BSSC Inter Level Prelims Paper (Held on 29th Jan 2017)

Q.1 The name of India's first wildlife conservation project was

A. Gir
B. Tiger
C. rhino
D. Hangul

Answer: B

Sol:

The first wildlife conservation project in India was **Project Tiger**, launched in 1973. This initiative was crucial in protecting the Bengal tiger, a species that faced severe threats from poaching and habitat loss. The project's primary goal was to create and maintain tiger reserves, where the tigers could live in a natural habitat without the threat of human encroachment. Project Tiger began with nine reserves and has since expanded to over 50 reserves across India, becoming one of the most successful wildlife conservation programs globally. The project also played a significant role in increasing awareness about the importance of wildlife conservation among the general public and in government policies.

Important Key Points:

1. **Project Tiger** was initiated in 1973 by the Government of India.
2. The project started with 9 tiger reserves, which have now expanded to over 50.
3. It focuses on providing a safe habitat for tigers and curbing poaching activities.
4. Project Tiger has significantly contributed to the increase in the tiger population in India.
5. The project involves various stakeholders, including the government, local communities, and international organizations.
6. The success of Project Tiger has made it a model for wildlife conservation worldwide.
7. The project has also contributed to the overall conservation of the ecosystems in which tigers live.

Knowledge Booster:

 Gir: Gir National Park, located in Gujarat, is the only place in the world where the Asiatic lion can be found in the wild. Although not related to tigers, Gir represents another significant conservation effort in India.

 Rhino: India has also undertaken significant conservation efforts for the one-horned rhinoceros, especially in Assam's Kaziranga National Park.

 Hangul: The Hangul or Kashmir stag, found in Jammu and Kashmir, has been the focus of conservation efforts under the Project Hangul, similar to Project Tiger.

Q.2 When was NITI Aayog started?

A. January 2015
B. June 2015
C. January 2016
D. August 2015

Answer: A

Sol:

NITI Aayog, which stands for the National Institution for Transforming India, was established in January 2015. It replaced the Planning Commission, which had been in place since 1950. NITI Aayog serves as the policy think tank of the Government of India, providing both directional and policy inputs. While the Planning Commission focused on the creation of five-year plans, NITI Aayog is more flexible and aims to promote cooperative federalism by involving states in the economic policy-making process. The organization also aims to foster innovation and technology-driven development strategies.

Important Key Points:

1. **NITI Aayog** was established on January 1, 2015.
2. It replaced the Planning Commission of India, which was established in 1950.
3. NITI Aayog promotes cooperative federalism by involving states in decision-making processes.
4. It serves as a policy think tank and provides strategic and technical advice to the central and state governments.
5. The institution aims to foster innovation and a technology-driven economy.
6. It also focuses on sustainable development and inclusive growth.
7. NITI Aayog has several initiatives, including the Atal Innovation Mission and Digital India.

Knowledge Booster:

 Planning Commission: The Planning Commission was responsible for formulating India's Five-Year Plans, which were a central part of the Indian economy's planning process.

 Cooperative Federalism: This concept refers to the partnership between the central and state governments in policymaking and implementation, ensuring that both work together in the country's development.

 Innovation: NITI Aayog promotes innovation through programs like the Atal Innovation Mission, which aims to create an environment of entrepreneurship and innovation in India.

Q.3 Who was the founder of Paunar Ashram?

A. Baba Ramdev
B. Baba Amte
C. Vinoba Bhave
D. Anna Hazare

Answer: C

Sol:

Vinoba Bhave, a prominent Indian advocate of nonviolence and human rights, founded the Paunar Ashram. The ashram, located near Wardha in Maharashtra, was established as a center for spiritual practice and community living. Vinoba Bhave is also well-known for the Bhoodan Movement, which he initiated to persuade wealthy landowners to voluntarily give a portion of their land to the landless poor. His work in the Paunar Ashram reflected his commitment to Gandhian principles of self-reliance, nonviolence, and social justice.

Important Key Points:

1. **Vinoba Bhave** was a close associate of Mahatma Gandhi and a staunch advocate of nonviolence.
2. He founded the **Paunar Ashram** near Wardha, Maharashtra.
3. The ashram became a center for Gandhian activities, including the Bhoodan Movement.
4. Vinoba Bhave's Bhoodan Movement aimed at land redistribution to the landless.
5. He was awarded the Bharat Ratna, India's highest civilian award, in 1983 posthumously.
6. The ashram continues to be a place for spiritual and social work, promoting the values of simple living and high thinking.

