

## Explanation

### 1. Answer: C

#### Explanation:

- **Statement 1 is correct: Article 12 of the Universal Declaration of Human Rights, 1948** states that **no one shall be subjected to arbitrary interference with his privacy, family, home or correspondence**, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.
- **Statement 2 is incorrect: Justice (Retd.) K.S. Puttaswamy & Another vs Union of India & Others (2017) is the cornerstone of the 'Right to Privacy' jurisprudence in India.** The nine Judge Bench of the Supreme Court in this case unanimously reaffirmed the **right to privacy as a fundamental right** under Article 21 of the Constitution of India. The Court held that the right to privacy was integral to freedoms guaranteed across fundamental rights, and was an intrinsic aspect of dignity, autonomy and liberty.
- **Statement 3 is correct: The Right to be Forgotten or the right to be left alone is a right that emerges from the 'Right to Privacy'. It, essentially, means that a person has the right to get their personal information removed from public resources if they wish so.**  
**The Delhi high Court has recently held that an individual has the 'right to be forgotten' and 'to be left alone' as facets of protection to their privacy.** The move is significant because India does not currently have a Right to Be Forgotten (RTBF), which is part of the Personal Data Protection Bill being reviewed by a parliamentary panel. It is also significant because as given above, in 2017, the Supreme Court held that the Right to Privacy is a fundamental right (as part of the Right to Life and Personal Liberty). The Court had observed that 'right of an individual to exercise control over his personal data and to be able to control his/her own life would also encompass his right to control his existence on the Internet.' This formed a foundation for recognition of the Right to be forgotten as a person is entitled to their privacy and can choose the information available in public.

#### Sources:

<https://www.un.org/en/about-us/universal-declaration-of-human-rights>

<https://privacylibrary.ccgnlud.org/case/justice-ks-puttaswamy-ors-vs-union-of-india-ors>

<https://www.hindustantimes.com/india-news/right-to-be-forgotten-left-alone-inherent-aspects-of-privacy-hc-101630000703655.html>

<https://www.mondaq.com/india/data-protection/1257164/right-to-be-forgotten-an-analysis-of-the-indian-position>

### 2. Answer: D

#### Explanation:

The **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act or the Forest Rights Act (FRA)** enacted in 2006 recognizes the rights of forest-dwelling tribal communities (FDST) and other traditional forest dwellers (OTFD) to forest resources on which these communities were dependent for a variety of needs, including livelihood, habitation and other sociocultural needs. It recognizes and vests the forest and occupation rights to FDST and OTFD who have been residing in such forests for generations. **Various rights covered under the Forest Rights Act include:**

- **Item 1 is correct: Title rights** – It gives FDST and OTFD the right to ownership to land farmed by tribals or forest dwellers subject to a maximum of 4 hectares.
- **Item 2 is correct: Use rights** – The rights of the dwellers extend to extracting Minor Forest Produce, grazing areas.
- **Item 3 is correct: Relief and development rights** – To rehabilitate in case of illegal eviction or forced displacement and to basic amenities, subject to restrictions for forest protection.
- **Item 4 is correct: Forest management rights** – It includes the right to protect, regenerate or conserve or manage any community forest resource which they have been traditionally protecting and conserving for sustainable use.

**Sources:**

<https://tribal.nic.in/FRA/data/FRARulesBook.pdf>

<https://www.thehindu.com/news/cities/Delhi/forest-rights-act-well-begun-and-now-odisha-is-ready-for-the-home-run/article65690516.ece>

**3. Answer: A****Explanation:**

- **Statement 1 is incorrect:** A curative petition is filed after the dismissal of the review plea against the final conviction. **It is meant to secure that there is no gross miscarriage of justice, and to prevent the abuse of process. It can be entertained if the petitioner establishes that there was a violation of the principles of natural justice, and that he was not heard by the court before passing an order.**

A curative petition is habitually decided by the judges in chamber unless there is an explicit request for an open-court hearing. A curative petition is the last and the final constitutional resort available for any redressal of grievances in court after a review petition has been exhausted and dismissed. **Under Article 137 of the Indian Constitution, the Supreme Court is guaranteed the powers to review its own judgments and orders. The Constitution does not explicitly provide for curative petitions, unlike Special leave petitions under Article 136 or review petitions under Article 137.**

- **Statement 2 is correct:** Every curative petition is admitted based on the principles laid down by the Supreme Court in the landmark case of **Rupa Ashok Hurra Vs Ashok Hurra and another, (2002)**. In this case the issue was of a matrimonial discord where the question of legality of a decree of divorce reached the Supreme Court even after the woman revoked the consent that she had given to divorce by mutual consent.

**A curative petition must be first circulated to a Bench of the three senior-most judges, and the judges who passed the concerned judgment, if available. Only when a majority of the judges conclude that the matter needs hearing should it be listed before the same Bench.**

**Sources:**

<https://blog.ipleaders.in/draft-curative-petition>

<https://www.livelaw.in/know-the-law/explained-what-is-curative-petition-151681>

**4. Answer: A****Explanation:**

- **Statement 1 is correct:** A state is defined as a political unit that has the power of enforcing laws within a certain well-defined territory and over a group of people. There are four defining features of a state which are listed below –
  - **Population** – A state must have people governed by the government. These people are commonly referred to as ‘citizens’.
  - **Territory** – A state must have a well and clearly defined territory. This is referred to as ‘border’ which is a mark that symbolizes the end of one state and where another begins from.
  - **Government** – **A government is a powerful machinery that enforces rules and regulations through common law of the land.** The government is the institution in which any society enforces public policies through bureaucratic institutions.
  - **Sovereignty** – **A state must have supreme power and authority to act. This includes the authority to make its own decisions, policies, reforms, public affairs, external affairs, etc. with little or no interference from the other states or countries.**
- **Statement 2 is incorrect:** Article 12 defines the term ‘State’ in Part III of the Constitution. It says that the term ‘State’ includes the following:
  - **The Government and Parliament of India, i.e., Executive and Legislature of the Union.**
  - **The Government and Legislature of each State, i.e., Executive and Legislature of the State.**
  - All Local and Other Authorities within the Territory of India.

- All Local and Other Authorities are under the control of the Government of India.  
**Judiciary, though an organ of the state, is not specifically mentioned in Article 12, unlike the executive and the legislature.** Whether the judiciary comes under the definition of 'state' or not depends on the type of functions carried out by the Courts. **In the exercise of non-judicial functions such as administrative or legislative, the Courts fall within the definition of 'state'** However, in the exercise of judicial functions, the Court cannot be brought within the definition of the state.

- **Statement 3 is incorrect: Supreme Court has held various bodies/entities like SAIL, Indian Oil, CSIR, etc. to be 'other authorities' under Article 12 and hence state. However, BCCI was not held to be state by the Supreme Court.**

In the case of **Zee Telefilms Ltd vs Union of India, (Zee Telefilms case)** the issue that arose before a Constitution Bench of the Supreme Court was whether BCCI was 'State' within Article 12 and consequently could a writ petition under Article 32 of the Constitution be maintainable against BCCI. The Court opined that it is clear that the facts established do not cumulatively show that the Board is financially, functionally or administratively dominated by or is under the control of the Government. Thus, the little control that the Government may be said to have on the Board is not pervasive in nature. Such control is purely regulatory and nothing more. **BCCI, was, thus, held not to be 'State' under Article 12 of the Constitution.**

**Sources:**

<https://www.zambianguardian.com/characteristics-of-a-state>

<https://www.legalserviceindia.com/legal/article-8704-all-you-need-to-know-about-article-12-of-the-indian-constitution.html>

<https://www.advocatekhoj.com/library/lawreports/righttoinformationact2005/41.php>

**5. Answer: D**

**Explanation:**

- **Option (a) is correct: The Directive Principles are non-justiciable in nature, that is, they are not legally enforceable by the courts for their violation.** Therefore, the government (Central, state and local) cannot be compelled to implement them.
- **Option (b) is correct: The Directive Principles constitute a very comprehensive economic, social and political programme for a modern democratic State. They embody the concept of a 'welfare state' and not that of a 'police state', which existed during the colonial era.** In brief, they seek to establish economic and social democracy in the country.
- **Option (c) is correct: The Directive Principles, though non-justiciable in nature, help the courts in examining and determining the constitutional validity of a law.** The Supreme Court has ruled many a times that in determining the constitutionality of any law, if a court finds that the law in question seeks to give effect to a Directive Principle, it may consider such law to be 'reasonable' in relation to Article 14 (equality before law) or Article 19 (six freedoms) and thus save such law from unconstitutionality.
- **Option (d) is incorrect: While the Fundamental Rights aim at establishing political democracy in the country, the Directive Principles aim at establishing social and economic democracy in the country.**

**Source:** Indian Polity by M. Laxmikanth 6th Edition, Chapter 8

**6. Answer: D**

**Explanation:**

Since May 2022, RBI has increased the repo rate by 250 basis points (from 4% to 6.5%, 100 basis= 1%). That is why lending rates linked with 'external benchmark rate' i.e., repo rate has increased by 250 basis point (2.5%). However, MCLR in this period has increased only by 140 basis points.

- **Statement 1 is incorrect: The RBI has made it mandatory for banks to link all new floating rate personal or retail loans and floating rate loans to MSMEs to an external benchmark like the**

**Repo rate effective October 1, 2019. The MCLR method — considered as non-transparent — which was introduced in the Indian financial system by the RBI in 2016, replaced the base rate system that was introduced in 2010.**

- **Statement 2 is incorrect:** MCLR is based on 'marginal/additional cost of deposits' (plus some other factors). And this cost of deposits includes all kinds of deposits like savings A/c, Current A/c and Term (FD/Recurring) Deposit A/c. Even though banks have increased Term Deposit rates to around 222 basis points but Savings A/c deposit rates have remained almost unchanged. **This is the reason that MCLR lending rate has increased by only 140 basis point while external benchmark (repo) based lending rate has increased by 250 basis point.** So, we can say that the overall lending (MCLR and external benchmark) rate has increased less than 250 basis points.

**Sources:** <https://indianexpress.com/article/business/banking-and-finance/banks-keep-savings-deposit-rates-unchanged-in-current-cycle-rbi-8547504>

<https://indianexpress.com/article/business/economy/roadblock-for-rate-transmission-external-benchmark-linked-loans-rise-but-mclr-still-dominant-7412758/>

## 7. Answer: A

### Explanation:

- **Option (a) is incorrect and Option (d) is correct:** Bharat Ratna is the highest civilian award in the Republic of India. **The award was originally limited to achievements in the arts, literature, science, and public services, but the government expanded the criteria to include "any field of human endeavour" in December 2011.** The award was established in 1954, and it is considered one of the highest honors that can be conferred upon a citizen of India. It is awarded in recognition of outstanding contributions to the nation, and recipients of the award are selected by a committee of the government of India. **The recommendations for the Bharat Ratna are made by the Prime Minister to the President. Bharat Ratna recipients rank seventh in the Indian order of precedence.**
- **Option (b) is correct:** Each of the recipients gets a peepal leaf medallion along with a Sanad (certificate) signed by the President. **The award does not carry any monetary endowment.** The concept of awarding this award posthumously was not there in the original statute declared in January 1954. **The provision to award posthumously was finally added in the January 1966 statute of this prestigious award.**
- **Option (c) is correct:** The number of yearly awards is **constrained to a maximum of three in a specific year.**

### Sources:

[https://en.wikipedia.org/wiki/Bharat\\_Ratna](https://en.wikipedia.org/wiki/Bharat_Ratna)

<https://observoice.com/bharat-ratna-award-its-significance-and-recipients-10578>

## 8. Answer: D

### Explanation:

- **Statement 1 is correct:** **The Petroleum and Natural Gas Regulatory Board (PNGRB) was constituted under The Petroleum and Natural Gas Regulatory Board Act, 2006.** The Act provides for the establishment of Petroleum and Natural Gas Regulatory Board to protect the interests of consumers and entities engaged in specified activities relating to petroleum, petroleum products and natural gas and to promote competitive markets and for matters connected therewith or incidental thereto.
- **Statement 2 is incorrect:** The board is mandated to **regulate the refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas excluding production of crude oil and natural gas** so as and to ensure uninterrupted and adequate supply of petroleum, petroleum products and natural gas in all parts of the country. **PNGRB does not regulate the production of crude oil and natural gas**

- **Statement 3 is correct:** Section 13 of the Act states that **the Board shall have, for the purposes of discharging its functions under this Act, the same powers as are vested in a civil court under the Code of Civil Procedure, 1908.**

Sources:

<https://pngrb.gov.in/eng-web/story.html>

[https://pngrb.gov.in/pdf/orders/GTIPL\\_13092022.pdf](https://pngrb.gov.in/pdf/orders/GTIPL_13092022.pdf)

## 9. Answer: D

Explanation:

Supreme Court in *Vijay Madanlal Choudhary & Ors. v Union of India* in July 2022 upheld several provisions of the Prevention of Money Laundering Act (PMLA) that deal with a wide range of issues, from what constitutes the main offence to the powers of the Enforcement Directorate (ED) and the procedure for conducting searches and seizures and effecting arrests.

- **Statement 1 is incorrect:** The Supreme Court held that, the Enforcement Case Information Report (ECIR) **cannot be equated with an FIR**; that there are **sufficient safeguards in the entire process** of survey, search, seizure and arrest, in as much as the law requires the officer responsible to record reasons in writing at every stage. **A copy of the ECIR need not be given to the accused**, but at the time of arrest, **the grounds of arrest should be conveyed**. In any case, the Special Court can examine the documents to decide whether the detention of the accused needs to be continued. The court suggested that the ED may consider the desirability of informing the public through its website the scope of the authority under the Act, the measures adopted by its functionaries and the options or remedies available to the accused.
- **Statement 2 is incorrect:** Citing a compelling interest in imposing stringent bail conditions for economic offences, the Supreme Court **upheld the bail provisions under PMLA that impose a reverse burden of proof on the accused**. It means that there is **NO presumption of innocence while granting bail under the PMLA**, and the burden of proof lies on the accused unlike other normal circumstances.

Sources:

<https://www.thehindu.com/news/national/explained-what-has-the-supreme-court-said-on-pmla-validity/article65703096.ece>

<https://indianexpress.com/article/explained/supreme-court-pmla-judgment-review-money-laundering-act-8109974/>

## 10. Answer: D

**Explanation: NATO has been in news since the previous year due to the ongoing Russia-Ukraine conflict. On April 4, 2023, Finland finally became the 31st country to join the North Atlantic Treaty Organization (NATO) after applying last May. Sweden has also applied for the membership but it has been currently blocked by Türkiye and Hungary.**

NATO was set up after World War II with the express purpose of containing the Soviet Union. The members of the alliance include: since 1949, the 12 founding countries of Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom and the United States; Greece and Türkiye joined in 1952; Germany in 1955; Spain in 1982; Czechia, Hungary and Poland in 1999; Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia and Slovenia joined in 2004; Albania and Croatia in 2009; Montenegro in 2017; North Macedonia in 2020; and finally, Finland.

**Five EU member states who have declared their non-alignment with military alliances and are not NATO members: Austria, Cyprus, Ireland, Malta, and Sweden. Furthermore, Switzerland is also not part of the NATO.**

Sources: <https://www.nato.int/nato-welcome/index.html>

<https://indianexpress.com/article/explained/explained-global/finland-joins-nato-what-the-end-of-finlandisation-means-for-russia-west-8540715/>

<https://www.thehindu.com/news/international/explained-on-finlands-journey-to-join->

nato/article66722064.ece

### 11. Answer: D

#### Explanation:

- **Statement 1 is correct:** Marital rape is an act of sexual intercourse with one's spouse without the spouse's consent. Section 375 of Indian Penal Code (IPC) defines Rape. Providing exceptions to the law section **375 (2) says, "sexual intercourse or sexual act by a man with his wife, the wife not being under 15 years of age is not a rape"**. In **Independent Thought vs. Union of India** case of **2017 Supreme Court read down the exception 2 of Section 375 because it ran contrary to the protection provided to married girl children aged 15 to 18 years under the POCSO Act**. So, currently the marital rape exception is applicable only in case of an adult wife. In other words, non-consensual sexual intercourse by the husband with his adult wife is not a rape. In this regard, the **Supreme Court will begin hearing a series of petitions seeking to criminalize marital rape from March 14, 2023**. The Karnataka High Court had earlier held that a husband was liable to be charged for rape under the Indian Penal Code (IPC) if he has forcible sex with his wife.
- **Statement 2 is correct: Section 9 of the Hindu Marriage Act** provides for **restitution of conjugal rights or the Right to stay together**. If either the husband or the wife, without reasonable excuses, withdraws from the society of the other, the aggrieved party may approach the Court for restitution of conjugal rights.
- **Statement 3 is correct: Section 125 of the Code of Criminal Procedure, 1973 provides for maintenance of wives, minor children and parents**. Nature of provisions u/s 125 CrPC is a social justice legislation. The maintenance proceeding is not to punish a person for his past neglect, but to prevent vagrancy leading to the commission of crime and starvation. The provisions of maintenance of the Code of Criminal Procedure are **applicable to persons belonging to all religions and have no relationship with the personal laws of the parties**.

#### Sources:

<https://www.thehindu.com/news/national/supreme-court-to-hear-petitions-relating-to-criminalisation-of-marital-rape-from-march-14/article66382195.ece>

<https://www.legalserviceindia.com/legal/article-7756-marital-rape-law-is-it-really-required-.html>

<https://www.advocatekhoj.com/library/lawareas/hma/restitution.php?Title=Hindu%20Marriage%20Act&STitle=Restitution%20of%20Conjugal%20Rights#>

<https://www.legalserviceindia.com/legal/article-4889-maintenance-under-section-125-cr-p-c.html>

<https://privacylibrary.ccgmlud.org/case/independent-thought-vs-union-of-india-and-ors>

### 12. Answer: A

#### Explanation:

- **Statement 1 is correct: Constitution Benches are not a routine affair in the Supreme Court (SC)** as most of the cases are listed before a **two or three-judge Bench, called a Division Bench**. As per the legal provisions, a Constitution Bench consists of a minimum of five judges and the number can go up to an odd number of seven, nine and so on. **The Chief Justice of India, who is also the master of the roster, decides which cases will be heard by a Constitution Bench, the number of judges on the bench and even its composition**. While there are no clear guidelines, **the sole discretion lies with the CJI**.
- **Statement 2 is incorrect: It is NOT binding on the CJI to be a part of a Constitution Bench**.
- **Statement 3 is incorrect:** Article 145(3), which deals with the rules of the court, provides for the setting up of a Constitution Bench. Article 145(3) says a minimum of five judges need to sit for deciding a case involving a "substantial question of law as to the interpretation of the Constitution", or for hearing any reference under Article 143, which deals with the power of the President to consult the SC. **The Constitution doesn't provide as to what constitutes "substantial**

questions of law” that “involve Constitutional interpretation”. Other scenarios in which a Constitution Bench can be constituted are:

- If two or three-judge Benches of the Supreme Court have delivered conflicting judgments on the same point of law
- If a later three-judge Bench of the SC doubts the correctness of a judgment delivered by a former Bench with as much strength and decides to refer the matter to a larger bench for reconsideration of the previous judgment.

**Source:**

<https://www.thehindu.com/news/national/explained-the-constitution-bench-of-the-supreme-court/article65955010.ece>

**13. Answer: D**

**Explanation:**

Under the provisions of **Article 102 (1) and Article 191 (1)** of the Constitution, an MP or an MLA (or an MLC) is **barred from holding any office of profit** under the central or state government. MPs and MLAs, as members of the legislature, hold the government accountable for its work. The office of profit law simply seeks to enforce: **the principle of separation of power between the legislature and the executive.**

In 1964, the Supreme Court ruled that the test for determining whether a person holds an office of profit is the **test of appointment**. Several factors are considered in this determination including factors such as:

- whether the government is the appointing authority,
- whether the government has the power to terminate the appointment,
- whether the government determines the remuneration,
- what is the source of remuneration, and
- the power that comes with the position.
- Parliament has enacted the Parliament (Prevention of Disqualification) Act, 1959 exempting certain offices from the purview of office of profit. Section 3 of the Act exempts the following offices among others:
  - any office held by a Minister, Minister of State or Deputy Minister for the Union or for any State
  - the office of **Chief Whip**, Deputy Chief Whip or Whip in Parliament or of a Parliamentary Secretary
  - **Chairperson of the National Advisory Council**
  - **the office of chairperson of the National Commission for Minorities**
  - **the office of chairperson of the National Commission for the Scheduled Castes and Scheduled Tribes**
  - **the office of chairperson of the National Commission for Women**

**Sources:**

<https://prsindia.org/theprsblog/explained-law-on-holding-an-%E2%80%98office-of-profit%E2%80%99>

<https://indiankanoon.org/doc/1522361/>

**14. Answer: B**

**Explanation:**

The **Universal Declaration of Human Rights (UDHR)** is a milestone document in the history of human rights. The Declaration was proclaimed by the **United Nations General Assembly** in **Paris** on 10 December **1948** as a common standard of achievements for all peoples and all nations. It sets out, for the first time, **fundamental human rights to be universally protected**. The UDHR is widely recognized as having **inspired**, and paved the way for, the **adoption of more than seventy human rights treaties**, applied today on a permanent basis at global and regional levels (all containing references to it in their

preambles).

