2 and 3 only

Q.23) Solution (b)

Statement 1	Statement 2	Statement 3
Incorrect	Correct	Incorrect
As per Indian State of Forest Report (ISFR), 2019, total forest cover is 21.67% of the geographical area of the country. The tree cover is 2.89% of geographical area. Thus total forest and tree cover is 24.56%. Hence statement is incorrect.	The top five States in terms of increase in forest cover : Karnataka (1,025 sq km), Andhra Pradesh (990 sq km), Kerala (823 sq km), Jammu & Kashmir (371 sq km) and Himachal Pradesh (334 sq km).	Total forest cover in the North Eastern region is 65.05% of its geographical area. The current assessment shows a decrease of forest cover to the extent of 765 sq km (0.45%) in the region. Except Assam and Tripura, all the States in the region show decrease in forest cover.

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Q.24) The term 'Arrokoth' seen in news is related with

- a) Cyber Physical System
- b) Particle Physics
- c) Kuiper Belt Flyby Object
- d) Human Genome Project

Q.24) Solution (c)

- The International Astronomical Union and Minor Planets Center, the global body for naming **Kuiper Belt objects**, has officially named the New Horizons Kuiper Belt Flyby Object as '**Arrokoth**'.
- Arrokoth is one of the thousands of known small icy worlds in the Kuiper Belt, the vast “third zone” of the solar system beyond the inner terrestrial planets and the outer gas giant planets.

Q.25) Consider the following statements about innovation for Defence Excellence (iDEX) initiative:

1. iDEX is an ecosystem to foster innovation and indigenous technology development in Defence and Aerospace.
2. iDEX will be funded and managed by a Defence Research and Development Organisation (DRDO).

Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.25) Solution (a)

Statement 1	Statement 2
Correct	Incorrect
An innovation for Defence Excellence (iDEX) initiative was launched in 2018 by Defence Ministry. iDEX is an ecosystem to foster innovation and indigenous	iDEX provides funding/grants to MSMEs, start-ups, individual innovator, R&D institutes and academia to carry out R&D which has good potential for future adoption. iDEX will be funded and managed

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technology development in Defence and Aerospace by engaging innovators and entrepreneurs to deliver technologically advanced solutions for modernizing Indian Military.

by a **'Defence Innovation Organization (DIO)'** which has been formed as a 'not for profit' company as per Section 8 of the Companies Act 2013. DIO is funded by Hindustan Aeronautics Limited (HAL) and Bharat Electronics Limited (BEL).

Q.26) The 'Dampier-Hodges Line' is associated with which of the following regions?

- a) Western Ghats
- b) Aravallis
- c) Sundarbans
- d) Konkan Coast

Q.26) Solution (c)

In India, the Dampier-Hodges Line created by the British in 1828 is considered the northern boundary which include forested as well as densely populated parts of Sundarbans.

Q.27) Which of the following pairs is/are correctly matched?

- 1. Sasthamkotta Lake – Kerala
- 2. Kanjli Wetland – Uttarakhand
- 3. Surinsar-Mansar Lakes – Punjab

Select the correct code:

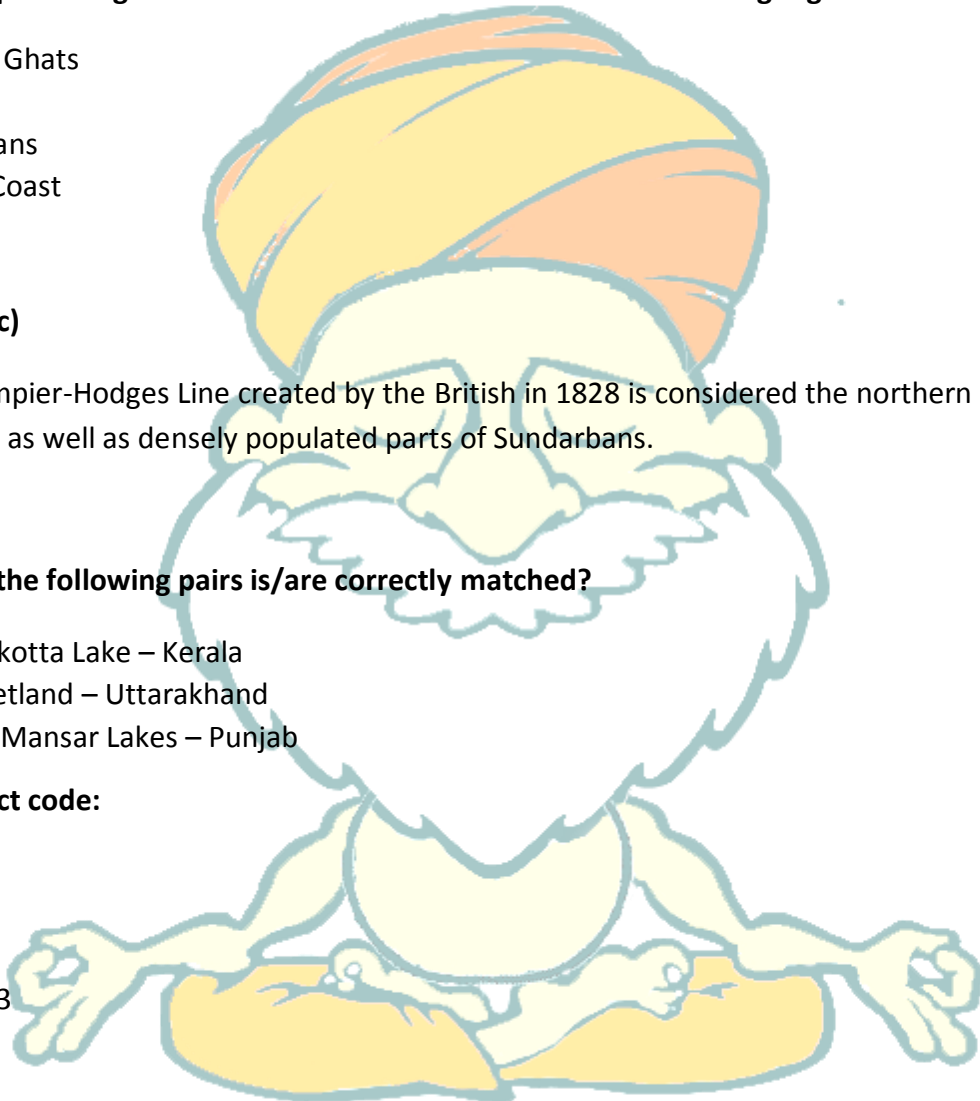
- a) 1 Only
- b) 1 and 2
- c) 2 and 3
- d) 1, 2 and 3

Q.27) Solution (a)

Sasthamkotta Lake – Kerala

Kanjli Wetland – Punjab

Surinsar-Mansar Lakes – Jammu & Kashmir



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Q.28) The 'Bureau of Indian Standards (BIS)' is under the aegis of

- a) Ministry of Consumer Affairs, Food & Public Distribution
- b) Ministry of Commerce and Industry
- c) Ministry of Science and Technology
- d) Ministry of Jal Shakti

Q.28) Solution (a)

The Bureau of Indian Standards (BIS) is the national Standards Body of India working under the aegis of Ministry of Consumer Affairs, Food & Public Distribution.

Q.29) Which of the following are surveillance acts of India?

- 1. Indian Telegraph Act, 1885,
- 2. Information Technology (IT) Act, 2000
- 3. Central Bureau of Investigation Act, 1965

Select the correct code:

- a) 1 and 2
- b) 2 Only
- c) 1 and 3
- d) 1, 2 and 3

Q.29) Solution (a)

The laws governing this are the Indian Telegraph Act, 1885, which deals with interception of calls, and the Information Technology (IT) Act, 2000, which deals with interception of data. Under both laws, only the government, under certain circumstances, is permitted to conduct surveillance, and not private actors.

Q.30) India has Free Trade Agreements (FTAs) with

- 1. Japan
- 2. USA
- 3. South Korea

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Select the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) None of the above

Q.30) Solution (c)

The major FTAs that India has signed and implemented so far include South Asia Free Trade Agreement (SAFTA), India-ASEAN Comprehensive Economic Cooperation Agreement (CECA), India-Korea Comprehensive Economic Partnership Agreement (CEPA) and India-Japan CEPA.

