

Q. 1) Consider the following statements about Small Cells

1. These are high-powered radio access nodes or base stations.
2. They have a coverage range from a few metres to a few hundred metres.
3. They are portable, easy to deploy, and help provide localised coverage.

Choose the correct code:

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

Q.1) Solution: (b)

Explanation:

- Small cell is an umbrella term used to describe a miniature radio access point (AP) or wireless network base station with a low radio frequency (RF) power output, footprint, and range.
- These are low-powered radio access nodes or base stations. **Hence statement 1 is incorrect.**
- Small Cells provide coverage for very short distances and therefore they are installed in a large number for good geographical coverage to provide highly reliable and high-capacity broadband.
- They have a coverage range from a few metres to a few hundred metres. **Hence statement 2 is correct.**
- They are portable, easy to deploy, and help provide localised coverage.
- Considering the present situation, the fifth-generation (5G) small cell is poised to usher in an era of innovation on a massive scale, ensuring significantly improved signal penetration and superior coverage. **Hence statement 3 is correct.**

Q. 2) Recently, in the news ethylene glycol is a

- a) Pesticide
- b) Medicine
- c) Bioplastic
- d) Adulterant

Q.2) Solution: (d)

Explanation:

- Ethylene glycol is a colourless and odourless alcoholic compound that can be fatal if consumed.
- The sweet-tasting ethylene glycol is a syrupy or viscous liquid at room temperature.
- It is mostly used as an automotive antifreeze and as a raw material for manufacturing polyester fibres.
- It is also found in several products such as hydraulic brake fluids, stamp pad inks, ballpoint pens, solvents, paints, cosmetics, and plastics.
- Diethylene glycol and ethylene glycol are **adulterants** that are sometimes illegally used as solvents in liquid drugs.
- Diethylene glycol and ethylene glycol may be used by pharma companies as an alternative to non-toxic solvents such as glycerine or propylene glycol to cut costs.
- The ingestion of ethylene glycol can cause severe health effects. Central nervous system depression, nausea, vomiting, intoxication, euphoria, stupor, respiratory depression, and reduced excretion of urine can occur due to ethylene glycol intoxication. **Hence option d is correct.**

Q. 3) Consider the following statements about Sand Battery

1. It receives electricity from the solar grid only.
2. Its purpose is to work as a high-capacity reservoir for renewable energy.
3. The heat stored in the core of the battery can last days or weeks.

Choose the correct code:

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

Q.3) Solution: (b)

Explanation:

- Sand Battery receives electricity from the grid through cheaper **renewable sources like solar and wind.**
- Electricity is converted to heat and transferred to sand. **Hence statement 1 is incorrect.**
- Air is blown via a fan through the curricular pipe system inside the silo.
- It will enter the electric air heater, where it becomes hot with the help of a resistor located inside.
- Hot air will be circulated by an air-to-water heat exchanger through the metal structure (pipes).
- There's no direct contact between air and water.
- Hot water is discharged into the district heating system.
- It circulates in close loop from the heat exchanger to the customer and back.
- Energy is stored as heat which is used to heat homes or to provide hot stream and high-temperature process heat to industries that are often fossil-fuel dependent.
- It is a type of energy storage device that uses sand or sand-like materials as the storage medium.
- Sand is a very effective medium for storing heat and loses little over time.
- The sand is charged with electricity and then discharged to produce power.
- Its purpose is to work as a high-power and high-capacity reservoir for renewable energy. **Hence statement 2 is correct.**
- Sand batteries can help to increase the use of renewable energy by allowing excess/surplus energy produced from renewable sources to be stored and used at a later time.
- The sand battery has three major interconnected components:
 - ✓ Steel silo: It contains 100 tonnes of sand where the heat is stored.
 - ✓ Electric air heater: Resistors are used in regular ovens and an air-to-water heat exchanger.
 - ✓ Heat Exchanger: It has a mechanical pipe and water.
- Sand stores the heat at around 500 Celsius (the same process that makes electric fires work).
- Sand is at the core and very far from the boundary so the heat stored in the core does not easily get lost. It can last days or weeks. **Hence statement 3 is correct.**
- The reservoir is so well-insulated from the outer environment that it can retain temperatures up to 600 degrees Celsius and prevent heat losses over time.
- It can store up to 8 megawatt-hours of energy as heat.