- **Statement 1 is incorrect: The Declaration is not, in itself, a legally binding instrument.** However, it contains a series of principles and rights that are based on human rights standards enshrined in other international instruments that are legally binding – such as the International Covenant on Civil and Political Rights.
- **Statement 2 is correct:** Article 1 of the UDHR provides that **“All human beings are born free and equal in dignity and rights.** They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.”
- **Statement 3 is incorrect:** Women delegates from various countries played a key role in getting women’s rights included in the Declaration. **Hansa Mehta was the only other female delegate** (apart from Eleanor Roosevelt, the then First lady of the USA) to the **United Nations Commission on Human Rights** in 1947-48. She was a staunch fighter for women’s rights in India and abroad. She is widely credited with changing the phrase **“All men are born free and equal”** to **“All human beings are born free and equal”** in **Article 1 of the Universal Declaration of Human Rights.**

**Sources:**

<https://www.un.org/en/about-us/universal-declaration-of-human-rights>

<https://www.un.org/en/observances/human-rights-day/women-who-shaped-the-universal-declaration>

<https://www.ohchr.org/en/special-procedures/sr-human-rights-defenders/declaration-human-rights-defenders#>

**15. Answer: C**

**Explanation:**

F.I.R. means any information recorded by an on-duty officer given by an aggrieved person or any other person either in writing or made orally **about the commission of a Cognizable Offence.** F.I.R. can also be registered by the Judicial Magistrate by giving the direction to the concerned jurisdictional area of the Police Station.

- **Option (a) is incorrect:** FIR itself is the First Information Report.
- **Option (b) is incorrect:** In the case of a **non-cognizable offence,** the police cannot arrest the accused without a warrant as well as cannot start an investigation without the permission of the court. In the case of a **bailable offence, the grant of bail is a matter of right.** It may be either given by a police officer who is having custody of the accused or by the court. However, a **non-bailable offence** is one in which the **grant of Bail is not a matter of right.**
- **Option (c) is correct:** **Zero F.I.R.** is an **amendment,** introduced on the recommendation of the **Justice Verma Committee** formed at the backdrop of the brutal **Nirbhaya gang rape** in Delhi in 2012. With the help of zero F.I.R. **a complaint can be lodged at any police station irrespective of the jurisdiction of the Police Station.** In Zero FIR, any police station can register FIR irrespective of the jurisdictional area but the investigation will be taken up by the police in the place of occurrence reported in the FIR. The sanctity of the legal process remains the same in zero FIR. This puts a legal obligation on the police to begin investigation and take quick action without the excuse of absence of jurisdiction.
- **Option (d) is incorrect:** In **Gulshan Kumar v. State,** it was held that though an **FIR is not a substantive piece of evidence, it can be used to corroborate or contradict the statement of maker thereof** and also to judge the trustworthiness of the prosecution story.

**Sources:**

<https://www.legalserviceindia.com/legal/article-4370-zero-fir.html>

<https://www.legalserviceindia.com/legal/article-1338-what-is-fir-and-chargesheet-.html>

**16. Answer: D**

**Explanation:**

**Article 129 and Article 215** of the Indian Constitution provide for **Supreme Court and High Courts**



being 'Court of Record' respectively. The Constitution does not define "Court of Record".

- **Statements 1, 2 and 3 are correct:** As a Court of Record, the Supreme Court has **two powers**:
  - The judgements, proceedings and acts of the Supreme Court are **recorded for perpetual memory and testimony**. These records are admitted to be of **evidentiary value** and cannot be questioned when produced before any court. They are recognised as **legal precedents and legal references**.
  - It has **power to punish for contempt of court**.
- **Additional Information:** The contempt of court is **defined by the Contempt of Courts Act, 1971** and it includes **civil and criminal contempt**.
 

Civil contempt means wilful disobedience to any judgement, order, writ or other process of a court or wilful breach of an undertaking given to a court.

Criminal contempt means the publication of any matter or doing an act which:

  - scandalizes or lowers the authority of a court; or
  - prejudices or interferes with the due course of a judicial proceeding; or
  - Interferes or obstructs the administration of justice in any other manner.

However, innocent publication and distribution of some matter, fair and accurate report of judicial proceedings, fair and reasonable criticism of judicial acts and comment on the administrative side of the judiciary do not amount to contempt of court.

**Source:**

<https://thelawmatics.in/court-of-record-meaning-origin-and-law-applicable-in-india/>  
 Indian Polity by M. LaxmiKanth: Chapter 26: Supreme Court

**17. Answer: C**

**Explanation:**

- **Option (c) is correct:** As per Ministry of Commerce and Industry, Govt. of India FDI Policy (updated as on September, 2022), Foreign Direct Investment (FDI) is prohibited in the sectors given below:
  - **Chit Funds**
  - **Nidhi Company**
  - **Lottery Business including government/private lottery, online lotteries, etc**
  - Gambling and Betting including casinos, etc
  - Trading in Transferable Development Rights (TDRs)
  - **Manufacturing of Cigars, cheroots, cigarillos, and cigarettes (tobacco or tobacco substitutes)**
  - Real Estate Business or Construction of Farm Houses
  - **Activities/sectors not open to private sector investments – atomic energy, railway operations** (other than permitted activities mentioned under the consolidated FDI Policy)

**FDI is allowed in Defence as well as Insurance sector.** In defence, government has liberalised and allowed FDI under automatic route up to 74% and up to 100% through Government route wherever it is likely to result in access to modern technology. FDI limit in Insurance sector was increased from 49% to 74% and foreign Ownership and control allowed with safeguards in the Union Budget 2021-22.

**Source:** <https://www.makeinindia.com/policy/foreign-direct-investment>

**18. Answer: B**

**Explanation:**

- **Statement 1 is incorrect:** There are **12** publically owned **major ports** and **200 non-major ports (minor ports)** in the country. **Mundhra Port in Gujarat is a privately owned Major port**. All the 12 Major ports are functional. Out of the 200 non-major ports, around 65 ports are handling cargo and the others are "Port Limits" where no cargo is handled and these are used by fishing vessels and by small ferries to carry passengers across the creeks etc. The Ports in the country handle around 90% of EXIM Cargo by volume and 70% by value.

- **Statement 2 is correct:** While the Major Ports are under the administrative control of Ministry of Shipping, the non-major ports are under the jurisdiction of respective State Maritime Boards/ State Government. All the 12 Major Ports are governed under the Major Port Trusts act, 1963. All the Non-Major Ports (minor ports) are governed under the IPA Act, 1908 which consists of 69 sections and two schedules and regulates the berths, stations, anchoring, fastening, mooring and unmooring of vessels. Besides, it fixes the rates to be paid in a port other than Major Port for use of such mooring belonging to the Government.
- **Statement 3 is incorrect:** Major ports on the west coast of India include: Kandla (Gujarat), Mumbai (Maharashtra), Jawaharlal Nehru Port Trust (JNPT) (Maharashtra), Marmugao (Goa), New Mangalore (Karnataka) and Cochin (Kerala). Major ports on the east coast of India include: Tuticorin (Tamil Nadu), Chennai (Tamil Nadu), Ennore (Tamil Nadu), Visakhapatnam (Andhra Pradesh), Paradip (Orissa) and Kolkata, Haldia (West Bengal).

**Sources:**

<https://shipmin.gov.in/division/ports-wing>

<https://dwiep.ncscm.res.in/images/port.pdf>

**19. Answer: C**

**Explanation:**

- **Option (a) is correct:** A judge of the Supreme Court can be removed from his Office by an order of the President. The President can issue the removal order only after an address by Parliament has been presented to him in the same session for such removal. The address must be supported by a special majority of each House of Parliament (i.e., a majority of the total membership of that House and a majority of not less than two-thirds of the members of that House present and voting). **The Judges Enquiry Act (1968) regulates the procedure relating to the removal of a judge of the Supreme Court by the process of impeachment. It is this Act and not the Constitution** which provides for an elaborate procedure for the removal of a Supreme Court Judge.
- **Option (b) is correct:** The Procedure mentioned in the Judges Enquiry Act (1968) is as follows:
  - A removal motion signed by 100 members (in the case of Lok Sabha) or 50 members (in the case of Rajya Sabha) is to be given to the Speaker/ Chairman.
  - The Speaker/Chairman may admit the motion or refuse to admit it.
  - **If it is admitted, then the Speaker/ Chairman is to constitute a three-member committee to investigate into the charges.**
  - **The committee should consist of (a) the chief justice or a judge of the Supreme Court, (b) a chief justice of a high court, and (c) a distinguished jurist.**
  - If the committee finds the judge to be guilty of misbehaviour or suffering from an incapacity, the House can take up the consideration of the motion.
  - After the motion is passed by each House of Parliament by special majority, an address is presented to the president for removal of the judge.
  - Finally, the president passes an order removing the judge.
- **Option (c) is incorrect:** The grounds of removal are two - **proved misbehaviour or incapacity. Violation of Constitution is ground for impeachment of the President and not the Supreme Court judges.**
- **Option (d) is correct:** It is interesting to know that **no judge of the Supreme Court has been impeached so far.** The first case of impeachment is that of **Justice V. Ramaswami** of the Supreme Court (1991–1993). Though the **enquiry Committee found him guilty of misbehaviour**, he could not be removed as the **impeachment motion was defeated in the Lok Sabha.** The Congress Party abstained from voting.

**Source:**

Indian Polity by M. LaxmiKanth: Chapter 26: Supreme Court

**20. Answer: C**

**Explanation:**

'Right to Work' includes protections against sexual harassment at work. The sexual harassment of women in the workplace is a form of gender-based violence. Besides violating their self-esteem, dignity, and self-respect, it also violates their constitutional and human rights. In India, the legislation regarding this is the **Sexual Harassment of Women at Work Place (Prevention, Prohibition and Redressal) Act, 2013 (POSH Act)**. As a result of the Act, women are protected at work from sexual harassment. Furthermore, it provides for preventing and redressing complaints of sexual harassment.

- **Statement 1 is correct:** The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) is an **international legal instrument that requires countries to eliminate discrimination against women and girls in all areas and promotes women's and girls' equal rights**. CEDAW is often described as the **international bill of rights for women**, and is one of the key international agreements that guides the work of UN Women in achieving gender equality and empowering all women and girls.

**The Statement of Objects and Reasons of the POSH Act incorporates Article 11 of CEDAW as a part of its Objects and Reasons**, which requires States Parties to take all appropriate measures to eliminate discrimination against women in the workplace. **Sexual harassment is one such form of gendered violence**, which can seriously impair equality in employment for women. Additionally, the Statement of Objects and Reasons acknowledges that the **Supreme Court had provided guidelines to address this issue until appropriate legislation is enacted**, in Vishakha v. the State of Rajasthan (1997). **The POSH Act is line with both the principles of CEDAW and the Vishakha guidelines laid down by the Supreme Court.**

- **Statement 2 is incorrect:** There is a specific **provision** inserted under the **POSH Act to deal with false complaints**. Section 14 of the Act specifically states that if the **Internal Complaints Committee (ICC)**, during the course of the investigation, finds that **any complaint has been falsely or maliciously filed**, or that any **evidence** brought before the ICC is **false**, it can recommend a **penalty to be imposed on such a person**. This section was inserted amidst much concern that **women are "prone" to misuse rights-based legislations**. When the POSH Act was evaluated by the Parliamentary Standing Committee in 2011, they observed that this section should not deter women from filing complaints. As a result, two key provisos had been inserted into the section. First, that the **inability to prove a complaint does not render it false**. Second, that **malicious intent has to be specifically established before disciplinary action is recommended** against the complainant.
- **Statement 3 is correct:** **Section 4 of the POSH Act makes it compulsory for any office or branch of an organization employing ten or more employees to have an internal complaints committee. It is mandatory for the employer to constitute an internal committee in such cases.** According to **Section 4 of The Posh Act: Every workplace employer** shall, by written order, form a Committee to be known as the "**Internal Complaints Committee**", which shall consist of a **senior-level woman from the workplace who shall be the presiding officer**, two employees who are fully well equipped with knowledge of gender-neutral laws and societal norms (internal member), and one person from non-governmental organizations committed to the cause of women (external member).

**Section 5 and 6 of The Posh Act** gives power to the local committees to be established by the **district governments** in order to help look into and address **complaints of sexual harassment** coming from the **unorganized sectors**, from **businesses where the internal committee has not been formed because there are fewer than 10 employees**, or when the complaint is against the employer.

**Sources:**

<https://blog.ipleaders.in/posh-act-2013/>

<https://legalserviceindia.com/legal/article-9723-the-sexual-harassment-of-women-at-workplace-prevention-prohibition-and-redressal-act-2013-posh-inquiry-committee.html>

<https://journal.lexresearchhub.com/wp-content/uploads/2020/07/vol1-issue4-10.pdf>

**21. Answer: D**
**Explanation:**

- **Statement 1 is correct:** During Mughal period, the zamindars were landed proprietors who also enjoyed certain social and economic privileges by virtue of their superior status in rural society. The zamindars held extensive personal lands termed milkiyat, meaning property. **Milkiyat lands were cultivated for the private use of zamindars, often with the help of hired or servile labour.** The zamindars could sell, bequeath or mortgage these lands at will.
- **Statement 2 is correct:** During the Mughal dynasty's emperors, the taluqdar was a lower-ranking official than the Zamindar, who was superior to the taluqdar. The Taluqdar collected taxes from peasants whereas the Zamindar collected taxes from the Taluqdar.
- **Statement 3 is correct:** Zamindars spearheaded the colonisation of agricultural land, and helped in settling cultivators by providing them with the means of cultivation, including cash loans. There is evidence to show that zamindars often established markets (haats) to which peasants also came to sell their produce. Although there can be little doubt that zamindars were an exploitative class, but their relationship with the peasantry had an element of reciprocity, paternalism and patronage. Two aspects reinforce this view. First, **the bhakti saints, who eloquently condemned caste-based and other forms of oppression, did not portray the zamindars (or, interestingly, the moneylender) as exploiters or oppressors of the peasantry.** Usually, it was the revenue official of the state who was the object of their ire. Second, in a large number of agrarian uprisings which erupted in north India in the seventeenth century, zamindars often received the support of the peasantry in their struggle against the state.

**Sources:**

<https://ncert.nic.in/textbook/pdf/lehs204.pdf>

**22. Answer: B**
**Explanation:**

- **Statement 1 is correct:** In 1398 Timur invaded India on the pretext that the Muslim sultans of Delhi were showing excessive tolerance to their Hindu subjects. He crossed the Indus River and, leaving a trail of carnage, marched on Delhi. The army of the Delhi sultan Mahmud Tughluq was destroyed at Panipat and Delhi was reduced to a mass of ruins, from which it took more than a century to emerge. By April 1399 Timur was back in his own capital.
- **Statement 2 is incorrect:** When the Mughal occupied India, it became necessary for them to make a strong hold on Kandahar because of its strategic location that connects Persia with India. Kandahar was a gateway to India from Persia and for the safety of India and Kabul the Mughals were struggling to have strong control over the area. On the other side Persia considered Kandahar as her integral part particularly from the reign of Shah Tahmasp and always remained busy in taking its control from the Mughals. It was necessary for them to take control of Kandahar for accomplishing the Safavid expansion policy. Thus, Kandahar remained a sandwich between two great Empires. **But Nadir Shah already conquered Kandahar from Hotaki dynasty of Afghanistan before marching towards India. After capturing Kandahar, Nadir Shah invaded Mughal empire. In 1738, Nadir Shah attacked India because Mughal Emperor Muhammad Shah insulted the Persian ambassador at Delhi's royal court.** Invading India in 1738–1739, the Persian King Nadir Shah took Lahore and, on February 13 of that year, defeated the Mughal army at Karnal.
- **Statement 3 is correct:** Between 1748 and 1767, Ahmad Shah Durrani invaded India eight times. **The immediate reason behind Ahmad Shah Abdali to invade India was to avenge the expulsion by Marathas of his viceroy Timur Shah from Lahore.** The Third battle of Panipat took place between Ahmed Shah Abdali and Maratha commander Sadashiv Rao Bhau on 14 January 1761 in the Panipat ground.

**Sources:**

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<https://www.studyiq.com/articles/nadir-shah-invasion/>

<https://www.studyiq.com/articles/ahmad-shah-abdali/>

**23. Answer: A**

**Explanation:**

- **Option (a) is correct: The correct chronological order is Sanskrit College at Banaras (1791)- Bethune School (1849)- Open competition for civil services (1855)- Universities at Calcutta, Bombay and Madras (1857).**
  - **The Sanskrit College was established by Jonathan Duncan, the resident, at Benaras in 1791 for study of Hindu law and philosophy.**
  - **The Bethune School was founded by J.E.D. Bethune, president of the Council of Education in Calcutta in 1849.** It was the first fruit of the powerful movement for women's education that arose in the 1840s and 1850s. It was one of the first schools for women in India along with the school opened by Savitri Phule in Maharashtra.
  - **The Charter Act of 1853 introduced an open competition system of selection and recruitment of civil servants.** The covenanted civil service was thus thrown open to the Indians also. Accordingly, the Macaulay Committee (the Committee on the Indian Civil Service) was appointed in 1854. **The civil services examinations were held for the first time in London in 1855. From 1922, it was held simultaneously in India and England.**
  - **In 1857, universities at Calcutta, Bombay and Madras were set up and later, departments of education were set up in all provinces.**

**Sources:** Spectrum Modern History by Rajiv Ahir

[https://www.upsc.gov.in/sites/default/files/History%20of%20the%20Commission%20final%20%281%29\\_0.pdf](https://www.upsc.gov.in/sites/default/files/History%20of%20the%20Commission%20final%20%281%29_0.pdf)

**24. Answer: B**

**Explanation:**

- **Statement 1 is correct:** One means of claiming high status by the kings in ancient times was to identify with a variety of deities. This strategy is best exemplified by the Kushanas (first century BCE - first century CE), who ruled over a vast kingdom extending from Central Asia to northwest India. **Many Kushana rulers also adopted the title devaputra, or "son of god", possibly inspired by Chinese rulers who called themselves sons of heaven.**
- **Statement 2 is incorrect:** Faxian, Xuanzang, and Yijing were among hundreds of Chinese monks who made pilgrimages to India during the first millennium CE. Xuanzang started his pilgrimage to India in either 627 or 629 CE. **When the Chinese pilgrim Xuan Zang visited the city of Pataliputra in the seventh century CE, he found it in ruins, and with a very small population. This was because of the fact that by this time Pataliputra had lost its political and economic significance.**
- **Statement 3 is correct: The Chinese Buddhist pilgrim Fa Hien (404–411 AD) visited India during reign of Chandragupta II. He wrote that "untouchables" had to sound a clapper in the streets so that people could avoid seeing them.** Another Chinese pilgrim, Xuan Zang (seventh century), observed that executioners and scavengers were forced to live outside the city.
- **Statement 4 is incorrect:** Cultural and economic ties between India and China date back to about 2000 years ago. The Southern Silk route (SSR), one of the least studied overland route, is a trade route which is about 2000 km long and linked East and North East India with Yunnan Province of China via Myanmar. **The South West Silk route or the Sikkim Silk route, connected Yunnan, and India through Tibet. A section of the route from Lhasa crossing Chumbi Valley, Nathu La Pass connected to the Tamralipta Port (present day Tamluk in West Bengal).** From the Tamralipta port, this trade route took to the sea to traverse to Sri Lanka, Bali, Java and other parts of the Far

East. Another section of the route crossed Myanmar and entered India through Kamrup (Assam) and connected the ports of Bengal and present day Bangladesh.