Knowledge Booster:

 Baba Ramdev: A yoga guru and entrepreneur who popularized yoga and Ayurvedic products in India.

 Baba Amte: Known for his work in rehabilitating leprosy patients through the Anandwan Ashram in Maharashtra.

 Anna Hazare: A social activist known for his role in the anti-corruption movement in India and his work in rural development.

Q.4 Which is the official language of Jammu and Kashmir?

A. Hindi
B. Dogri
C. Urdu
D. All of these

Answer: D

Sol:

Jammu and Kashmir, as a union territory, has a unique linguistic landscape that includes multiple languages officially recognized for various purposes.

Official Languages of Jammu and Kashmir

1. Urdu:

 Urdu is the principal official language of Jammu and Kashmir, used extensively in administration and government communication.

 The status of Urdu is established by the Jammu and Kashmir Official Languages Act, 2020. According to this Act, Urdu is the official language for all government and legal purposes in the union territory.

2. Hindi:
☐ Hindi is also recognized as an official language in Jammu and Kashmir. It is used in administrative functions and communication alongside Urdu.
☐ Hindi's status as an official language is provided under the Jammu and Kashmir Official Languages Act, 2020, which includes Hindi alongside Urdu as a medium for official communications and administrative purposes.
3. Dogri:
☐ Dogri is one of the recognized regional languages and is officially used in the Jammu region. It has significant cultural and administrative importance in the region.
☐ The Jammu and Kashmir Official Languages Act, 2020, also recognizes Dogri as an official language. This act formalizes the use of Dogri in government functions, especially in the Jammu region where it is widely spoken.

Q.5 Japan parliament is called

A. Cortes
B. Diet
C. Sejim
D. Dell

Answer: B

Sol:
The **Diet** is the national parliament of Japan. It is a bicameral body, consisting of the House of Representatives (Shūgiin) and the House of Councillors (Sangiin). The Diet is responsible for making laws, approving the budget, and overseeing the government's administration. Members of the Diet are elected by the Japanese people, and it plays a crucial role in Japan's democratic governance.
Important Key Points:
1. The **Diet** is Japan's national parliament, composed of two houses.
2. The House of Representatives is the lower house, and the House of Councillors is the upper house.
3. The Diet has the power to make laws, approve budgets, and scrutinize government activities.
4. It is a symbol of Japan's post-World War II democratic system.
5. The Prime Minister of Japan is chosen by the members of the Diet.
6. The Diet building, located in Tokyo, is a significant landmark and symbol of Japanese democracy.
Knowledge Booster:
☐ **Cortes**: The national legislative body of Spain, consisting of two chambers: the Congress of Deputies and the Senate.
☐ **Sejm**: The lower house of the parliament of Poland, playing a crucial role in the legislative process.
☐ **Dell**: This term is not associated with any national parliament but is more commonly known as a brand name for computers and technology products.

Q.6 Riyal is the currency (of this country)

A. Romania
B. Pakistan
C. Saudi Arabia
D. Angola

Answer: C

Sol:
The **Riyal** is the official currency of Saudi Arabia. It is abbreviated as SAR and is subdivided into 100 halalas. The Saudi Riyal has been in use since the country's founding and is a stable currency, supported by Saudi Arabia's vast oil wealth. The currency plays a critical role in the global energy market, as oil transactions often involve the Riyal.
Important Key Points:
1. **Riyal** is the official currency of Saudi Arabia, denoted by the symbol SAR.
2. The currency is subdivided into 100 halalas.
3. The Riyal is integral to global oil trade, given Saudi Arabia's status as a leading oil producer.
4. Saudi Arabia's economy is one of the largest in the Middle East, bolstered by the oil industry.
5. The Riyal is pegged to the US Dollar, providing stability in exchange rates.
6. Coins and banknotes of various denominations are used in everyday transactions within the kingdom.
Knowledge Booster:
☐ **Romanian Leu**: The official currency of Romania, abbreviated as RON.
☐ **Pakistani Rupee**: The currency of Pakistan, abbreviated as PKR, subdivided into 100 paisa.
☐ **Angolan Kwanza**: The currency of Angola, abbreviated as AOA, named after the Kwanza River.

