

Test Code 01201024



AAKALAN BPSC Prelims Test-2024 (Subject Code: 01)

ANSWER KEY

1. (b)	26. (a)	51. (c)	76. (a)	101. (b)	126. (a)
2. (c)	27. (c)	52. (d)	77. (b)	102. (a)	127. (c)
3. (a)	28. (d)	53. (d)	78. (d)	103. (c)	128. (a)
4. (a)	29. (d)	54. (c)	79. (c)	104. (a)	129. (a)
5. (c)	30. (a)	55. (c)	80. (a)	105. (c)	130. (a)
6. (a)	31. (c)	56. (a)	81. (a)	106. (c)	131. (b)
7. (b)	32. (b)	57. (c)	82. (b)	107. (b)	132. (b)
8. (b)	33. (c)	58. (b)	83. (d)	108. (b)	133. (d)
9. (d)	34. (b)	59. (c)	84. (c)	109. (c)	134. (d)
10. (c)	35. (c)	60. (c)	85. (d)	110. (d)	135. (a)
11. (d)	36. (c)	61. (b)	86. (d)	111. (c)	136. (d)
12. (c)	37. (a)	62. (a)	87. (d)	112. (c)	137. (a)
13. (c)	38. (d)	63. (a)	88. (c)	113. (c)	138. (b)
14. (c)	39. (a)	64. (c)	89. (d)	114. (c)	139. (c)
15. (a)	40. (a)	65. (c)	90. (d)	115. (d)	140. (b)
16. (d)	41. (c)	66. (b)	91. (d)	116. (a)	141. (b)
17. (c)	42. (d)	67. (d)	92. (d)	117. (d)	142. (d)
18. (d)	43. (c)	68. (b)	93. (d)	118. (b)	143. (c)
19. (b)	44. (a)	69. (a)	94. (d)	119. (d)	144. (a)
20. (d)	45. (c)	70. (a)	95. (c)	120. (c)	145. (a)
21. (b)	46. (a)	71. (d)	96. (b)	121. (b)	146. (c)
22. (d)	47. (c)	72. (a)	97. (d)	122. (a)	147. (c)
23. (c)	48. (a)	73. (b)	98. (a)	123. (a)	148. (d)
24. (b)	49. (d)	74. (b)	99. (c)	124. (a)	149. (d)
25. (c)	50. (d)	75. (c)	100. (c)	125. (b)	150. (d)



BPSC Prelims Test-2024

Aanklan-1-24

1. (b)

- The Kovind Committee has given many suggestions regarding 'One Nation One Election'. The Committee has recommended holding Lok Sabha and State Assembly elections together in the first phase. Apart from this, the Committee has proposed local body elections within 100 days.
- To implement this scheme, the Committee had recommended making 15 amendments in the Constitution through two Constitution Amendment Bills. According to this proposal, elections in the country will be conducted in 2 phases-
- In the first phase, elections to Lok Sabha and all Legislative Assemblies will be held simultaneously.
- In the second phase, elections to local bodies will be held within 100 days of the first phase. To enable the implementation of simultaneous elections, it is proposed to introduce two types of amendment bills in Parliament.
- One will be a Constitutional Amendment Bill and the other will be a consequential amendment in the law of Union Territories with Legislative Assemblies.
- To achieve the first phase of elections, a Constitutional Amendment Bill will be introduced to amend Article 83 (Duration of Houses of Parliament), Article 172 (Duration of State Legislatures) and insert Article 82A.
- **Article 171 deals with the composition of Legislative Councils**

2. (c)

- Inspired by Brahmo Samaj, Veda Samaj was established in Madras in 1864.
- Veda Samaj opposed caste discrimination and supported widow remarriage and education system for girls.

- Like Brahmo Samaj, Veda Samaj also condemned the rituals and superstitions of orthodox Hindus and expressed faith in an almighty God.
- Chembeti Sridharalu Naidu was the main leader of Veda Samaj. He translated the books of Brahmo Samaj into Tamil and Telugu.
- Branches of South Indian Brahmo Samaj were established in Tamil Nadu, Karnataka and Andhra. After some time, branches of Prarthana Samaj were also opened and both the Samajs together worked for religious and social reform.

3. (a)

The Mediterranean climate is characterized by dry summers and wet winters. It's found in regions between 31 and 40 degrees latitude north and south of the equator, on the western side of continents. The largest area with a Mediterranean climate is the Mediterranean Basin, which is where the climate gets its name.

The Mediterranean climate can lead to water scarcity, soil erosion, land degradation, and soil and water pollution. However, the region is also good for hiking, recreational cycling, and spending time on the beach.

The Mediterranean climate is found in many countries, including:

- **Europe:** Southern Spain, Italy, Greece, Turkey, Croatia, the south of France, and a few islands in the Mediterranean Sea
- **North America:** Coastal California and the far northwest corner of Mexico
- **South America:** Central Chile
- **Africa:** Morocco, Tunisia, and Algeria
- **Asia:** Syria, Lebanon, and Israel
- **Australia:** Southern and southwestern Australia



4. (a)

- According to Economic Survey 2023-24 the main reasons behind low agricultural productivity in India includes fragmented land holdings, low farm investment, lack of farm mechanisation, insufficient access to quality inputs, dependency on rains and short growing seasons are a few reasons for the low yields.
- **Inadequate infrastructure for marketing** it is not related to agricultural productivity rather it is related to **post harvest losses**.
- Statement 4 is incorrect because government is very cautious and active to increase the agricultural productivity through its various efforts including soil health card etc.

5. (c)

- To solve the problems of farmers in Bihar, Shri Krishna Singh and Muhammad Zubair formed the Kisan Sabha in Munger in 1922-23. Later, the farmer movement of Bihar was led by the great farmer leader Swami Sahajanand Saraswati.
- Swami Sahajanand formally established the Kisan Sabha on March 4, 1928. On the occasion of Sonpur Mela in November, 1929, this Kisan Sabha was named 'Provincial Kisan Sabha'.
- Swami Sahajanand was made the President of the Provincial Kisan Sabha and Shri Krishna Singh was made the Secretary.
- Seeing the increasing popularity of the movement of the 'Provincial Kisan Sabha', the landlords became worried and started pressurizing the government to suppress it. The interests of the landlords were in danger due to the farmer movement. Therefore, to protect against this, a political party, United Political Party, was established in the year 1932.
- The main objective of the United Political Party was to protect the interests of the landlords from the farmer movements. The United Political Party had the support of the Indian National Congress. At this time the Civil Disobedience Movement was going on. On the call of Swami Sahajanand, a

large number of farmers had joined the Civil Disobedience Movement.

6. (a)

The Doppler effect is a phenomenon observed when a wave source moves relative to an observer. It causes a change in the perceived frequency of the wave.

Key Points:

- **Frequency Shift:** When a wave source moves towards an observer, the perceived frequency increases (sounds higher). When it moves away, the perceived frequency decreases (sounds lower).
- **Wavelength Change:** The wavelength of the wave also changes due to the Doppler effect. Waves emitted towards the observer have a shorter wavelength, while those emitted away have a longer wavelength.
- **Applications:** The Doppler effect is used in various fields, including:
 - **Radar:** To measure the speed of moving objects.
 - **Astronomy:** To determine the motion of stars and galaxies.
 - **Medical imaging:** For ultrasound and Doppler echocardiograms.

Examples:

- **Ambulance siren:** As an ambulance approaches, the siren sounds higher (higher frequency) due to the Doppler effect. As it moves away, the siren sounds lower (lower frequency).
- **Police radar gun:** By measuring the Doppler shift of radar waves reflected off a moving vehicle, police can determine its speed.

7. (b)

- Bahamani and Vijayanagara kingdoms were established in the south and far south.
- These kingdoms arose during the reign of Muhammad bin Tughlaq when the Sultanate's hold on southern India weakened. The Sultan's officers revolted against the Sultan and established these kingdoms.
- Hasan Gangu, an officer of Muhammad bin Tughlaq, laid the foundation of the Bahamani



kingdom. In 1347 A.D., Hasan revolted against the Sultan and declared the Bahamani kingdom an independent kingdom. He assumed the title of Bahamani Shah and became the first ruler of this dynasty.

- The Bahamani kingdom had diamond mines in the Golconda region.
- The entire northern Deccan up to the Krishna river was under the Bahamani kingdom.
- The Vijayanagar kingdom was to the south of this kingdom.
- Two brothers named Harihar and Bukka laid the foundation of this kingdom. They too experienced the declining power of the Sultanate. He conquered the territory of Hoysala kingdom (modern Mysore state) and declared himself the independent ruler of Vijayanagar kingdom in 1336 AD.
- He made Hastinavati (modern Hampi) his capital.

8. (b)

- Waqia Navis was responsible for intelligence posts and domestic affairs of the Maratha Empire. In 1674 AD, Shivaji was crowned in Raigad and assumed the title of Chhatrapati.
- The king was assisted by a council of ministers called Ashtapradhan. Each minister headed a department and was directly answerable to Chhatrapati Shivaji Maharaj. These offices were neither permanent nor hereditary.
- Peshwa – Pant Pradhan, who was in charge of finance and general administration. Later Peshwa became more powerful and became the Prime Minister.
- Sar-i-Naubat or Senapati – Military commander, an honorary post.
- Amatya/Majumdar – Accountant General.
- Waqia Navis – Intelligence and police, posts and household affairs.
- Surnavis or Chitnis or Sachiv – who looked after official correspondence.
- Sumanta – Master of ceremonies and foreign affairs.
- Nyayadhish – Judge.
- Pandita Rao – Charities and religious administration.

9. (d)

Jyotirao 'Jyotiba' Govindrao Phule was an Indian writer, social activist, thinker and anti-caste social reformer born in the Satara district of **Maharashtra in 1827.**

- He was bestowed with the honorific **Mahatma title by Maharashtrian** social activist **Vithalrao Krishnaji Vandekar in 1888.**
- He is believed to be the **first Hindu to start an orphanage** for the unfortunate children.
- **Women Education:** At home he began educating his wife Savitribai and opened a girl's school in **1848.** No teacher dared to work in a school in which untouchables were admitted as students.
 - In **1851**, Jyotiba established a **girls' school** and asked his wife to teach the girls in the school. Later, he opened two more schools for the girls and an indigenous school for the lower castes, especially for the **Mahars and Mangs.**

In 1873, Jyotiba Phule formed the Satya Shodhak Samaj (**Society of Seekers of Truth**) which undertook a **systematic deconstruction** of existing beliefs and history, only to reconstruct an equality promoting version.

Famous Works

- He wrote well-known books including **Gulamgiri (Slavery)** and **Shetkarayacha Aasud (Cultivator's Whipcord).**
- He established a link between poor conditions of **American Black slaves** and people of lower castes in India.
- Phule dedicated his book named Gulamgiri to all the Americans who fought against slavery, it was written in 1873.
- He also penned some stories like '**Tritiya Ratna**', '**Brahmananche Kasab**', '**Ishara**'.
- He wrote dramas like '**Satsar**' **Ank 1 and 2**, which were enacted under his directives to spread awareness **against social injustice.**

10. (c)

- **In 1607, William Hawkins was appointed to command the ship Hector on behalf of**



the East India Company, embarking on a voyage to Surat and Aden, carrying letters and gifts from King James I of England. He reached Surat in August 1608.

- By April 1609, Hawkins had arrived at the court of Mughal Emperor Jahangir. However, his efforts to establish a trading factory in Surat were thwarted by Portuguese opposition, leading him to left Agra in November 1611.
- Hawkins was fluent in Turkish, which facilitated discussions with Jahangir and some of his ministers, who also spoke the language, the native tongue of Babur. Jahangir referred to him as “English Khan.”

11. (d)

About Jainism

- Jainism, one of the world’s oldest religions, originated in India around the 6th century BCE, with roots tracing back even earlier.
- Founded by Vardhamana Mahavira, the 24th Tirthankara, it emphasizes nonviolence (ahimsa), asceticism, and self-discipline as means to spiritual liberation.
- Central to Jain philosophy is the belief in the soul’s eternal nature and the importance of karma in shaping one’s destiny.
- Its rigorous ethical code, its emphasis on non-violence in thought, word, and deed, and its strict asceticism have profoundly influenced Indian culture and spirituality.
- The names of two Jain Tirthankaras – Rishabha and Arishtanemi – are found in the Rig Veda.

Triratnas of Jainism

The three jewels, or triratnas of Jainism, are the core principles guiding a follower towards spiritual liberation (moksha):

- **Right Knowledge (Samyak Jnana):** This involves having a true understanding of the nature of reality, the self, and the universe.
 - It means recognising the fundamental truths about the soul, karma, and the cycle of birth and rebirth.

- **Right Faith (Samyak Darshana):** Right faith refers to a deep belief in and trust in Jainism’s teachings.
 - o It involves a clear, unwavering conviction in the principles of truth and the path laid out by the Tirthankaras.
- **Right Conduct (Samyak Charitra):** This is about ethical discipline and moral purity.
 - It includes following the five vows (ahimsa, or nonviolence; satya, or truthfulness; asteya, or nonstealing; brahmacharya, or chastity; and aparigraha, or nonattachment) to purify the soul and reduce karmic bondage.

Jain Tirthankaras

- According to Jain tradition, there were 24 Tirthankaras (literally ford makers, across the stream of existence), the first being Rishabhadeva/Adinatha and the last being Mahavira.