Q. 4) Consider the following statements about Small Satellite Launch Vehicle

1. It is a 5-stage launch vehicle.
2. It provides low-cost access to space.
3. It is capable of launching a 1000 kg satellite.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) 3 only
- d) None

Q.4) Solution: (b)

Explanation:

Context: Recently, Indian Space Research Organisation (ISRO) launched the first flight of the Small Satellite Launch Vehicle(SSLV), carrying an Earth observation satellite EOS-02, and co-passenger students' satellite AzaadiSAT.

- A Small Satellite Launch Vehicle (SSLV) is a three-stage Launch Vehicle configured with three Solid Propulsion Stages and a liquid propulsion-based Velocity Trimming Module (VTM) as a terminal stage. **Hence statement 1 is incorrect.**
- SSLV is 2m in diameter and 34m in length with a lift-off weight of around 120 tonnes.
- Key Features:
 - ✓ Low cost
 - ✓ The low turn-around time
 - ✓ Flexibility in accommodating multiple satellites
 - ✓ Launch demand feasibility
 - ✓ Minimal launch infrastructure requirements

Hence statement 2 is correct.

- SSLV is capable of launching 500kg satellites in a 500km planar orbit from Satish Dhawan Space Centre (SDSC). **Hence statement 3 is incorrect.**

Q. 5) Consider the following statements about Nirbhay Missile

1. It is a nuclear-capable long-range sub-sonic cruise missile.
2. It has been designed & developed by Defence Research & Development Organisation (DRDO).

Choose the correct code:

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

Q.5) Solution: (c)

Explanation:

- Nirbhay is the first indigenous long-range sub-sonic cruise missile, which can be deployed from multiple platforms.
- It can carry a warhead of 200kg to 300kg at a speed of 0.6 to 0.7 Mach with a launch weight of 1500kg.
- It is capable of loitering and cruising at Mach 0.7 (sub-sonic) at an altitude as low as 100 meters.
- It has a range of 1000km.
- It can carry a nuclear warhead. **Hence statement 1 is correct.**
- It has been indigenously designed & developed by Defence Research & Development Organisation (DRDO). **Hence statement 2 is correct.**

Q. 6) Consider the following

Anti-Ballistic Missile	Country
1. S-400 TRIUMF	Israel
2. THAAD	USA
3. NETRA	India
4. Iron Dome	Russia

How many given pair/s are correctly matched?

- a) One pair
- b) Two pairs
- c) Three pairs
- d) Four pairs

Q.6) Solution: (b)

Explanation:

Anti-Ballistic Missile	Country
1. S-400 TRIUMF	Russia
2. THAAD-Terminal High Altitude Area Defence system	USA
3. NETRA-Airborne Early Warning and Control System	India
4. Iron Dome Aerial Defence System	Israel

Hence option b is correct.

Q. 7) The Fungal Priority Pathogen List (FPPL) is released by the

- a) Food and Agriculture Organisation
- b) Ministry of Health and Family Welfare
- c) World Health Organisation
- d) United Nations International Children's Emergency Fund (UNICEF)

Q.7) Solution: (c)

Explanation:

- The **World Health Organisation** released the first-ever **list of fungal infections (Priority Pathogens) that can be a threat to public health.**
- The fungal priority pathogens list (FPPL) includes 19 fungi that represent the greatest threat to human health.
- The list takes precedence from the bacterial priority pathogens list, first established by WHO in 2017 with a similar focus to galvanise global attention and action.
- It aims to focus and drive further research and policy interventions to strengthen the global response to fungal infections and antifungal resistance.
- The classification is based on the pathogen's public health impact or emerging antifungal resistance risk. They are
 - ✓ Critical Priority Group: It includes *Candida auris*, which is a highly drug-resistant fungus, *Cryptococcus neoformans*, *Aspergillus fumigatus*, and *Candida albicans*.
 - ✓ High Priority Group: It includes several other fungi from the *Candida* family as well as others such as *Mucorales*, a group containing "black fungus", an infection that rose rapidly in seriously ill people, particularly in India, during Covid-19.
 - ✓ Medium Priority Group: It includes several other fungi, including *Coccidioides* spp and *Cryptococcus gattii*.