Q.7 The color of the wheel in the Indian flag is

A. Blue
B. red
C. saffron
D. black

Answer: A

Sol:
The wheel on the Indian national flag, known as the Ashoka Chakra, is **blue** in color. It is a 24-spoke wheel that represents the eternal wheel of law (Dharma Chakra). The blue color symbolizes the sky and the ocean, reflecting the vastness and depth of the universe. The Ashoka Chakra is a central part of the Indian flag, embodying the principles of justice, righteousness, and forward movement.
Important Key Points:
1. The **Ashoka Chakra** on the Indian flag is **blue**.
2. It has 24 spokes, symbolizing the 24 hours of the day and the concept of movement and progress.
3. The Chakra is derived from the Lion Capital of Ashoka, an ancient Indian emperor.
4. The blue color represents the sky, the ocean, and the universe's vastness.
5. The Indian flag was adopted on July 22, 1947, shortly before India's independence.
6. The flag's design, including the Ashoka Chakra, was inspired by the Swaraj Flag designed by Pingali Venkayya.
Knowledge Booster:
☐ **Red**: Often associated with the blood shed by freedom fighters, though not the color of the Ashoka Chakra, it is significant in the history of various flags.
☐ **Saffron**: Represents courage and sacrifice in the Indian flag.
☐ **Black**: Though not part of the Indian flag, black can symbolize mourning or the end of an era in other flags.

Q.8 Who translated Vande Mataram into English?

A. vankim chandra
B. Rabindranath tagore
C. Aurobindo Ghosh
D. Satyajit Ray

Answer: C

Sol:
Aurobindo Ghosh, an Indian nationalist, philosopher, and poet, translated **Vande Mataram** into English. The original Bengali version of Vande Mataram was written by Bankim Chandra Chatterjee and became a symbol of the Indian independence movement. Aurobindo's translation helped spread the song's message of patriotism and resistance against British rule to a broader audience.
Important Key Points:
1. **Aurobindo Ghosh** was a key figure in the Indian independence movement and an influential spiritual leader.
2. He translated **Vande Mataram** into English, making its powerful message accessible to non-Bengali speakers.
3. The original song was composed by **Bankim Chandra Chatterjee** in the 1870s.
4. Vande Mataram played a crucial role in inspiring the Indian freedom struggle.
5. The song was later adopted as the national song of India.

6. Aurobindo's work extended beyond politics to spirituality, where he founded the Aurobindo Ashram in Pondicherry.

Knowledge Booster:

 Bankim Chandra Chatterjee: The author of Vande Mataram, also known for his novel Anandamath.

 Rabindranath Tagore: The first non-European to win the Nobel Prize in Literature, he also composed India's national anthem, Jana Gana Mana.

 Satyajit Ray: A renowned filmmaker, who was also a prolific writer, though not directly associated with Vande Mataram.

Q.9   1 Chaitra usually falls (on this day)

A. January 1st
B. April 1st
C. February 22nd
D. March 22nd

Answer: D

Sol:

In the traditional Hindu calendar, **1 Chaitra** typically falls on **March 22nd** (or March 21st in leap years) in the Gregorian calendar. Chaitra is the first month of the Hindu lunar calendar and marks the beginning of the new year in many regions of India. This day is significant as it also coincides with the onset of spring and is celebrated with various festivals such as Gudi Padwa, Ugadi, and Chaitra Navratri across different states in India.

Important Key Points:

1. **1 Chaitra** is the first day of the Hindu lunar calendar and usually falls on March 22nd.
2. This day marks the beginning of the Hindu New Year in several parts of India.
3. Chaitra is associated with the arrival of spring, symbolizing renewal and rejuvenation.
4. Festivals like **Gudi Padwa** (in Maharashtra), **Ugadi** (in Andhra Pradesh and Karnataka), and **Chaitra Navratri** are celebrated on this day.
5. The month of Chaitra is also considered auspicious for the start of new ventures and rituals.
6. **Chaitra Shukla Pratipada**, the first day of Chaitra, is important in Vedic traditions and is mentioned in ancient scriptures.

Knowledge Booster:

 January 1st: Celebrated as New Year's Day according to the Gregorian calendar, adopted worldwide as the beginning of the new year.

 April 1st: Known as April Fools' Day, a day marked by pranks and humor, though it has no connection with the Hindu calendar.

 February 22nd: Not significant in the context of the Hindu calendar but observed as various minor observances in different cultures.