**Sources:**

<https://ncert.nic.in/textbook/pdf/lehs102.pdf>

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<https://www.thepeninsula.org.in/2020/07/09/india-china-trade-in-ancient-times-southern-silk-route-2/>

**25. Answer: C**

**Explanation:**

- **Statement 1 is correct:** To fully understand the Vedas, it is necessary to read the Vedangas or the branches/limbs of the Veda. They are like a supplement to the original Veda. Nirukta covers etymology, and is the study concerned with correct interpretation of Sanskrit words in the Vedas. It is one of the **foundational text of vedāṅga**. **Nirukta is a Sanskrit word that means “explained” or “interpreted.”** The text express instructions on how words must be interpreted and made sense of. **Yāska’s Nirukta presupposes grammar and argues vigorously for the etymological analysis of every Vedic word.** His fundamental notion was that all words can be reduced to an original root and one should never give up on a word as un-derivable. **This understanding of origin of the words helped in development of Sanskrit grammar in later periods. Thus, Nirukta relates with development of Sanskrit grammar indirectly.**
- **Statement 2 is incorrect:** In the seventh century **Harsha** was considered to be a literary monarch. He is said to have authored three plays, **Priyadarshika, Nagananda and Ratnavali. Ratnavali is written in Sanskrit but it is not related with development of Sanskrit grammar.**
- **Statement 3 is correct:** **Mahabhashya** attributed to **Patañjali**, is a commentary on selected rules of Sanskrit grammar from **Pāṇini's** treatise, the **Aṣṭādhyāyī**, as well as **Kātyāyana's Vārttikasūtra**, an elaboration of **Pāṇini's** grammar. It is dated to the 2nd century BCE. **Patanjalis’ Mahabhasya** also refers to several aspects of drama i.e. the actors, the music, the stage, **rasa** in the performances called **Kamsavadha** and **Balibandha**.
- **Statement 4 is correct:** The term ‘classical Sanskrit’ refers to the language whose rules were codified by the 5th/4th century BCE grammarian **Panini** in his **Ashtadhyayi**. The great grammarian **Panini**, analysed Sanskrit and its word formation in his unrivalled descriptive grammar **Ashtadhyayi**. **Panini’s grammar, Ashtadhyayi, illustrates the rules of grammar and also throws light on society, economy and culture of those times.**

**Sources:**

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<https://www.nios.ac.in/media/documents/SecIChCour/English/CH.12.pdf>

<https://www.nios.ac.in/media/documents/SecIChCour/English/CH.06.pdf>

**26. Answer: C**

**Explanation:**

- **Statement 1 is incorrect:** **Manyam, or the Rampa rebellion, was a tribal revolt led by Alluri Sitarama Raju in the Rampa regions of present-day Godavari district in Andhra Pradesh. It began in August 1922 and lasted until the capture and killing of Raju in May 1924.**  
**The rebellion was started by looting police stations in Chintapalli, Krishnadevipet, and Rajavommangi by 500 tribals under Raju on August 22, 23, and 24, respectively. The tribal masses**

showed wholehearted participation throughout the rebellion under Raju, who prepared them and spread the ideals of the non-cooperation movement and Swaraj in the hills. By September, the rebels had defeated the British police five times, and the government dispatched Malabar special police to the hills to put down the rebellion. **This forced the rebels to start guerilla warfare, which lasted for two years.** Even though the police defeated the villagers at times, they returned to the scene in greater numbers. The government imposed martial law and punitive taxes on the villagers, exerting pressure on them to end the rebellion. A bounty of Rs. 1500 was declared on Raju and Rs. 1000 on Gam Goutham Dora and Gam Mallaya Dora, the lieutenants of Raju. Yet the tribal masses continued actively supporting the rebellion, which revealed their deep-rooted anti-British sentiments and yearning for freedom. **Nevertheless, the British crushed the rebellion after the capture and murder of Raju on May 7, 1924.**

- **Statement 2 is incorrect: The tribes of Rampa had traditionally been able to support their food requirements through the use, in particular, of the podu system, whereby each year some areas of jungle forest were burned to clear land for cultivation.** The British Raj authorities had wanted to improve the economic usefulness of lands in Godavari Agency, an area that was noted for the prevalence of malaria and blackwater fever. **With the 1882 Madras Forest Act authorities took control of the forests, mostly for commercial purposes such as produce for building railways and ships, without any regard for the needs of the tribal people.** The act restricted the free movement of Adivasis in their forest habitats, and **prevented them from practicing their traditional form of agriculture called podu.** So, they rebelled against the Britishers.

Source: <https://indianculture.gov.in/node/2822518>

27. Answer: C

Explanation:

- **Statement 1 is correct: The Act for Better Government of India, 1858 transferred the power to govern from the East India Company(EIC) to the British Crown. Now, the power to govern was to be wielded through a secretary of state** (earlier this power was exercised by Directors of the Company and the Board of Control). The secretary of state was to be a member of the British cabinet, and was to be assisted by a council of 15. He was answerable to the British Parliament. All initiatives and final decisions rested with the secretary and the council was only advisory in nature. **Lord Stanley was the first Secretary of State for India.**
- **Statement 2 is correct:** The British East India Company (1600-1874) was the largest and most successful private enterprise ever created. All-powerful wherever it colonised, the EIC's use of its own private army and increasing territorial control, particularly in India, meant that it faced ever-greater scrutiny from the British government in the late 18th century. the EIC's independence ended with the chaos of the Sepoy Mutiny of 1857-8. **The British Crown replaced the EIC's board of directors as the rulers of British India, and Parliament officially dissolved the EIC in 1874.**
- **Statement 3 is incorrect:** Lord William Bentick abolished Sati through a legislation in 1829. However, **he was not the first to outlaw Sati in India. Before him, Akbar had tried to restrict this practice, the Marathas had outlawed this. Even the French and Portuguese had also outlawed it in Chandernagore and Goa respectively.**

Sources: Spectrum Modern History by Rajiv Ahir  
Essentials of Modern India by Nitin Sangwan

28. Answer: B

Explanation:

- **Option (b) is correct:** Permanent settlement was introduced by Lord Cornwallis in the year 1793. It was introduced because the company felt that a fixed revenue demand would give zamindars a sense of security and, assured of returns on their investment, encourage them to improve their estates. In the early decades after the Permanent Settlement, however, zamindars regularly failed to pay the revenue demand and unpaid balances accumulated.

**The reasons for this failure were various. First: the initial demands were very high.** This was because it was felt that if the demand was fixed for all time to come, the Company would never be able to claim a share of increased income from land when prices rose and cultivation expanded. To minimise this anticipated loss, the Company pegged the revenue demand high, arguing that the burden on zamindars would gradually decline as agricultural production expanded and prices rose.

**Second: this high demand was imposed in the 1790s, a time when the prices of agricultural produce were depressed,** making it difficult for the ryots to pay their dues to the zamindar. If the zamindar could not collect the rent, how could he pay the Company?

**Third: the revenue was invariable, regardless of the harvest, and had to be paid punctually.** In fact, according to the Sunset Law, if payment did not come in by sunset of the specified date, the zamindari was liable to be auctioned.

**Fourth: the Permanent Settlement initially limited the power of the zamindar to collect rent from the ryot and manage his zamindari.**

- **The Permanent Settlement had the features that state demand was fixed at 89% of the rent and 11% was to be retained by the zamindar. The state demand could not be increased but payment should be made on the due date, before sunset, so it was also known as the 'Sunset Law'.** Zamindars were announced as landowners who were to provide 10/11 of the total revenue to the Company and were paid the rest 1/11 of the total revenue for their duties. The **Zamindari system** collected land revenue from farmers through intermediaries known as Zamindars. **According to the Sunset Law, if payment did not come in by sunset of the specified date, the zamindari was liable to be auctioned.**

Source: NCERT Themes in Indian History, Theme 10

29. Answer: B

Explanation:

- **Option (b) is correct:** The correct chronological order is **construction of shore temple at Mahabalipuram- Complete victory over Ceylon by Rajendra Chola- First visit of Abdur Razzak Samarqandi- Battle of Talikota (Rakshasa-Tangadi).**
  - The Post Gupta period in India is known for the progress in temple architecture and sculpture. **The shore temple at Mahabalipuram was built in the reign of Narasimhavarman II, also known as Rajasimha who reigned from 700 to 728 CE.**
  - The founder of the Chola dynasty was Vijayalaya (9th century AD) but the real architects of the glory of the dynasty were Rajaraja I (AD 985–AD 1014) and his son Rajendra I (AD 1014–AD 1044). **Rajendra I completed the victory over Ceylon by defeating the Sri Lanka king Mahinda V and capturing whole of Ceylon in 1018 AD.** The royal insignia of the king and the queen of Sri Lanka were captured and Sri Lanka was not able to free herself from the Chola control for another 50 years.
  - One of the most important descriptions of the city of Vijayanagara Empire in the fifteenth century comes from Abdur Razzaq Samarqandi, a diplomat who came visiting from Herat. **Abdur Razzaq Samarqandi first visited south India in the 1440s.**
  - **The Deccan states (Bijapur, Ahmadnagar, Golkonda and Bidar, except Berar) formed a confederacy and inflicted a crushing blow on the Vijayanagar armies at Bannihatti in the battle of Talaikotta in 1565 CE.** This battle is also known as Rakshasa Thangadi.

**Question Hack:** Simple understanding of the chronology, that Pallavas came first followed by Cholas and Vijaynagar rulers respectively would have led you to the correct answer. Moreover, Abdur Rajjaq came to south during Vijaynagar glory period and battle of talikota led to downfall of Vijaynagar. Thus event 2 should come before event 4.

Sources:

<https://ncert.nic.in/textbook/pdf/lehs201.pdf>

<https://ncert.nic.in/ncerts/l/kefa106.pdf>



Ancient and Medieval India by Poonam Dalal Dahiya.

**30. Answer: C**

**Explanation:**

- **Statement 1 is correct: The main distinction between a tornado and a waterspout is that a tornado occurs over land while a waterspout occurs over water.** Both tornado and waterspout are formed from a cumuliform cloud. They both have a rapid rotation of air. Also, they are both classified as tornadoes, with a waterspout being a type of tornado. A difference between the two is that **a waterspout tends to be weaker.** The force of friction is weaker over water thus there is less air available to be drawn into the circulation.
- **Statement 2 is incorrect: A waterspout is a whirling column of air and water mist.** Waterspouts fall into two categories: **fair weather waterspouts and tornadic waterspouts.**
  - **Tornadic waterspouts** are tornadoes that form **over water, or move from land to water. They have the same characteristics as a land tornado.** They are associated with severe thunderstorms, and are often accompanied by high winds and seas, large hail, and frequent dangerous lightning.
  - **Fair weather waterspouts** usually form along the dark flat base of a line of developing cumulus clouds. This type of waterspout is generally not associated with thunderstorms. **While tornadic waterspouts develop downward in a thunderstorm, a fair weather waterspout develops on the surface of the water and works its way upward.** By the time the funnel is visible, a fair weather waterspout is near maturity. Fair weather waterspouts form in light wind conditions so they normally move very little.
- **Statement 3 is correct:** A thunderstorm is a rain shower during which one hears a thunder. Thunderstorms occur in a type of cloud known as a **cumulonimbus.** They are usually accompanied by strong winds and often produce heavy rain and sometimes snow, sleet, or hail, but some thunderstorms produce little precipitation or no precipitation at all. Thunderstorms result from the **rapid upward movement of warm, moist air, sometimes along a front.** There are **three ingredients that must be present** for a thunderstorm to occur. They are: **Moisture, Instability, and Lifting.** Additionally, there is a fourth ingredient (**Wind Shear**) for severe thunderstorms.

**Sources:**

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**31. Answer: B**

**Explanation:**

- **Statement 1 is incorrect: During early medieval period, religious leaders, who did not function within the orthodox Brahmanical framework, were gaining ground. These included the Naths, Jogis and Siddhas.** Many of them came from artisanal groups, including weavers, who were becoming increasingly important with the development of organised craft production. **However, in spite of their popularity these religious leaders were not in a position to win the support of the ruling elites.**
- **Statement 2 is incorrect:** Tantric practices were widespread in several parts of the subcontinent. Many of these ideas influenced Shaivism as well as Buddhism, especially in the eastern, northern and southern parts of the subcontinent. **Tantrism appeared in both Buddhism and Hinduism and influenced many religious trends and movements from the 5th century CE, but some of it was meant for esoteric circles.** Tantrism is thought to be a method of conquering transcendent powers and realizing oneness with the highest principle by Yogic and ritual means—in part magical and orgiastic—which are also supposed to achieve other supranormal goals.

- **Statement 3 is correct: During ancient India, between the sixth and eighth centuries AD, both Nayanars and Alvars were revered by the Vellala peasants.** Not surprisingly, rulers tried to win their support as well. These kings also introduced the singing of Tamil Shaiva hymns in the temples under royal patronage, taking the initiative to collect and organise them into a text (Tevaram).
- **Statement 4 is correct: Sixth century BCE onwards teachers travelled from place to place, trying to convince one another as well as laypersons, about the validity of their philosophy or the way they understood the world. Debates took place in the kutagarashala – literally, a hut with a pointed roof – or in groves where travelling mendicants halted.** If a philosopher succeeded in convincing one of his rivals, the followers of the latter also became his disciples. So, the support for any particular sect could grow and shrink over time.

**Sources:**

<https://www.britannica.com/topic/Hinduism/Tantrism>

<https://ncert.nic.in/textbook/pdf/lehs202.pdf>

<https://whc.unesco.org/en/tentativelists/5492/>

**32. Answer: C**

**Explanation:**

- **Option (c) is correct: “The White Man’s Burden” was written in 1899 by Rudyard Kipling, at a time when imperialism was still a perfectly normal and healthy way of ensuring the survival and prosperity of one’s nation or empire.** Particularly, this was before World War II and the Holocaust, which was enabled by the rise of Nazi German imperialism. (It is important to note here that Nazi German imperialism was ideologically driven by social Darwinism, part of the underpinnings of communism.)

**Kipling wrote “White Man’s Burden” as a response to the American takeover of the Philippines after the Spanish-American War in 1898. The phrase that forms the poem’s title and refrain, “White Man’s burden,” is a metaphor for the tremendous hardship and responsibility of carrying out effective and positive imperialism.** Representing imperialist Britain, the narrator is speaking like an older, wiser brother to his new imperialist younger brother, America, explaining what difficulties lie ahead on this path.

**Source:** <https://classicalpoets.org/2021/03/04/white-mans-burden-by-rudyard-kipling-a-teaching-tool/#:~:text=Kipling%20wrote%20%E2%80%9CWhite%20Man%E2%80%99s%20Burden%E2%80%9D%20as%20a%20response,responsibility%20of%20carrying%20out%20effective%20and%20positive%20imperialism.>

**33. Answer: D**

**Explanation:**

- **Statement 1 is incorrect: While Gandhi worked for the upliftment of the lower caste and denounced ‘untouchability’, he did not condemn the varna system for most of his life.** So even though he commanded dignity for the untouchables, he also supported the caste system, deeming it necessary until the 1940s. He wanted reformation of the caste system and the Hindu society. According to him, Varna system was integral to the Hindu social fabric, but at the same time he recognized that it needed wholesale reforms.
- **Statement 2 is incorrect: Dr.B.R. Ambedkar advanced “Broken Men Theory”. According to him, the primitive society was tribal in nature. With the passage of time, some settled down with agriculture as means of livelihood. However, all people did not get settled down. Soon, battles took place between settled tribes and nomadic.** Stealing of cattle, stealing of women and stealing other forms of wealth became a regular feature. The cause of battles between the settled people and the nomadic tribes were the nomads found it easier to fight against the settled and steal their wealth, and the settled were unable to defend themselves from the nomads, who were militant and aggressive. The broken men were in need of shelter and food, whereas the settled were in

need of protection of their property and persons. As a result of this, an agreement was found necessary by both the parties. **The primitive society was not that generous and liberal to admit the nomads into their area of habitation. Hence the settled allotted lands outside the village to the nomadic settlers. Because of their living outside the village, they were called “Antyaja” “Antyavasin” and “Asprushya.”**

- **Statement 3 is incorrect: Gandhi always had in mind the objective of eradicating untouchability by root and branch.** His ideas were based on the grounds of humanism and reason. He argued that the Shastras did not sanction untouchability and, even if they did, they should be ignored since truth cannot be confined within the covers of a book. **In 1932, he founded the All-India Anti-Untouchability League which later came to be known as the Harijan Sevak Sangh.**
- **Dr. B. R. Ambedkar founded the All-India Depressed Classes Association in 1930 to ensure that the Scheduled Castes were fairly represented in India’s decision-making organizations.**

**Sources:** Spectrum Modern History, Chapter 8  
Essentials of Modern India by Nitin Sangwan

### 34. Answer: B

**Explanation:**

- **Statement 1 is correct: The second Round Table Conference was held in London from September 7, 1931 to December 1, 1931. The Indian National Congress nominated Gandhi as its sole representative.** A. Rangaswami Iyengar and Madan Mohan Malaviya were also there. At the conference, Gandhi (and therefore the Congress) claimed to represent all people of India against imperialism. Gandhi pointed out that there was a need of a partnership between Britain and India on the basis of equality. He put forward the demand for the immediate establishment of a responsible government at the centre as well as in the provinces. He also reiterated that the Congress alone represented political India. **Saying that the untouchables were Hindus, and thus not to be treated as a minority, he discarded the idea of a separate electorate for them. He also said there was no need for separate electorates or special safeguards for Muslims or other minorities. Many of the other delegates disagreed with Gandhi.**
- **Statement 2 is incorrect:** The third RTC was held from November 1932 to December 1932. **Only 46 delegates including B.R. Ambedkar participated in this. Congress, Muslims League (including Muhammad Ali Jinnah) and all major political parties including the Labor Party of Britain did not participate in the third RTC.**
- **Statement 3 is correct: The recommendations of RTCs were published in a White Paper in March 1933 and debated in the British Parliament afterwards.** A Joint Select Committee was formed to analyze the recommendations and formulate a new Act for India, and that **committee produced a draft Bill in February 1935 which was enforced as the Government of India Act of 1935 in July 1935.**

**Source:** Spectrum Modern History by Rajiv Ahir, Chapter 19

### 35. Answer: A

**Explanation:**

- **Option (a) is correct: Government of India approved declaration of 15th November as Janjatiya Gaurav Divas dedicated to the memory of brave tribal freedom fighters so that coming generations could know about their sacrifices about the country.** India’s freedom struggle was strengthened by several movements by tribal communities such as Santhals, Tamars, Kols, Bhils, Khasis and Mizos to name a few. The revolutionary movements and struggles organized by the tribal communities were marked by their immense courage and supreme sacrifice. **The date is the birth anniversary of Sri Birsa Munda who is revered as Bhagwan by tribal communities across the country.** Birsa Munda fought bravely against the country against the exploitative system of the British colonial system and spearheaded movement against British oppression giving a call for ‘Ulgulan’ (Revolution). The declaration acknowledges the glorious history and cultural heritage of

tribal communities. The day will be celebrated every year and would recognize the efforts of the tribals for preservation of cultural heritage and promotion of Indian values of valour, hospitality and national pride.

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=1770508>

**36. Answer: C**

**Explanation:**

- **Option (c) is correct:** By the second century BC, the megalithic people had moved from the uplands into fertile river basins and reclaimed marshy deltaic areas. Under the stimulus of contact with the elements of material culture brought from the north to the extreme end of the peninsula by traders, conquerors, and Jaina, Buddhist, and some brahmana missionaries, they began practising wet paddy cultivation, founded numerous villages and towns, and developed social classes. **Cultural and economic contacts between the north and the deep south, known as Tamizhakam, became extremely important from the fourth century BC onwards.**
- Whereas **the land between the hills of Venkatam and Kanyakumari is called Tamilaham. It includes the whole of modern Tamil Nadu and Kerala.** With forested hills, undulated terrains, pastures, arid zones, wet-lands and long sea coast, the region represented a combination of diverse eco-zones. The three principal chiefdoms, the Cheras, Cholas and Pandyas had their strongholds both in the interior as well as on the sea coast.

**Sources:**

India's Ancient Past by RS Sharma, Chapter- 22

<https://egyankosh.ac.in/bitstream/123456789/62863/1/Block-7.pdf>

**37. Answer: A**

**Explanation:**

- **Statement (a) is correct: Cisgenesis is the genetic modification of a recipient plant with a natural gene from a crossable—sexually compatible—plant.** Such a gene includes its introns and is flanked by its native promoter and terminator in the normalsense orientation. Cisgenic plants can harbour one or more cisgenes, but they do not contain any transgenes. **Transgenesis is the genetic modification of a recipient plant with one or more genes from any non-plant organism, or from a donor plant that is sexually incompatible with the recipient plant.** While cisgenesis involves genetic modification using a complete copy of natural genes with their regulatory elements that belong exclusively to sexually compatible plants, **intragenesis refers to the transference of new combinations of genes and regulatory sequences belonging to that particular species without the introduction of any foreign DNA.**

**Source:**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1525145/#:~:text=Cisgenesis%20is%20the%20genic%20modification,terminator%20in%20the%20normalsense%20orientation.>

**38. Answer: B**

**Explanation:**

- **Option (b) is correct:** DNA origami is **the nanoscale folding of DNA to create arbitrary two- and three-dimensional shapes at the nanoscale.** The DNA origami approach **greatly simplifies building DNA nanostructures by using one very long DNA strand and folding it up to form a scaffold.** These structures are amenable to site-specific functionalization with nanometer precision, and have been shown to exhibit cellular biocompatibility and permeability. The DNA origami technique has found widespread use in a variety of emerging biological applications such as biosensing, enzyme

cascades, biomolecular analysis, biomimetics, Miniature biosensors, Molecular motor and drug delivery. **'Prosthetic limbs' is not an application as its applications are in nanoscale.**

**Source:** <https://www.nist.gov/news-events/news/2021/01/nist-publishes-beginners-guide-dna-origami#:~:text=In%20a%20technique%20known%20as,biosensors%20and%20drug%2Ddelivery%20containers.>

**39. Answer: A**

**Explanation:**

Infrared (IR) is a **wireless** mobile technology used for device communication over **short ranges**. IR light-emitting diodes (LED) are used to transmit IR signals, which pass through a lens and focus into a beam of IR data. The beam source is **rapidly switched on and off for data encoding**. IR light is very similar to visible light, except that it has a **slightly longer wavelength**, meaning IR is **undetectable to the human eye** - perfect for wireless communication.