S. No.	Name	Symbol
1.	Rishabha	Bull
2.	Ajithnath	Elephant
3.	Sambhavanath	Horse
4.	Abhinandannath	Monkey
5.	Sumatinath	Curlew
6.	Padmaprabhu	Red Lotus
7.	Suparswanath	Swastik
8.	Chandrajai Prabhu	Moon
9.	Suvidhinath	Crocodile
10.	Shitalnath	Srivatsa
11.	Shreyanasanath	Rhinoceros
12.	Vasupujya	Buffalo
13.	Vimalnath	Boar
14.	Anantnath	Falcon
15.	Dharmnath	Vajra
16.	Shantinath	Deer
17.	Kuntunath	He – Goat
18.	Arnath	Fish
19.	Mallinath	Water pot
20.	Muniswasth	Tortoise
21.	Neminath	Blue Lotus
22.	Arishtanemi	Conch Shell
23.	Parshwanath	Serpent
24.	Mahavira	Lion

12. (c)

- Directive Principles of State Policy, in the context of India, refers to a set of guidelines or principles contained in the Indian Constitution.



- They denote the ideals that the governments in India, both Central as well as State, should keep in mind while formulating policies and enacting laws.
- They constitute a very comprehensive socio-economic and political program that would aid in achieving socio-economic justice and setting the foundation for a modern and welfare state. The provisions related to the DPSPs, as mentioned in Articles 36 to 51 in Part IV of the Indian Constitution

The following directive principles were added through the 42nd Constitutional Amendment Act of 1976-

1. Equal justice and free legal aid (Article 39A)
2. Participation of workers in the management of industries (Article 43A)
3. Protection and improvement of the environment and safeguarding of forests and wildlife (Article 48A)

The promotion of cooperative societies was added to the Constitution of India through the 97th Constitutional Amendment Act of 2011.

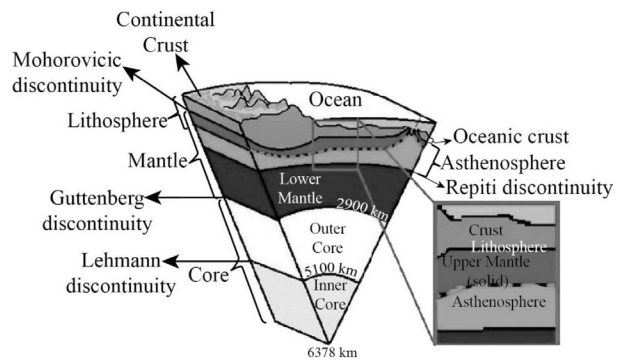
13. (c)

The Earth's interior consists of various elements that differ in physical and chemical properties such as temperature, density, and composition. It is structured into distinct layers: the crust, mantle, and core. Each of these primary layers is further divided into the upper and lower crust, upper and lower mantle, and outer and inner core. The boundaries between these layers are known as transition zones, commonly referred to as discontinuities.

The various discontinuities of the earth are as follows.

1. **Conrad Discontinuity:** The Conrad Discontinuity separates the upper and lower crust.
2. **Mohorovicic Discontinuity:** This is the transition zone between the crust and the mantle.
3. **Repetti Discontinuity:** This separates the upper mantle from the lower mantle.
4. **Gutenberg Discontinuity:** This is the transition zone between the lower mantle and the outer core.

5. **Lehmann Discontinuity:** This is the layer separating the outer core from the inner core.



14. (c)

Earthquake waves

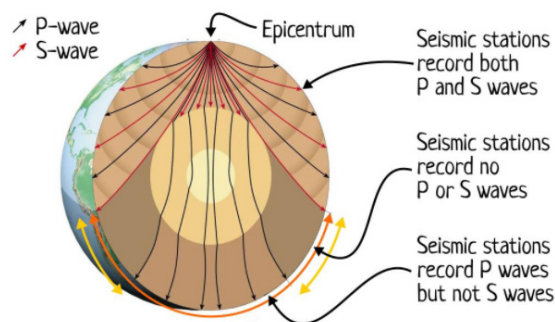
These are of 2 types – body waves and surface waves

- **Body waves:**
 - Generated due to the **release of energy at the focus** and move in all directions travelling through the body of the earth. Hence, the name – body waves.
 - Travel **only through the interior of the earth.**
 - **Faster than surface waves.**
 - There are 2 types of body waves: **P-primary waves and S-secondary waves.**
 - ♦ P waves travel through **gaseous, liquid and solid materials** whereas S waves travel **only through solid materials.**
- **Surface Waves:**
 - When the **body waves interact with surface rocks**, a new set of waves is generated called surface waves.
 - These waves **move along the earth's surface.**
 - Surface waves are **transverse waves** in which particle movement is perpendicular to the wave propagation. Hence, they create **crests and troughs** in the material through which they pass.
 - They are the **most damaging** waves.
 - 2 common surface waves are **Love waves** and **Rayleigh waves.**
 - **Speed of different Waves in descending order: Primary Waves > Secondary Waves > Love Waves > Rayleigh Waves.**



- P-waves are **longitudinal waves** and move like **sound waves**. It moves at the fastest of seismic waves. Its movement is slowed down by the liquid medium as compared to the solid.
- S waves move similarly to light waves. It can only move in solids. Its speed is 40% lower than that of P waves.
- L waves are surface waves and travel the longest route. Its effect is the most destructive.

An **earthquake** generates **seismic waves** that propagates throughout the Earth's interior. Earth's core is mapped by observing the characteristic of the **seismic waves** that reach the surface of the Earth.



15. (a)

- Etna is located on the east coast of Sicily in the Mediterranean Sea. Vesuvius is located in Naples in Italy. Cotopaxi is located in Ecuador, South America. These are all active volcanoes.
- Aconcagua belongs to volcanic origin but is not an active volcano in itself. It is the highest mountain peak in the continent of South America.

16. (d)

- The **Lorraine region is famous for iron steel**. It is located in France. Some of the other important industrial centers and industries are:
 - Chicago- Meat Processing
 - Montreal - Ships and Aircraft
 - Ottawa- Paper Industry
 - Manchester - Cotton Textile Industry
 - Liverpool - Ship building and oil refining
 - Frankfurt - Engineering and Transport Scape
 - Antwerp- Diamond Industry

- Copenhagen - Dairy Industry
- Casablanca - Chemical Industry
- Nagoya - Aircraft Car Machinery
- Osaka - Ships, Iron and Steel, Textiles
- Shanghai - Textiles, Machines, Shipbuilding and Rail Engines

17. (c)

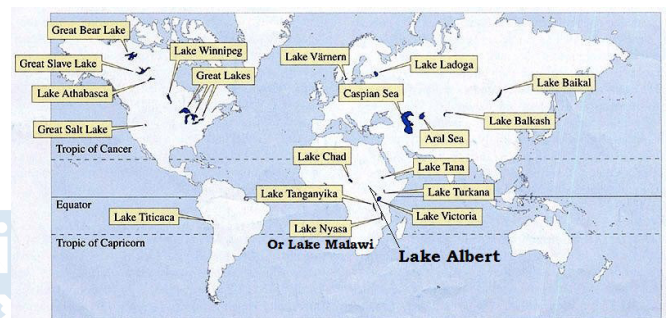
The order of the above lakes and their related countries is as follows:

Lake Titicaca - Bolivia Peru

Lake Urmia - Iran

Reindeer Lake - Canada

Lake Athabasca - Canada



18. (a)

- In 1861, Alexander Cunningham, the father of Indian archaeology, was appointed the first archaeological surveyor in India.
- In 1871, the Archaeological Survey of India was formed as a department of the government.
- During Lord Curzon's time it was centralised and renamed the Archaeological Survey of India and **John Marshall became its first Director General**.
- **Discovery of Ancient Buddhist Sites:** He uncovered several significant Buddhist locations, including Sarnath, Bodh Gaya, and Nalanda.
- **Identification of Taxila:** Cunningham was instrumental in locating the ancient city of Taxila, which had been forgotten for centuries.
- **Establishment of a Museum:** He founded a museum at Taxila to display artifacts unearthed during his excavations.
- **Publication of Scholarly Works:** He authored numerous books and articles on



Indian archaeology, notably his influential work, The Ancient Geography of India.

- **Systematic Study of Coins:** Cunningham initiated a structured examination of Indian coins, leading to the identification of various ancient dynasties and rulers.

19. (b)

According to the Hindu Succession Act, 1956, her husband has the first right on the property of a Hindu woman who dies without a will.

20. (d)

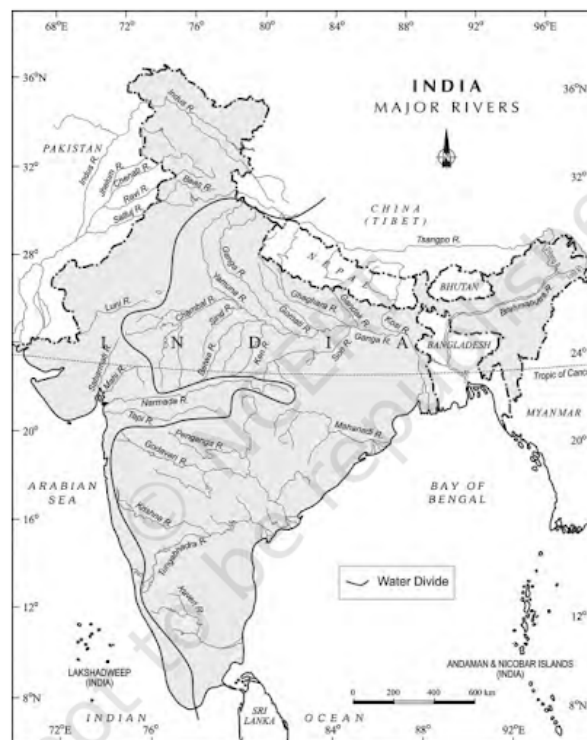


- Paradip is a natural deep water port on the east coast of India in Jagatsinghpur district of Odisha.
- Kakinada deep water fall is located in Andhra Pradesh, the eastern coast of India. Ennore is located on the Coromandel Coast, 24 km north of Chennai Port. Nagapattinam is located in the Cauvery delta in the south of Puducherry.

21. (b)

- The rivers flowing from the Western Ghats towards plants are as follows:
 - Godavari
 - Krishna
 - Kaveri
 - Tungabhadra
 - Bhima
 - Malaprabha
 - Ghataprabha
 - Hemavathi
- The rivers flowing from the Western Ghats towards the west are –
 - Periyar
 - Netravati

- Sharavathi
- Mandovi etc.



22. (d)

- The Nalanda International University Bill was passed in Parliament in 2010.
- In **2006**, President APJ Abdul Kalam inspired the state government to set up a new Nalanda International University.
- In 2007 the Bihar Legislative Assembly passed a bill for the creation of a new university.
- The international university supported by 18 member countries was established by an Act of the Indian Parliament in 2010.

History:

- Nalanda University was established during the reign of Kumaragupta I.
- Budhgupta, son of Kumaragupta, built a Buddhist Vihar here.
- Nalanda was an acclaimed Mahavihara, a large Buddhist monastery in the ancient kingdom of Magadha (modern-day Bihar) in India.
- It is considered by historians to be the world's very first residential university and among the greatest centers of learning in the ancient world.



23. (c)

- Rig veda has 10 Mandalas, 1028 suktas and 10,462 verses.
- The third mandal of Rigveda contains the famous Gayatri Mantra dedicated to Savitri. Its ninth mandal is dedicated to Som. The literal meaning of Som is song, this Veda is mainly a collection of mantras sung on the occasion of Yajna. The Samaveda, one of the four Vedas, has **1,875** verses, suktas, which are mostly taken from Rigveda. It is called the **origin** of Indian music.

Vedas

- The **Rig Veda, Samveda, and Yajur Veda** are collectively known as **Vedatrayi**.
- The **Atharva Veda** is considered a later addition. **Bharatamuni's Natyasastra** is regarded as the **panchama Veda** (fifth Veda).
- The **Rig Veda** is the oldest among all Vedas and was likely compiled over several centuries.
- Some of the earliest hymns were composed around **1500 BC** and passed orally from the teacher to the disciples.

24. (b)

- Nachari is a popular dance form in the western part of Bihar. This dance is performed by devotees of Lord **Shiva** on the auspicious day of Maha Shivratri and the Basant Panchami.
- Nachari is a vibrant and dynamic dance style known for its rapid footwork and fluid movements. Typically performed by a group of dancers, both male and female,
- it showcases synchronized choreography set to the rhythms of traditional Bhojpuri music. The performers don colorful traditional costumes and frequently incorporate props such as scarves or sticks to elevate their presentation.
- **Nachari is a famous dance in the Magar community. Some other famous Magar dances include Kauda, Ghatu, Sorathi, Jhyaure, and Rodi.**

25. (c)

- Gautam Buddha attained the status of a deity during the reign of Kanishka.

- During the reign of Kanishka, in the Fourth Buddhist Council, Buddhism was divided into two distinct and independent sects called Hinayana and Mahayana. In the Mahayana sect, Buddha was considered a deity and began to be worshipped.

Who is Gautama Buddha?

- He was born in 563 BCE, Lumbini (Nepal), Shakyas Republic.
- His parents were Suddhodana (father) and Maya Devi (mother).
- According to tradition, he was born in 563 B.C. in a Shakyas Kshatriya family in Lumbini, Nepal, near Kapilavastu.
- He died in 483 BCE in Kusinagar (Uttar Pradesh), Malla Republic.