Q.10   Satyamev Jayate is taken from here:

A. Gita
B. Mundak Upanishad
C. Ramayana
D. Manu Smriti

Answer: B

Sol:

The phrase **"Satyamev Jayate"** (Truth Alone Triumphs) is taken from the **Mundak Upanishad**, an ancient Indian scripture that is part of the Atharva Veda. This phrase is the national motto of India and is inscribed at the base of the national emblem. The mantra underscores the importance of truth and righteousness in Indian culture and philosophy. The adoption of this phrase reflects India's long-standing tradition of valuing truth as the highest moral principle.

Important Key Points:

1. **Satyamev Jayate** means "Truth Alone Triumphs" and is taken from the **Mundak Upanishad**.
2. It is the national motto of India, symbolizing the centrality of truth in Indian philosophy.
3. The phrase is inscribed at the base of the **national emblem** of India, which features the Lion Capital of Ashoka.
4. The **Mundak Upanishad** is one of the principal Upanishads and is part of the **Atharva** Veda.
5. The mantra emphasizes that truth is eternal and ultimate, transcending all other values.
6. The adoption of this motto reflects India's commitment to justice, righteousness, and ethical governance.

Knowledge Booster:

 Gita: The Bhagavad Gita, another significant Hindu scripture, focuses on the moral and spiritual dilemmas faced by the warrior Arjuna.

 Ramayana: An ancient Indian epic that narrates the life and struggles of Lord Rama, teaching values like duty, righteousness, and devotion.

 Manu Smriti: An ancient legal text among the many Dharmaśāstras of Hinduism, outlining the duties and laws of the society.

Q.11   In March 2016, Gatimaan Express was trial run between Delhi and the following city:

A. Gwalior
B. Pune
C. Chandigarh
D. Agra

Answer: D

Sol:

The **Gatimaan Express**, India's fastest train at the time of its launch, had its trial run between **Delhi and Agra** in March 2016. The train reduced the travel time between the two cities to just 100 minutes, significantly faster than the existing services. The launch of Gatimaan Express was part of Indian Railways' efforts to modernize its services and provide high-speed train options for passengers. The train offers luxurious amenities, including high-quality food, entertainment systems, and well-furnished coaches.

Important Key Points:

1. **Gatimaan Express** is India's first semi-high-speed train.
2. It operates between **Delhi** and **Agra**, covering the distance in just about 100 minutes.
3. The train was launched in April 2016 after successful trials in March.
4. Gatimaan Express features top-notch amenities like comfortable seating, infotainment systems, and gourmet meals.
5. The introduction of Gatimaan Express marked a significant step in the modernization of Indian Railways.
6. The train's top speed is 160 km/h, making it the fastest train in India at the time of its launch.

Knowledge Booster:

 Gwalior: A historic city in Madhya Pradesh, known for its palaces and fortresses, but not a part of the Gatimaan Express route.

 Pune: A major city in Maharashtra, known for its educational institutions and IT industry.

 Chandigarh: The capital of Punjab and Haryana, known for its architecture and urban design, but not connected by Gatimaan Express.

Q.12   The main tribe found in Tamil Nadu is

A. Irula
B. Pong
C. Garos
D. khaud

Answer: A

Sol:

The **Irula** tribe is one of the main tribes found in Tamil Nadu. They are traditionally snake and rat catchers, known for their skills in handling poisonous snakes and extracting venom. The Irula community is also involved in agriculture, labor, and other rural activities. They reside primarily in the Nilgiri Hills, the Eastern Ghats, and other parts of Tamil Nadu. The tribe has a rich cultural heritage, with unique traditions, language, and lifestyle.

Important Key Points:

1. The **Irula** tribe is indigenous to Tamil Nadu and parts of Kerala.
2. They are traditionally known as snake and rat catchers, often employed in venom extraction for antivenom production.
3. Irulas are also engaged in agriculture, fishing, and other manual labor in rural areas.
4. The tribe has its own language, which belongs to the Dravidian language family.

5. The Irula community has been part of various conservation and ecological programs due to their knowledge of wildlife.

6. The tribe's cultural practices and beliefs are closely tied to nature and their environment.

Knowledge Booster:

☐ **Pong:** This term is not associated with any recognized tribe in Tamil Nadu.

☐ **Garos:** A major tribe in Meghalaya, known for their unique matrilineal society.

☐ **Khaud:** This does not correspond to a recognized tribal community in Tamil Nadu.