Hence option c is correct.

Q. 8) Consider the following statements about India's first bridgital autism support network

1. It enables mentoring, skilling, and meaningful livelihoods for people with autism.
2. It is launched by the Centre for Autism and Other Disabilities Rehabilitation Research and Education (CADRRE).
3. It focuses on art and craft, dance, music therapy, and physical and mental fitness for people with autism.

Choose the correct code:

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

Q.8) Solution: (d)

Explanation:

- Autism, also called autism spectrum disorder (ASD), is a complicated condition that includes problems with communication and behaviour.
- It can involve a wide range of symptoms and skills.
- ASD can be a minor problem or a disability that needs full-time care in a special facility.
- People with autism have trouble with communication. They have trouble understanding what other people think and feel.
- This makes it hard for them to express themselves, either with words or through gestures, facial expressions, and touch.
- People with autism might have problems with learning. Their skills might develop unevenly.
- For example, they could have trouble communicating but be unusually good at art, music, math, or memory.
- The initiative shall pave the way for small towns and rural India to access specialised care and support and help create an auxiliary network of champions for the differently-abled.
- This platform shall also enable mentoring, skilling, and meaningful livelihoods for people with autism. **Hence statement 1 is correct.**
- In the first phase, the initiative will primarily focus on supporting children with autism, and subsequently, in the second stage, it will focus on young adults, empowering them with life skills and career readiness.
- The content is designed and delivered in collaboration with specialists from CADRRE who have expertise in training children with autism.
- The Centre for Autism and Other Disabilities Rehabilitation Research and Education (CADRRE), a not-for-profit organization will launch “**Pay Attention — a different mind is a gifted mind**”, India’s first bridgital autism support network. **Hence statement 2 is correct.**
- The project aims to create a network of grassroots champions, enable early identification, first-level care, teach social skills, and ways to ease activities of daily living, and hold workshops for sensory and motor development.
- It also focuses on art and craft, dance, music therapy, physical and mental fitness, and communication skills and enables support for academics. **Hence statement 3 is correct.**

Q. 9) Consider the following statements about iNCOVACC

1. It is the world's first intranasal vaccine for Covid
2. It is an adenovirus-vectored vaccine.
3. It is complex to administer as it requires needles.

Choose the correct code:

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

Q.9) Solution: (a)

Explanation:

- iNCOVACC is the world's first intranasal vaccine for Covid to be approved as a booster dose.
Hence statement 1 is correct.
- iNCOVACC, co-developed by Bharat Biotech and the U.S.-based Washington University, was approved in November for 'restricted emergency use' for those aged 18 or older.
- The nasal vaccine is approved both as a primary dose and a heterologous booster.
- Unlike Covaxin, which is an inactivated coronavirus injected along with an adjuvant, iNCOVACC is an adenovirus-vectored vaccine with a "prefusion stabilised spike protein", which is more like the technology employed in the Covishield vaccines. **Hence statement 2 is correct.**
- It promises to become an important tool in mass vaccinations during pandemics and endemics.
- It is easy to administer as it is non-invasive and does not require trained healthcare workers.
- It also eliminates needle-associated risks such as injuries and infections, has higher compliance, and is scalable as far as manufacturing is concerned. **Hence statement 3 is incorrect.**
- The sprays don't need to be refrigerated.

Q. 10) Consider the following statements about Kala-azar

1. It is a parasitic disease that is transmitted to humans by the bite of an infected sandfly.
2. Over 90% of kala-azar cases in India are reported from Bihar and Jharkhand.