Five Events in Buddha's Life

Events	Symbol
1. Janma (Birth)	Elephant
2. Mahabhinishkramana (Renunciation)	Horse
3. Nirvana/Sambodhi (Enlightenment)	Bodhi tree
4. Dharmachakra pravartana (1 st sermon)	Wheel
5. Mahaparinirvana (Death)	Stupa

26 (a)

Brahmo Samaj:

- Raja Rammohan Roy founded the **Brahmo Sabha** in August 1828; it was **later renamed Brahmo Samaj**.
- Its chief aim was the **worship of the eternal God**. It was against **priesthood, rituals and sacrifices**.
- It focused on **prayers, meditation and reading of the scriptures**.
- It believed in the **unity of all religions**.
- **It split into two in 1866**, namely **Brahmo Samaj of India** led by Keshub Chandra Sen and **Adi Brahmo Samaj** led by Debendranath Tagore.
- **Raja Ram Mohan Roy**

About Raja Ram Mohan Roy:

- o Raja Ram Mohan Roy was born in a **Hindu Brahmin family** in **Radhanagar village** in **West Bengal's Murshidabad district**, Bengal.
- o He worked as a **moneylender** in Calcutta, and from 1809 to 1814 and **served in the**



Revenue Department of the East India Company.

- o **Gopal Krishna Gokhale** called him the ‘**Father of Modern India**’.
- o Several historians consider him **one of the pioneers of the Indian Renaissance**.
- o He was bestowed with the title of **Raja** by **Akbar II, the Mughal emperor**.
- o Rammohan was a gifted **linguist**. He knew more than a dozen languages including Sanskrit, Persian, Arabic, English, French, Latin, Greek and Hebrew.

27. (c)

- Tilak spoke at the Conference on Abolition of Untouchability, held on 23-24 March 1918, and presided over by Sir Sayajirao Gaekwad. Tilak stated unequivocally, “If God were to tolerate untouchability, I would not recognise him as God at all”.
- Bal Gangadhar Tilak, popularly known as Lokmanya Tilak has been referred to as ‘the father of Indian unrest’.

About Bal Gangadhar Tilak

- **Birth:** 23rd July 1856 at Ratnagiri (now in Maharashtra).
- He was a scholar, mathematician, philosopher and ardent nationalist with firm belief in Indian values and ethos.
- For that, he started organising the **Ganesh festival** in **1893** and the **Shivaji festival** in **1895**.
- He published **The Orion** or **Researches into the Antiquity of the Vedas** (1893) and **The Arctic Home in the Vedas** (1903).
- In **1916**, he set up the **Home Rule League** in Poona and gave the famous slogan “**Swarajya is my birthright and I will have it.**”
- He tried to make people **politically conscious** through **two weekly newspapers** that he owned and edited viz. **Kesari**, published in **Marathi** and **The Mahratta**, published in **English**.
- In the **Mandalay jail**, he wrote his magnum opus, the *Srimad Bhagavadgita Rahasya* (Secret of the Bhagavadgita), an **original exposition** of the most-sacred book of the Hindus.

28. ()

Vitamin D is a hormone synthesized by the kidneys. The liver and kidneys work together to convert vitamin D into its active form, known as calcitriol. This hormone plays a crucial role in regulating calcium levels in the blood and is essential for the development of strong bones.

29. (d)

- **Pycnocline:** The pycnocline is a transitional zone in the ocean where there is a rapid change in seawater density, situated between the low-density upper layer and the high-density deep water.
- **Thermocline:** The thermocline is the transition layer that separates the warmer, mixed water at the ocean’s surface from the cooler, deeper water below.
- **Halocline:** The halocline is an intermediate layer of ocean water where salinity increases more rapidly with depth compared to the layers above and below it.

30. (a)

- The sacred literature of Jain was written in the Ardhamagadhi form of Prakrit. These texts were finally compiled in the sixth century A.D. in Gujarat at Valabhi, a great centre of education.

Main Followers of Jainism

- Bimbisara (c. 558–491 BCE), Ajatshatru (c. 492–460 BCE), and Udayin (c. 460–440 BCE) of the Haryanka dynasty as a patron.
- In south India, the Ganga dynasty, Kadamba dynasty, Amoghavarsha (Rashtrakuta dynasty).

Jain Councils

Councils	1 st Jain Council (300 BC)	2 nd Jain Council (512 AD)
Location	Pataliputra	Vallabhi
Chairman	Stulabhadra	Devridhigani Kshmasramana
Royal Patron	Chandragupta Maurya	–
Outcomes	Compilation of 12 Angas to replace 14 Purvas	Final compilation of 12 Angas and 12 Upangas

31. (c)

- Chhath Puja is a major Hindu festival celebrated in Bihar and eastern Uttar Pradesh. It is celebrated in the month of Kartik.



- Almost all civilizations have worshipped the 'God Sun', but it has a unique form in Bihar. Chhath Puja is the only occasion where the **setting sun** is worshipped along with the rising sun.
- Chhath Puja starts after three days of Diwali and it is a Celebration Over 4 Days.
- **1st Day: Nahay Khay** - This involves taking a dip in a holy water body and fasting all day. Ladies observing the fast can have 1 meal the whole day. The meal has to be home cooked.
- **2nd Day: Lohanda and Kharna** - A fast has to be maintained the whole day. It is broken after sunset and with prasad (popular: Kheer and Chapati). After this another fast has to be observed for the next 36 hours without water.
- **3rd Day: Sandhya Arghya** - Prasad is prepared at home and taken to the river in the evening and offered to the setting sun. Women wear turmeric yellow coloured sarees while performing this ritual.
- **4th Day: Usha Arghya** - On the last day of the festival, devotees make offerings to the rising sun at the riverbank. On this day, the devotees break their 36-hour fast, resulting in the end of the festival. Relatives share prasad together.

32. (b)

Amherst, Ellenborough, Hardinge, and Auckland were all British Governor-Generals of India during different periods:

Amherst (1823-1828)

William Pitt Amherst, the 1st Earl Amherst, was the Governor-General of India from 1823 to 1828. During his tenure, the British annexed Assam, which led to the First Anglo-Burmese War (1824–1826). The war ended with the Treaty of Yandabo (1826), which forced Burma to give up large areas of land and accept a British representative.

Auckland (1836-1842)

George Eden, the Earl of Auckland, was the Governor-General of India from 1836 to 1842. He was recalled after the British suffered setbacks in Afghanistan.

Ellenborough (1842-1844)

Edward Law, the Earl of Ellenborough, was the Governor-General of India from 1842 to 1844. During his time in office, the British successfully invaded Kabul, which helped restore the British reputation in India after the mismanagement of the Afghan War by his predecessor, Lord Auckland.

Hardinge (1844-1848)

Henry Hardinge, the 1st Viscount Hardinge, served as the Governor-General of India from 1844 to 1848. In 1845, the first Sikh War broke out after the death of Maharajah Ranjit Singh.

33. (c)

Democracy has played a significant role in reducing political inequality globally by enabling every citizen to participate in political activities, regardless of caste, gender, religion, region, or race. It is this democratic system of governance that made it possible for Abraham Lincoln and Barack Obama to become Presidents of the USA.

34. (b)

Statement 1 - incorrect: Devaluation makes exports **more** competitive and cheaper for foreigners, not less.

Statement 2 - Incorrect: Devaluation tends to **encourage** exports, not discourage them.

Statement 3 - Correct: It can indeed help reduce the trade deficit by boosting exports and making imports more expensive.

35. (c)

- The Searchlight was a pioneering English newspaper that played a crucial role in covering political issues in its region. However, it faced severe government repression following an article by Prasad that criticized the Patna High Court's judgment in the Barh Sati case. In response to this criticism, the government took extreme measures to suppress the newspaper, ultimately fining it Rs 200 for its dissenting views. This incident highlights the ongoing struggles for press freedom and the challenges faced by media outlets in holding authorities accountable.
- Murli Manohar Prasad served as the longest-tenured editor of the Searchlight



newspaper, which was established in 1918 by Dr. Sachidanand Sinha. As the first editor, Prasad played a pivotal role in shaping the newspaper's editorial direction and influence in Bihar. Over the years, Searchlight had several other notable editors, including: Syed Haider Hussain Maheshwar Prasad CSR Somayajulu S. Ranga Iyer

36. (c)

- Farid, who later became known as Sher Khan and subsequently Sher Shah, was the son of a jagirdar under the Jaunpur kingdom.
- He was born in 1472 AD.
- His father, Hasan Khan Sur, held the jagir of Sasaram in Bihar during the rule of the Lodis.
- Sher Shah is renowned for his significant contributions to Indian history, particularly in establishing a strong administrative framework and promoting infrastructure development, including roads and a standardized currency.
- His legacy includes the introduction of the Sur Empire, which laid the groundwork for future governance in India.
- In 1539, he defeated Humayun in the battle of Chausa (26 June 1539) and after that, he assumed the title Sher Shah as emperor.
- Sher Shah king was assisted by important ministers:
 - Diwan-i- Wizarat – also called as Wazir – in charge of Revenue and Finance.
 - Diwan-i-Ariz – in charge of Army.
 - Diwan-i-Rasalat- Foreign Minister
 - Diwan-i-Insha- Minister for Communications

37. (a)

Madhepura

- Singheshwar Sthan is an ancient temple dedicated to Lord Shiva located in Madhepura district. The divine Shivalinga here is considered a symbol of immense faith and devotion of the people. It is said that this place was once the Tapabhoomi of the great Shringi Rishi. Here he had built 7 Havan Kunds for Yagya, which are still visible in

the form of ruins. Due to the residence of Shringi Rishi, this place became famous as Singheshwar Sthan.

- The beauty of Singheshwar place is worth seeing on the day of Mahashivratri. The cattle fair here is quite famous.
- A month-long fair is held on the occasion of Mahashivratri at Singheshwar Sthan, famous as Deoghar in Bihar.

38. (d)

- **Fundamental Rights** refer to a set of essential liberties and entitlements guaranteed to every citizen by the constitution of a country. These rights serve as the bedrock of individual freedom, protecting citizens from arbitrary state actions and ensuring basic human rights and freedoms.

Articles 12 to 35 in Part III of the Indian Constitution provide for six Fundamental Rights. These rights are mentioned below:

- **Right to Equality (Articles 14–18)**
- **Right to Freedom (Articles 19–22)**
- **Right against Exploitation (Articles 23–24)**
- **Right to Freedom of Religion (Articles 25–28)**
- **Cultural and Educational Rights (Articles 29–30)**
- **Right to Constitutional Remedies (Article 32)**
- These rights are not absolute but are subject to reasonable restriction, which means that the state can impose reasonable restrictions on them.
- These rights are not absolute but are subject to reasonable restriction, which means that the state can impose reasonable restrictions on them. It balances individual liberty with social needs.
- All these rights are available against the arbitrary action of the state. However, some of them are also available against the actions of private individuals.
- **No Permanency** – They are not sacrosanct or absolute, as the Parliament can curtail or abolish them, for example – the abolition of the fundamental right to property in 1978.



39. (a)

- **Article 124:** Supreme Court judges should be appointed by the President after consultation with such judges of the High Courts and the Supreme Court as the President may deem necessary.
 - The CJI is to be consulted in all appointments except his or her own.
- Appointment to the office of the Chief Justice of India should be of the seniormost Judge of the Supreme Court considered fit to hold the office. The Union Minister of Law, Justice and Company Affairs would, at the appropriate time, seek the recommendation of the outgoing Chief Justice of India for the appointment of the next Chief Justice of India.
 - Whenever there is any doubt about the fitness of the seniormost Judge to hold the office of the Chief Justice of India, consultation with other Judges as envisaged in Article 124 (2) of the Constitution would be made for appointment of the next Chief Justice of India.
 - After receipt of the recommendation of the Chief Justice of India, the Union **Minister of Law, Justice and Company Affairs** will put up the recommendation to the Prime Minister who will advise the President in the matter of appointment.

40. (a)

Article 130 of the Constitution of India states that the Supreme Court of India can sit in Delhi or any other place that the Chief Justice of India (CJI) appoints with the President's approval.

41. (c)

The procedure for the amendment of the Constitution as laid down in Article 368 is as follows:

1. An amendment of the Constitution can be initiated only by the introduction of a bill for the purpose in either House of Parliament and not in the state legislatures.
2. The bill can be introduced either by a minister or by a private member and does not require prior permission of the president.

3. The bill must be passed in each House by a special majority, that is, a majority of the total membership of the House and a majority of two-thirds of the members of the House present and voting.
4. Each House must pass the bill separately. In case of a disagreement between the two Houses, there is no provision for holding a joint sitting of the two Houses for deliberation and passage of the bill.
5. If the bill seeks to amend the federal provisions of the Constitution, it must also be ratified by the legislatures of half of the states by a simple majority, that is, a majority of the members of the House present and voting.
6. After duly passed by both Houses of Parliament and ratified by the state legislatures, where necessary, the bill is presented to the president for assent.
7. The president must give his assent to the bill. He can neither withhold his assent to the bill nor return the bill for reconsideration by the Parliament.
8. After the president's assent, the bill becomes an Act (i.e., a constitutional amendment act) and the Constitution stands amended by the terms of the Act.