Q.13 Jarwar tribe is found here

A. Bihar

B. Odisha

C. Nagaland

D. Andaman

Answer: D

Sol:

The **Jarwa** (also spelled **Jarwa**) tribe is indigenous to the Andaman Islands in India. The Jarwa are one of the Andamanese indigenous peoples and have historically been isolated from the outside world. They live primarily in the forests of South and Middle Andaman. The Jarwa are known for their distinct culture, language, and way of life, which is closely connected to their forest environment. Due to their isolation, the Jarwa have maintained many of their traditional practices and are protected under Indian law, with restricted contact with the outside world.

Important Key Points:

1. The **Jarwa** tribe is one of the indigenous tribes of the Andaman Islands.

2. They are known for their hunter-gatherer lifestyle, living in harmony with nature.

3. The Jarwa people have traditionally been isolated, with limited contact with the outside world.

4. Indian law protects the Jarwa, restricting access to their territories to preserve their way of life.

5. The tribe speaks the **Jarwa** language, which is part of the Great Andamanese language family.

6. Efforts have been made to ensure that the Jarwa community is not exploited or displaced from their land.

Knowledge Booster:

☐ **Bihar:** While rich in cultural diversity, Bihar is home to tribes like the Santhals and Mundas, not the Jarwa.

☐ **Odisha:** Known for its tribal diversity, Odisha has tribes like the Kondhs and Santals.

☐ **Nagaland:** This state is home to several Naga tribes, each with its distinct culture and traditions.

Q.14 The author of 'Anand Math' was

A. Tilak

B. Bankim chandra

C. Sharat chandra

D. Tagore

Answer: B

Sol:

Bankim Chandra Chattopadhyay was the author of the novel **Anand Math**. The book, first published in 1882, is one of the most significant works in Indian literature. It is in this novel that the patriotic song **Vande Mataram** was included, which later became an anthem for the Indian independence movement. The novel is set against the backdrop of the Sannyasi Rebellion of the late 18th century, reflecting the struggle against British rule. Bankim Chandra is often referred to as the father of modern Indian fiction, and his works were pivotal in awakening a sense of nationalism among Indians.

Important Key Points:

1. **Bankim Chandra Chattopadhyay** wrote **Anand Math** in 1882.

2. The novel includes the song **Vande Mataram**, which played a vital role in India's independence movement.

3. **Anand Math** is inspired by the Sannyasi Rebellion against the British in Bengal.

4. The novel is considered one of the earliest examples of nationalist literature in India.

5. Bankim Chandra's writing style combined classical Sanskrit with modern vernacular, making it accessible and powerful.

6. His work inspired many future leaders and freedom fighters in their struggle against British colonialism.

Knowledge Booster:

☐ **Tilak:** Bal Gangadhar Tilak was a freedom fighter and social reformer, known for his slogan "Swaraj is my birthright."

☐ **Sharat Chandra:** Another famous Bengali novelist, known for works like "Devdas" and "Parineeta."

☐ **Tagore:** Rabindranath Tagore was a Nobel laureate in literature and the author of India's national anthem, "Jana Gana Mana."

Q.15 Who wrote "The Audacity of Hope"?

A. G.W. Bush

B. Manmohan Singh

C. Obama

D. Bill Clinton

Answer: C

Sol:

Barack Obama, the 44th President of the United States, wrote **"The Audacity of Hope"**. Published in 2006, the book outlines his political philosophy, vision for America, and personal experiences that shaped his views. The title itself is derived from a sermon by his former pastor, Jeremiah Wright, which Obama heard while attending church in Chicago. The book became a bestseller and played a significant role in Obama's rise to national prominence, eventually leading to his successful presidential campaign in 2008.

Important Key Points:

1. **Barack Obama** is the author of **"The Audacity of Hope"**.

2. The book was published in 2006, just before his successful campaign for the U.S. Senate.

3. It discusses Obama's political beliefs, his ideas for reform, and his experiences in American politics.

4. The title reflects Obama's belief in optimism and change, even in the face of adversity.

5. The book became a bestseller and contributed to Obama's national recognition.

6. **"The Audacity of Hope"** is considered an important work in understanding Obama's approach to governance and leadership.

Knowledge Booster:

☐ **G.W. Bush:** George W. Bush, the 43rd President of the United States, authored a memoir titled "Decision Points."