Choose the correct code:

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

Q.10) Solution: (b)

Explanation:

- Kala-azar Disease is also known as **Visceral Leishmaniasis, Black Fever, or Dumdum Fever.**
- There are three types of Leishmaniasis:
 - ✓ **Visceral Leishmaniasis**, which affects multiple organs and is the most serious form of the disease.
 - ✓ **Cutaneous Leishmaniasis**, which causes skin sores and is the most common form.
 - ✓ **Mucocutaneous Leishmaniasis**, which causes skin and mucosal lesions.
- It is a **deadly parasitic disease** caused by the protozoa parasite Leishmania and mainly affects people living in **Africa, Asia, and Latin America.**
- It is transmitted to humans by the bite of an infected female phlebotomine sandfly.
- The disease **can cause death** if left untreated.
- Its symptoms include **fever, weight loss, anemia, and enlargement of the liver and spleen.**
- **Hence statement 1 is correct .**
- The treatment of kala-azar involves the use of drugs, such as sodium stibogluconate and meglumine antimoniate.
- The WHO recommends a combination of two or more drugs for the treatment of kala-azar, as monotherapy has a higher risk of treatment failure and drug resistance.
- According to the World Health Organization (WHO), Kala-azar is the second deadliest parasitic disease in the world, and as of November 2022, about 89% of global cases are reported from eight countries: Brazil, Eritrea, Ethiopia, India, Kenya, Somalia, South Sudan, and Sudan.
- India contributes about 11.5% of total cases of Kala-azar reported globally.

- Over 90% of kala-azar cases in India are reported from Bihar and Jharkhand, while Uttar Pradesh and West Bengal have achieved their elimination targets at the block level. **Hence statement 2 is correct.**

Q. 11) Consider the following statements about Software-as-a-services (SaaS)

1. It is a software distribution model in which services are hosted by a cloud service provider.
2. The end-users need to install specific software on their devices to access these services.
3. Outlook and Hotmail are forms of SaaS.

Choose the correct code:

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

Q.11) Solution: (c)

Explanation:

- Software-as-a-services (SaaS) is also known as “On-Demand Software”.
- It is a software distribution model in which services are hosted by a cloud service provider.
Hence statement 1 is correct.
- These services are available to end-users over the internet so, the end-users do not need to install any software on their devices to access these services. **Hence statement 2 is incorrect.**
- Outlook, Hotmail, or Yahoo! Mail are forms of SaaS. **Hence statement 3 is correct.**
- **There are the following services provided by SaaS providers –**
- Business Services – SaaS Provider provides various business services to start-ups. The SaaS business services include ERP (Enterprise Resource Planning), CRM (Customer Relationship Management), billing, and sales.
- Document Management – SaaS document management is a software application offered by a third party (SaaS provider) to create, manage, and track electronic documents.
- Social Networks – Social networking service providers use SaaS for their convenience and handle the general public’s information.

- Mail Services – To handle the unpredictable number of users and load on e-mail services, many e-mail providers offer their services using SaaS.

Q. 12) Consider the following statements about AlphaFold

1. It is an artificial intelligence-based protein structure prediction tool.
2. It has helped in discoveries in vaccine and drug development.

Choose the correct code:

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

Q.12) Solution: (c)

Explanation:

- AlphaFold is an artificial intelligence-based protein structure prediction tool.
- It is based on a computer system called Deep Neural Network.
- Neural networks use a large amount of input data and provide the desired output exactly like how a human brain would.
- The real work is done by the black box between the input and the output layers, called the hidden networks. **Hence statement 1 is correct.**
- AlphaFold is fed with protein sequences as input.
- When protein sequences enter through one end, the predicted three-dimensional structures come out through the other.
- Proteins are generally structured using X-ray crystallography, nuclear magnetic resonance spectroscopy, or cryogenic electron microscopy.
- These techniques are not just time-consuming, they often take years and are based mainly on trial-and-error methods.
- AlphaFold makes the process of protein structuring easier.
- It is a watershed movement in science and structural biology in particular.

- AlphaFold has already helped hundreds of scientists accelerate their discoveries in vaccine and drug development since the first public release of the database nearly a year back. **Hence statement 2 is correct.**

Q. 13) Consider the following statements about the Language Model for Dialogue Applications (LaMDA)

1. It is Yahoo's modern conversational agent enabled with a neural network capable of deep learning.
2. It can engage in a free-flowing way about a seemingly endless number of topics.