- **Statement 1 is correct: IR transceivers are quite cheap and serve as short-range communication solutions.** It serves as a cost-effective way of transmitting a few bits of data wirelessly.
- **Statement 2 is incorrect: Anyone can send IR signals. Typically, no handshake, authentication, or authorization takes place between the sender and the receiver.** A TV, for example, can be controlled by any remote that speaks the same language. In communications, language is referred to as a protocol, which is an agreement between the sender and the recipient of the data. The two parties agree to follow a predefined pattern and transmit the information in a certain way.
- **Statement 3 is correct: IR communication has major limitations because it requires line-of-sight, has a short transmission range and is unable to penetrate walls.**
- **Statement 4 is incorrect:** However, IR LEDs aren't the only thing that can emit IR or near IR waves. Many other sources, like light bulbs and the sun itself, release IR waves, which is one of the difficulties when dealing with IR communications. **The performance of wireless infrared transmission systems for indoor use is severely impaired by the noise and interference induced by natural and artificial ambient light.**

**Sources:**

<https://www.techopedia.com/definition/630/infrared-ir>

<https://learn.sparkfun.com/tutorials/ir-communication/all>

<https://www.digikay.in/en/maker/blogs/2021/understanding-the-basics-of-infrared-communications>

[https://www.researchgate.net/publication/3672237\\_Reducing\\_the\\_effects\\_of\\_artificial\\_light\\_interference\\_in\\_wireless\\_infrared\\_transmission\\_systems](https://www.researchgate.net/publication/3672237_Reducing_the_effects_of_artificial_light_interference_in_wireless_infrared_transmission_systems)

**40. Answer: D**

**Explanation:**

Virtual Private Networks (VPNs) and proxy servers are tools to help keep a user's activity private while browsing the internet. Both technologies hide the user's IP address, making it difficult for websites and advertisers to track user behaviour. Both technologies can be used to bypass censorship and access blocked websites. Both technologies provide an additional layer of security and privacy to the user's internet connection.

- **Statement 1 is incorrect:** VPN is a mechanism of **employing encryption, authentication and integrity protection** so that we can **use public network as private network. Only a VPN encrypts the data a user sends or receives.** It simulates a private network over public network. It allows users to remotely access a private network. Protocols used in VPN are PPTP (Point to point tunneling protocol), L2TP (Layer 2 tunneling protocol) etc. VPN works on firewall. It does not hide the IP address of client.
- **Statement 2 is incorrect: A proxy server is a computer that sits between a user and a server, acting as a gateway when a user accesses the internet.** Proxy server uses the anonymous network ID instead of actual IP address of client (means it hides the IP address of client), so that the actual

IP address of client couldn't be revealed. Protocols used in Proxy are FTP (File transfer protocol), SMTP (Simple mail transfer protocol) HTTP (Hyper Text Transfer Protocol) etc. Proxy works on browsers. It does not simulate a private network over public network.

- **Statement 3 is incorrect: Both VPN and Proxy allow users to access content that is blocked or restricted in their region by connecting to a server in another location.**

Source:

<https://www.geeksforgeeks.org/difference-between-virtual-private-networkvpn-and-proxy/>

41. Answer: C

Explanation:

- **Statement 1 is correct: A cleanroom is a controlled environment that filters pollutants** like dust, airborne microbes, and aerosol particles **to provide the cleanest area possible**. Cleanrooms are classified into different classes depending on the number of particles allowed in the air per cubic meter. They also control variables like temperature, airflow, and humidity. Essentially, cleanrooms work to remove pollutants, particles, and contaminants from outside ambient air. Outside air passes through a filter system. **The filters (HEPA or ULPA) then clean and decontaminate this outside air according to their specifications**. The filter then introduces the processed air into the controlled environment.
- **Statement 2 is incorrect: A data clean room is a technology service that helps content platforms keep first person user data private when interacting with advertising providers**. The concept of a data clean room is intended to be a **data-focused equivalent to a physical clean room**, with the goal of having a pristine environment where **technology can't be contaminated by outside influence**. Instead of being concerned with contamination by physical elements, the primary concern of a data clean room is **keeping user data isolated and private**. A data clean room provides **aggregated and anonymized user information to protect user privacy**, while providing advertisers with non-personally identifiable information (non-PII) to target a specific demographic and for audience measurement. Most modern data clean rooms **work in software as a service (SaaS) models** in the cloud, enabling content providers and advertisers to collaborate.
- **Statement 3 is correct: Most cleanrooms are used for manufacturing products such as electronics, pharmaceutical products, and medical device equipment**. Other usage of cleanroom is in **Biotech, cell and gene therapy, forensic science, microbiology, medical research, microprocessors and semiconductors, and aerospace and defence**.
- **Statement 4 is correct: A "Sterile Room" is a microbiologically controlled Clean Room** built in such a way to **prevent bacteria, viruses or parasites from being present**. In order to create a sterile germ-free environment, operators install chemical sterilization systems and perform microbial tests as well as bacterial load analyses. **Sterile Rooms are used in sectors where the presence of bacteria or germs may pose a danger**, therefore in **pharmaceutical environments** where the presence of bacteria may compromise the products or, in the **medical sector**, to place patients under observation. Another sector where Sterile Rooms may be needed is **Food and Beverage**, for the handling of products.

Sources:

<https://angstromtechnology.com/what-is-a-cleanroom/>

<https://www.techtarget.com/searchcustomerexperience/definition/data-clean-room>

<https://angstromtechnology.com/cleanroom-industries/>

<https://galvani.eu/blog/clean-room-vs-sterile-room/>

42. Answer: B

Explanation:

Cis-lunar Autonomous Positioning System Technology Operations and Navigation Experiment (CAPSTONE) is the first spacecraft to test the entrance and sustainability of a very unique **near rectilinear halo orbit**, also known as NRHO. CAPSTONE serves as a pathfinder mission for Gateway as

part of NASA's Artemis program. Gateway is a space station that will orbit the Moon and provide a place for astronauts to resupply and prepare for their trips down to the lunar surface.

- **Statement 1 is incorrect:** A near-rectilinear halo orbit (NRHO) is a **halo orbit** with **slightly curved** – or nearly straight – sides between close passes with an orbiting body. A **halo orbit** is a **periodic, three-dimensional orbit associated with one of the L1, L2 and L3 Lagrange points**. **Near-rectilinear** means that **some segments of the orbit have a greater curvature** than those of an elliptical orbit of the same maximum diameter, and **other segments have a curvature less** than that of an elliptical orbit of the same maximum diameter.
  - A **halo orbit is a type of orbit around a celestial body**, such as a planet or a moon, where a spacecraft follows a repeating path that keeps it in a specific location relative to the body and the Sun.
- **Statement 2 is correct:** NRHO orbit is at a **precise balance point between the gravities of the Earth and the Moon**, which offers a long, stable orbit so that Gateway and future spacecraft don't have to carry so much fuel to stay in orbit around the Moon. Orbits around the Moon are very unstable. Moon's gravity is extraordinarily lumpy, so it's really hard to stay in orbit around the Moon. Stable orbits can only be achieved with careful planning and adjustments.
- **Statement 3 is correct:** Circular orbits are the simplest kinds of orbits in celestial mechanics, where an orbiting body remains at constant radius as it travels around a gravitating mass. **In reality, no orbits of astronomical bodies are perfectly circular, since every object is constantly perturbed by the gravity of a very large number of other nearby objects like the planets in the solar system.** However, when a small object like a satellite, asteroid, or small moon orbits a large object like a planet or star, it is a good approximation to treat the system as a two-body system with the larger body fixed.

**Sources:**

<https://www.nasa.gov/feature/does-anything-orbit-the-moon-we-asked-a-nasa-technologist>

<https://brilliant.org/wiki/characteristics-of-circular-orbits/>

[https://en.wikipedia.org/wiki/Near-rectilinear\\_halo\\_orbit](https://en.wikipedia.org/wiki/Near-rectilinear_halo_orbit)

**43. Answer: A**

**Explanation:**

- **Statement (a) is correct:** DigiYatra was first introduced by the Ministry of Civil Aviation in December 2022. DigiYatra service was launched by the Government for paperless and contactless entry at airports. The service allowed passengers to travel without a boarding pass. DigiYatra uses a facial recognition system (FRS) to verify the identity of passengers linked to their boarding passes. When the facility was first introduced in December 2022, it was launched at three airports: Delhi, Bengaluru, and Varanasi. DigiYatra is a Biometric Enabled Seamless Travel experience based on facial recognition technology which aims to provide a paperless and seamless travel experience to passengers.

**Source:** <https://www.thehindubusinessline.com/info-tech/how-to/digiyatra-app-all-you-need-to-know/article66571425.ece>

**44. Answer: C**

**Explanation:**

**Context:** The government has **exempted Site Directed Nuclease (SDN) 1 and 2 genomes from Rules 7-11 of the Environment Protection Act**, thus allowing it to avoid a long process for approval of GM crops through the Genetic Engineering Appraisal Committee (GEAC).

- **Statement 1 is correct:** Genome editing (also called **gene editing**) is a group of technologies that give scientists the ability to change an organism's DNA. It allows genetic material to be added, removed, or altered at particular locations in the genome. **Site Directed Nuclease (SDN) 1 introduces** changes in the host genome's DNA through small insertions/deletions **without**

introduction of foreign genetic material. **SDN1 and SDN2 types of genome editing are currently being used in Indian labs for breeding new crops, and imparting traits including resistance to diseases and drought**

- **Statement 2 is incorrect:** In **SDN 2**, the edit involves using a small DNA template to generate specific changes. Both **SDN1** and **SDN2** processes **do not involve alien genetic material** and the end result is indistinguishable from conventionally bred crop varieties. **The SDN3 process involves larger DNA elements or full length genes of foreign origin** which makes it similar to Genetically modified organisms (GMO) development.
- **Statement 3 is correct:** BT Cotton is India's only transgenic crop approved for commercial cultivation. BT Brinjal has been banned in India since 2010. Recently, the Genetic Engineering Appraisal Committee (GEAC), India's apex regulator of genetically modified plants and food products, has approved the environmental release of Dhara Mustard Hybrid-11 (DMH-11), a genetically-engineered variant of mustard.

**Source:**

<https://www.biosafety.be/content/targeted-genome-editing>

<https://www.hindustantimes.com/india-news/rules-relaxed-for-some-gene-edited-plants-organisms-101648665945313.html>

<https://pubs.rsc.org/en/content/articlelanding/2016/sc/c5sc04398k>

**45. Answer: D**

**Explanation:**

- **Statement 1 is correct:** Athlete Biological Passport (ABP), a powerful anti-doping tool that **monitors selected biological variables over time to reveal the effects of doping rather than attempting to detect the doping substance or method itself.** It works against doping through enhanced target testing and analysis, investigations, deterrence, and as indirect evidence for use of prohibited methods or substances.
- **Statement 2 is correct:** **At present, the ABP is there to detect two main substance classes.** The **Haematological Module** of the ABP is used to detect blood doping. And the **Steroid Module** helps to detect steroid doping, different types of steroids. The **Endocrine Module that will target growth hormone doping is in line to be launched soon.**
- **Statement 3 is correct:** **National Anti-Doping Agency (NADA) is in process to have its first Athlete Passport Management Unit (APMU) in India to handle the administrative management of Biological Passports.** There are only 11 APMUs recognized by the WADA all over the world while India does not have one till now. The NADA said that it will constitute a group of experts in related subjects for Athlete Biological Passport Management. The National Anti-Doping Agency (NADA) and National Dope Testing Laboratory (NDTL) organized the "WADA Athlete Biological Passport (ABP) Symposium- 2022" from 12<sup>th</sup> to 14th October, 2022 in New Delhi

**Source:** <https://www.newindianexpress.com/sport/other/2022/oct/14/athlete-biological-passport-has-a-positive-effect-as-a-deterrent-wada-official-aikin-2507827.html>

**46. Answer: C**

**Explanation:**

**Synthetic aperture radar (SAR)** refers to a technique for producing fine-resolution images from a resolution-limited radar system. It requires that the radar be moving in a straight line, either on an airplane or, as in the case of NISAR, orbiting in space.

- **Option (a) is correct:** NASA-ISRO Synthetic Aperture Radar (NISAR) is the first satellite mission to collect radar data in two microwave bandwidth regions, called the L-band and the S-band, **to measure changes of our planet's surface, including movements as small as centimeter.**
- **Option (b) is correct:** **Radar penetrates clouds and darkness, enabling NISAR to collect data day and night in any weather.** The instrument's imaging swath — the width of the strip of data



collected along the length of the orbit track — is greater than 150 miles (240 kilometers), which allows it to image the entire Earth in 12 days. Over the course of multiple orbits, the radar images will allow users to track changes in croplands and hazard sites, as well as to monitor ongoing crises such as volcanic eruptions.

- **Option (c) is incorrect: NISAR is a joint Earth-observing mission between NASA and the Indian Space Research Organization (ISRO) with the goal to make global measurements of the causes and consequences of land surface changes using advanced radar imaging. On Sept. 30, 2014, NASA and ISRO signed a partnership to collaborate on and launch NISAR.**
- **Option (d) is correct: NISAR is planned to launch in 2024 from India's Satish Dhawan Space Center in Sriharikota, into a near-polar orbit. NASA requires a minimum of three years of global science operations with the L-band radar, and ISRO requires five years of operations with the S-band radar over specified target areas in India and the Southern Ocean.**

**Source:**

<https://nisar.jpl.nasa.gov/mission/mission-concept/>

**47. Answer: A**

**Explanation:**

- **Statement 1 is correct: Both plants and animals (including insects and mammals) have an innate immune system, which helps protect hosts from the majority of microbes they encounter during their lifetime.** Plant and animal innate immune systems recognize an overlapping set of conserved microbe-associated molecular patterns (MAMPs).
- **Statement 2 is correct: Plants and animals have similar but not identical responses to foreign molecules. Unlike animals, plants do not have mobile immune cells like lymphocytes that can detect pathogens in the circulatory system.** In animals, when lymphocytes detect pathogen antigens, they undergo clonal expansion and differentiation, leading to the production of memory cells that enable subsequent secondary immune responses. **Since plants lack a circulatory system, they have different immune strategies to establish specific but less complex immune responses and generate a different type of immune memory.**
- **Statement 3 is incorrect: The main difference between plant and animal immunity is that while animals exposed to infection can adapt and acquire immunity, plants cannot. Instead, their ability to recognise and repel specific attackers is hard-wired into their genes. An adaptive immune system does not exist in plants. Plants have no lymphocytes, immune memory cells are not formed and the phenomenon of somatic recombination has not been unequivocally demonstrated.**

**Source:**

<https://go.gale.com/ps/i.do?p=AONE&u=googlescholar&id=GALE|A456982033&v=2.1&it=r&sid=AO NE&asid=9467e611>

**48. Answer: B**

**Explanation:**

Ozone depleting substances are chemicals that destroy the earth's protective ozone layer. They include:

- **chlorofluorocarbons (CFCs)**
- **halon**
- carbon tetrachloride (CCl<sub>4</sub>)
- methyl chloroform (CH<sub>3</sub>CCl<sub>3</sub>)
- hydrobromofluorocarbons (HBFCs)
- hydrochlorofluorocarbons (HCFCs)
- methyl bromide (CH<sub>3</sub>Br)
- bromochloromethane (CH<sub>2</sub>BrCl)

Production and import of these chemicals are controlled by the Montreal Protocol on Substances that Deplete the Ozone Layer.

- **Statement 1 is correct:** Ozone depleting potential is a measure of how much damage a chemical can cause to the ozone layer compared with a similar mass of trichlorofluoromethane (CFC-11). **CFC-11, with an ozone depleting potential of 1.0, is used as the base figure for measuring ozone depleting potential.** CFCs also have **very high Global warming potential**, ranging from 4660 for CFC-11 to as high as 10900 for CFC-12.
- **Statement 2 is incorrect:** Fluorinated gases (F-gases) have been introduced as substitutes for ODS in many sectors such as refrigeration and air conditioning applications. F-gases include **hydrofluorocarbons (HFCs)**, perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>). These gases **do not deplete the ozone layer, but they are greenhouse gases.**
- **Statement 3 is incorrect: Carbon dioxide (CO<sub>2</sub>), a naturally occurring greenhouse gas, has no ozone depleting potential.**
- **Option 4 is correct: Halons**, which were widely used in fire extinguishers and explosion suppression systems, **have an extremely high potential for ozone depletion - they are ten times more potent than chlorofluorocarbons (CFCs) - and they also act as a global warming agent - three and a half thousand times as potent as carbon dioxide (CO<sub>2</sub>).**

**Question Hack:** By eliminating statement 2 (HFC) one could reach to the correct answer. We all know that under Montreal protocol, CFC were to be eliminated as it was having high ozone depleting potential. It was to be replaced with HFC which has zero ozone depleting potential but it was found that it was having high global warming potential (as it was a green-house gas). Thus, under Kigali amendment we came up with aims and targets to phase out HFC.

**Sources:**

<https://www.dccew.gov.au/environment/protection/ozone/ozone-science/ozone-depleting-substances>

<https://www.eea.europa.eu/themes/climate/ozone-depleting-substances-and-climate-change/protecting-the-ozone-layer-while>

<https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances>

<https://www.dccew.gov.au/environment/protection/ozone/halon/waste-halon-useful-plastics>

**49. Answer: C**

**Explanation:**

- **Statement 1 is incorrect: As per Section 6(1) of Mahatma Gandhi National Rural Employment Guarantee Act (Mahatma Gandhi NREGA), 2005, the Central Government, by notification, specifies the wage rate for unskilled work for its beneficiaries.** Accordingly, the Ministry of Rural Development notifies Mahatma Gandhi NREGA wage rate for every financial year for States/UTs.
- **Statement 2 is correct: To compensate the Mahatma Gandhi NREGA workers against inflation, the Ministry of Rural Development revises the wage rate every financial year based on change in Consumer Price Index for Agricultural Labourers (CPI-AL).** If the calculated wage rate of any State is coming lower than the wage rate of the previous financial year, it is being protected by maintaining the previous financial year's wage rate. The revised wage rate is made applicable from 1st April of each financial year.
- **Statement 3 is correct: State Governments can provide wages over and above the wage rate notified by the Central Government under Mahatma Gandhi NREGA.**

**Source:** <https://rural.nic.in/en/press-release/increase-rural-wages>

**50. Answer: C**

**Explanation:**

- **Option (c) is correct: According to provisional data from the commerce ministry, the bilateral trade between India and the United States has risen by 7.65% to reach \$128.55 billion in the fiscal year 2022-23, making the United States India's largest trading partner.** This represents an

increase from \$119.5 billion in the previous year and \$80.51 billion in 2020-21, indicating a growing economic relationship between the two countries.

As per the data, **exports from India to the United States increased** by 2.81% to \$78.31 billion in the fiscal year 2022-23, compared to \$76.18 billion in 2021-22, **while imports from the US surged** by around 16% to \$50.24 billion.

- Meanwhile, **India's bilateral trade with China decreased by approximately 1.5%, reaching \$113.83 billion in 2022-23, down from \$115.42 billion in the previous year.**

In the fiscal year 2022-23, **India's exports to China decreased by roughly 28% to \$15.32 billion, while imports from China rose by 4.16% to \$98.51 billion**, leading to a wider trade gap of \$83.2 billion compared to \$72.91 billion in 2021-22.

**Source:** <https://currentaffairs.adda247.com/us-emerges-as-indias-biggest-trading-partner-in-fy23-at-128-55-bn-china-at-second-position>

### 51. Answer: C

#### Explanation:

- **Option (c) is correct:** Pradhan Mantri Bhartiya Jan Urvarak Pariyojana - One Nation One Fertiliser has been launched which is a scheme of ensuring affordable quality fertiliser of Bharat brand to the farmers. It aims to market fertilizers in the nation under the '**BHARAT**' brand name, and was introduced by Prime Minister Narendra Modi on October 18, 2022. This indicates that fertilizer packages will be of the same design throughout the nation, bearing the labels BHARAT UREA, BHARAT DAP, BHARAT MOP, and BHARAT NPK, etc.
- The Prime Minister mentioned two new measures in the fertiliser reform story of India. Firstly, a campaign is being initiated today to **develop more than 3.25 lakh fertiliser shops across the country as Pradhan Mantri Kisan Samruddhi Kendras**. These will be centres where farmers can buy not only fertilisers and seeds but also implement soil testing and avail useful information about farming techniques. **Secondly, with One Nation, One Fertiliser, the farmer is going to get rid of all kinds of confusion about the quality of the fertiliser and its availability.** "Now the urea sold in the country will be of the same name, same brand and same quality and this brand is Bharat! Now urea will be available only under 'Bharat' brand name in the entire country", Shri Modi remarked. He further added that it will result in reducing the cost of fertilisers and increase their availability.

**Sources:** <https://timesofagriculture.in/one-nation-one-fertilizer-scheme-bharat-brand-fertilizer>  
<https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=1868463>

### 52. Answer: A

#### Explanation:

**Union government recently unveiled the new foreign trade policy (FTP) 2023, moving away from incentives to a remission- and entitlement-based regime, even as it stuck to the goods and services exports target of \$2 trillion for 2030. The policy provided for Facilitation of "merchanting trade" – shipment of goods from one foreign country to another with the aid of Indian intermediary and sans contact with Indian ports** — and a step to reduce transaction costs for smaller firms, which have a major share in India's goods exports, are the other key features of the policy.

- **Statement 1 is correct:** In Indian Context, the trade is called Merchanting Trade when,
  - **The supplier of goods will be resident in one foreign country**
  - **The buyer of goods will be resident in another foreign country**
  - The merchant or the intermediary will be resident in India

In simple terms, a Merchanting transaction is one which involves shipment of goods from one foreign country to another foreign country involving an Indian Intermediary. Hence, it is also called Intermediary Trade.
- **Statement 2 is incorrect:** Conditions for Classification as Merchanting Trade – For a trade to be classified as merchanting trade following conditions should be satisfied;

- **Goods acquired should not enter the Domestic Tariff Area of the Importing Country** and
- The state of the goods should not undergo any transformation and is meant for transport from the country of the supplier to the country of the buyer.