☐ **Manmohan Singh:** Former Prime Minister of India, known for his role in economic reforms, but not an author of a similar book.

☐ **Bill Clinton:** The 42nd President of the United States, who wrote "My Life," an autobiography.

Q.16 What is the meaning of the word abbreviation 'AD' describing time?

A. (of jesus) after death

B. anno domini

C. edge dark

D. after dorians

Answer: B

Sol:

The abbreviation **AD** stands for **Anno Domini**, which is Latin for "In the year of our Lord." It is used to label or number years in the Julian and Gregorian calendars. AD is used to refer to the years following the traditional date of the birth of Jesus Christ. This system of dating was devised by Dionysius Exiguus in the 6th century and is widely used across the world. The equivalent term **BC** stands for "Before Christ," used for the years before the birth of Jesus.

Important Key Points:

1. **AD** stands for **Anno Domini**, meaning "In the year of our Lord."

2. It is used to number years in the Julian and Gregorian calendars after the birth of Jesus Christ.

3. The system was introduced by Dionysius Exiguus in the 6th century.

4. **BC** (Before Christ) is used for years before the birth of Jesus.

5. The AD and BC system is the most commonly used dating system in the world.

6. The use of **AD** and **BC** helps in standardizing historical timelines and events.

Knowledge Booster:

☐ **Edge Dark**: Not related to any time-keeping system; it could be a term used in another context, possibly fictional.

☐ **After Dorians**: Dorians were a Greek tribe, but this term does not relate to the AD dating system.

☐ **Anno Domini** is sometimes replaced with **CE (Common Era)** in secular contexts, and **BC** with **BCE (Before Common Era)**.

Q.17 When is Martyrs' Day celebrated?

A. February 5

B. 14 February

C. 30 January

D. 30 June

Answer: C

Sol:

Martyrs' Day in India is observed on **30th January** every year. This day marks the assassination of Mahatma Gandhi in 1948. On this day, the nation pays homage to all the freedom fighters who sacrificed their lives for India's independence. The President, the Prime Minister, and other high-ranking officials pay respects at Raj Ghat, Gandhi's memorial in Delhi, with a two-minute silence observed nationwide.

Important Key Points:

1. **Martyrs' Day** in India is observed on **30th January** to honor Mahatma Gandhi.

2. This day marks the anniversary of Gandhi's assassination in 1948.

3. The nation remembers and honors all freedom fighters who laid down their lives for India's independence.

4. A two-minute silence is observed at 11 AM across the country to pay respects.

5. The President and Prime Minister of India pay homage at Raj Ghat in Delhi.

6. Several states and institutions organize programs to commemorate the contributions of martyrs.

Knowledge Booster:

☐ **14 February**: Known as Valentine's Day worldwide but has no connection with Martyrs' Day in India.

☐ **5 February**: In Kashmir, this day is observed as **Kashmir Solidarity Day** by some groups but is unrelated to Indian Martyrs' Day.

☐ **30 June**: There is no significant national observance on this day related to martyrs in India.

Q.18 The fear of not having access to your mobile phone (losing access) is called

A. nomophobia

B. monophobia

C. cynophobia

D. euphobia

Answer: A

Sol:

Nomophobia is the term used to describe the fear or anxiety of being without a mobile phone or losing access to it. The term is a blend of "no mobile phone" and "phobia." It is a growing phenomenon in the digital age, where people have become increasingly dependent on their smartphones for communication, information, and entertainment. Symptoms of nomophobia include panic, anxiety, and distress when unable to use a phone.

Important Key Points:

1. **Nomophobia** refers to the fear of being without a mobile phone or losing access to it.

2. It is derived from "no mobile phone phobia."

3. Nomophobia is a common issue in the digital age due to the increasing dependence on smartphones.

4. The condition can lead to anxiety, stress, and a sense of disconnection.

5. It is considered a type of behavioral addiction related to the use of mobile phones.

6. Managing screen time and digital detoxes are recommended to combat nomophobia.

Knowledge Booster:

☐ **Monophobia**: The fear of being alone or isolated.

☐ **Cynophobia**: The fear of dogs, a common specific phobia.

☐ **Euphobia**: Not a recognized phobia, but in Greek, it could imply a fear of good news (though this is not a medically recognized term).