Choose the correct code:

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

Q.13) Solution: (b)

Explanation:

- The **Language Model for Dialogue Applications (LaMDA)** is Google's modern conversational agent enabled with a neural network capable of deep learning. **Hence statement 1 is incorrect.**
- Google first announced LaMDA at its flagship developer conference I/O (Input/Output) in 2021 as its generative language model for dialogue applications which can assure that the application will be able to converse on any topic.
- LaMDA can engage in a free-flowing way about a seemingly endless number of topics, an ability that the company thinks can unlock more natural ways of interacting with technology and entirely new categories of helpful applications. **Hence statement 2 is correct.**
- LaMDA can discuss based on the user's inputs thanks completely to its language processing model which has been trained on large amounts of dialogue.

Q. 14) Consider the following statements about Param Pravega

1. It has been designed by the Centre for Development of Advanced Computing (C-DAC).
2. It is the largest supercomputer developed under the National Supercomputing Mission (NSM).

Choose the correct code:

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

Q.14) Solution: (c)

Explanation:

- Param Pravega has been designed by the Centre for Development of Advanced Computing (C-DAC). **Hence statement 1 is correct.**
- It is the largest supercomputer developed under the National Supercomputing Mission (NSM). **Hence statement 2 is correct.**
- It is one of the most powerful supercomputers in India.
- The system is expected to power diverse research and educational pursuits. It has a supercomputing capacity of 3.3 petaflops (10¹⁵ operations per second).
- A majority of the components used to build this system have been manufactured and assembled within India.
- The National Supercomputing Mission (NSM) was announced in 2015.
- NSM envisaged setting up a network of 70 high-performance computing facilities with an aim to connect national academic and R&D institutions across India over seven years at an estimated cost of Rs 4500 Crores.
- Parent Body: Ministry of Electronics and IT (MeitY) and Department of Science and Technology (DST).
- Nodal Agencies of NSM– Centre for Development of Advanced Computing (C-DAC), Pune, and the Indian Institute of Science (IISc), Bengaluru.
- Under NSM, the long-term plan is to build a strong base of 20,000 skilled persons over the next five years who will be equipped to handle the complexities of supercomputers.

- In 2020, an RTI reply revealed that India has produced just three supercomputers since 2015 under NSM
 - ✓ PARAM Shivay installed in IIT-BHU, Varanasi with 837 TeraFlop capacity
 - ✓ The second one at IIT-Kharagpur with a 1.66 PetaFlop capacity
 - ✓ PARAM Brahma at ISER-Pune has a capacity of 797 TeraFlop

Q. 15) Consider the following statements about Cyberchondria

1. It is the anxiety concerning one's health caused by visiting medical websites.
2. In this situation, people blindly trust medical information available online and stop their treatment abruptly.

Choose the correct code:

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

Q.15) Solution: (c)

Explanation:

- **Cyberchondria** is the anxiety concerning one's health caused by visiting medical websites. **Hence statement 1 is correct.**
- The Internet Derived Information Obstructing Treatment (IDIOT) syndrome is medically called cyberchondria -people blindly trust medical information available online and stop their treatment abruptly. **Hence statement 2 is correct.**
- Its prevention efforts need to focus on the way online health information is accessed, interpreted, and managed in an effort to improve online health information literacy.

Q. 16) Consider the following statements about Fiberisation

1. It is the process of connecting radio towers with each other via optical fibre cables.
2. It has high latency with finite bandwidth coverage.

Choose the correct code:

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

Q.16) Solution: (a)

Explanation:

- Fiberisation is the process of connecting radio towers with each other via optical fibre cables.
- It helps provide full utilisation of network capacity, and carry large amounts of data once 5G services are rolled out. **Hence statement 1 is correct.**
- It aids in providing additional bandwidth and stronger backhaul support
- Fibre-based media, commonly called optical media, provides almost infinite bandwidth and coverage, low latency, and high insulation from interference.
- With 5G, it will also be necessary to increase the density of mobile towers to provide better coverage to consumers and businesses. This calls for increased requirements for fibre deployment. **Hence statement 2 is incorrect.**

Q. 17) Consider the following statements about India's Data Empowerment and Protection

Architecture (DEPA)

1. It is a consent management tool launched for better data management.
2. It does not allow individuals to easily manage and control their data consents.