**Sources:** <https://www.financialexpress.com/economy/boost-to-merchanting-trade-re-settlement-in-new-foreign-trade-policy/3029318/>

[https://www.unionbankofindia.co.in/pdf/difc\\_33\\_invsttreasurymerchantingtrade.pdf](https://www.unionbankofindia.co.in/pdf/difc_33_invsttreasurymerchantingtrade.pdf)

**53. Answer: D**

**Explanation:**

Green Bonds are bonds issued by any sovereign entity, inter-governmental groups or alliances and corporations with the aim that the proceeds of the bonds are utilized for projects classified as environmentally sustainable. Sovereign green bonds are issued by governments to raise resources for such projects. In India, the framework for the sovereign green bond was issued by the government on November 9, 2022.

- **Statement 1 is correct:** Finance Minister Nirmala Sitharaman recently announced the plan to issue sovereign green bonds in the 2022-23 budget as Asia's third-largest economy **attempts to tap the domestic debt market to finance green infrastructure projects. The Reserve Bank of India auctioned 160 billion rupees (\$1.93 billion) worth of sovereign green bonds in two tranches in the government's first-ever such debt sale to raise funds to finance clean projects.**
- **Statement 2 is correct:** A **green finance working panel, headed by the Chief Economic Adviser (CEA) V Anantha Nageswaran**, has been mandated to select projects from the proposals submitted by various government departments.
- **Statement 3 is correct:** Other features of SGBs include –
  - They will be issued through Uniform Price Auction.
  - 5% of the notified amount for sale will be reserved for retail investors.
  - They will be eligible for trading in the secondary market.
  - **They will be reckoned as eligible investment for SLR purposes.**

**Sources:**

<https://theprint.in/business/india-launches-first-ever-sovereign-green-bonds-auction/1301622>

<https://currentaffairs.adda247.com/reserve-bank-of-india-says-no-foreign-investment-cap-on-sovereign-green-bonds>

**54. Answer: B**

**Explanation:**

**Context:** The Reserve Bank of India (RBI) Governor has said that it has proposed to permit banks with IFSC Banking Unit (IBU) to offer non-deliverable foreign exchange derivative contracts to residents.

A non-deliverable forward (NDF) is a cash-settled, and usually short-term, forward contract. A non-deliverable forward (NDF) is a two-party currency derivatives contract to exchange cash flows between the NDF and prevailing spot rates. One party will pay the other the difference resulting from this exchange. NDFs are traded over-the-counter (OTC) and commonly quoted for time periods from one month up to one year.

- **Statement 1 is incorrect:** **As for a forward transaction, an NDF is fixed for an agreed amount (of the non-convertible currency),** on a specific due date, and at a defined forward rate. It **allows for transaction in non-convertible currency but the whole transaction is settled in the convertible currency.**
- **Statement 2 is correct:** **An NDF is an efficient way to hedge a foreign exchange (FX) exposure against non-convertible currencies such as the Argentinian peso, Taiwanese dollar, Korean won, etc.** It is conceptually similar to a forward transaction with the difference that there is **no settlement in the non-convertible currency.** Instead, the whole transaction is settled in the convertible currency such as USD, EUR, or CHF.

- **Statement 3 is correct: The notional amount is never exchanged**, hence the name "non-deliverable." Two parties agree to take opposite sides of a transaction for a set amount of money—at a contracted rate, in the case of a currency NDF. This means that **counterparties settle the difference between contracted NDF price and the prevailing spot price**. The profit or loss is calculated on the notional amount of the agreement by taking the difference between the agreed-upon rate and the spot rate at the time of settlement.

**Sources:**

<https://www.credit-suisse.com/media/assets/private-banking/docs/ch/unternehmen/kmugrossunternehmen/fx-factsheet-ndf-en.pdf>  
<https://www.investopedia.com/terms/n/ndf.asp>

**55. Answer: A**

**Explanation:**

Ukraine is among the largest exporters of wheat, maize, rapeseed, sunflower seeds and sunflower oil, globally.

- **Statement 1 is correct:** The **Black Sea Grain Initiative** was signed with **Russia and Ukraine as the two main parties** in **Istanbul** on July 27 2022. The deal provided for a **safe maritime humanitarian corridor for Ukrainian exports** (particularly for **food grains**) from three of its key ports, namely, **Chornomorsk, Odesa and Yuzhny**. The **central idea was to calm markets** by ensuring an adequate supply of grains, **thereby limiting food price inflation**. The initiative was initially stipulated for a period of 120 days, with an option to extend or terminate in November 2022. Russia extend the deal in November 2022.
- **Statement 2 is incorrect:** The deal was **brokered by the United Nations (UN) and Turkey**. The deal put in place a **Joint Coordination Centre (JCC)**, comprising senior representatives from **Russia, Turkey, Ukraine and the UN** for oversight and coordination. **All commercial ships are required to register directly with the JCC** to ensure appropriate monitoring, inspection and safe passage. The initiative has been credited for having made a “huge difference” to the global cost of living crisis. The deal provides for a safe humanitarian corridor for the export of Ukrainian grains through the Black Sea, to tackle rising food prices due to the geopolitical conflict grappling the ‘breadbasket’.
- **Statement 3 is incorrect: Bosphorus strait connects Black Sea to the Sea of Marmara.** It is a natural strait and an internationally significant waterway located in **Istanbul** and forms part of the **continental boundary between Asia and Europe**, and divides Turkey by **separating Anatolia from Thrace**. It is the **world's narrowest strait used for international navigation**. It is the **Dardanelles Strait** which connects **Sea of Marmara to the Aegean Sea**.



**Source:**

<https://www.thehindu.com/news/international/explained-what-is-the-black-sea-grain-initiative/article66085476.ece>

56. Answer: A

Explanation:

- **Statement 1 is correct: The Asia-Pacific Trade Agreement (APTA)**, previously named the **Bangkok Agreement**, signed in 1975 as an initiative of **Economic and Social Commission for Asia and the Pacific (ESCAP)**, is a **preferential tariff** arrangement that aims at promoting intra-regional trade through exchange of mutually agreed concessions by member countries.
- **Statement 2 is incorrect: APTA has six members namely Bangladesh, China, India, Republic of Korea, Lao People's Democratic Republic, Sri Lanka and Mongolia, the most recent one in 2020.** ESCAP functions as the secretariat for the Agreement. It is **not a trade agreement between India and ASEAN.**
- **Statement 3 is incorrect: The Regional Comprehensive Economic Partnership (RCEP) will become the largest trade agreement in the world as measured by the GDP of its members – almost of one third of the world's GDP.** India is not a member of RCEP. By comparison, other major regional trade agreements by share of global GDP are the South American trade bloc Mercosur (2.4%), Africa's continental free trade area (2.9%), the European Union (17.9%) and the **United States-Mexico-Canada agreement (28%). APTA has about 24 % contribution to world GDP.**

Sources:

<https://unctad.org/news/asia-pacific-partnership-creates-new-centre-gravity-global-trade>

<https://www.indiantradeportal.in/vs.jsp?lang=0&id=0,1,30622,30624>

<https://www.unescap.org/apta>

57. Answer: C

Explanation:

**STRIPS stands for Separate Trading of Registered Interest and Principal Securities.** Stripping is a process of converting periodic coupon payments of an existing Government Security into tradable zero-coupon securities, which will usually trade in the market at a discount and are redeemed at face value.

- **Statement 1 is correct: G-Sec STRIPS** let investors hold and trade the individual interest and principal components of eligible government treasury notes and bonds as separate securities. A 10-year government security that pays interest twice a year can be stripped into 20 coupons and one principal instrument, **all of which then become zero-coupon bonds and traded separately as independent securities in the secondary market.** STRIPS can be held in an individual's demat account.
- **Statement 2 is incorrect: They are created out of existing securities only** and unlike other securities, **are not issued through auctions.**
- **Statement 3 is correct: Reconstitution is the reverse process of stripping,** where, the Coupon STRIPS and Principal STRIPS are reassembled into the original Government Security.

Sources:

[https://www.rbi.org.in/Scripts/BS\\_CircularIndexDisplay.aspx?Id=8183#111](https://www.rbi.org.in/Scripts/BS_CircularIndexDisplay.aspx?Id=8183#111)

<https://economictimes.indiatimes.com/mf/analysis/g-sec-strips-offer-more-than-bank-fds-with-security/articleshow/93865212.cms>

<https://mintgenie.livemint.com/news/personal-finance/g-sec-strips-should-retail-investors-opt-for-them-to-earn-higher-than-bank-fds-151663072046761>

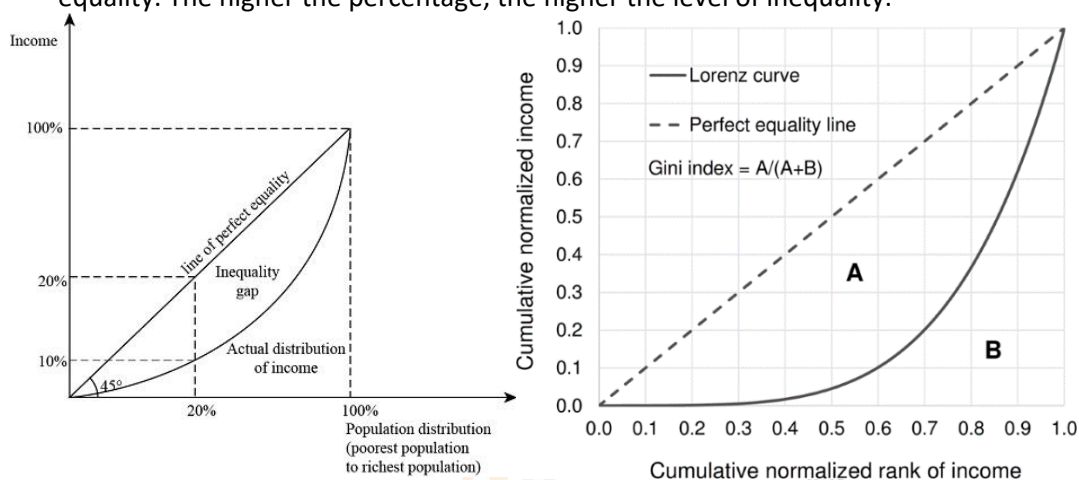
58. Answer: C

Explanation:

- **Statement 1 is correct: The Gini Index is a summary measure of income inequality.** The Gini coefficient incorporates the detailed shares data into a single statistic, which summarizes the dispersion of income across the entire income distribution.

- **Statement 2 is incorrect: The Gini coefficient ranges from 0, indicating perfect equality (where everyone receives an equal share), to 1, perfect inequality (where only one recipient or group of recipients receives all the income).**
- **Statement 3 is correct: Gini coefficients of income are calculated on a market income and a disposable income basis.** The Gini coefficient on market income—sometimes referred to as a **pre-tax Gini coefficient**—is calculated on income before taxes and transfers. It measures inequality in income without considering the effect of taxes and social spending already in place in a country. **The Gini coefficient on disposable income**—sometimes referred to as the **after-tax Gini coefficient**—is calculated on income after taxes and transfers. It measures inequality in income after considering the effect of taxes and social spending already in place in a country.
- **Statement 4 is correct: The Gini is based on the difference between the Lorenz curve (the observed cumulative income distribution) and the notion of a perfectly equal income distribution.**

**Additional Information:** While the Lorenz curve simply shows the general distribution of wealth or income, the Gini index (or Gini coefficient) provides a percentage, from 0% to 100%, of income equality. The higher the percentage, the higher the level of inequality.



**Sources:**

<https://www.census.gov/topics/income-poverty/income-inequality/about/metrics/gini-index.html>  
[https://en.wikipedia.org/wiki/Gini\\_coefficient](https://en.wikipedia.org/wiki/Gini_coefficient)

**59. Answer: C**

**Explanation:**

- **Statement 1 is correct: In 2014, over 92 per cent of mobile phones used in India were imported, today over 97 per cent of mobile phones used in India are made in India.** Today India exports electronic devices worth \$12 billion. This information was given by Minister of State for Electronics and Information Technology while speaking at the event CyFY2022, organised by Observer Research Foundation (ORF).
- **Statement 2 is incorrect: As of March 2023, there is no semiconductor fabrication plant for mobile phones in India.** Union IT Minister intimated in March 2023 that the first semiconductor fabrication plant for mobile phones will be announced in future, and India is poised for a vibrant chip industry in the next 3-4 years on the back of enabling policies and the government's firm commitment towards growing the manufacturing ecosystem.
- **Statement 3 is correct: As per extant Foreign Direct Investment (FDI) policy, FDI up-to 100% under the automatic route is permitted for electronics manufacturing (except from countries sharing land border with India),** subject to applicable laws / regulations; security and other conditions.

**Sources:**

<https://economictimes.indiatimes.com/industry/cons-products/electronics/97-pc-phones-used-in-country-are-made-in-india-union-minister-rajeev-chandrasekhar/articleshow/95109746.cms?from=mdr>

<https://www.ndtv.com/business/indias-first-semiconductor-fabrication-factory-to-be-declared-in-a-few-weeks-it-minister-3859669>

<https://pib.gov.in/PressReleasePage.aspx?PRID=1811371#>

**60. Answer: D**

**Explanation:**

**Commercial Courts Act, 2015** was introduced by the government to **reduce the pendency of the Commercial Disputes** which earlier were dealt with under the category of regular suits. The Commercial Courts Act 2015 came into force on 23rd October 2015, section 2(b) of the Commercial Courts Act, 2015 says that the Commercial Court is what is defined under section 3(1) of the said act. According to this section, the government may constitute commercial courts at the District level by notification after consultation with the High Court, Commercial Disputes having a specific value of fewer than 3 lakhs and not more than 1 crore come under the jurisdiction of district courts.

• **Items 1, 2, 3 and 4 are correct: Commercial Disputes are defined under section 2(c) of the Commercial Courts Act, 2015 as:**

- (i) ordinary transactions of merchants, bankers, financiers and traders such as those relating to mercantile documents, including enforcement and interpretation of such documents;
- (ii) **export or import of merchandise or services;**
- (iii) **issues relating to admiralty and maritime law;**
- (iv) transactions relating to aircraft, aircraft engines, aircraft equipment and helicopters, including sales, leasing and financing of the same;
- (v) carriage of goods;
- (vi) construction and infrastructure contracts, including tenders;
- (vii) agreements relating to immovable property used exclusively in trade or commerce;
- (viii) franchising agreements;
- (ix) distribution and licensing agreements;
- (x) management and consultancy agreements;
- (xi) joint venture agreements;**
- (xii) shareholders agreements;
- (xiii) subscription and investment agreements pertaining to the services industry including outsourcing services and financial services;
- (xiv) mercantile agency and mercantile usage;
- (xv) partnership agreements;
- (xvi) technology development agreements;
- (xvii) intellectual property rights relating to registered and unregistered trademarks, copyright, patent, design, domain names, geographical indications and semiconductor integrated circuits;
- (xviii) agreements for sale of goods or provision of services;
- (xix) exploitation of oil and gas reserves or other natural resources including electromagnetic spectrum;
- (xx) insurance and re-insurance;**
- (xxi) contracts of agency relating to any of the above; and
- (xxii) such other commercial disputes as may be notified by the Central Government

**Sources:**

<https://districts.ecourts.gov.in/commercial-courts-7>

<https://www.indiacode.nic.in/bitstream/123456789/2156/1/a2016-04.pdf>



**61. Answer: A**
**Explanation:**

**Debt monetization or monetary financing** is the practice of a **government borrowing money from the central bank to finance public spending instead of selling bonds** to private investors or raising taxes. The central banks who buy government debt, are **essentially creating new money in the process** to do so. This practice is often **informally and pejoratively called printing money or money creation**.

- **Statements 1 is correct:** When government deficits are financed through debt monetization the outcome is an increase in the monetary base, shifting the aggregate-demand curve to the right **leading to a rise in the price level** (unless the money supply is infinitely elastic). **It may reduce the real value of the holdings of money by the public.** When governments intentionally do this, they devalue existing stockpiles of fixed income cash flows of anyone who is holding assets based in that currency. It is prohibited in many countries, because it is considered dangerous due to the **risk of creating runaway inflation** in full employment scenario.
- **Statement 2 is incorrect: It is not necessary that it may lead to slow growth.** In fact, monetary financing of budget deficit **can act as a stimulus to economic growth and employment in an economy overburdened by private debt.**
- **Statement 3 is incorrect: It benefits debtors at the expense of creditors and will result in an increase in the nominal price of real estate.**

**Source:**

<https://www.imf.org/en/Blogs/Articles/2022/02/22/should-monetary-finance-remain-taboo>

[https://en.wikipedia.org/wiki/Debt\\_monetization](https://en.wikipedia.org/wiki/Debt_monetization)

**62. Answer: A**
**Explanation:**

- **Statement 1 is correct:** Off-budget financing, also known as 'extra' budget borrowing, is used by the Centre to finance its expenditures while keeping the debt off from its annual statement. **Such borrowings are not counted in the calculation of the fiscal deficit.**
- **Statement 2 is correct:** The off-budget borrowings are loans that the government does not take directly, but public institutions borrow after the Centre's order. These borrowings are intended to fulfill the government's expenditure needs. **The government can ask an implementing agency to raise the required funds from the market through loans or by issuing bonds.** For example, Oil marketing companies, like IOCL, HPCL and BPCL extended unsecured and interest-free loans to Pradhan Mantri Ujjwala Yojana beneficiaries on account of first refill or cost of gas of stove.
- **Statement 3 is incorrect: In India, the off-budget financing is also excluded from the Fiscal Responsibility and Budget Management (FRBM) Act, which intends to bring transparency and accountability to the monetary actions of the government.** FRBM Act sets a target for the Centre to establish fiscal discipline, strengthen fiscal prudence, and reduce its fiscal deficits. Since the Centre is not directly borrowing the money, therefore, the liability of the loan is not formally on the Centre. As a result, it is not included in the fiscal deficit book. Governments across the world use this to escape budget controls.

**Source:** <https://www.businesstoday.in/news/story/what-is-off-budget-financing-how-does-it-help-govt-manage-budget-286217-2021-02-01>

**63. Answer: C**
**Explanation:**

- **Item 1 is correct:** Article 280 (3) (c) recognizes that urban local bodies (ULBs) are not just the responsibility of state governments the central government has an important stake in financing their activities, and **urban local bodies (ULBs) have a claim in the divisible pool of the central government resources with many of their functions enumerated in Schedule 12** having been drawn from the Concurrent List of the Constitution.

- **Item 2 is incorrect:** ULBs have the power to levy following taxes –

- Property Tax
- Taxes on Vehicles
- Advertisement Tax
- Toll Tax
- Entertainment Tax

**Electricity tax is defined as per the policy of the central government with taxes going to the state government.** This differs from state to state. The tax is also different for different sectors and industries.

- **Item 3 is correct:** Major sources of non-tax revenues for ULBs are –

- License fee
- Gate Fees
- Permit fees
- Registration fees
- Service Charges

- **Item 4 is correct: Similar to Centre and State Governments, Municipal Corporations can raise resources by selling bonds in the open market via open market operations.** This is still a relatively underdeveloped area, as out of all ULBs, only those having reasonably good amounts of resources from their own sources and credentials can raise resources through borrowing by selling bonds.

- Among the many provisions, the 74th Constitutional Amendment Act, one was about the sharing of resources of States Governments with their respective local governments. Broadly, all transfers from state governments to the municipalities can be of two types –

- Mandatory Shared Resources
- Discretionary Transfers/Grants-in-Aid

**Source:**

<https://budgetbasics.openbudgetsindia.org/municipal-budget#what-are-the-sources-of-funds-for-ulbs>

**64. Answer: D**

**Explanation:**

- **Statement 1 is correct: RoDTEP Scheme (Remission of Duties and Taxes on Exported Products)** is based on the globally accepted principle that taxes and duties should not be exported, and taxes and levies borne on the exported products should be either exempted or remitted to exporters. **The RoDTEP scheme rebates/refunds the embedded Central, State and local duties/taxes to the exporters** that were so far not being rebated/refunded. The scheme is being implemented from 1st January 2021 and the rebate is issued as a transferable electronic scrip by the Central Board of Indirect Taxes & Customs (CBIC) in an end to end IT environment.
- **Statement 2 is incorrect:** In the present times, when exports are facing headwinds on account of signs of recession in some of the developed markets & supply chain disruptions on account of Russia-Ukraine conflict, **extension of RoDTEP to uncovered sectors like Chemicals, Pharmaceuticals & Articles of Iron & Steel is likely to enhance the export competitiveness of these sectors.**
- **Statement 3 is correct: RoDTEP support is available to eligible exporters at a notified rate as a percentage of Freight On Board (FOB) value.** Rebates on certain export products will also be subject to value cap per unit of the exported product.