42. (d)

- On August 5, 2019, the President issued the Constitution (Application to Jammu and Kashmir) Order which inserted a new provision, Article 367(4), in the Indian Constitution.
 - This replaced the expression 'Constituent Assembly of the State' in the proviso to Article 370(3) with 'Legislative Assembly of the State'.
- The same day had seen the Parliament abrogate Article 370 and pass the Bill to reorganise the State of Jammu and Kashmir.
 - The former State was split into two Union Territories — **Jammu and Kashmir and Ladakh**.
 - **5 Lok Sabha seats were retained by Jammu and Kashmir, and 1 was transferred to Ladakh.**



43. (c)

Section 16(1) of the States Reorganisation Act, 1956 states that the Regional Councils shall consist of the following members:

- (a) A Union Minister nominated by the President.
 - (b) the Chief Ministers of all the States comprised in the region and two other Ministers nominated by the Governor of all such States and, if any such State has no Council of Ministers, three members each from such States to be nominated by the President;
 - (c) in the area which includes any Union Territory, two or more members from each such Union Territory to be nominated by the President;
2. The Union Minister nominated under clause (a) of sub-section (1) of section 3 of the Zonal Council shall be its Chairman. The President has designated the Union Home Minister as the Chairman of all Zonal Councils.
 3. The Chief Ministers of the States comprised in each region shall, in rotation, serve as Vice-Chairmen of the Zonal Council for a term of one year at a time.
 - Provided that if during that period the State concerned does not have a Council of Ministers, a member nominated by the President from that State shall act as Vice-Chairman of the Zonal Council.
 4. The Zonal Council for each region shall have the following persons as advisers to assist the Council in the performance of its functions, namely:-
 - (a) A person nominated by the Planning Commission (now NITI Aayog);
 - (b) the Chief Secretary of each State Government comprised in the area, and;
 - (c) The Development Commissioner or any other officer nominated by the State Government in each area comprised in the region.

44. (a)

- The Ashok Mehta Committee was formed in December 1977 by the Janata government to strengthen the declining Panchayati Raj system in India. The committee's main objective was to identify the reasons for the

poor performance of Panchayati Raj and to make recommendations for its revival. The committee submitted its report in August 1978.

The key recommendations of the Ashok Mehta Committee are as follows:

- The three-tier system of Panchayati Raj Institutions (PRIs) should be replaced by a two-tier system, consisting of:
 - Zila Parishad – at the district level, and
 - Mandal Panchayat – consisting of a group of villages with a total population of 15,000 to 20,000.
- The Nyaya Panchayats should be kept as separate bodies from that of Development Panchayats.

The Nyaya Panchayats should be presided over by a Qualified Judge.

Committee recommended that Panchayati Raj Institutions (PRIs) should have compulsory powers of taxation to mobilize their own financial resources, not voluntary powers.

45. (c)

Doctrine of Syadvada and Anekantavada

Syadvada (Theory of Judgement): The Jain view that all our ordinary knowledge is necessarily partial, always relative to some particular point of view and specific aspects of objects, is known as Syadvada. According to this concept, identity and difference must exist in reality.

Anekantavada: According to this doctrine, ultimate truth and reality are complex and have multiple aspects. Anekantavada has also been interpreted to mean- non-absolutism, intellectual ahimsa, religious pluralism, and rejection of fanaticism.

46. (a)

The tax “Turushkadand” is mentioned in the **Maner copper plate inscription**.

Turushka-danda was a tax levied by the Gahadavala kings in early medieval India. The name translates to “Turkic punishment”. Scholars believe that the tax was used for a variety of purposes, including:

- A contribution to a tribute paid to the Turushkas (Ghaznavids)



- A tax to prepare for potential war with Turushka enemies
- A fiscal measure to deter Islamic invasions

The term “Turushka” was used in Sanskrit texts and inscriptions to refer to Turkic Muslim invaders who were influential in the region during the 8th–14th centuries.

47. (c)

- **Jagadamba Devi** was one of the artists through whom **Mithila painting** emerged on the global stage.
- Jagadamba Devi was born in Bhajparaul, Madhubani district, Bihar on February 25, 1901. She died on 8 July 1984 at the age of 83.
- The paintings made by Jagadamba Devi are collected in many countries. Some of her paintings are also displayed in Sabarmati Ashram, which have a unique identity.
- Jagadamba Devi was the first Mithila painter to be awarded the National Award (1970) and **the Padma Award (1975)**.
- Jagadamba Devi, the first recipient of the Padma Shri award in art, is known for Madhubani painting.
- According to the information, she used to draw triangular shapes from head to neck and double lines for the rest of the parts. The colours she used to fill in those double lines were amazing.
- She mostly used bright colours, especially red. Doli, Gajalakshmi, Radha Krishna were her most famous paintings.

48. (a)

- Increase in the volume with increase in the temperature is due to a property known as thermal expansion. As the temperature of a substance increases, its particles gain kinetic energy and move farther apart. This increase in the distance between particles leads to an increase in the overall volume of the substance.
- However, there's a slight anomaly in water's behavior between 0°C and 4°C. During this temperature range, water's volume actually decreases slightly before it starts to increase

again. This unique property is due to the arrangement of water molecules at these temperatures.

49. (d)

- When diluting sulfuric acid, it's crucial to **always add the acid to the water**. This safety precaution is due to the highly exothermic nature of the reaction between sulfuric acid and water.
- While sulfuric acid is a highly corrosive and reactive substance, it actually has a **relatively low specific heat** compared to many other substances, including water.
- This means that it takes less heat energy to raise the temperature of a given amount of sulfuric acid compared to an equal amount of water. This property is one reason why sulfuric acid is used in many industrial processes that require high temperatures, such as the production of fertilizers and other chemicals.

50. (d)

- **Rh factor:** This is a protein found on the surface of red blood cells. People can be either Rh⁺ (positive) or Rh⁻ (negative).
- **First pregnancy:** If an Rh⁻ woman carries an Rh⁺ fetus, her immune system may produce antibodies against the Rh factor. However, these antibodies usually don't cross the placenta during the first pregnancy.
- **Second pregnancy:** If the second fetus is also Rh⁺, the mother's immune system may already have antibodies against the Rh factor. These antibodies can cross the placenta and attack the fetus's red blood cells, leading to a condition called hemolytic disease of the newborn (HDN). This can be fatal.
- To prevent HDN, Rh⁻ women who carry Rh⁺ fetuses are given a RhoGAM injection during pregnancy and after delivery. RhoGAM is a medication that prevents the mother's immune system from producing antibodies against the Rh factor.

51. (c)

To be divided by 4, the number formed by the last two digits of 14393x, 3x, must be exactly divisible by 4.



So, if the number 14393x has 2 or 6 in place of x, then the number will be divided by 4.

52. (d)

The LCM of 5, 10 and 12 will be 60 and after an interval of 60 seconds all three bells will ring together again.

53. (d)

Sum of five numbers = $61 \times 5 = 305$
 Average of first three numbers = 62
 Sum of first three numbers = 186
 Average of last three numbers = 59
 Sum of last three numbers = 177
 Third number = $(186 + 177) - 363 = 58$

54. (c)

Total age of all three students = 60
 Age of the eldest student = $60 \times 7 \div (3 + 5 + 7) = 28$

55. (c)

Required percentage increase in enrollment of students = $50 \times 100 \div (100 - 50) = 100\%$

56. (a)

Let cost price = x
 Profit = $600 - x$
 Loss = $300 - x$
 According to the question,
 Profit = Loss
 $600 - x = x - 300$
 $x = 450$
 Profit percentage = 60%
 Selling price = $450 \times 160 \div (100)$
 = ₹720

57. (c)

Amount to be paid after four years
 $550 + \{550 \times 5 \times 4 \div (100)\}$
 = $550 + 110$
 = ₹660

58. (d)

Distance between the cop and the thief = 2 km
 Difference in speed of cop and thief = 5 km/hr
 Required time to cover 2 km gap = $(2/5)60$
 = 24 minutes

59. (c)

Total methods = $7 \times 8 = 56$

60. (c)

Number of cards, $n(S) = 52$
 Number of king cards, $n(E) = 4$
 $P(E) = n(E)/n(S)$
 = $4/52$
 = $1/13$

61. (b)

- Service tax is a tax levied by the government on service providers on certain service transactions, but is actually borne by the customers. It is categorized under Indirect Tax and came into existence under the Finance Act, 1994.
- Service Tax was introduced in India in 1994 by Chapter V of the Finance Act, 1994. The Central Board of Excise & Customs (CBEC), Department of Revenue, Ministry of Finance, deals with the task of formulation of policy concerning levy and collection of Service Tax.

62. (a)

- Effective Revenue Deficit is the difference between revenue deficit and grants for creation of capital assets. Thus, it indicates the actual revenue deficit after grants given for capital expenditure.
 - *Effective Revenue Deficit = Revenue Deficit – Grants for Creation of Capital Assets*
- The concept of effective revenue deficit was introduced in the Union Budget for the financial year 2011-12
- Effective Revenue deficit was introduced in the **Union Budget** 2012-13, on the suggestion of Rangarajan Committee.

63. (a)

Economic globalism, characterized by the integration of nations through free trade, multinational corporations, and global markets, does not necessarily lead to the decline of socialist ideology.



In fact, socialism can coexist with and even thrive alongside economic globalism due to its foundational principles of universalism and global solidarity.

64. (c)

- Invisible unemployment is a condition where more people are engaged in work as compared to requirement for example whole family of 10 members is engaged in agricultural work which can be done by 5 members only. This type of unemployment is mainly found in the rural areas of developing countries.
- On the other hand underemployment is a condition where a highly skilled person is engaged in low paying job.
- Cyclical and frictional unemployment are found in developed countries.
- Bhagwati Committee is related to the estimation of unemployment.
- Scheduled Banks under the Banking System in India refer to those financial institutions that are listed in the 2nd Schedule of the Reserve Bank of India Act, 1934.

Scheduled banks can be further classified into various categories, including:

- Public sector banks
- Private sector banks
- Foreign banks
- Regional rural banks
- Small finance banks
- Cooperative banks

65. (c)

- Lord Cornwallis was a significant British administrator and military leader in India during the late 18th century, serving as the Governor-General of India from 1786 to 1793. His tenure is notable for several major reforms that laid the foundation for British administrative practices in India.

Major Reforms of Lord Cornwallis

1. Administrative Reforms:

- o Permanent Settlement (1793): One of Cornwallis's most important reforms, the Permanent Settlement aimed to create a stable revenue system in Bengal. It fixed land

revenue assessments permanently, giving zamindars (landowners) the responsibility of collecting taxes. This reform sought to increase revenue predictability for the British while granting zamindars some rights over land.

- o Reduction of Corruption: Cornwallis established a system to reduce corruption among officials by implementing a salary structure for civil servants, thus discouraging them from taking bribes.

2. Judicial Reforms:

- o Separation of Revenue and Criminal Justice: Cornwallis introduced the separation of judicial and revenue functions, leading to the establishment of a structured legal system. The introduction of British legal system included codifying laws and providing a formal court structure.
- o Establishment of District Courts: He established a hierarchy of courts, including district courts, to handle legal matters, which aimed to improve access to justice for the populace.
- o Cornwallis dissolved District Fauzadari Court established by Warren Hastings, and set up Circuit Courts at **Calcutta, Decca, Murshidabad, and Patna.**

3. Military Reforms:

- o Reorganization of the Army: Cornwallis restructured the British East India Company's army, emphasizing discipline and regular training. This was aimed at creating a more effective military force in India.

4. Economic Reforms:

- o Focus on Revenue Generation: Cornwallis emphasized agricultural production and revenue collection, aiming to ensure a steady flow of income to the British administration. Permanent Settlement was a key aspect of this approach.

66. (b)

- Madhubani district has highest **fish production.**
- Maximum **milk production** in Bihar is in Samastipur district.



- Cows account for highest number of the total livestock(42.1%) in Bihar.

67. (d)

- Bonds are a means of raising money for companies and governments.
- Money raised through bonds comes under the category of debt.
- The return received from a bond is called yield. The yield of a bond and its value have an inverse relationship. This means that when the price of a bond decreases, its yield increases. When the price of a bond increases, its yield decreases.
- Bond yields are affected by withdrawal of money from the Indian private market by US companies, regulation by the Reserve Bank, and changes in inflation and short-term interest rates.

68. (b)

- **Capital Gains** refer to the profit made from the sale of a capital asset, which can be a physical asset like property or a financial asset like stocks or bonds.
- When an asset is sold for a higher price than its original price, this excess is called capital gain. This may be a result of inflation, but if the price remains constant, real and monetary capital gains will be the same.
- Examples of capital gain are - When you buy a painting and its value increases due to its popularity, When there is a natural increase in the value of a property etc.

Types of Capital Gains:

- **Short-Term Capital Gains:** Profits from the sale of capital assets held for a short period (usually less than a year). These gains are taxed at your ordinary income tax rate.
- **Long-Term Capital Gains:** Profits from the sale of capital assets held for a longer period (usually more than a year). These gains are generally taxed at a lower rate than ordinary income.

69. (a)

- Bharat Stree Mahamandal was the first women's organisation in India founded by

Sarala Devi Chaudhurani in Allahabad in 1910.

- In 1910, Sarala Devi Chaudhrani conducted the first meeting of Bharat Stree Mahamandal in Allahabad.
- The objectives of this institution included promotion of education for women, abolition of the purdah system, and improvement of the social, economic and political status of women..
- The organisation opened several offices in Lahore (then part of undivided India), Allahabad, Delhi, Karachi, Amritsar, Hyderabad, Kanpur, Bankura, Hazaribagh, Midnapur and Kolkata (formerly Calcutta) to improve the situation of women all over India.