Choose the correct code:

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

Q.17) Solution: (a)

Explanation:

- India's Data Empowerment and Protection Architecture (DEPA) is a consent management tool launched for better data management. **Hence statement 1 is correct.**
- DEPA has the potential to improve data protection and privacy for citizens by giving them greater control over the use and sharing of their personal information.
- By allowing individuals to easily manage and control their data consents, DEPA could help to build trust in digital technologies and data governance. **Hence statement 2 is incorrect.**

Q. 18) Recently in the news, Modified Elephant is a

- Genetically modified elephant
- Hackers group
- Biosensor
- None

Q.18) Solution: (b)

Explanation:

- Context: American cyber security firm Sentinel One has released a report on Modified Elephant—a hacking group that allegedly planted incriminating evidence on the personal devices of Indian journalists, human rights activists, human rights defenders, academics, and lawyers.
- Modified Elephant operators have been infecting their targets using spear phishing emails with malicious file attachments over the last decade, with their techniques getting more sophisticated over time.
- Spear phishing refers to the practice of sending emails to targets that look like they are coming from a trusted source to either reveal important information or install different kinds of malware on their computer systems.

Modified Elephant typically weaponises malicious Microsoft Office files to deliver malware to their targets. **Hence option b is correct.**

Q. 19) Consider the following statements about Saguna Rice Technique

1. It insists that all roots and small portions of the stem should be left in the beds for slow rotting.
2. It is a zero-till, Conservation Agriculture (CA) type of cultivation method.
3. The ploughing, puddling, and hoeing are done to control weeds.

Choose the correct code:

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

Q.19) Solution: (a)

Explanation:

- Saguna Rice Technique is a unique new method of cultivation of rice and related rotation crops without ploughing, puddling, and transplanting (rice) on permanent raised beds.
- This is a zero-till, Conservation Agriculture (CA) type of cultivation method.
- The permanent raised beds used in this method facilitate ample oxygen supply to the root zone area while maintaining optimum moisture conditions there.
- SRT has made suitable changes in conventional rice cultivation to ease farmers' laborious work and prevent fertility loss during puddling. **Hence statement 1 is correct.**
- The SRT iron forma (the tool will be better soon) facilitates the planting of crops in predetermined distances enabling precise plant population per unit area.
- The absence of puddling and transplanting of rice makes it possible for "Not dependent on erratic behavior of rain." This means 'No more waiting for Rain God to shower just optimum rain for best transplanting operation'.
- Similarly, if rain vanishes for a few days during crop season it doesn't lead to cracking of land or 'crop kill' immediately.
- Important Principles:
- SRT insists that all roots and a small portion of the stem should be left in the beds for slow rotting. **Hence statement 2 is correct.**

- No ploughing, puddling, or hoeing is to be done to control weeds. **Hence statement 3 is incorrect.**
- This system will get the crop ready for harvesting 8 to 10 days earlier.

Q. 20) Consider the following statements about Pullulan polymer

1. It is an exopolysaccharide biomaterial.
2. It is used in the food, cosmetics, and pharmaceutical industry.

Choose the correct code:

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

Q.20) Solution: (c)

Explanation:

- **Pullulan polymer** is an exopolysaccharide, that is, this polymer is secreted by the fungus itself into the medium on which it is growing.
- Pullulan as a biomaterial is already successful and widely used commercially. **Hence statement 1 is correct.**
- It is exploited in the food, cosmetics, and pharmaceutical industry because of its non-toxic, non-mutagenic, and non-immunogenic properties.
- In the biomedicine sector, it has been used for drug and gene delivery. **Hence statement 2 is correct.**

Q.21) Consider the following statements about UN Statistical Commission

1. It was established by the UN Economic and Social Council in 1947, as its Functional Commission.
2. It is the highest body of the global statistical system.
3. The members are elected by the United Nations General Assembly on the basis of an equitable geographical distribution.

Choose the correct statements:

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

Q.21) Solution (a)

Explanation:

- The **United Nations Statistical Commission** was established by the **UN Economic and Social Council** in **1947**, as its **Functional Commission**. Hence **statement 1 is correct**.
- It is the **highest body of the global statistical system**. Hence **statement 2 is correct**.
- It is the highest decision making body for international statistical activities.
- Functions - It sets statistical standards and develop concepts and methods, including their implementation at the national and international level.
- Memberships – The Commission consists of **24 member countries** of the United Nations.
- The term of office of members is **four years**.
- The members are elected by the **United Nations Economic and Social Council** on the basis of an equitable geographical distribution. Hence **statement 3 is not correct**.