Sources:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1881602>

<https://www.livemint.com/news/india/rodtep-rates-guidelines-to-benefitexporters-come-into-effect-11629199117719.html>

**65. Answer: C****Explanation:**

- **Pair 1 is correctly matched:** Thousands of people in opposition-held **Idlib** in **north western Syria** have taken to the streets to mark the **12<sup>th</sup> anniversary of popular protests** calling for the **downfall of President Bashar al-Assad** and his government in March 2023. Twelve years on, al-Assad still controls most of the country, largely thanks to **military backing from Iran and Russia**. The region is home to more than **four million people, most of them displaced** from other parts of Syria during previous bouts of violence. **Recently, it was hit by devastating earthquakes** that killed thousands of people.
- **Pair 2 is correctly matched:** **Erbil**, also called **Hawler**, is the **capital** and most populated city in the **Kurdistan Region of Iraq**. It lies in the **Erbil Governorate**. Erbil is **home to a large population of refugees due to ongoing conflicts in Syria**. In 2020, it was estimated that 450,000 refugees had settled in the Erbil metropolitan area since 2003, with many of them expected to remain. The parliament of the Iraqi Kurdistan was established in Erbil in 1970.
- **Pair 3 is correctly matched:** **Natanz is a nuclear facility in Iran** which has been in news due to an attack on it in April 2021. **Iran has accused Israel** for what it called an act of "**nuclear terrorism**". Natanz nuclear facility is part of Iran's nuclear program. It is generally recognized as Iran's central facility for uranium enrichment with over 19,000 gas centrifuges currently operational.
- **Pair 4 is incorrectly matched:** **Al-Hudaydah**, also known as Hodeda, Hodeida, Hudaida or Hodeidah, **is the fourth-largest city in Yemen and its principal port on the Red Sea**. In 2018, the Saudi-led coalition launched a major offensive against the Houthis to **recapture the Red Sea city of Hudaydah**. The port is the **principal lifeline for millions of Yemenis at risk of famine**. After six months of fierce fighting, the two sides agreed **a truce in the city**.

**Sources:**

<https://www.aljazeera.com/gallery/2023/3/15/photos-syria-twelfth-anniversary-since-uprising>

<https://en.wikipedia.org/wiki/Erbil>

<https://www.bbc.com/news/world-middle-east-56734657>

<https://en.wikipedia.org/wiki/Natanz>

<https://www.bbc.com/news/world-middle-east-29319423>

[https://en.wikipedia.org/wiki/Al\\_Hudaydah](https://en.wikipedia.org/wiki/Al_Hudaydah)

**66. Answer: D****Explanation:**

The Government of India has initiated the National Investment and Infrastructure Fund (NIIF) which is a state-owned investment fund for enhancing investment in economic and social infrastructure financing in the country. NIIF is envisaged to be a fund of funds that generate risk-adjusted returns for its investors alongside promoting infrastructure development.

- **Items 1, 2, 3 and 4 are correct:** The NIIF aims to maximize the economic impact mainly through **infrastructure development in commercially viable projects such as greenfield and brownfield, including stalled projects**. It would also consider other **nationally important projects in manufacturing, if commercially viable**. The fund intends to attract investment from both domestic and foreign investment sources. The investment fund objective is to generate attractive long-term risk-adjusted returns for investors on a sustainable basis.

- **Item 5 is correct:** NIIF will invest in the **projects where the revenue streams are clearly identified in an agreement between the project plan entity and approved Government entity.** It would be the endeavour of the NIIF to be treated on par with the contributor of its class.

Source: <https://www.indiafilings.com/learn/national-investment-and-infrastructure-fund-niif>

**67. Answer: A**

**Explanation:**

In India, land ownership is primarily established through a registered sale deed (a record of the property transaction between the buyer and seller). During such transactions, the onus of checking past ownership records of a property is on the buyer. Therefore, land ownership in India, as determined by such sale deeds, is presumptive in nature, and subject to challenge.

- **Statement 1 is incorrect: To address issues with land records, a move towards conclusive titling has been proposed.** In a conclusive titling system, the government provides guaranteed titles, and compensation in case of any ownership disputes. **Achieving this will require shifting to a system of registered property titles (as opposed to sale deeds) as the primary evidence of ownership, and having clear and updated land records.**
- **Statement 2 is incorrect: Land records consist of various types of information (property maps, sale deeds) and are maintained across different departments at the district or village level.** These departments work in silos, and the data across departments is not updated properly. Hence, discrepancies are often noted in land records. In the past, surveys to update land records have not been undertaken or completed, and maps have not been used to establish actual property boundaries on the ground. Therefore, in several records, the property documents do not match the position on the ground.
- **Statement 3 is correct:** Today, land ownership can be determined through a set of documents. These include:
  - the record of rights (RoR), which captures details such as the name of the land holder, the number and size of the plot area, and revenue rate (for agricultural land),
  - the registered sale deed to prove that the property has been sold from one person to the other, and the taxes on the sale have been paid,
  - survey documents to record a property's boundaries and area, and prove that the property is listed in government records, and
  - property tax receipts.

**However, an electricity connection does not prove the ownership of the property.**

Source: <https://prsindia.org/policy/analytical-reports/land-records-and-titles-india>

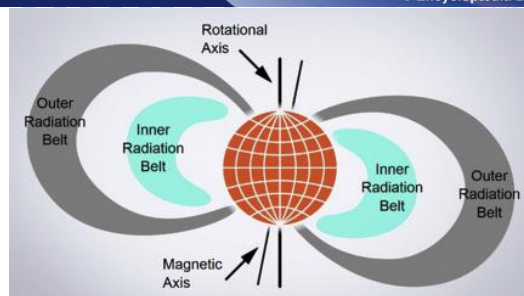
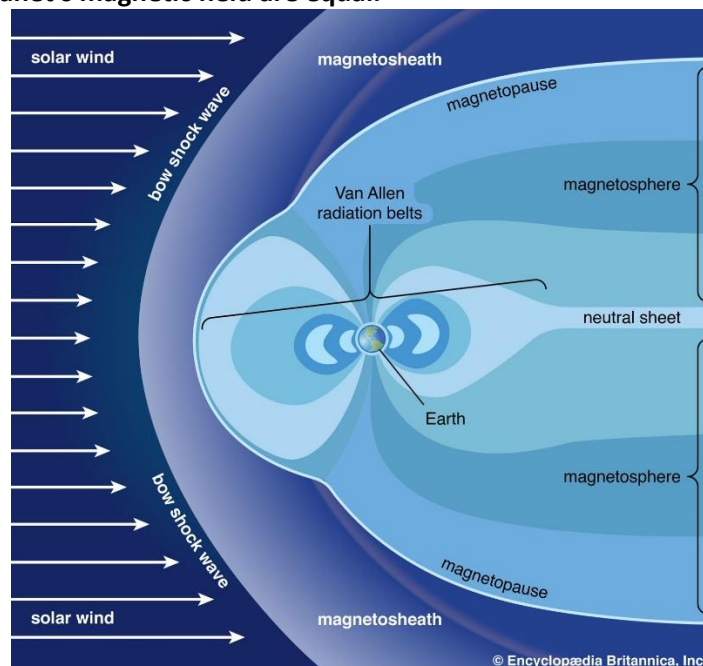
**68. Answer: B**

**Explanation:**

- **Statement 1 is incorrect:** Earth's **internal magnetism** creates a region around the planet known as the **magnetosphere. While several planets in our solar system have magnetospheres, Earth has the strongest one of all the rocky planets.** Our magnetosphere is a vast, comet-shaped bubble, and it has played a crucial role in our planet's habitability. **After the Sun, Jupiter has by far the strongest and biggest magnetic field in our solar system** — it stretches almost 15 times the width of the Sun. (**Earth's, on the other hand, could easily fit inside the Sun**). Jupiter does not have a molten metal core; instead, its magnetic field is created by a core of **compressed liquid metallic hydrogen.**
- **Statement 2 is correct:** The Van Allen radiation belt is a **zone of energetic charged particles, most of which originate from the solar wind.** The particles are captured by and held around a planet by that planet's magnetic field. It surrounds Earth, containing a nearly impenetrable barrier that prevents the fastest, most energetic electrons from reaching Earth. The **outer belt is made up of billions of high-energy particles that originate from the Sun** and become trapped in Earth's

magnetic field, an area known as the magnetosphere. The **inner belt results from interactions of cosmic rays with Earth's atmosphere.**

- **Statement 3 is correct: The magnetopause is the abrupt boundary between a magnetosphere and the surrounding plasma.** For planetary science, the magnetopause is the **boundary between the planet's magnetic field and the solar wind.** The location of the magnetopause is determined by the balance between the pressure of the dynamic planetary magnetic field and the dynamic pressure of the solar wind. As the solar wind pressure increases and decreases, the magnetopause moves inward and outward in response. **The magnetopause is where the pressure from the solar wind and the planet's magnetic field are equal.**



**Sources:**

<https://www.nasa.gov/feature/goddard/2017/nasa-investigates-invisible-magnetic-bubbles-in-outer-solar-system>

<https://www.nasa.gov/magnetosphere>

**69. Answer: C**

**Explanation:**

In a country's balance of payments, the capital account features transactions that lead to changes in the overseas financial assets and liabilities. These include investments abroad and inward capital flows. Capital account convertibility implies the freedom to convert domestic financial assets into overseas financial assets at market determined rates.

- **Statement 1 is correct:** Once a country eases capital controls, **typically, there is a surge of capital flows.** For countries that face constraints on savings and capital can utilize such flows to finance their investment, which in turn stokes economic growth.

- **Statement 2 is correct:** The inflow of capital can help augment domestic resources and boost growth. Local residents would be in a position to diversify their portfolio of assets, which helps them **insulate themselves better from the consequences of any shocks in the domestic economy.**

**Source:**

<https://economictimes.indiatimes.com/news/economy/finance/what-is-capital-account-convertibility/articleshow/1949066.cms>

**70. Answer: B**

**Explanation:**

An Exchange Rate (ER) represents the price of a national currency valued as a foreign currency. The exchange rate plays a significant role in the economy. Because exchange rate fluctuations influence the whole economy, the exchange rate is a major economic factor for growth, stability, and economic development. In addition, the exchange rate directly influences the unemployment rate and the inflation level, and it is an indicator of external competitiveness.

- **Statement 1 is correct: A freely (clean) floating (or flexible) exchange rate regime, where the monetary authorities refuse any intervention in the exchange rate market, is the simplest type of system.** The rate is then freely determined by market forces and can fluctuate by any amount at any moment.
- **Statement 2 is correct: In a fixed exchange rate regime, exchange rates are held constant or allowed to fluctuate within very narrow boundaries,** perhaps 1 percent above or below the initial set of rates. When a country chooses to fix its exchange rate, local currency is assigned a par value in terms of gold, another currency, or a basket of currencies.
- **Statement 3 is correct: Countries operating under a pegged exchange rate regime “peg” their currency’s value to a foreign currency or some unit of account** (e.g., gold, the European currency unit, etc.). Hence, while bilateral parity is maintained, the home currency’s value fluctuates against other currencies in line with the anchor country’s currency.
- **Statement 4 is incorrect: In a managed float (or dirty float) exchange rate regime,** the monetary authority influences the movements of the exchange rate through active intervention in the foreign market without specifying, or recommitting to, a preannounced path for the exchange rate. **Although market conditions determine the exchange rate, this type of exchange rate regime also involves certain less-specified central bank interventions with various objectives.**

**Source:**

<https://www.encyclopedia.com/social-sciences/applied-and-social-sciences-magazines/exchange-rates>

**71. Answer: D**

**Explanation:**

- **Pair 1 is correctly matched:** In the north-western parts of India including Gujarat and Rajasthan, Solanki School developed under the patronage of the Solanki rulers. The temple walls were devoid of any carvings. The garbhagriha is connected with the mandapa both internally as well as externally. The porticos have decorative arched gateways known as torans. **A unique feature of this school is the presence of step-tank, known as surya-kund in the proximity of the temple.** The steps of the tank are full of small temples. There are wooden carvings present in these temples. Example: Modhera Sun temple, Gujarat (built in 1026–27 by Bhima-I).

- **Pair 2 is correctly matched:** In the central part of India, the Chandela rulers developed a distinct style of temple making of their own known as Khajuraho school or Chandel school. **In these temples, both the interior and exterior walls were lavishly decorated with carvings.** The temples were made of sandstone. The temples had three chambers – garbhagriha, mandapa and ardhamandapa. Some temples had a vestibular entrance to the garbhagriha known as antarala. The temples were generally north or east facing. The temples were built on relatively high platform and belong to Hindu as well as Jain religion. Example: Kandariya Mahadeva temple, Lakshman temple at Khajuraho, etc.
- **Pair 3 is correctly matched:** During ancient India, in different parts of the Kalinga empire, a distinct style of temple architecture, sub-schools of the Nagara School, known as Odisha School developed. The exterior walls were lavishly decorated with intricate carvings, but interior walls were plain. There was no use of pillars in the porch. Iron girders were used instead to support the roof. **The shikharas in the Odisha school were known as rekhadeuls. They were almost vertical roofs which suddenly curved inwards sharply. The mandap was known as jagmohan in this region.** Temples were surrounded by a boundary wall as in Dravidian style of temple architecture. Example: Jagannath temple at Puri, Lingaraj temple at Bhubaneswar, etc.

**Sources:**

Indian Art and Culture by Nitin Singhania, Chapter 1

**72. Answer: A**

**Explanation:**

- **Option (a) is correct: The Intergovernmental Panel on Climate Change (IPCC) defines tipping points as “critical thresholds in a system that, when exceeded, can lead to a significant change in the state of the system, often with an understanding that the change is irreversible.”** The IPCC identifies several tipping points of climate change. Here are the **7 most likely to be crossed this century** due to human activity: **Greenland ice sheet, Permafrost, Ocean circulation and temperature (AMOC), Monsoons, Amazon Rainforests, Antarctic ice sheets, and Coral reef die-off.**
- **Option (b) is incorrect: Carrying capacity is the maximum number, density, or biomass of a population that a specific area can support sustainably.** This likely varies over time and depends on environmental factors, resources, and the presence of predators, disease agents, and competitors over time.
- **Option (c) is incorrect: Forcing Mechanism is a process that alters the energy balance of the climate system, i.e. changes the relative balance between incoming solar radiation and outgoing infrared radiation from Earth.** Such mechanisms include changes in solar irradiance, volcanic eruptions, and enhancement of the natural greenhouse effect by emissions of greenhouse gases.
- **Option (d) is incorrect: Natural Variability are the variations in the mean state and other statistics (such as standard deviations or statistics of extremes) of the climate on all time and space scales beyond that of individual weather events.** Natural variations in climate over time are caused by internal processes of the climate system, such as El Niño as well as changes in external influences, such as volcanic activity and variations in the output of the sun.

**Sources:**

<https://earth.org/tipping-points-of-climate-change/>

<https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/carrying-capacity>

[https://19january2017snapshot.epa.gov/climatechange/glossary-climate-change-terms\\_.html](https://19january2017snapshot.epa.gov/climatechange/glossary-climate-change-terms_.html)

**73. Answer: D**
**Explanation:**

- **Pair 1 is correctly matched: The 15th Conference of Parties (COP15)** of the United Nations Convention to Combat Desertification (UNCCD), concluded May 20, 2022 in Abidjan with a global pledge to boost drought resilience and invest in land restoration for future prosperity. The UN members also agreed and committed to accelerate the restoration of one billion hectares of degraded land by 2030.
- **Pair 2 is correctly matched:** The Governments which are party to the UNCCD met in New Delhi in Sept 2019 over ten days for COP14 adopting a series of breakthrough measures in the accord, known as the **Delhi Declaration**. Besides the **land degradation neutrality (LDN) agreement - whereby countries have pledged to halt the degradation of land to the point where ecosystems and land use can no longer be supported** - there was a landmark decision to boost global efforts to mitigate and manage the risks of crippling drought.
- **Pair 3 is correctly matched: All 198 members of the United Nations unanimously adopted in July, 2022 the Lisbon Declaration on ocean conservation.** The nations committed to follow science-based and innovative actions on an urgent basis. They recognised that developing countries, particularly small island developing states (SIDS) and least developed countries (LDCs), need assistance with capacity building. Participants at the conference agreed to work on **preventing, reducing and controlling marine pollution**. It includes: **Nutrient pollution, untreated wastewater, Solid waste discharges, Hazardous substances, Emissions from the maritime sector, including shipping, shipwrecks, and anthropogenic underwater noise.**

**Sources:**

<https://www.downtoearth.org.in/news/wildlife-biodiversity/how-to-fight-desertification-here-s-what-the-15th-cop-to-unccd-agreed-on-82953>

<https://news.un.org/en/story/2019/09/1046332>

<https://www.downtoearth.org.in/news/governance/un-ocean-conference-198-countries-adopt-lisbon-declaration-83521>

**74. Answer: A**
**Explanation:**

- **Item 1 is correct: Orang National Park** is well known as an important habitat of the Indian One-horned Rhinoceros. **The Park is situated on the northern bank of the Brahmaputra river.** The Pachnoi and Dhansiri rivers flow along its eastern and western boundaries respectively. Both these rivers are tributaries of the Brahmaputra.
- **Item 2 is incorrect: Manas National Park is situated on the bank of the river Manas (tributary of Brahmaputra) at the foothills of the Himalayas.** The beautiful Park, earlier known as North Kamrup wildlife sanctuary, is spread over an area of 519 sq km and was declared a sanctuary in 1928. It was established as the core of the Manas Tiger Reserve from 1973 and elevated to the position of a National Park status in 1990.
- **Item 3 is correct: Kaziranga National Park** is a scenic natural area in the state of Assam, India. **It is situated on the left bank of the Brahmaputra River,** about 60 miles (100 km) west of Jorhat on the main road to Guwahati. First established in 1908 as a reserved forest, it subsequently was designated a game (1916) and wildlife (1950) sanctuary before becoming a national park in 1974. Kaziranga was designated a UNESCO World Heritage site in 1985.
- **Item 4 is incorrect: The Raimona National Park** is within the Bodoland Territorial Region. The area of the park includes the northern part of the notified Ripu Reserve Forest, which forms the western-most buffer to the Manas National Park that straddles the India-Bhutan border. **Raimona is bounded on the west by the Sonkosh river along the Assam-West Bengal border running southward from the India-Bhutan border and the Saralbhanga river on the east** till it touches the India-Bhutan border on the north and the southern part of the Ripu Reserve Forest.



- **Item 5 is correct: Dibru-Saikhowa National Park** is a national park located in Dibrugarh and Tinsukia districts, Assam, India. It was designated a Biosphere Reserve in July 1997. It is located about 12 km north of Tinsukia town at an average elevation of 118 m. **The park is bounded by the Brahmaputra and Lohit Rivers in the north and Dibru River in the south.**

**Sources:**

<http://datazone.birdlife.org/site/factsheet/orang-national-park-iba-india>  
<https://www.britannica.com/place/Kaziranga-National-Park>  
<https://tinsukia.assam.gov.in/tourist-place-detail/274>  
[https://www.kaziranga-national-park.com/manas\\_national\\_park.shtml](https://www.kaziranga-national-park.com/manas_national_park.shtml)  
<https://www.thehindu.com/news/national/raimona-becomes-assams-sixth-national-park/article34736719.ece>

**75. Answer: A**

**Explanation:**

The Rajya Sabha passed the Wild Life (Protection) Amendment Bill, 2022 in Dec 2022, which seeks to give effect to India's obligations under the Convention on International Trade on Endangered Species of Wild Fauna and Flora ('CITES'), which requires countries to regulate trade of all listed specimens through permits. The Act aims to protect and conserve wildlife by rationalising schedules that list out species under the Wild Life (Protection) Act of 1972 and improving the management of protected areas.

- **Statement 1 is correct: Section 38 of the Wildlife (protection) amendment act, 2022** read along with Section 62 of the WPA, 1972 states that “The **Central Government** may, by notification, **declare any wild animal specified in Schedule II to be vermin for any area and for such period as may be specified therein** and so long as such notification is in force, **such wild animal shall be deemed not to be included in Schedule II** for such area and for such period as specified in the notification.” **Previously, Vermins were classified seperately in Schedule V of the WPA, 1972.**
- **Statement 2 is incorrect: Section 38 of the Wildlife (protection) amendment act, 2022** inserts the 62A (1) in the Wildlife Protection Act, 1972 which states that, “**The Central Government** may, by notification, regulate or prohibit the import, trade, possession or proliferation of **invasive alien species which pose a threat to the wild life or habitat in India.**”

**Sources:**

<https://indianexpress.com/article/opinion/columns/latest-amendment-to-wildlife-protection-act-8320098/>  
<https://tribal.nic.in/downloads/FRA/Concerned%20Laws%20and%20Policies/Wildlife%20Protection%20Act,%201972.pdf>  
<https://egazette.nic.in/WriteReadData/2022/241252.pdf>


**76. Answer: C**

**Explanation:**

- **Pair 1 is incorrectly matched: Permaculture** is an approach to land management and settlement design that adopts arrangements observed in flourishing natural ecosystems. **Permaculture agriculture is an approach to agricultural design that focuses on whole systems thinking, as well as using or simulating patterns from nature. Permaculture has 3 core tenants- Care for the earth; Care for the people; and Fair share.** Permaculture integrates land, resources, people and the

environment through mutually beneficial synergies – imitating the no waste, closed loop systems seen in diverse natural systems. It is a portmanteau of permanent agriculture and permanent culture.