70. (a)

- Raja Ram Mohan Roy founded the Brahmo Samaj in Kolkata on August 20, 1828.
- Debendranath Tagore established the Tattvabodhini Sabha in Calcutta (now Kolkata) on October 6, 1839. The Sabha was originally called the Tattvaranjini Sabha, but was renamed to Tattwabodhini Sabha, which means «Truth-seekers» Sabha.
- The Indian Brahmo Samaj or Navin Brahmo Samaj was founded in 1866 by Keshav Chandra Sen.
- Later on, the Indian Brahmo Samaj split and the Navin Brahmo Samaj was founded in 1878.
- Satyashodhak Samaj (Truth-seekers' Society) was a social reform society founded by Jyotiba Phule in Pune, Maharashtra, on 24 September 1873.

71. (d)

- Popular leaders who participated in the Champaran Satyagraha for the abolition of the Tinkathiya system along with Gandhiji included Rajkumar Shukl, Sant Raut, Anugrah Narayan Sinha, Ramnavami Prasad, Shabhusharan Verma, etc.
- In the Champaran district of Bihar, India, thousands of landless laborers, indentured workers, and farmers were compelled to



cultivate indigo and other cash crops instead of food crops.

- Under the Tinkathiya system, villagers were required to dedicate 3/20ths of their total land area for indigo production, a mandate imposed by European colonialists. This exploitation led to significant hardship, as farmers could not grow sufficient food for their families while receiving inadequate compensation for the indigo they produced.

72. (a)

The correct match is as follows-

List-I.	List-II
(Military Exercise)	(Country)
(A) Tiger Triumph	America
(B) Garuda	France
(C) Dustlik	Uzbekistan
(D) Nomadic Elephant	Mongolia

73. (b)

- Kharagpur hills in Bihar are relatively the oldest from the geological point of view.
- Kishanganj** district is in the easternmost part of Bihar.
- There are 16 districts in Bihar which do not share borders with any country or state.
- 7 districts of Bihar share borders with Nepal and they are West Champaran, East Champaran, Sithamarhi, Madhubani, Supaul, Araria, and Kishanganj



74. (b)

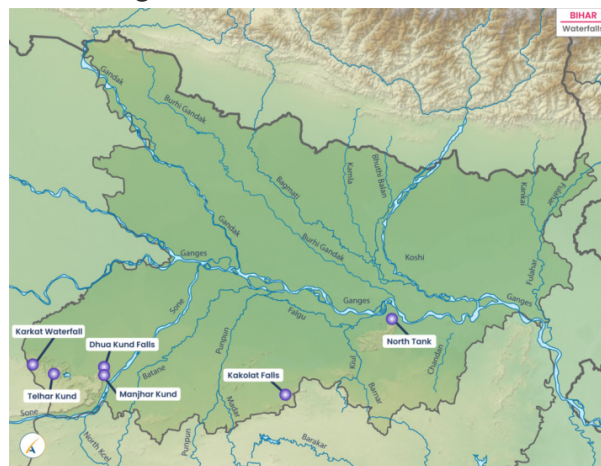
According to Bureau of mines Mineral Resources Bihar is the principal holder of country's pyrite resources and possesses 95% of resources.

The important mineral occurrences in Bihar are

- limestone in Kaimur (Bhabhua), Monghyr and Rohtas districts;
- mica** in Nawada district;
- quartz/ silica sand in Bhagalpur, Jamui, Monghyr and Nalanda districts;
- quartzite in Lakhisarai, Monghyr and Nalanda districts;
- talc/soapstone/ steatite in Monghyr district.
- bauxite** in Monghyr and Rohtas districts;
- china clay in Bhagalpur and Monghyr districts;
- felspar** in Gaya, Jamui and Monghyr districts;
- fireclay in Bhagalpur and Purnea districts;
- gold** in Jamui district;
- granite in Bhagalpur, Gaya, Jahanabad and Jamui districts;**
- iron ore (hematite) in Bhagalpur district;
- iron ore (magnetite) in Gaya and Jamui districts;
- lead-zinc in Banka and Rohtas districts and pyrites in Rohtas district.

75. (c)

Telharkund waterfall is located in Kaimur district. This waterfall is situated near the origin of the Durgavati river.



76. (a)

- Banabhatta is considered the greatest ornament in the literary circle of Harsha Vardhana.



- Bana's **Kadambari** is not only the most celebrated prose romance in Sanskrit, but also the best work with universal appeal.
- Similarly **Harshacharita**, is probably first work of its kind is the biography of his great hero Harsha. The work is not only the **first attempt of Biography Indian literature** but also an authentic work.
- There are two more works attributed to Banabhatta viz. **Chhandakasthaka** and **Parvatiparinaya**.
- Please note that Banabhatta did not complete Kadambari. His work was later finished by his son **Bhushanbhatta** (or maybe Pulindabhata) and thus Kadambari is divided into two parts viz. Purvabhaga and Uttarbhaga, ascribed to the father and son respectively.

77. (b)

- **A balloon filled with hydrogen gas rises in the air only when its total weight (including the balloon itself, the hydrogen gas, and any payload) is significantly less than the weight of the air it displaces.**
- **This principle is known as Archimedes' principle. It states that a body immersed in a fluid experiences an upward buoyant force equal to the weight of the fluid displaced by the body. In the case of a hydrogen-filled balloon, the buoyant force is greater than the weight of the balloon and its contents, causing it to rise.**

78. (d)

- According to the 2011 census, the descending order of population density is Shivhar (1880), Patna (1823) and Darbhanga (1728), Vaishali (1717)
- According to the 2011 census, the population density of the state is 1106 persons per square kilometer.
- As per 2011 census, ascending order of population- Shivhar (1880), Patna (1823) and Tara (1728), and ascending order of population

79. (c)

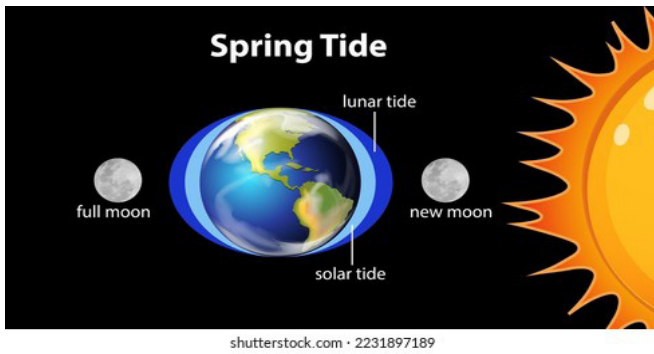
- Glucose gets converted into glycogen and is stored in **liver and muscles**.
- Liver is the largest Exocrine gland.
- Jaundice occurs due to disorder in liver.
- Bile juice is produced in liver.
- Liver - It makes toxic substance non-toxic. Urea is produced in it.
- liver stores some vitamins, including vitamins A, D, E, and K
- The liver converts vitamin D into 25-hydroxyvitamin D₃, and then the kidneys convert it into 1,25-dihydroxyvitamin D₃, also known as calcitriol. Calcitriol is the active form of vitamin D
- The liver stores vitamin K and synthesizes vitamin K-dependent proteins, which are essential for blood coagulation.
- Spleen - It is called Blood Bank of the body. The spleen is known as the graveyard of red blood cells (RBCs) because it filters and destroys old and damaged RBCs

80. (a)

- Tides usually occur twice at every place, but the time of tides does not remain the same regularly. The main reason for this is that the earth completes one revolution in its orbit in 24 hours.
- The earth completes its revolution from west to east. The moon also revolves around the earth at its own distance, so the moon moves a little ahead of its fixed tide centre in the next one day. Due to this, the tide centre takes 52 minutes more time to reach just below this new centre of the moon or in front of the moon.
- Thus, every next day, the tide centre takes a total of 24 hours and 52 minutes to come in front of the moon. Thus, every next day, the tide centre takes a total of 24 hours and 52 minutes to come in front of the moon.

High tides occur on full moon and new moon. This phenomenon is known as **spring tides**.





why:

- **Gravitational Pull:** The moon's gravitational pull on Earth's oceans is strongest when it's directly overhead or directly on the opposite side of the planet.
- **Sun's Influence:** The sun also exerts a gravitational pull on Earth's oceans, though it's weaker than the moon's.
- **Alignment:** During full moon and new moon, the sun, Earth, and moon are aligned in a straight line. This causes the gravitational pulls of the sun and moon to reinforce each other, resulting in exceptionally high tides.

81. (a)

- The **north-eastern agro-climatic zone** of Bihar is known for the production of **commercial crops such as sugarcane, jute, tobacco, potato, makhana** etc.
- Bihar is divided into four main agro-climatic zones based on soil, rainfall, temperature, and terrain:
- Zone-I: North-Western Alluvial Plain
- Zone-II: North-East Alluvial Plain
- Zone-III A: South East Alluvial Plain
- Zone-III B: South West Alluvial Plain
- The North-Western Alluvial Plain Zone has the most districts in Bihar, with 13 districts. These districts are:

Begusarai, East Champaran, West Champaran, Darbhanga, Gopalganj, Madhubani, Muzaffarpur, Samastipur, Saran, Sheohar, Sitamarhi, Siwan, and Vaishali.

- Bihar's main agricultural crops include: Paddy, Wheat, Jute, Maize, and Oil seeds.
- Bihar is also India's leading producer of makhana, accounting for about 85% of the country's total output.

82. (b)

- In the last phase of the **Pleistocene period**, after the rise of Shivalik, a wide Indus-Ganga basin was formed between the Himalayas and the Chotanagpur plateau.
- The plain area of Bihar is 95% of the total area of Bihar. Here rocks of Pleistocene and modern era are found which are kept under the quaternary structure.
- In the Pleistocene period, when the central part of the Rajmahal and Shillong plateau was eroded, the river Ganga started flowing towards the Bay of Bengal.

83. (d)

According to Bureau of mines Mineral Resources Bihar is the principal holder of country's pyrite resources and possesses 95% of resources.

The important mineral occurrences in Bihar are

- limestone in Kaimur (Bhabhua), Monghyr and Rohtas districts;
- **mica** in Nawada district;
- quartz/ silica sand in Bhagalpur, Jamui, Monghyr and Nalanda districts;
- quartzite in Lakhisarai, Monghyr and Nalanda districts;
- talc/soapstone/ steatite in Monghyr district.
- **bauxite** in Monghyr and Rohtas districts;
- china clay in Bhagalpur and Monghyr districts;
- **felspar** in Gaya, Jamui and Monghyr districts;
- fireclay in Bhagalpur and Purnea districts;
- **gold** in Jamui district;
- granite in Bhagalpur, Gaya, Jahanabad and Jamui districts;
- iron ore (hematite) in Bhagalpur district;
- iron ore (magnetite) in Gaya and Jamui districts;
- lead-zinc in Banka and Rohtas districts and pyrites in Rohtas district are reported.

84. (c)

- The movement during which there was a strike throughout the city when the Prince of Wales visited Patna was the **Non-Cooperation Movement**.



- This movement, led by Mahatma Gandhi, aimed at achieving Indian self-rule and was marked by widespread protests against British colonial rule.
- When Edward, Prince of Wales, arrived in Patna on December 22, 1921, he was met with significant resistance, including a general strike (hartal) called by Gandhi and the Indian National Congress.
- The strike reflected the collective discontent of the populace and their refusal to support colonial authority during the prince's visit.

85. (d)

- **Dharwad Rock-** The first erosion took place on the basic rock of Archaean Hum, due to which it got transformed, the first transformed rock is called Dharwad rock group. The rock of Dharwad group is found in Munger, Jamui, Jawada in the south-eastern part of Bihar.
- **Vidhan Rock-** This rock is found in the south-western part of Bihar - in Rohtas, Kaimur district. Vindhyan rock is found in Madhya Pradesh, Uttar Pradesh, it is its eastern extension. It is called Kaimur Plateau in Bihar. It is north of Son River.
- **Tertiary Rock-** This is found in the southern border of the Himalayas. In this period, the world's newest Moderaar mountain Himalaya was formed. It is spread along the northern border of Champaran district of Bihar.
- **Quaternary Rock-** After the upliftment of Shivalik, a wide 'Indus Ganga Basin' was formed between the Himalayas and Chotanagpur Plateau. This led to the formation of the Ganges Plain.

86. (d)

Climatic classification of different regions of Bihar according to different geographers is as follows:

Geographers	North Bihar	South Bihar
Koppen	Cwg	Aw
Thornthwaite	CA'W	CB'W
Triwartha	CA'W	AW

87. (d)

- **Udayin** made Pataliputra his capital.
- **Shishunaga** The founder of the Shaishunaga dynasty, Shishunaga moved the capital of Magadha from Pataliputra to Vaishali.
- Kalashoka, the son of Shishunaga, moved the capital back to Pataliputra.
- Kalashoka's reign is also known for organizing the Second Buddhist Council in Vaishali.

88. (c)

Bottleneck Inflation:

- It takes place when the supply falls drastically and the demand remains at the same level.
- It arises due to supply-side mismanagement, which is also known as **structural inflation**.
- This can be put in the **demand-pull inflation category**.
- Bottleneck inflation can be caused by a number of factors, including: supply-side accidents, hazards, mismanagement, inefficient storage and distribution facilities, and poor productivity. Bottlenecks can reduce economic activity by limiting the inputs needed to produce goods and services. The severity of these constraints depends on whether bottlenecks affect items that are upstream (at the start of production chains) or downstream (closer to final consumers).