Source: [CLICK HERE](#)

Q.22) Consider the following statements about Antarctic Circulation

1. The Antarctic Circumpolar Current (ACC) is the largest wind-driven current on Earth.
2. It is driven by strong westerly winds and creates some of the roughest seas in the world.
3. ACC is the only current in the global ocean to close upon itself in a circumpolar loop.

Choose the correct statements:

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

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

Q.22) Solution (b)

Explanation:

- The **Antarctic Circumpolar Current (ACC)** is the largest wind driven current on Earth. Hence **statement 1 is correct.**
- It is the only current that goes all the way around our planet and connects the Atlantic, Pacific, and Indian Oceans.
- It is driven by **strong westerly winds and creates some of the roughest seas in the world.** Hence **statement 2 is correct.**
- ACC is the **only current in the global ocean to close upon itself in a circumpolar loop.** Hence **statement 3 is correct.**
- ACC is the primary means of inter-basin exchange of heat, carbon dioxide, chemicals, biology and other tracers.

Source: [CLICK HERE](#)

Q.23) Consider the following statements about Biodiversity Heritage Sites (BHS)

1. Richness of domesticated species is one of the components to notify an ecosystem as Biodiversity Heritage Sites.
2. BHS are notified by State Government in consultation with local bodies under Environment Protection Act, 1986.

Choose the incorrect statements:

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

Q.23) Solution (b)

Explanation:

BHS are unique ecosystems having rich biodiversity comprising of **any one or more of the following components:**

- **Richness of wild as well as domesticated species or intraspecific categories. Hence statement 1 is correct.**
- High endemism.
- Presence of rare and threatened species, keystone species, and species of evolutionary significance.
- Wild ancestors of domestic/cultivated species or their varieties.
- Past pre-eminence of biological components represented by fossil beds and having significant cultural, ethical or aesthetic values and are important for the maintenance of cultural diversity, with or without a long history of human association with them.
- Under Section-37 of the Biological Diversity Act, 2002, the State Government, in consultation with local bodies, may notify areas of biodiversity importance as BHS. **Hence statement 2 is not correct.**
- The State Government, in consultation with the Central Government, may frame rules for the management and conservation of BHS.
- **The creation of BHS may not put any restriction on the prevailing practices and usages of the local communities other than those voluntarily decided by them.**

Source: [CLICK HERE](#)

Q.24) Consider the following statements about Dark matter

1. It is a hypothetical invisible mass that is responsible for adding gravity to galaxies and other bodies.
2. Dark matter interacts with the electromagnetic force.
3. Dark matter makes up about 67% of the universe.

Choose the correct statements:

- a) 1 only
- b) 1, 2 and 3

- c) 2 only
- d) 1 and 2

Q.24) Solution (a)

Explanation:

- Dark matter is a **hypothetical invisible mass thought to be responsible for adding gravity to galaxies and other bodies**. Hence statement 1 is correct.

Why called dark matter?

- It is called so because unlike normal matter (i.e. stars and galaxies), **dark matter does not interact with the electromagnetic force**. Hence statement 2 is not correct.

How much is dark matter?

- According to NASA, Dark matter seems to outweigh visible matter roughly six to one, making up about 27% of the universe.
- **Roughly 68% of the universe is dark energy. Dark matter makes up about 27%. The rest visible matter is 5% of the universe**. Hence statement 3 is not correct.

Source: [CLICK HERE](#)

Q.25) Cyber Surakshit Bharat initiative, recently seen in news is an initiative of?

- a) NITI Aayog and Prime Minister's Office
- b) Ministry of Home Affairs
- c) Ministry of Electronics and Information Technology (MeitY)
- d) Ministry of Defence

Q.25) Solution (c)

Explanation:

What is the Cyber Surakshit Bharat initiative?