- **Pair 2 is correctly matched: Zero Budget Natural Farming (ZBNF) means raising crops without using any fertilizers and pesticides or any other external materials.** The word Zero Budget refers to the zero cost of production of all crops. ZBNF includes 4 major elements: **Bijamrita, Jiwamrita, Acchadana (Mulching) and Waaphasa (Soil Aeration).** The concept was promoted by **agriculturist & Padma Shri awardee Subhash Palekar, in the mid-1990s** as an alternative to the Green Revolution's methods driven by chemical fertilizers and pesticides and intensive irrigation. **ZBNF is developed indigenously.**
- **Pair 3 is correctly matched: Precision agriculture (PA) is the science of improving crop yields and assisting management decisions using high technology sensor and analysis tools.** PA is a new concept adopted throughout the world to increase production, reduce labor time, and ensure the effective management of fertilizers and irrigation processes. It uses a large amount of data and information to improve the use of agricultural resources, yields, and the quality of crops.
- **Pair 4 is correctly matched: Biodynamic farming was the first ecological farming systems to develop as a grassroots alternative to chemical agriculture. Biodynamic farming is an alternative variant where the chemical fertilizers are totally replaced by microbial (biological) nutrient givers such as bacteria, algae, fungi, mycorrhiza and actinomycetes.** A basic ecological principle of biodynamics is to conceive of the farm as an organism, a self-contained entity. Emphasis is placed on the integration of crops and livestock, recycling of nutrients maintenance of soil, and the health and wellbeing of crops and animals; the farmer too is part of the whole.

**Sources:**

<https://www.permaculturenews.org/what-is-permaculture/>

<https://grocycle.com/permaculture-farming/>

<https://www.sciencedirect.com/topics/earth-and-planetary-sciences/precision-agriculture>

<https://pib.gov.in/FactsheetDetails.aspx?Id=148598>

[https://agritech.tnau.ac.in/ta/org\\_farm/orgfarm\\_biodynmic.html](https://agritech.tnau.ac.in/ta/org_farm/orgfarm_biodynmic.html)

**77. Answer: D**

**Explanation:**

- **Statement 1 is incorrect:** The first country-wide tiger census conducted in 1972 estimated the population to comprise a little more than 1,800 individuals, an alarming reduction in tiger population. **Launched at the Jim Corbett National Park, the programme was initially started in nine tiger reserves of different States such as Assam, Bihar, Karnataka, Madhya Pradesh, Jharkhand, Maharashtra, Odisha, Rajasthan, Uttar Pradesh and West Bengal, covering over 14,000 sq km.** While tigers face the threat of extinction, the elephants face the threat of attrition. The elephant numbers have not increased or decreased drastically but there is an increasing pressure on the elephant habitats. **Project Elephant was launched in 1992.** It is a centrally sponsored scheme.
- **Statement 2 is incorrect:** Two genetically different African species exist: the savanna elephant and the forest elephant, with a number of characteristics that differentiate them both. **The African savanna elephant is the largest elephant species, while the Asian forest elephant and the African forest elephant are of a comparable, smaller size.** Asian elephants differ in several ways from their African relatives, with more than 10 distinct physical differences between them. For example, Asian elephants' ears are smaller compared to the large fan-shaped ears of the African species. Only some male Asian elephants have tusks, while both male and female African elephants grow tusks.
- **Statement 3 is incorrect:** There are three species of elephant: African Savanna (Bush), African Forest and Asian. **The African forest elephant is listed as Critically Endangered, and the African savanna elephant as Endangered. The Asian Elephant is listed as Endangered (EN)** because of a

population size reduction inferred to be at least 50% over the last three generations, based on a reduction in its area of occupancy and the quality of its habitat.

- **Statement 4 is incorrect:** The Elephant Task Force (ETF) of Ministry of Environment released a report in 2010 with a few recommendations. **One of them was to accord elephant reserves the status of being 'ecologically sensitive areas' under the Environmental (Protection) Act 1986.** The ETF also recommended establishing a better governance model by amending the Wildlife Protection Act to close loopholes and forming a 'National Elephant Conservation Authority'. However, **the government has not implemented any of these recommendations for an ostensible lack of funds for Project Elephant.**

**Sources:**

<https://www.worldwildlife.org/stories/what-s-the-difference-between-asian-and-african-elephants-and-10-other-elephant-facts>

<https://www.britannica.com/story/whats-the-difference-between-asian-and-african-elephants>

<https://science.thewire.in/environment/elephant-reserves-conservation-funds-law>

<https://indianexpress.com/article/explained/fifty-years-of-project-tiger-how-the-programme-saved-indian-tigers-8547213/>

**78. Answer: C**

**Explanation:**

- **Option (c) is correct: The Great Blue Wall is a Western Indian Ocean (WIO)-born, African-driven roadmap to achieve a nature-positive world by 2030.** It is an action-driven regional response to the three interconnected crises of biodiversity loss, climate change, and economic decline. It aims at unlocking unprecedented nature-based recovery efforts through the establishment of a transformational movement that dramatically accelerates and upscales ocean conservation action while enhancing socioecological resilience and the development of a regenerative blue economy. It aspires to achieve this by catalyzing political leadership and financial support.

**Source:** <https://www.greatbluewall.org/about>

**79. Answer: B**

**Explanation:**

- **Statement 1 is correct:** The speed of energy in which it converts into the organic matter with the help of chlorophyll is **known as primary productivity.** Primary productivity can be affected by various factors like light, water, and nutrients. The two main types of primary productivity are Net primary productivity (NPP) and gross primary productivity (GPP). **The loss of energy during the process of gross primary productivity is known as net primary productivity.** It is completely dependent on the Gross primary productivity. If the GPP decreases due to any factor, then the NPP will also decrease.
- **Statement 2 is incorrect: Primary productivity** is the rate of production of organic matter by autotrophic organisms. **It is the gross rate of photosynthesis, or the rate at which energy is captured from the environment. Secondary productivity** is the rate of production of new organic matter from primary productivity. **It is the rate at which herbivores and other consumers (heterotrophs) convert the energy from primary production** into their own tissue, releasing the energy for use elsewhere in the ecosystem.
- **Statement 3 is correct:** The trophic level of an organism is the number of steps it is from the start of the chain. A food web starts at trophic level 1 with primary producers such as plants, can move to herbivores at level 2, carnivores at level 3 or higher, and typically finish with apex predators at level 4 or 5. **The amount of energy transferred from a lower trophic level to a higher trophic level always decreases as energy is lost at each step as heat. Only 10 percent of energy is transferred from one trophic level to the next.**

**Sources:**

<https://www.difference101.com/gross-primary-productivity-vs-net-primary-productivity>

<https://www.ecologycenter.us/species-richness/relationships-between-primary-and-secondary-productivity.html>

<https://education.nationalgeographic.org/resource/resource-library-food-chains-and-webs>

<https://www.w3schools.blog/pyramids-of-number-biomass-and-energy>

**80. Answer: A**

**Explanation:**

- **Statement 1 and 2 are correct: Aeroponics was developed from hydroponics**, a system in which plants grow with their roots immersed in nutrient-rich water instead of soil. **Although some plants did well in hydroponic systems, many lacked enough oxygen to thrive. So the technique was evolved to allow plant roots to hang in the air while being sprayed with a fine mist of nutrient-rich water. In the aeroponics system, the plants are intended to grow suspended in the air space having the environment which is generally fully closed or semi-closed.** Plants are held in place by pieces of fabric or foam which support the stems and roots as they grow. **Aeroponics surround the plant with higher levels of oxygen, due to a nutrient-rich mist.** The nutrient solution is recycled so no water is wasted, plants are healthier, grow faster and produce more. **This technique also makes crops less vulnerable to pests and plant diseases.**
- **Statement 3 is incorrect: Aeroponics is a technique that allows crops to be grown without soil and with minimal water usage**, offers hope for the future of food as the global population grows and resources dwindle. **The innovative farming method uses 90% less water than traditional farming.**

**Sources:**

<https://www.weforum.org/agenda/2022/03/aeroponics-farm-food-jordan-climate-change/>

<https://medium.com/krishi-wise/what-is-aeroponics-farming-why-you-should-care-238617517711>

**81. Answer: A**

**Explanation:**

- **Statement 1 is incorrect:** The Montreal Protocol on Substances that Deplete the Ozone Layer is a global agreement to protect the Earth's ozone layer by phasing out the chemicals that deplete it. **An important reason for the protocol's successful implementation has been its compliance procedure. This was designed from the outset as a non-punitive procedure. There are no strict punitive measures taken against the members for non-compliance.**
- **Statement 2 is correct:** The **Vienna Convention** was the first convention of any kind to be signed by every country involved, taking effect in 1988 and reaching universal ratification in 2009. This speaks to the enormity of ozone depletion at the time and the willingness of countries around the world to work together to solve it. **The Convention aimed to promote cooperation among nations by exchanging information on the effects of human activities on the ozone layer.** In doing so, the creators of the Convention hoped policymakers would adopt measures to combat those activities responsible for ozone depletion.
- **Statement 3 is correct:** The Kigali Agreement is the most iconic amendment of the Montreal Protocol which has been internationally applauded by scientists and environmentalists for being a crucial measure towards curbing the rising rate of global warming. This Agreement particularly aims at phasing out the production and consumption of Hydrofluorocarbons (HFCs) which were first introduced as a substitute to ODSs namely Chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons (HCFCs). It came into force on 1st January 2019 and has been ratified by 119 countries as of April 2021. **Kigali Agreement legally binds the signatory countries with non-compliance measures. It delineates specific targets for the signatory countries to accomplish phasing down of HFCs to be achieved within a specified time limit.**

**Sources:**

<https://www.swep.net/refrigerant-handbook/5.-refrigerants/sd5>

<https://ozone.unep.org/treaties/vienna-convention>

[https://www.ozonactionmeetings.org/system/files/5.6\\_background\\_non\\_compliance\\_procedure\\_final\\_0.pdf](https://www.ozonactionmeetings.org/system/files/5.6_background_non_compliance_procedure_final_0.pdf)

<https://www.unep.org/news-and-stories/press-release/world-takes-stand-against-powerful-greenhouse-gases-implementation>

## 82. Answer: B

### Explanation:

- **Pair 1 is correctly matched:** UIDAI has launched its new **AI/ML-based chatbot 'Aadhaar Mitra.'** With the help of Aadhaar Mitra, residents get access to a host of features like tracking Aadhaar status, **registering and tracking grievances** and details on enrolment centre locations.
- **Pair 2 is incorrectly matched: Nyaya Mitra (NM) aims to facilitate expeditious disposal of 10-15 years old pending cases in High Courts and Subordinate Courts.** 80 Nyaya Mitras will be engaged across the country from 2021-2026. **Nyaya Mitra aims at assisting the district judiciary in reduction of decade old pending court case.** Districts selected based on highest pendency of court cases over 10 years of period sourced from National Judiciary Data Grid (NJDG) database. It will also render assistance towards prison reforms within the district, in coordination with the district judiciary and other stakeholders. **Nyaya mitra is a retired judicial officer/executive officer, having legal degree/background who is located at High Courts/District Courts. The position of the Nyaya Mitra is filled with retired judicial officers and retired government officers having legal background only.**
- **Pair 3 is incorrectly matched: The Swachhta Mitra work with the authorities to spread the word on proper sanitation and disposal of garbage.** It helps to involve the masses in segregation of waste at source. They are roped in for awareness generation and not for installation of free toilets in villages at panchayat level.

### Sources:

<https://www.outlookindia.com/business/what-is-aadhaar-mitra-uidai-unveils-new-chatbot-here-is-all-you-need-to-know-news-262066>

<https://www.adda247.com/upsc-exam/nyaya-mitra-scheme/>

<https://timesofindia.indiatimes.com/city/delhi/delhi-swachhta-mitras-to-tackle-garbage-better/articleshow/88499403.cms>

## 83. Answer: B

### Explanation:

- **Statement 1 is correct: Seed drilling is the practice of dropping seeds in rows and furrows.** Rows and furrows of predetermined dimensions are made where seeds are dropped at a definite depth and distance, covered with soil, and compacted. During drilling, seeds may be sown continuously or at regular intervals in the rows. These rows may be straight and parallel or staggered and irregular. Sowing implements such as the seed drill or seed-cum-fertilizer drill are used. After seeding, the field may be leveled or ridged. During seeding, other operations such as the drilling of manures and fertilizers, pesticides, and soil amendments are also done simultaneously. Drilling may be adopted for both pure cropping and intercropping situations.
- **Statement 2 is incorrect: Direct seeding is a crop establishment system wherein rice seeds are sown directly into the field, as opposed to the traditional method of growing seedlings in a nursery, then transplanting into flooded fields.** Direct seeded rice is seen to be one of the most efficient, sustainable, and economically-viable rice production systems used today. Compared to the conventional puddled transplanted rice (PTR) method prevalent in Asia, DSR delivers faster

planting and maturing, conserves scarce resources like water and labor, is more conducive to mechanization, and reduces emissions of greenhouse gases that contribute to climate change.

- **Statement 3 is correct: The System of Rice Intensification (SRI)** involves cultivating rice with as much organic manure as possible, starting with young seedlings, planted singly at wider spacing in a square pattern; and with intermittent irrigation that keeps the soil moist but not inundated, and frequent inter cultivation with weeder that actively aerates the soil. SRI is not a standardised, fixed technological method. **It is rather a set of ideas, a methodology for comprehensively managing and conserving resources by changing the way that land, seeds, water, nutrients, and human labour are used to increase productivity from a small but well-tended number of seeds. SRI Paddy Cultivation requires less water, involves less expenditure and gives more yields.**

**Sources:**

<https://agriculturistmusa.com/drilling-method-of-sowing-seeds/>

<https://dsrc.irri.org/our-work/what-is-dsr>

<https://vikaspedia.in/agriculture/best-practices/sustainable-agriculture/crop-management/sri-2013-new-method-of-growing->

[rice#:~:text=The%20System%20of%20Rice%20Intensification,cultivation%20with%20weeder%20that%20actively](https://vikaspedia.in/agriculture/best-practices/sustainable-agriculture/crop-management/sri-2013-new-method-of-growing-)

**84. Answer: D**

**Explanation:**

- **Items 1 and 2 are correct: Plastic** still reigns supreme in the 3D printing. Two types of plastic are most commonly used in 3D printing: **Poly Lactic Acid (PLA)**: biodegradable plastic made from renewables such as corn starch and **Acrylonitrile butadiene styrene (ABS)**: best suited for parts that require strength and flexibility.
- **Item 3 is correct:** Today, it is possible to 3D print using **gold and silver**. These filaments are sturdy materials and are processed in powder form. These materials are generally used in the jewellery sector. These metal use the DMLS (Direct Metal Laser Sintering) or SLM process for printing.
- **Item 4 is correct: Stainless steel** is printed by fusion or laser sintering. There are two possible technologies that can be used for this material. It can be DMLS or SLM technologies. Since stainless steel is all about strength and detail, it is perfect to use for miniatures, bolts and key chains
- **Item 5 is correct: Ceramics** is one of the newest material that is used in 3D printing. It is more durable than metal and plastic since it can withstand extreme heat and pressure without even breaking or warping it. Moreover, this type of material is not prone to corrosion like other metals or wear away like plastics do. This material is generally used in Binder Jetting technology, SLA (Stereolithography) and DLP (Digital Light Processing).
- **Item 6 is correct:** The current offering has grown significantly over the years and we can now produce parts with a wide variety of materials, from ceramics to food to stem cell-laden hydrogels. Among these amazing materials is wood. Now **compatible with processes such as filament extrusion or even powder bed methods, wood 3D printing is becoming increasingly popular.**

**Sources:**

<https://www.cmac.com.au/blog/top-10-materials-used-industrial-3d-printing>

<https://redshift.autodesk.com/articles/what-materials-are-used-in-3d-printing>

<https://i.materialise.com/blog/en/gold-3d-printing/>

<https://www.twi-global.com/technical-knowledge/faqs/what-is-3d-printing/can-3d-printing-use-metal>

<https://www.3dnatives.com/en/all-you-need-to-know-about-wood-3d-printing-060220234/>

**85. Answer: D**

**Explanation:**

- **Option (d) is correct:** In the mega international event held on 9th April 2023, at Mysuru, Karnataka, to commemorate 50 years of Project Tiger, the Prime Minister Shri Narendra Modi

launched the International Big Cat Alliance (IBCA) for conservation of **seven big cats namely Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar and Puma harbouring our planet.**

India has a long-standing experience on the tiger agenda and conservation of other big cats like lion, snow leopard, leopard, now the translocation of the Cheetah to bring an extinct big cat back to its natural habitat. The alliance aims to reach out to 97 range countries covering the natural habitats of the seven big cats. IBCA would further strengthen global cooperation and efforts to conserve the wild denizens, especially the big cats.

**Source:** <https://pib.gov.in/PressReleaselframePage.aspx?PRID=1915372>

**86. Answer: A**

**Explanation:**

- **Statement 1 is correct: Mustard is one of the major crops of Rajasthan and this north western state alone contributes 43 per cent of the total mustard seed production in India.** In Rajasthan, Alwar takes the lead as the major producing district followed by Shri Ganganagar, Bharatpur, Tonk, Sawai Madhopur, Baran, and Hanumangarh.
- **Statement 2 is correct: Gobhi sarson, PGSH 1707 was released in 2020. The variety is resistant to white rust.** It has long height and is hybrid variety. The variety gives an average yield of 8.8qtl/acre and seeds contain 41% oil content. The variety matures within 142days.
- **Statement 3 is incorrect: India is the fourth-largest producer of mustard oil cultivation in the world.** Mostly in Rajasthan, Mustard farming has been carried out since the ancient times. With this, Mustard crops are popular in Madhya Pradesh and Gujarat too. Some southern area farmers have also grown Mustard crops in India, including Karnataka, Tamil Nadu and Andhra Pradesh. **It as a rabi crop in Assam, Bihar, Orissa and West Bengal.**

**Sources:**

<https://www.gaonconnection.com/lead-stories/rajasthan-coldwave-climate-change-agriculture-farmer-mustard-oilseed-production-price-hike-business-51585#:~:text=Mustard%20is%20one%20of%20the,Madhopur%2C%20Baran%2C%20and%20Hanumangarh>

<https://www.apnikheti.com/en/pn/updates-detaills/new-variety-of-gobhi-sarson-by-pau/1042>

<https://www.tractorjunction.com/blog/mustard-farming-in-india-varieties-cultivation/>

**87. Answer: C**

**Explanation:**

- **Option (c) is correct: Sugar cane originates from the tropical and subtropical regions of Asia and New Guinea.** Therefore, areas with similar climates are best suited for growing this cash crop. Laos, China, Brazil, Mexico, India, the Philippines, Mexico, and Myanmar are just a few countries where the plant is thriving. Other sugar cane growing zones include areas with high solar activity, abundant precipitation, and fertile soils, such as the United States (Florida, Texas, and Louisiana), Western Australia, and South Africa. **For most of its life cycle, the optimum growing temperature for sugar cane is around 32°C (90°F). After the plant grows mature, slightly lower temperatures help to increase the amount of sugar in it. Frost is prohibited for the crop, regardless of plant growth stages.** Furthermore, sugar cane needs a lot of sunlight; if plants grow in a shaded field, even at the right temperature, they will suffer. Since temperature is a critical factor in growing sugar cane, choosing a field with a favorable temperature regime is necessary.

**Sources:**

<https://eos.com/blog/how-to-grow-sugar-cane/>

**88. Answer: C**

**Explanation:**

- **Statement 1 is correct:** Just as optical telescopes collect visible light, bring it to a focus, amplify it and make it available for analysis by various instruments, so do radio telescopes collect weak radio

light waves, bring it to a focus, amplify it and make it available for analysis. We use **radio telescopes to study naturally occurring radio light from stars, galaxies, black holes, and other astronomical objects**. We can also use them to **transmit and reflect radio light off of planetary bodies in our solar system**. These specially-designed telescopes observe the longest wavelengths of light, ranging from 1 millimeter to over 10 meters long.

- **Statement 2 is correct:** Radio telescopes are built in all shapes and sizes based on the kind of radio waves they pick up. However, every radio telescope has an antenna on a mount and at least one piece of receiver equipment to detect the signals. Because radio waves are so long and cosmic radio sources are extremely weak, radio telescopes are the largest telescopes in the world, and only the most sensitive radio receivers are used inside them. **The most versatile and powerful type of radio telescope is the parabolic dish antenna**. The parabola is a useful mathematical shape that forces incoming radio waves to bounce up to a single point above it, called a focus.

**Source:**

<https://public.nrao.edu/telescopes/radio-telescopes/>

**89. Answer: B**

**Explanation:**

- **Statement 1 is correct:** India is the world's biggest producer of jute, followed by Bangladesh. Jute is known as the golden fibre, is basically, natural, renewable, biodegradable and meets all standards for 'safe' packaging. Jute grows well on well-drained fertile soils in the flood plains where soils are renewed every year. **Golden Fibre Revolution in India is related to jute production.**
- **Statement 2 is incorrect:** Government of India approved Reservation norms for mandatory use of jute in packaging of rice, wheat and sugar for the Jute Year 2022-23. **The Mandatory norms provide for full reservation for packaging of foodgrains and 20% reservation for packaging of sugar in jute bags, which will be a big boost for West Bengal.** The reservations norms under JPM Act provide for direct employment to 3.70 lakh workers and protect the interest of approximately 40 lakh farm families in the jute sector.
- **Statement 3 is correct:** The Cabinet Committee on Economic Affairs, chaired by the Hon'ble Prime Minister Shri Narendra Modi, has given its approval for the Minimum Support Price (MSP) for Raw Jute for 2023-24 season. The approval is based on recommendations of the Commission for Agricultural Costs and Prices (CACP). The MSP of Raw Jute (TD-3 equivalent to earlier TD-5 grade) has been fixed at Rs.5050/- per quintal for 2023-24 season. **The announced MSP of raw jute for 2023-24 season is in line with the principle of fixing the MSP at a level of at least 1.5 times all India weighted average cost of production as announced by the Government in the Budget 2018-19.**

**Sources:**

<https://pib.gov.in/PressReleasePage.aspx?PRID=1901434>

<https://pib.gov.in/PressReleaselframePage.aspx?PRID=1910520#:~:text=The%20MSP%20of%20Raw%20Jute,quintal%20for%202023%2D24%20season>

<https://pib.gov.in/PressReleasePage.aspx?PRID=1881409>

<https://www.studyiq.com/articles/agriculture-current-affairs-last-one-year-2019-20-nabard-grade-icar-upsc-free-pdf/>

**90. Answer: B**

**Explanation:**

- **Option (b) is correct:** India has a large repository of indigenous bovine population with rich biodiversity. There are 50 well-defined breeds of cattle and 17 breeds of buffaloes. These breeds have evolved over generations, surviving due to their adaptability to harsh climatic conditions, ability to perform on poor quality feed and fodder, resistance to diseases etc. Some important cattle breeds are India are Amritmahal, Deoni, Gaolao, **Ongole, Luit (Swamp)**, Mehsana, **Sahiwal**,



Ponwar etc. **The Ayrshire is a Scottish breed of dairy cattle.** The population of some of the breeds have declined over years and the primary reason for such decline in numbers of such breeds is reduced productivity - an uneconomical proposition for farmers. The solution therefore lies in the genetic improvement of these breeds for milk production.