Q.19 The first film directed by Satyajit Ray was

A. aparajito

B. aqueduct

C. Charulata

D. Pather Panchali

Answer: D

Sol:

Pather Panchali was the first film directed by **Satyajit Ray**, who is considered one of India's greatest filmmakers. The film was released in 1955 and is based on the novel by Bibhutibhushan Bandopadhyay. It is the first part of the critically acclaimed Apu Trilogy, followed by **Aparajito** and **Apur Sansar**. **Pather Panchali** is a landmark in Indian cinema, known for its neorealistic portrayal of rural Bengal. The film captures the struggles of a poor family and their dreams amidst hardships. It won several international awards, including the Best Human Document at the Cannes Film Festival, marking Ray's emergence as a major force in world cinema.

Important Key Points:

1. **Pather Panchali** was the debut film of **Satyajit Ray** and released in 1955.

2. It is based on a novel by **Bibhutibhushan Bandopadhyay** and is the first in the **Apu Trilogy**.

3. The film is celebrated for its realistic portrayal of rural life in Bengal.

4. It won several international accolades, including at the Cannes Film Festival.

5. **Pather Panchali** introduced Indian cinema to the global audience and is considered a classic.

6. Satyajit Ray's direction, along with the film's music by **Ravi Shankar**, contributed to its success.

Knowledge Booster:

☐ **Aparajito**: The second film in the Apu Trilogy, it continues the story of Apu and his family.

☐ **Charulata**: Another masterpiece by Satyajit Ray, based on a novella by Rabindranath Tagore, exploring the inner life of a lonely woman.

☐ **Apur Sansar**: The final film in the Apu Trilogy, which concludes the story of Apu's life journey.

Q.20 Where is the largest museum of India?

A. Delhi

B. Mumbai

C. Kolkata

D. Bihar

Answer: C

Sol:

The largest museum in India is the **Indian Museum** located in **Kolkata**. Established in 1814, it is the oldest and one of the largest museums in the country. The museum houses an extensive collection of artifacts, including ancient sculptures, coins, paintings, and fossils. It also features exhibits on natural history, archaeology, and art. The Indian Museum is not only a repository of India's cultural heritage but also a significant research institution, attracting scholars and tourists alike.

Important Key Points:

1. The **Indian Museum** in Kolkata is the largest museum in India.

2. It was established in 1814, making it the oldest museum in the country.

3. The museum has a vast collection of over 100,000 artifacts, including sculptures, fossils, and paintings.

4. It has six main sections: Art, Archaeology, Anthropology, Geology, Zoology, and Economic Botany.

5. The Indian Museum is also a center for research and education in various fields of history and science.

6. The museum's collections provide insights into India's rich cultural and natural heritage.

Knowledge Booster:

☐ **Delhi**: Home to the National Museum, which is one of the largest museums in India but not as extensive as the Indian Museum in Kolkata.

☐ **Mumbai**: Features the Chhatrapati Shivaji Maharaj Vastu Sangrahalaya, another significant museum in India.

☐ **Bihar**: Houses the Patna Museum, known for its collection of archaeological artifacts and historical exhibits.

Q.21   Who wrote Panchatantra?

A. Vishnu Sharma

B. Ishwar Krishna

C. Visakh Dutt

D. varahamihira

Answer: A

Sol:

The **Panchatantra** is an ancient Indian collection of interrelated animal fables in Sanskrit verse and prose, and it is attributed to **Vishnu Sharma**. These stories are believed to have been composed around 200 BCE and were intended to teach Indian princes the art of statecraft and wise conduct. The Panchatantra is divided into five books, each focusing on a specific aspect of life and governance. The tales have been widely translated and have influenced storytelling across cultures worldwide.

Important Key Points:

1. **Vishnu Sharma** is traditionally credited as the author of the **Panchatantra**.

2. The Panchatantra is a collection of fables designed to teach moral and practical lessons.

3. The work is divided into five books, each with a central theme, such as friendship, strategy, and conflict resolution.

4. The stories often feature animals with human traits, imparting wisdom through their interactions.

5. The Panchatantra has been translated into numerous languages and remains popular across the world.

6. The tales emphasize values like wisdom, leadership, and the importance of intelligence over brute force.

Knowledge Booster:

☐ **Ishwar Krishna**: An ancient Indian philosopher, known for his work on the **Sankhya** philosophy, but not related to Panchatantra.

☐ **Visakh Dutt**: The author of the ancient Indian political drama **Mudrarakshasa**.

☐ **Varahamihira**: An Indian astronomer, mathematician, and astrologer known for his work **Brihat Samhita**.