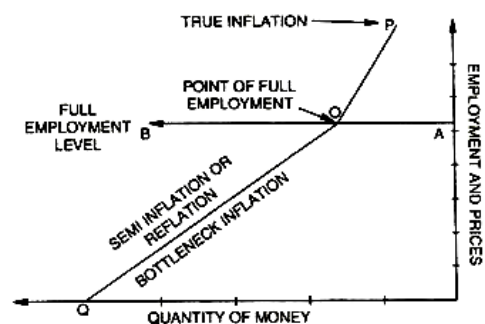


Fig. 32.1

89. (d)

- **Maulana Mazharul Haq** was given the title of Deshbhushan by Gandhiji.
- He was a editor of a newspaper named 'Motherland' and was the President of the Bombay Session of the Muslim League in 1915.



- He established 'Sadakat Ashram' and took part in almost all the freedom movements.

90. (d)

- Bakasht Movement was carried out in Bihar during 1937-39.
- This movement was organized by Swami Sahajanand Saraswati in Bihar. Prominent leaders were Swami Shraddhanand Saraswati, Yadunandan Sharma, Rahul Sankrityayan, Panchanan Sharma.
- This movement was against the eviction of tenants from Bakasht land by the landlords and led to the passing of Bihar Tenancy Act and Bakasht Land Tax.
- Bakasht Movement spread throughout Bihar. Kisan Sabha actively organized and motivated farmers in Bakasht Movement.
- Bihar Provincial Kisan Sabha Annual Conference held at Vaini, Darbhanga in December 1938 resolved to oppose the landlords and fight for the rights of tenants in Bakasht land.

91. (d)

The Battle of Khanwa was fought between Babur and Rana Sanga of Mewar on 16 March 1527 in the village of Khanwa, 35 km from Agra.

The battle of Khanwa consolidated the gains made during the first battle of Panipat on April 21, 1526.

92. (d)

Veda	Rigveda	Yajurveda	Samveda	Atharvaveda
Officiating priest	Hotri	Adhvaryu	Udgatri	Brahman

93. (d)

Akbar introduced many social and educational reforms -

- He stopped the practice of Sati.
- A widow could become Sati only by her own will.
- Widows of young age
- Young widows who had not had cohabit with her husband till they became widows could not become Sati at all.
- Akbar was not in favour of having more than one wife provided the first wife was childless.

94. (d)

Court-

Navratna	Contribution
Amarsimha	Sanskrit lexicographer and author of Amarkosha.
Dhanvantri	Great Physician and author of Dravyavali and Nighantu.
Harisena	Great Eulogist, who composed the Prayag Prashasti or Allahabad Pillar Inscription.
Kalidasa	Great Playwright, often termed as the Indian Shakespeare.
Kshapanaka	Great Astrologer and Grammarian, known for his treatise Kshapanaka Vyakarana.
Sanku	Great Builder and Architect of Ujjain.
Varahamihira	Astrologer, Astronomer, and Mathematician, who wrote Panchasiddhantika, Brihat Samhita, and Brihat Jataka.
Vararuch	Grammarian and Sanskrit Scholar, identified as Katyayana, who wrote Prakrit Prakasha, the first Grammar of the Prakrit language.
Vetalbhatta	A great poet and composer of Vetalpanchavimastikan.

95. (c)

- Copper is a heavy, red coloured metal. It has a lot of **lustre**.
- It is very soft, ductile and malleable metal. Due to this property, very thin wires and sheets can be made from it.
- This metal is also a good conductor of electricity and heat.
- It is less noble than gold and silver and due to this reason it corrodes quickly in moist air.
- Corrosion forms a light green coloured poisonous compound called vermillion. Like silver, copper is also resistant to many chemicals.
- However, this metal dissolves in nitric acid and hot concentrated sulphuric acid and salts are formed from it.



- Among the salts of copper, Cropper sulphate (Butiya) is present.
- Metal oxides are generally **basic in nature**, hence copper oxides are basic in nature.

96. (b)

- Plato and Aristotle were advocates of “geometrical concept of justice”. It is the concept of proportional equality.
- It implies equal parts to equals and unequal parts to unequals. It also means that the distribution of power and patronage should be in accordance with the ability or contribution of the individual.
- As Aristotle said, if flutes are to be distributed, they should be distributed among those who have the ability to play the flute. Similarly, only those people should rule who have the ability to rule. According to this concept of justice, benefits and responsibilities should, in fact, be in proportion to the ability and capacity of the recipient. Statistical justice is sometimes considered democratic justice and geometric justice is often considered equivalent to aristocratic justice.
- In Plato’s book Republic, justice is also linked to the social order. According to this, the idea of justice inherent in the soul is actually an analogy of justice inherent in the state.

Statistical concept of justice

It considers everyone as equal partners in the vision of justice. Jeremy Bentham said “Each one should be counted as one and none more than one.”

97. (d)

- The Universal Declaration of Human Rights has a preamble and 30 articles. These define certain rights which should be available to all individuals without any discrimination on the basis of race, religion, nation, sex and colour.

These human rights can be divided into three categories:

- o The first category includes those rights which are mainly related to the civil and political rights of the individual. These include the rights to life, liberty, security of the individual, freedom from oppression and slavery and

political participation. Apart from the right to property and marriage and the fundamental freedoms of opinion, expression, thinking, consciousness and religion, the rights related to freedom of association and assembly are also integral parts of the first category of fundamental rights.

- o The second category of rights are those which can be called ‘security-centric rights’. These rights provide social, economic and cultural security. These social, economic, cultural rights are more positive in nature. Hence, they make it the responsibility of the state to ensure the realisation of those rights. In the Universal Declaration of Human Rights, there is agreement on those principles which are the basic foundation of the first and second category rights.
- o The third category of human rights are relatively new rights. They have emerged in recent years as a response to international consensus on a variety of new issues. These include environmental, cultural and developmental rights. These are more related to the rights of groups and peoples than to the rights of individuals. These rights also include the right to self-determination and the right to development. Developing countries have played a leading role in generating international consensus on these rights.

98. (a)

Bihar was the leading state in India in terms of economic growth during the 2022-2023 fiscal year.

The Finance Minister of Bihar, Mr Samrat Chaudhary, presented the Budget for the state for the financial year 2024-25 on February 13, 2024. The Gross State Domestic Product (GSDP) of Bihar for 2024-25 (at current prices) is projected to be Rs 9.76 lakh crore, amounting to growth of 13.5% over the previous year.

99. (c)

- In Bihar, a village named Patwa Toli has gained recognition as the ‘IIT factory’ for consistently producing over a dozen IITians annually.



- The journey to securing a seat in the prestigious Indian Institutes of Technology (IIT) is known to be challenging, but Patwa Toli has defied odds by nurturing many successful engineers over the past 25 years.
- The village, located in **Gaya**, boasts a high number of IIT qualifiers, with almost every household having an engineer.

100.(c)

- Late Deputy Chief Minister of Bihar, Sushil Kumar Modi, political career started as a student activist at Patna University in 1971.
- He became the general-secretary of the Patna University Students' Union in 1973.
- Lalu Prasad, who later came to be his biggest political rival, was the president of the union at that time.
- He became an MLA for the first time in 1990 from Patna Central constituency and was made the chief whip of the BJP legislature party.
- From 1996 to 2004, he was the leader of the opposition in the state assembly.
- He became a member of Lok Sabha from Bhagalpur in 2004.
- He was elected to the Rajya Sabha in 2020 and retired earlier this year.

101.(b)

Samastipur district of Bihar got the first place in the country in the nationwide ranking released for January under the Jal Jeevan Survekshan 2023 by the Central Government's Department of Drinking Water and Sanitation, Ministry of Jal Shakti. Whereas in this survey, Bihar's Sheikhpura is in the second position, Supaul in the third and Banka district in the fourth position.

Top ten ranking in this survey-

- o Samastipur (Bihar)
- o Sheikhpura (Bihar)
- o Supaul (Bihar)
- o Banka (Bihar)
- o Vellore (Tamil Nadu)
- o Sirmaur (Himachal Pradesh)
- o Dehradun (Uttarakhand)

- o Annambaya (Andhra Pradesh)
- o Lakhisarai (Bihar)
- o Bilaspur (Chhattisgarh)

102.(a)

The new Bihar policy contains several financial incentives for investors. These include:

- o Capital subsidy of 30% for investments up to Rs 10 crore.
- o 25% for investments up to Rs 50 crore.
- o 25% for investments exceeding Rs 50 crore, with a maximum limit of Rs 25 crore.
- o 100% reimbursement of land conversion fee, stamp duty and registration fee.
- o 80% reimbursement of **Goods and Services Tax (GST)** on commercial operation for up to 5 years.
- o 100% reimbursement of electricity tariff for new tourism units for 5 years.
- o Hoteliers and tour operators will get a 5% reimbursement of the monthly remuneration paid to tourist guides. The maximum monthly limit for this will be Rs 5000 per guide for up to 2 years.
- o incentives for green certification, MICE (meetings, incentives, conferences, and exhibitions) promotions, are also included in the policy.
 - 50% of the subsidy will be paid at the commencement of commercial operation, 25% after 2 years, and 25% after 5 years.
 - A sum of Rs 62 crore is also sanctioned for the construction of an alternative approach path with sheds and a bus depot near **Vishnupad Temple in Gaya**.

103.(c)

Statement 1 is Incorrect because Kanwar Lake is indeed the first Ramsar site of Bihar but located in Begusarai district.

Statement 2 is Correct: It's a residual oxbow lake, but it was formed by the meandering of the Burhi Gandak River.

Statement 3 is Correct: This wetland is part of the Central Asian Flyway, making it crucial for migrating birds.



104.(a)

The Champaran Satyagraha of 1917 was India's first civil disobedience movement led by Mahatma Gandhi:

Background-The British government forced farmers in the Champaran district of Bihar to grow indigo on their land, which harmed the soil's fertility. The farmers were forced to grow indigo under the exploitative tinkathia system, where they were paid very little for their labor.

Gandhi's involvement- When Gandhi returned to India from South Africa in 1915, he saw the peasants being oppressed by the indigo planters. He advised the farmers to use the same methods of civil disobedience that he had used in South Africa. Gandhi's involvement was triggered by a request from local peasant leaders Raj Kumar Shukla and Sant raut.

The movement- Gandhi was invited to Champaran by Rajkumar Shukla, an indigo cultivator, to investigate the farmers' conditions. When the British authorities tried to stop Gandhi from investigating, he refused and was able to gain the support of the farmers. After peaceful protests, the government agreed to abolish the tinkathia system and compensate the farmers.

Significance- The Champaran Satyagraha was a pivotal moment in India's freedom struggle, and it influenced the youth of India. It was also the first time that Gandhi used the tactic of civil disobedience in response to an unlawful edict. The movement targeted not only the abolition of the Tinkathia system but also emphasized public health reforms and education.

105.(c)

Interim Government 1946

Duration- September 2, 1946 to August 15, 1947

Members- 12 members, including three Muslims nominated by the Congress

Executive- Viceroy's Executive Council, which acted as the Council of Ministers

Vice President- Jawaharlal Nehru, who also served as the de-facto Prime Minister

Here are the members of the Interim Government of India in 1946 and their portfolios:

- **Jawaharlal Nehru:** Vice President and in charge of External Affairs and Commonwealth Relations
- **Sardar Vallabhbhai Patel:** Home Affairs, Information, and Broadcasting
- **Rajendra Prasad:** Agriculture and Food
- **Ibrahim Ismail Chundrigar:** Commerce
- **Baldev Singh:** Defence
- **Liaquat Ali Khan:** Finance
- **C Rajagopalachari:** Education and Arts
- **Babu Jagjivan Ram:** Labour
- **Jogendra Nath Mandal:** Law
- **Abdur Rab Nishtar:** Railways and Communications, Post and Air
- **C H Bhabha:** Works, Mines, and Power
- **Viscount Wavell:** President of the Executive Council until February 1947
- **Lord Mountbatten:** President of the Executive Council from February 1947
- **Sir Claude Auchinleck:** Commander-in-Chief

106.(c)

'According to the 2023 Bihar caste survey, the state's population is 130,725,310. The survey also found that:

- **Religion:** 81.99% of the population practices Hinduism, while 17.70% practice Islam.
- **Caste:** 63% of the population is made up of Other Backward Classes (OBCs) and Extremely Backward Classes (EBCs).
- **Poverty:** 63.74% of families earn less than Rs 10,000 per month.
- **Vehicles:** 95.5% of the population owns a vehicle, but only 0.44% own a four-wheeler.
- **Laptops and computers:** 2.109 crore people in Bihar have laptops or computers. Brahmins own the most laptops or computers, followed by Bhumihars.
- 2023 Bihar caste-based survey found that Bhumihars have the highest poverty rate among the general category (Hindus) in Bihar. 27.58% of Bhumihar families in Bihar are poor, meaning their monthly income is less than ₹6,000.



107.(b)

According to The Heritage Foundation's 2024 Index of Economic Freedom, India's economic freedom score is 52.9, which ranks it 126th out of 184 countries. This is unchanged from the previous year, and India's economy is considered "mostly unfree".

Here are some of the factors that contribute to India's lower ranking:

- **Government integrity:** India lags behind in this area.
- **Labor freedom:** India lags behind in this area.
- **Fiscal health:** India lags behind in this area.
- **Regulatory framework:** The regulatory framework is burdensome.
- **State-owned enterprises:** State-owned enterprises are present in many sectors.
- **Tolerance for government meddling:** India has a legacy of decades of failed socialist policies that include a tolerance for government meddling in economic activity.