**Source:**

<https://www.nddb.coop/services/animalbreeding/geneticimprovement/breeds>

**91. Answer: B**

**Explanation:**

- **Pair 1 and 4 are correctly matched:** Shifting cultivation has been described as an economy of which the main characteristics are rotation of fields rather than rotation of crops, absence of draught animals and manuring, use of human labour only, employment of dibble stick or hoe, and short period of occupancy alternating with long fallow periods. After two or three years the fields are abandoned, the cultivators shift to another clearing, leaving the old one for natural recuperation. This explains the use of the term 'shifting cultivation'. It is known as Jhum or Jum in the hilly states of Northeast India, as Podu, Dabi, **Koman** or Bringa in **Orissa**, as **Kumari in Western Ghats**, as Watra in southeast Rajasthan, Bewar or **Dahia** and Deppa or Kumari in the Bastar district of **Madhya Pradesh**, '**Podu**' or '**Penda**' in **Andhra Pradesh**.

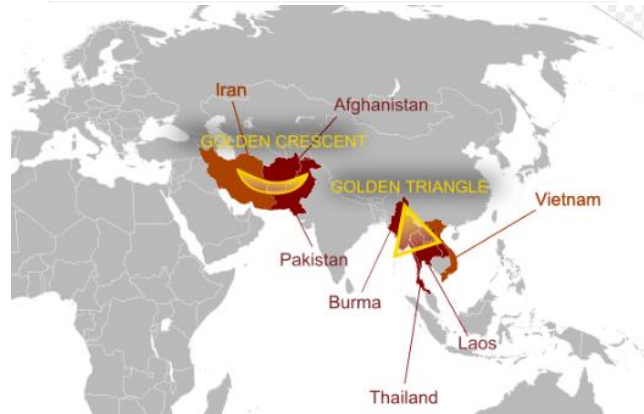
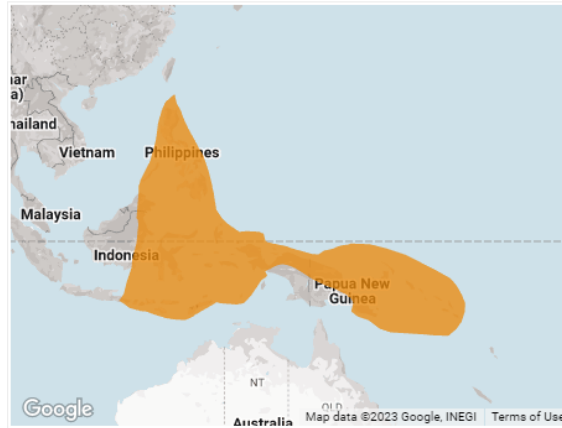
**Source:**

[http://sarsunacollege.ac.in/WebPages/Downloads/ELearning/Science/Geograpgy/UG%202nd%20Sem/SEM%202%20CC3%20UNIT%202/SEM%202-CC3-%20UNIT%202%20-%20SUBSISTENCE%20%20FARMING%20\(SHIFTING%20CULTIVATION\).pdf](http://sarsunacollege.ac.in/WebPages/Downloads/ELearning/Science/Geograpgy/UG%202nd%20Sem/SEM%202%20CC3%20UNIT%202/SEM%202-CC3-%20UNIT%202%20-%20SUBSISTENCE%20%20FARMING%20(SHIFTING%20CULTIVATION).pdf)

**92. Answer: C**

**Explanation:**

- **Statement 1 is correct:** The Coral Triangle is a marine area located in the **western Pacific Ocean**. It includes the waters of 6 nations namely: **Indonesia, Malaysia, the Philippines, Papua New Guinea, Timor Leste and Solomon Islands**. Named for its staggering number of corals (nearly 600 different species of reef-building corals alone), the region **nurtures six of the world's seven marine turtle species** and more than 2000 species of reef fish. The Coral Triangle also supports large populations of commercially important tuna, fueling a multi-billion-dollar global tuna industry.
- **Statement 2 is incorrect: The notorious Golden Triangle represents the region coinciding with the rural mountains of Myanmar, Laos, and Thailand.** It is Southeast Asia's main opium-producing region and one of the oldest narcotics supply routes to Europe and North America. The **Golden Crescent** is the name given to **one of Asia's two principal areas of illicit opium production** (with the other being the Golden Triangle). Located at the crossroads of Central, South, and Western Asia, this space covers the mountainous peripheries of **Afghanistan and Pakistan**, extending into eastern Iran.
- **Statement 3 is correct: Lithium** is often referred to as "**white gold.**" **The Lithium Triangle is a lithium-rich region in the Andean southwest corner of South America**, spanning the borders of **Argentina, Bolivia, and Chile** and forming a geographic triangle of lithium resources underneath their **salt flats**. Approximately **58 percent of the world's lithium resources** are found in these three countries, according to the 2021 USGS Mineral Commodity Summary.



**Sources:**

- <https://www.worldwildlife.org/places/coral-triangle>
- <https://indianarmy.nic.in/writereaddata/CLAWS/Golden%20Triangle.htm>
- [https://en.wikipedia.org/wiki/Golden\\_Crescent](https://en.wikipedia.org/wiki/Golden_Crescent)
- <https://www.csis.org/analysis/south-americas-lithium-triangle-opportunities-biden-administration>

**93. Answer: B**

**Explanation:**

- **Statement 1 is incorrect:** BHARAT TAP initiative is launched by the Minister for Housing and Urban Affairs & Petroleum and Natural Gas.
- **Statement 2 is correct:** BHARAT TAP initiative is to provide low-flow, sanitary-ware at scale, and thereby reduce water consumption at source considerably. Bharat Tap is a concept to use low flow tap and fixtures. It is an initiative for awareness creation for promotion of BIS Certified Water Efficient Plumbing Fixtures that reduce the water dispensation at source, leading to a water saving of minimum 40%.

**Source:**

<https://economictimes.indiatimes.com/news/india/close-to-rs-12-lakh-cr-expenditure-on-urban-schemes-since-2014-8-times-than-upa-govt/articleshow/91517123.cms?from=mdr>

**94. Answer: B**

**Explanation:**

- **Statement 1 is incorrect:** Indian Fertiliser market is segmented into nitrogenous, phosphatic, potash, complex, secondary nutrient, and micronutrient fertilizers on the basis of product. Based on their nature, fertilizers can be classified into chemical fertilizer and biofertilizer. **In India, the penetration of organic fertilizer is very low i.e. the proportion of organic fertilizer of the total fertilizer consumption is only 0.29% for the year 2018-19 and 0.34% for the year 2019-20.**

- **Statement 2 is correct:** 'SATAT' scheme on Compressed Bio Gas (CBG) encourages entrepreneurs to set up CBG plants, produce & supply CBG to Oil Marketing Companies (OMCs) for sale as automotive & industrial fuels.

It aims at:

- Efficient treatment and disposal of municipal solid waste
- **Promotion of organic farming by using Fermented Organic Manure (FOM) produced from CBG plants**
- Efficient tackling of urban air pollution due to farm stubble-burning and carbon emissions.
- **Statement 3 is incorrect:** The Union Minister of Fisheries, Animal Husbandry and Dairying has launched NDDB Mrida Limited. It is a wholly-owned subsidiary company of National Dairy Development Board (NDDB). It is a first-of-its-kind company focussing on the efficient utilization of dung by creating a manure management value chain. **NDDB has registered a trademark named "SuDhan" to provide a common identity to dung-based organic fertilizers.**

Sources: <https://satat.co.in/satat/index.jsp>

<https://www.downtoearth.org.in/blog/agriculture/organic-fertiliser-a-must-for-the-next-green-revolution-85470>

### 95. Answer: B

#### Explanation:

- **Option (a) is incorrect:** As of Feb 2023, Renewable energy sources, including large hydropower, have a **combined installed capacity of 174.53 GW**. The following is the installed capacity for Renewables –
  - Wind power: 41.9 GW
  - **Solar Power: 63.3 GW**
  - Biomass/Co-generation: 10.2 GW
  - Small Hydro Power: 4.93 GW
  - Waste To Energy: 0.52 GW
  - Large Hydro: 46.85 GW
- **Option (b) is correct:** Offshore wind energy is the clean and renewable energy obtained by taking advantage of the force of the wind that is produced on the high seas, where it reaches a higher and more constant speed than on land due to the absence of barriers. In order to make the most of this resource, mega-structures are installed that are seated on the seabed and equipped with the latest technical innovations. **Currently, offshore wind farms are located in shallow waters (up to 60 metres deep) and away from the coast**, marine traffic routes, strategic naval installations and spaces of ecological interest.
- **Option (c) is incorrect:** Pyrolysis is one of the technologies available to convert biomass to an intermediate liquid product that can be refined to drop-in hydrocarbon biofuels, oxygenated fuel additives and petrochemical replacements. **Pyrolysis is the heating of an organic material, such as biomass, in the absence of oxygen.**
- **Option (d) is incorrect:** India's first-ever geothermal power project will be implemented by state-owned Oil and Natural Gas Corporation (ONGC) at **Puga village of eastern Ladakh**. The project, known as Geothermal Field Development Project, will be implemented in three phases and is planned to commission by the end of 2022. A tripartite agreement for this historic geothermal project was signed between Union Territory Administration Ladakh, Ladakh Autonomous Hill Development Council (LAHDC)-Leh and Oil and Natural Gas Corporation (ONGC) Energy Centre on February 08, 2021.a

#### Sources:

<https://www.investindia.gov.in/sector/renewable-energy>

<https://www.iberdrola.com/sustainability/how-does-offshore-wind-energy-work>

<https://www.ars.usda.gov/northeast-area/wyndmoor-pa/eastern-regional-research-center/docs/biomass-pyrolysis-research-1/what-is-pyrolysis>

96. Answer: D

Explanation:

An anticyclone is a weather phenomenon defined as a large-scale circulation of winds around a central region of high atmospheric pressure. The evolution of an anticyclone depends upon variables such as its size, intensity, and extent of moist convection, as well as the Coriolis force.

- **Statement 1 is correct:** High-pressure systems are frequently associated with light winds at the surface and subsidence of air from higher portions of the troposphere. Subsidence will generally warm an air mass by adiabatic (compressional) heating. Thus, **high pressure typically brings clear skies.**
- **Statement 2 is correct:** Winds in a cyclone blow counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere. Winds in an anticyclone blow just the opposite. The Coriolis force caused by Earth's rotation gives winds within high-pressure systems their **clockwise circulation in the northern hemisphere** (as the wind moves outward and is deflected right from the center of high pressure) and **anticlockwise circulation in the southern hemisphere** (as the wind moves outward and is deflected left from the center of high pressure), as viewed from above.
- **Statement 3 is correct:** On Jupiter, there are two examples of an extra-terrestrial anticyclonic storm; the **Great Red Spot** and the recently formed **Oval BA on Jupiter**. They are **powered by smaller storms merging** unlike any typical anticyclonic storm that happens on Earth where water powers them. The **Great Red Spot** is a **persistent high-pressure region** in the atmosphere of Jupiter, producing an **anticyclonic storm** that is the largest in the Solar System.

Sources:

<https://en.wikipedia.org/wiki/Anticyclone>

[https://en.wikipedia.org/wiki/Great\\_Red\\_Spot](https://en.wikipedia.org/wiki/Great_Red_Spot)

97. Answer: B

Explanation:

- **Option (B) is correct:** Namaste is a Central Sector Scheme of the Ministry of Social Justice and Empowerment (MoSJE) as a joint initiative of the MoSJE and the Ministry of Housing and Urban Affairs (MoHUA). **NAMASTE envisages safety and dignity of sanitation workers in urban India** by creating an enabling ecosystem that recognizes sanitation workers as one of the key contributors in operations and maintenance of sanitation infrastructure thereby providing sustainable livelihood and enhancing their occupational safety through capacity building and improved access to safety gear and machines. NAMASTE aims to achieve the following outcomes:
  - Zero fatalities in sanitation work in India
  - All sanitation work is performed by skilled workers
  - No sanitation workers come in direct contact with human faecal matter
  - Sanitation workers are collectivized into SHGs and are empowered to run sanitation enterprises
  - **All Sewer and Septic tank sanitation workers (SSWs) have access to alternative livelihoods (Thus it talks about only providing alternative livelihood opportunity. There is no provision in the scheme which specifically talks about providing Government jobs to sanitation workers.)**
  - Strengthened supervisory and monitoring systems at national, state and ULB levels to ensure enforcement and monitoring of safe sanitation work
  - Increased awareness amongst sanitation services seekers (individuals and institutions) to seek services from registered and skilled sanitation workers.

The category of cities that are to be eligible under the scheme are given below:

- **All Cities and Towns with a population of over one lakh with notified Municipalities, including Cantonment Boards (Civilian areas),**

- Ten Cities from hill states, islands and tourist destinations (not more than one from each State).

Source:

<https://pib.gov.in/PressReleasePage.aspx?PRID=1852627>

98. Answer: D

Explanation:

- **Statement 1 is incorrect: Conservation reserves and community reserves are terms used to describe protected areas in India that serve as buffer zones, connectors, and migration corridors between established national parks, wildlife sanctuaries, and reserved and protected forests. These categories of protected areas were first introduced in the Wildlife (Protection) Amendment Act of 2002, which amended the Wildlife Protection Act of 1972.**
- **Statement 2 is incorrect: Conservation Reserves is a state-owned area adjacent to National Parks and sanctuaries for the protection of the landscape, seascape, and habitat of fauna and flora. It is overseen by a Conservation Reserve Management Committee. After consulting with local communities, the State Government may declare any area owned by the Government as a conservation reserve.**  
**The State Government may designate any community land or private land as a Community Reserve if the members of that community or individuals involved agree to offer such areas for the protection of fauna and flora, as well as their traditions, cultures, and practices.**
- **Statements 3 is correct: Sacred groves are biodiversity-rich forests with natural vegetation and associated with various native religious and cultural beliefs, myths and taboos. They act as a 'treasure house of rare species of plants and animals'. They can encompass 1 to 100 ha and exemplify climax vegetation in an area. Sacred groves have been legally protected under 'community reserves' in the Wildlife (Protection) Amendment Act, 2002. Hunting and logging are usually strictly prohibited within these patches.**

Sources:

<https://www.conservationindia.org/resources/indias-protected-area-pa-network>

[http://www.wiienvi.nic.in/Database/cr\\_8229.aspx](http://www.wiienvi.nic.in/Database/cr_8229.aspx)

[http://www.wiienvi.nic.in/Database/cr\\_8228.aspx](http://www.wiienvi.nic.in/Database/cr_8228.aspx)

[https://www.researchgate.net/profile/Sunandani-Chandel/publication/359816412\\_SACRED\\_GROVES\\_AND\\_ITS\\_ROLE\\_IN\\_BIODIVERSITY\\_CONSERVATION/links/6295f0281117461e03aced13/SACRED-GROVES-AND-ITS-ROLE-IN-BIODIVERSITY-CONSERVATION.pdf](https://www.researchgate.net/profile/Sunandani-Chandel/publication/359816412_SACRED_GROVES_AND_ITS_ROLE_IN_BIODIVERSITY_CONSERVATION/links/6295f0281117461e03aced13/SACRED-GROVES-AND-ITS-ROLE-IN-BIODIVERSITY-CONSERVATION.pdf)

Chandel/publication/359816412\_SACRED\_GROVES\_AND\_ITS\_ROLE\_IN\_BIODIVERSITY\_CONSERVATION/links/6295f0281117461e03aced13/SACRED-GROVES-AND-ITS-ROLE-IN-BIODIVERSITY-CONSERVATION.pdf

99. Answer: C

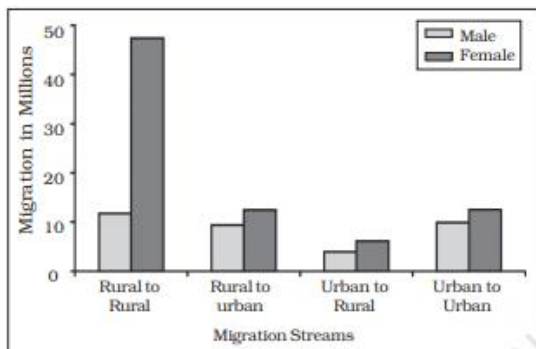
Explanation:

- **Statement 1 is incorrect: The age pyramid shows India's population is young, which, NFHS-5 notes, is typical of developing countries with low life expectancy. India's population remains young, with more than one-fourth aged under 15 years and less than an eighth over 60. Over half the population (52%) is below 30, compared to 55.5% in NFHS-4. The Median Age of India lies between 25 and 30 years (27.6 years in 2021).**
- **Statement 2 is correct: Population pyramids visualize the demographic structure of a population. The width represents the size of the population of a given age; women on the right and men on the left.** The bottom layer represents the number of newborns and above it, you find the numbers of older cohorts.
- **Statement 3 is correct: The kafala, or sponsorship, system defines the relationship between foreign workers and their local sponsor, or kafeel, which is usually their employer. It has been used in Gulf Cooperation Council (GCC) countries—Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates—as well as Jordan and Lebanon. The system almost gives total control over migrant workers' employment and immigration status.** In most situations, workers

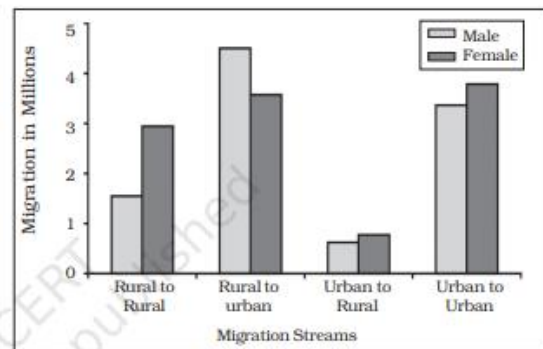
need their sponsor's permission to transfer jobs, end employment, and enter or exit the host country. Workers have little recourse in the face of exploitation, and many experts argue that the system facilitates modern slavery.

- **Statement 4 is correct:** Under the internal migration, four streams are identified:
  - (a) Rural to rural (R-R);
  - (b) Rural to urban (R-U);
  - (c) Urban to urban (U-U); and
  - (d) Urban to rural (U-R).

The stream of **intra-state migration was dominated by female migrants**. Most of these were migrants **related to marriage**. Females predominate the streams of short distance rural to rural migration in both types of migration. Contrary to this, **men predominate the rural to urban stream of inter-state migration due to economic reasons**.



**Fig. 2.1 a : Intra-state Migration by Place of Last Residence Indicating Migration Streams India, 2011**



**Fig. 2.1 b : Inter-state Migration by Place of Last Residence Indicating Migration Streams India, 2011**

Source: Census of India, 2011

**Sources:**

<https://indianexpress.com/article/explained/half-indias-population-under-age-30-nfhs-explained-7910458/>

<https://ourworldindata.org/age-structure>

<https://www.cfr.org/background/what-kafala-system>

Geography Class XII NCERT: India People and Economy: Chapter 2: Migration

**100. Answer: A**

**Explanation:**

- **Option (a) is correct:** The first rice variety in the nation with low phosphorous tolerance for any crop is **Drought Resistant Rice (DRR) Dhan 60**. It is developed by Indian Institute of Rice Research (IIRR). The variety produces a maximum yield of 5.19 tonnes per hectare (with 60 kg/ha of phosphorus) after maturing for 125–130 days. It requires at least 30% less phosphorous. The other varieties that provide the same advantages are DRR Dhan 66, DRR Dhan 65, and WGL-1487. Most of India's rice-growing regions lack enough phosphorus in the soil. Moreover, when phosphorus is used as fertilizer, it drains into water bodies, forcing farmers to apply it again and again. 75 lakh tonnes of phosphatic fertilisers (DAP or Di-ammonium phosphate and NPK or Nitrogen Phosphorus Potassium) were imported in 2020–2021, making up nearly one-third of all fertiliser imports.

**Source:**

<https://krishijagran.com/agriculture-world/iirr-researchers-develop-paddy-varieties-that-need-30-less-phosphorous/>