- The Cyber Surakshit Bharat **initiative was conceptualised with the mission to spread awareness about cyber-crime and build capacities of Chief Information Security Officers (CISOs) and frontline IT officials, across all government departments.**
- It was launched by the **Ministry of Electronics and Information Technology (MeitY)** in 2018 in cooperation with National e-Governance Division (NeGD) and various industry partners in India.
- The CISO training is the first-of-its-kind partnership between the Government and industry consortium under Public Private Partnership (PPP) model.

Source: [CLICK HERE](#)

Directions for the following 5(five) questions: Read the following information and answer the questions that follow

There are five friends named as A, B, C, D and E all working in various shops like stationary shop, book store, grocery shop, hardware shop, sports goods shop. Also all like to play different games such as hockey, kabaddi, basketball, tennis and football. Consider the following statements and answer the questions.

1. A does not like hockey
2. B has a book store and likes to play football.
3. C and D do not like tennis and C has grocery shop whereas D has hardware shop.
4. E likes kabaddi and does not work in stationary shop.
5. The person who likes hockey does not work in hardware shop.

Q.26) Who among the following works in stationary shop?

- a) A
- b) C
- c) D
- d) B

Q.27) Which game is played by D?

- a) Kabaddi
- b) Hockey
- c) Basketball
- d) Tennis

Q.28) Which of the following pairs are correctly matched?

- a) A - book store- tennis
- b) C – grocery – hockey
- c) D – sports goods shop
- d) B - stationary – kabaddi

Q.26) Solution (a)

Explanation:

The given statements can be summarized in a tabulated form as follows.

Names	Occupations	Favourite sports
A	Stationary	Tennis
B	Book store	Football
C	Grocery shop	Hockey
D	Hardware shop	Basketball
E	Sports goods shop	Kabaddi

From the given table, it is clear that A works in stationary shop.

Q.27) Solution (c)

Explanation:

It is clear that D plays basketball.

Q.28) Solution (b)

Explanation:

It is clear that option b is the correct combination of person, occupation and favourite game.

Directions: Answer the questions based on the following information:

In a family, there are six members A, B, C, D, E, and F. F and B are a married couple, A being the male member. D is the only son of C, who is the brother of A. E is the sister of D. B is the daughter-in-law of F, whose husband died.

Q.29) How many male members are there in the family?

- a) 2
- b) 3
- c) 4
- d) 5

Q.29) Solution (b)

Explanation:

From the data given in the question, we can understand that A is a male. B, the wife, is a female. C, the brother, is male. D, the son is male. E, the sister is female. F, the mother is female. So, there are three males. Therefore from the explanation, we can conclude that the correct option is b

Read the following passage and answer the item that follow. Your answer to these items should be based on the passages only

Passage 1

Farm distress has been a sadly persistent feature for the past five years, the initial two years on account of failed rains, but in the last three years because of policy failure on a number of fronts, including, most visibly, un-remunerative prices for farm produce. That it shapes electoral outcomes has also been known since, at least, the Gujarat elections. But what is new with the recent five state elections is that a particular palliative, farm loan waivers, is now seen as a necessary promise for electoral victory. There are some curious features to this.

A useful parallel to recall is the common practice 10-15 years ago, when electoral manifestos for state elections routinely promised to do away with property taxes. That crippled the ability of urban municipalities to collect the only tax that falls within their fiscal domain, and was a major factor underlying urban decay. The 13th finance commission curbed this practice by requiring that states enact irreversible rights of levy of the property tax for municipalities within their jurisdictions, in order to qualify for receipt of local government grants from the centre. That then forced political parties to think through the promise of property tax repeal, and to recognize that it only benefited a small class even within the urban sector, which actually owned property. The electoral gains of such a promise were clearly insignificant. Today, property tax repeal is absent from electoral manifestos.

Q.30) Which of the following statements are correct with respect to the given passage?

1. Urban municipalities were authorised to collect only property taxes 10-15 years back
2. Electoral manifestos today have replaced property taxes waiver with the farm loan waiver
3. The property tax waiver was a successful exercise as it benefitted all classes of people

Choose the correct code

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

Q.30) Solution (a)

Explanation:

The second paragraph says that 13th Finance commission forced parties to reconsider property tax waiver as it only benefited a small class even within the urban sector, which actually owned property. Hence, third statement is incorrect.

Therefore, option a is the correct answer.