Index of Economic Freedom

- It was first published in 1995.
- It's 30th edition was released in 2024.
- **Singapore** has been declared the freest economy in the world.
- The Index of Economic Freedom is calculated by rating 12 factors on a scale of zero to 100. These factors include the rule of law, government size, regulatory efficiency, and open markets.

108.(b)

- Health ministers of **11 African countries** signed the **Yaounde Declaration** to end **malaria deaths**.
- **The 11 African countries in the Yaoundé conference are**— Burkina Faso, Cameroon, Democratic Republic of the Congo, Ghana, Mali, Mozambique, Niger, Nigeria, Sudan, Uganda and Tanzania.
- There is also a Yaoundé Declaration for the Brain Economy, which was launched at the African High-Level Summit on the Brain Economy, Brain Health, and Brain Capital in

Yaoundé, Cameroon. The declaration aims to demonstrate African leadership in brain health and societal innovations.

109.(c)

- The 2024 Global Terrorism Index (GTI) from the Institute for Economics & Peace (IEP) highlights that terrorism remains a serious global threat.
- The report ranks 163 countries on the **impact of terrorism**, using data from **Terrorism Tracker** and other sources.
- It is based on four indicators (number of incidents, fatalities, injuries, and hostages in a year) weighted over five years.
- Islamic State has been declared the most dangerous terrorist group.
- Burkina Faso has been ranked the top country affected by terrorism.
- India placed 14th on this year's GTI, improving their rank by one place compared to the previous year. This new ranking comes as the country recorded a change in score decrease to place India within the range of a medium impact of terrorism.

110.(d)

- Sweden has officially become the 32nd member of NATO after completing the accession process in Washington.

North Atlantic Treaty Organization (NATO)

- **NATO**, also called the North Atlantic Alliance, is an intergovernmental military alliance.
- **Headquarters:** Brussels, Belgium
- **Background:** It was established by 12 countries from Europe and North America with the signing of the North Atlantic Treaty (also known as Washington Treaty) in 1949 in Washington, D.C.
 - The objective was to provide collective security against the Soviet Union attack in the aftermath of World War II.
- **Members:** It comprises **32** member states – two North American countries (USA and Canada) and 29 European countries and one eurasian country (Turkey).
 - Finland became the 31st member in 2023.



111.(c)

Guest countries- India has invited Bangladesh, Egypt, Mauritius, the Netherlands, Nigeria, Oman, Singapore, Spain and UAE as guest countries during its G20 presidency.

- o The G20 was **formed in 1999** in the backdrop of the financial crisis of the late 1990s that hit East Asia and Southeast Asia in particular.
- o Its aim was to secure global financial stability by involving middle-income countries.

Members:

- o Argentina, Australia, Brazil, Canada, China, France, Germany, Japan, India, Indonesia, Italy, Mexico, Russia, South Africa, Saudi Arabia, South Korea, Turkey, the United Kingdom, the United States, and the European Union.
- o **Together, the G20 countries include:**
 - 60 percent of the world's population,
 - 80 percent of global GDP, and
 - 75 percent of global trade.

112.(c)

Three Basin Summit

- The summit **(2024) is held in Brazzaville (capital of Congo)**. The first Summit of the Three Tropical Forest Basins was held in Brazzaville in 2011.
- The **Three Basins (Amazonia, Congo, Borneo-Mekong-Southeast Asia)** collectively house 80% of the world's tropical forests and two-thirds of terrestrial biodiversity.
- Tropical forest nations play a central role in combating **tropical deforestation and shaping global climate** and biodiversity governance.

Three Basins (Amazonia, Congo, Borneo-Mekong-Southeast Asia)

- **Amazon basin:** It is the largest drainage basin in the world, more than twice as large as that of the Congo River in Africa. It extends over 9 countries in South America.
- **Congo basin:** Nine countries (Angola, Cameroon, Central African Republic, Democratic Republic of the Congo, Republic

of the Congo, Burundi, Rwanda, Tanzania, Zambia) have part of their territory in the Congo Basin. More than 39 per cent of undisturbed Tropical Moist Forests overlap with oil and gas blocks and nearly 27 percent overlap with mining concessions.

- **Borneo-Mekong-Southeast Asia Basin:** It is the world's third largest carbon sink, and is composed of two sub-regions, the island of Borneo and the Mekong River. The Mekong River is one of the largest rivers in the world, crossing six countries: China, Myanmar, Thailand, Laos, Cambodia, and Vietnam.

113.(c)

1. Trans Himalaya: Trans Himalaya region is located north of the main Himalayan range and primarily includes areas in Ladakh and parts of Tibet. It consists of rugged mountains and plateaus, characterized by dry, high-altitude landscapes. The highest peaks include:

- **Saltoro Kangri** (7,742 m)
- **Sia Kangri** (7,742 m)

2. Himadri (or Greater Himalayas): Himadri, also known as the Greater Himalayas, is the highest range in the Himalayan chain. It contains some of the tallest peaks in the world, including:

- **Mount Everest** (8,848 m) – it is the highest peak in the world located on the border of Nepal and the Tibet Autonomous Region of China.
- **K2** (8,611 m) - the second highest peak
- **Kangchenjunga** (8,586 m) - located on the border between Nepal and India.

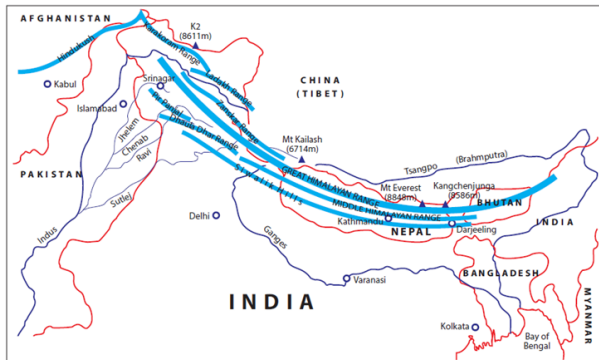
3. Himachal (or Middle Himalayas): Himachal range, which includes the Pir Panjal and Dhauladhar ranges, is known for its scenic beauty and is situated between the Greater Himalayas and the Shiwalik range. This range is characterized by lower elevations compared to the Himadri. Key features include:

- **Pir Panjal:** The highest peak in this range is **Kashmir Great Lakes** at around 4,000m.



- **Dhauladhar:** The highest peak is **Hanuman Tibba**, reaching approximately 5,982 m. This range is known for its dramatic landscapes and rich biodiversity.

4. Shiwalik (or Outer Himalayas): Shiwalik range lies at the foothills of the Himalayas and consists of lower, rolling hills. This range is not as high as the other ranges but is significant for its ecological diversity and important river valleys. The highest peak in the Shiwalik range is typically around 1,500m.



114.(c)

M0 (Reserve Money)

M0 is the sum of

- Currency in Circulation
- Bankers' Deposits with RBI, and
- 'Other' Deposits with RBI

Here, 'Other' Deposits with RBI comprise mainly:

- Deposits of quasi-government and other financial institutions including primary dealers,
- Balances in the accounts of foreign Central banks and Governments,
- Accounts of international agencies such as the International Monetary Fund, etc.

M1 (Narrow Money)

M1 is the sum of

- Currency with the Public, and
- Net Demand Deposits held by Commercial Banks

M2

M2 is the sum of

- M1, and

- Savings Deposits with Post Office Savings Banks

M3 (Broad Money)

M3 is the sum of

- M1, and
- Net Time Deposits with the Banking System

M4

M4 is the sum of

- M3, and
- Total Deposits with Post Office Savings Organizations (excluding National Savings Certificate)

15. (d)

The Uttar Pradesh government has unveiled the **Nandini Krishak Samridhhi Yojana** as a part of the Nand Baba Mission.

The aim of the **Nandini Krishak Samridhhi Yojana** is geared towards improving cattle breeds and increasing milk production across the state.

116.(a)

- On May 11, 2024, Senior IPS Officer Idashisha Nongrang has been named Meghalaya's first woman Director General of Police (DGP).
- She is the IPS officer of the 1992 batch belonging to the Assam-Meghalaya cadre (Meghalaya Wing).

117.(d)

- The Ramon Magsaysay Award, internationally called the "Nobel Prize of Asia," is an annual award in memory of former President Ramon Magsaysay of the Philippines.
- The 2024 laureates are:
 - Miyazaki Hayao (Japan) - Renowned filmmaker and founder of Studio G
 - Farwiza Farhan (Indonesia) - Environmentalist and social justice advocate
 - Karma Phuntsho (Bhutan) - Former monk, scholar, and cultural preservationist
 - Dr. Nguyen Thi Ngoc Phuong (Vietnam) - Physician and advocate for Agent Orange victims
 - Rural Doctors Movement (Thailand) - Collective of healthcare professionals revolutionizing rural health



118.(b)

- The Department of Shalya Tantra at All-India Institute of Ayurveda (AIIA) New Delhi successfully organised the **Second** (not first) National Seminar SAUSHRUTAM Shalya Sangoshti on the auspicious occasion of Sushruta Jayanti-2024.
- Sushruta Jayanti is celebrated every year on 15th July to honour the legendary Sushruta, considered as the father of surgery.

119.(d)

- o **IndusInd Bank** was the first bank to become a Financial Information Provider (FIP) under the Reserve Bank of India's (RBI) Account Aggregator (AA) framework in October 2020.
- o The AA framework allows customers to: View account statements, Track deposits, Plan investments, Get credit cards, and Share financial information with Financial Information Users (FIUs).
- o A Financial Information Provider (FIP) is an institution that holds a customer's financial data and shares it with a Financial Information User (FIU) through an Account Aggregator (AA).
- o FIPs can include: Banks, NBFCs, Depositories, AMC's, Mutual fund houses, and Insurance companies.
- o To become an FIP, an institution must:
 1. Register with a Financial Service Regulator
 2. Implement RBI-defined API specifications
 3. Test its module against RBI-approved Account Aggregator Sandboxes
 4. Enroll its module in the UAT-Central Registry

120.(c)



- In 2023, South Africa broke the record for the highest team run total in its first match only. Batting first against Sri Lanka, South Africa smashed 428 runs in 50 overs.
- Most wickets were taken by Mohammed Shami.
- **"Blaze and Tonk" was its mascot.** This is also true, as "Blaze and Tonk" were the

official mascots of the 2023 ICC Men's One Day World Cup.

- Angelo Mathews became the first batsman to be timed out in the international cricket.

121.(b)

- It would be organised for the 3rd time in Japan 2026
- The 19th Asian Games, officially known as Hangzhou 2022, were held from September 23 to October 8, 2023 in Hangzhou, China.
- It was the largest Asian Games in history, with over 12,000 athletes from 45 countries and regions competing in 40 sports, 61 disciplines, and 481 events.

Rank	Team/NOC				Total
1	People's Republic of China	201	111	71	383
2	Japan	52	67	69	188
3	Republic of Korea	42	59	89	190
4	India	28	38	41	107
5	Uzbekistan	22	18	31	71
6	Chinese Taipei	19	20	28	67
7	Islamic Republic of Iran	13	21	20	54
8	Thailand	12	14	32	58
9	Bahrain	12	3	5	20
10	Democratic People's Republic of Korea	11	18	10	39
11	Kazakhstan	10	22	48	80
12	Hong Kong, China	8	16	29	53

122.(a)

For the past two elections, residents of Khokhanaha village in Supaul's Kosi region have not voted. The 300-odd households in the village strategically boycotted the 2019 Lok Sabha polls and the 2020 Bihar Assembly polls in anger against all political parties for their apathy towards their plight.

123. (a)

- Gross Primary Deficit is measured by subtracting the interest payments from the fiscal deficit.
- Gross Primary deficit is a measure of the current year's fiscal operation after excluding the liability of interest payment created due to borrowings of the past.



124.(a)

The Gorakhpur–Siliguri Expressway is a 519 km long, four-lane expressway that will connect Gorakhpur in Uttar Pradesh to Siliguri in West Bengal.

It will pass through 3 states- U.P., Bihar & West Bengal.

It will pass through 8 districts of Bihar.



125.(b)

Dalmianagar is famous for cement. Dalmianagar is one of India's oldest and largest industrial towns. It's located on the banks of the Son River in the Rohtas district of Bihar. In the 1940s to 1980s, Dalmianagar became a major industrial town with factories producing, sugar, paper, chemicals, and vanaspati along with cement.

126.(a)

- While India is a significant producer, **China holds the top spot** for **litchi** production globally.
- China contributes a substantial portion of the world's total litchi supply.
- India, however, is the second largest producer of litchi, followed by other countries like Thailand, Australia, South Africa, and Madagascar.

127.(c)

- Recently, the United Nations Educational, Scientific and Cultural Organization (UNESCO) announced the addition of 55 new cities to its **Creative Cities Network (UCCN)**.
- Among the new entrants, **two Indian cities** made their mark: **Kozhikode in Kerala as the 'City of Literature'** and **Gwalior in Madhya Pradesh as the 'City of Music'**.
- With this designation, these cities joins the

ranks of six other Indian cities: **Mumbai, Chennai, Hyderabad, Varanasi, Jaipur and Srinagar** each distinguished for their unique cultural contributions.

- Founded in 2004, the UCCN aims to foster collaboration among cities that see creativity as vital to their development.
- These creative cities work together with a shared goal to embed creativity and cultural industries into their local development strategies while actively engaging on an international level.
- UNESCO recognizes cities across seven categories: **Craft, Folk Art, Media Arts, Film, Gastronomy, Literature, and Music.**

128.(a)

Sharad Vivek Sagar is a prominent figure in the Indian business landscape, recognized for his entrepreneurial endeavors and commitment to social impact. He has been honored with the prestigious **Young Global Leader** title in 2024.

Key Points about Sharad Vivek Sagar:

- **Business Leadership:** Sagar is the founder and CEO of **Marico Limited**, a leading Indian consumer goods company known for its hair care, skin care, and food products.

129.(a)

- In the years 1928–29, Arthur Holmes proposed the convection current hypothesis. Continental drift (moving apart) is a widely acknowledged driving force that led to the development of current plate tectonics. His major goal was to discover a scientific explanation for the continents' and seas' origins.
- According to this theory, the extreme heat generated by radioactive chemicals in the mantle (100-2900 km beneath the earth's surface) seeks a way to escape and causes convection currents to emerge in the mantle.
- Under the solid lithosphere, the fluid asthenosphere circulates as convection currents.
- Divergent convective currents pull crustal blocks away from each other in opposite directions, forming seas and oceans.



- East African Rift system, the Mid-Atlantic Ridges, and so on are examples

130.(a)

Protected Area	State
Dachigam Wildlife Sanctuary	J&K
Keoladeo Ghana Bird Sanctuary	Rajasthan
Kanha National Park	MP
Periyar Wildlife Sanctuary	Kerala

131.(b)

- SCS is a classification given by the Centre to assist the development of states that face geographical and socio-economic disadvantages.
- The Constitution does not make a provision for SCS and this classification was later done on the recommendations of the **5th Finance Commission in 1969**.
- Status was first accorded to **Jammu and Kashmir, Assam and Nagaland** in 1969. **Telangana** is the newest State of India to be accorded the status.

132.(b)

- Rajgir Festival is a beautiful representation of history, religion, art and culture and is renowned not only in Bihar but also at national and international level.
- The tradition of celebrating this festival is going on since 1986 and it is celebrated to highlight the historically and culturally rich heritage of Nalanda and Rajgir.
- **Rajgir Mahotsav**, formerly Rajgir Nritaya (Dance) Mahotsav, is a festival of dance and music. It is an annual three-day event in [Rajgir, Bihar](#)

133.(d)

The Bihar Police have decided to run 'Mission Jan Seva' in order to provide police services offline as well as in online mode to citizens. Now, the people will not have to rush to the police stations to get services like verification of passport, licence, character certificate or other such works as they can apply for such services online.

134.(d)

- Mountaineer Laxmi Jha has created history by hoisting the tricolour on Mount Kinabalu, the highest peak of Malaysia.
- She is the first Indian woman to reach the top of this mountain.
- Laxmi, a resident of Vangaon in Saharsa district of Bihar, comes from a simple family.

135.(a)

- Within the lungs, the passage divides into smaller and smaller tubes which finally terminate in balloon-like structures which are called alveoli (singular-alveolus). **The alveoli provide a surface where the exchange of gases can take place.**
- The walls of the alveoli contain an extensive network of blood vessels. As we have seen in earlier years, when we breathe in, we lift our ribs and flatten our diaphragm, and the chest cavity becomes larger as a result.
- Because of this, air is sucked into the lungs and fills the expanded alveoli. The blood brings carbon dioxide from the rest of the body for release into the alveoli, and the oxygen in the alveolar air is taken up by blood in the alveolar blood vessels to be transported to all the cells in the body.
- During the breathing cycle, when air is taken in and let out, the lungs always contain a residual volume of air so that there is sufficient time for oxygen to be absorbed and for the carbon dioxide to be released.

136.(d)

- In the 37th National Games held in Goa from October 26 to November 9, 2023, Maharashtra topped with 228 medals including 80 gold, 69 silver and 79 bronze, while Services stood second with 126 medals including 66 gold, 27 silver and 33 bronze.
- The unveiling of the official mascot 'MOGA,' a bison, is representing the distinct identity of Goa. It embodied the connection between the Games and the state's heritage



Rank	State/Union Territory/Team	Gold	Silver	Bronze	Total
1	Maharashtra	67	61	65	193
2	Servies	52	22	28	102
3	Haryana	48	33	47	128
4	Karnataka	28	23	25	76
5	Manipur	25	19	22	66
6	Madhya Pradesh	24	31	29	84
7	Delhi	19	17	46	82
8	Tamil Nadu	17	20	24	61
9	Kerala	15	19	21	55
10	Uttar Pradesh	11	19	22	52
11	Rajasthan	11	13	15	39
12	Goa	11	12	26	49
13	Punjab	9	23	22	54
14	Assam	9	12	18	39
15	Odisha	8	11	23	42
16	Andhra Pradesh	7	3	12	22
17	Gujarat	7	1	14	22
18	Arunachal Pradesh	6	2	5	13
19	West Bengal	5	22	21	48
20	Jammu and Kashmir	5	8	9	22
21	Chandigarh	4	6	1	11
22	Telangana	3	8	8	19
23	Uttarakhand	3	3	11	17
24	Andaman and Nicobar Islands	2	4	1	6
25	Jharkhand	2	3	11	16
26	Mizoram	2	2	0	4
27	Himachal Pradesh	2	1	3	6
28	Nagaland	1	2	3	6
29	Chhattisgarh	1	1	6	8
30	Bihar	0	3	4	7
31	Tripura	0	1	0	1
32	Dadra and Nagar Haveli & Daman and Diu	0	0	1	1
32	Lakshadweep	0	0	1	1

138.(b)

Operation Chakra-II focuses on dismantling the infrastructure of organized cyber-enabled financial crimes. CBI has partnered with national and international agencies, as well as private sector giants like Microsoft and Amazon, to tackle these crimes.

139.(c)

Arogya Maitri Cube

- It is a revolutionary mobile hospital equipped with cutting-edge technology.
- This cube is a part of the broader initiative named “Project BHISHM” – Bharat Health Initiative for Sahyog, Hita and Maitri.
- Features
 - It is tailored to treat up to 200 casualties, emphasizing rapid response and comprehensive care.
 - The Aid Cube is equipped with several innovative tools designed to enhance disaster response and medical support during emergencies.
 - It integrates Artificial Intelligence (AI) and data analytics to facilitate effective coordination, real-time monitoring, and efficient management of medical services in the field.
 - The whole unit contains 72 easily transportable components that can be conveniently carried by hand, cycle, or even drone, providing unmatched flexibility.
 - In the face of mass casualty incidents (MCIs), where requirements range from basic aid to advanced medical and surgical care, the Aid Cube stands out with its ability to be deployed within an astonishing 12 minutes.
 - These cubes are robust, waterproof, and light, designed for various configurations, making them ideal for diverse emergency scenarios.
 - From airdrops to ground transportation, the cube can be rapidly deployed anywhere, ensuring immediate response capability.

137.(a)

The 2024 Australian Open tennis tournament had several winners, including:

- Men’s singles:** Jannik Sinner won his first major title, beating Daniil Medvedev in a five-set final. Sinner’s victory made him the youngest Australian Open men’s singles champion since Novak Djokovic in 2008.
- Women’s singles:** Aryna Sabalenka won her second major title and her second at the Australian Open, beating Zheng Qinwen without losing a set.
- Men’s doubles:** Rohan Bopanna and Matthew Ebden won their first major title.
- Women’s doubles:** Elise Mertens and Hsieh Su-wei won their fourth major title and second at the Australian Open. Hsieh Su-wei also won her first major title in mixed doubles.
- Mixed doubles:** Hsieh Su-wei and Jan Zieliński won their first major title.



- It has advanced medical equipment, RFID-tagged for efficient repacking and redeployment.
- The state-of-the-art BHISHM software system integrated into a provided tablet allows operators to locate items quickly, monitor their usage and expiry, and ensure readiness for subsequent deployments.

140.(b)

Rafah border crossing in southern Gaza has gained global attention as **Palestinians** are attempting to leave Gaza in anticipation of a possible Israeli attack as part of the ongoing Israeli-Palestinian conflict.

- o Rafah crossing is the **southernmost exit point from the Gaza Strip**, and it shares a border with **Egypt's Sinai Peninsula**. The crossing is controlled by Egypt. It is the **only exit that does not lead to Israeli territory**.
- o There are only two other border crossings in and out of Gaza:
 - **Erez** is located in the north and is used by people in Israel.
- **Kerem Shalom**, in the south, which is **exclusively for commercial goods**.

Both Erez and Kerem Shalom controlled by Israel are currently closed.



141.(b)

A Hierarchy of Life: Cells to Organisms

Cells are the fundamental building blocks of

all living organisms. They are microscopic structures that contain various organelles, each with specific functions.

Tissues are groups of cells that work together to perform a particular function. There are different types of tissues, such as:

- **Epithelial tissue:** Covers the body's surfaces and lines internal organs.
- **Connective tissue:** Supports and connects different tissues and organs.
- **Muscle tissue:** Contracts to produce movement.
- **Nervous tissue:** Transmits electrical signals to coordinate bodily functions.

Organs are structures composed of multiple tissues that work together to perform a specific function. Examples of organs include the heart, lungs, liver, and brain.

Organ systems are groups of organs that work together to accomplish a complex task. The human body has several organ systems, such as:

- **Circulatory system:** Pumps blood throughout the body.
- **Respiratory system:** Exchanges oxygen and carbon dioxide.
- **Digestive system:** Breaks down food and absorbs nutrients.
- **Nervous system:** Controls and coordinates bodily functions.
- **Muscular system:** Enables movement.
- **Skeletal system:** Provides support and protection.
- **Endocrine system:** Produces hormones to regulate bodily processes.
- **Integumentary system:** Protects the body from the environment.
- **Lymphatic system:** Fights infection and maintains fluid balance.
- **Urinary system:** Filters waste products from the blood.
- **Reproductive system:** Enables the production of offspring.

142.(d)

- Viruses are considered a link between living and nonliving things because they exhibit characteristics of both.



- Because of these characteristics, viruses are also known as intracellular parasites, and are often referred to as a “biologist’s puzzle”
- Viruses are microscopic organisms that can infect hosts, like humans, plants or animals. They’re a small piece of genetic information (DNA or RNA) inside of a protective shell (capsid). Some viruses also have an envelope. Viruses can’t reproduce without a host.

143.(c)

- The process of nitrogen fixation by *Rhizobium leguminosarum* in the root glands of legume plants is called symbiotic nitrogen fixation.
- In this process, *Rhizobium* bacteria convert nitrogen gas (N₂) into ammonia (NH₃) in the root nodules of legume plants. The plant then uses the ammonia to create amino acids, nucleotides, vitamins, and flavones, which are essential for plant growth. In return, the plant provides the bacteria with a niche and fixed carbon.

144.(a)

Bacteria cannot grow in pickles with excess salt because of **plasmolysis**, which is when water moves out of the bacterial cell and into the pickle.

145.(a)

Cork is an excellent stopper for several reasons. It’s flexible and compressible, which creates a tight seal and prevents liquids or gases from escaping. It’s also non-reactive, so it won’t interact with the contents of the bottle, preserving the purity and stability of the medicine. Plus, it’s lightweight and resistant to moisture, ensuring longevity.

146.(C)

1. **Colitis:** Inflammation of the colon, directly impacting the digestive tract.
2. **Hernia:** While it can occur in various parts of the body, an abdominal hernia affects the digestive system by causing parts of the intestine or fatty tissue to push through a weak spot in the abdominal wall.

Uremia is related to kidney failure, and **mumps** is a viral infection affecting the salivary glands.

Some common digestive tract diseases:

1. **Gastritis:** Inflammation of the stomach lining, often caused by infections, certain medications, or alcohol.
2. **GERD (Gastroesophageal Reflux Disease):** A chronic condition where stomach acid frequently flows back into the esophagus, causing irritation.
3. **IBS (Irritable Bowel Syndrome):** A group of symptoms including abdominal pain and changes in the pattern of bowel movements without any evidence of underlying damage.
4. **Crohn’s Disease:** A type of inflammatory bowel disease that can affect any part of the gastrointestinal tract, leading to severe inflammation.
5. **Ulcerative Colitis:** Another type of inflammatory bowel disease, specifically affecting the colon and rectum, causing ulcers and inflammation.
6. **Celiac Disease:** An autoimmune disorder where ingestion of gluten leads to damage in the small intestine.
7. **Diverticulitis:** Inflammation or infection of small pouches that can form in the intestines.

147.(c)

- The biogeochemical cycle would be most affected if all the decomposers in an ecosystem were destroyed.
- Decomposers return nutrients to the earth after organisms die, which are essential for organisms to build their bodies and metabolize. If decomposition is not carried out, nutrients would become locked up in the bodies of plants and animals, eventually stopping the biogeochemical cycles.

148.(d)

- Local biodiversity is known as alpha diversity or local or site diversity. It’s a count of the number of species in a relatively homogeneous area.
- some other terms related to biodiversity:
- **Beta diversity:** The diversity of species between two habitats or regions
- **Genetic diversity:** The genetic variability among members of a species



- **Functional diversity:** A way to measure biodiversity by grouping wildlife by the functions they perform

149.(d)

The modern periodic law states that the physical and chemical properties of elements are periodic functions of their atomic numbers. This means that when elements are arranged in order of increasing atomic number, elements with similar properties repeat after regular intervals.

150.(d)

- The reaction of potassium permanganate (KMnO_4) and oxalic acid occurs slowly at first but becomes faster later because manganese (Mn^{2+}) acts as an autocatalyst.
- The reaction also requires heat to proceed. Increasing the temperature increases the kinetic energy of the molecules, which results in more molecules having energy greater than the activation energy. This increases the rate and completion of the reaction.