Q.22   Who was famous for his knowledge of Ayurveda?

A. Aryabhatta

B. Brahmagupta

C. Dhanvantari

D. Bhaskar

Answer: C

Sol:

Dhanvantari is revered as the god of Ayurveda, the ancient Indian system of medicine. He is believed to have emerged from the churning of the ocean (Samudra Manthan) holding the pot of amrita (elixir of life). Dhanvantari is considered the physician of the gods and is often depicted with four hands, holding medical herbs in one hand, a pot of nectar in another, and a leech and conch in the other two. His teachings laid the foundation of Ayurveda, which continues to be practiced in India and around the world.

Important Key Points:

1. **Dhanvantari** is regarded as the god of Ayurveda, the ancient Indian system of medicine.

2. He is believed to have appeared during the Samudra Manthan, holding the pot of amrita.

3. Dhanvantari is considered the physician of the gods and the father of Ayurveda.

4. Ayurveda, attributed to Dhanvantari, focuses on the balance between the body, mind, and spirit for maintaining health.

5. **Dhanteras**, a festival celebrated before Diwali, is dedicated to Dhanvantari, where people buy gold and utensils for good health and fortune.

6. Ayurveda continues to influence modern medicine, especially in holistic and natural approaches to health.

Knowledge Booster:

☐ **Aryabhatta**: An ancient Indian mathematician and astronomer, famous for his work **Aryabhatiya**.

☐ **Brahmagupta**: An Indian mathematician and astronomer known for his work in algebra and arithmetic.

☐ **Bhaskar**: Refers to Bhaskaracharya or Bhaskara II, a famous Indian mathematician and astronomer known for his work **Siddhanta Shiromani**.

Q.23   When did IPL (Cricket) start?

A. 2000

B. 2005

C. 2008

D. 2010

Answer: C

Sol:

The Indian Premier League (IPL), a professional Twenty20 cricket league, started in **2008**. It was established by the Board of Control for Cricket in India (BCCI) and has since become one of the most popular and lucrative cricket leagues in the world. The IPL follows a franchise-based model, with teams representing different cities in India. The league attracts top cricketers from around the globe, making it a highly competitive and entertaining event for cricket fans.

Important Key Points:

1. The **Indian Premier League (IPL)** started in **2008**.

2. It was initiated by the **Board of Control for Cricket in India (BCCI)**.

3. The IPL is a Twenty20 format cricket league, known for its fast-paced and high-energy matches.

4. The league operates on a franchise-based model, with teams representing various Indian cities.

5. The IPL has grown into one of the most financially successful and popular cricket leagues globally.

6. The league has had a significant impact on the careers of many cricketers and has popularized the T20 format.

Knowledge Booster:

☐ **2000**: This year marks the beginning of the 21st century but is unrelated to the inception of IPL.

☐ **2005**: The year before the first T20 World Cup but not related to the IPL.

☐ **2010**: The year when the IPL expanded with new teams but not the starting year.

Q.24   Whose nickname is 'The Wall'?

A. Shoaib Akhtar

B. Sachin Tendulkar

C. Kapil Dev

D. Rahul Dravid

Answer: D

Sol:

Rahul Dravid is famously known as "The Wall" in cricket due to his exceptional defensive skills and ability to play long, resilient innings. His technique and temperament made him one of the most dependable batsmen in cricket history. Dravid's ability to hold the batting order together and anchor the innings earned him this nickname, and he is regarded as one of India's greatest cricketers. Throughout his career, Dravid was known for his patience, consistency, and sportsmanship, which also contributed to his legendary status in the game.

Important Key Points:
1. **Rahul Dravid** earned the nickname "The Wall" for his solid defensive batting style.
2. He is one of the highest run-scorers in Test cricket with over 13,000 runs.
3. Dravid played crucial roles in many of India's overseas Test victories.
4. His ability to play marathon innings helped stabilize the Indian batting lineup.
5. Apart from being a batsman, Dravid also served as the captain of the Indian cricket team.
6. Post-retirement, he has contributed significantly to Indian cricket as a coach and mentor for young players.

Knowledge Booster:
⬜ **Shoaib Akhtar**: Known as the "Rawalpindi Express," Akhtar is famous for his speed and aggression as a fast bowler.
⬜ **Sachin Tendulkar**: Often referred to as the "God of Cricket," Tendulkar is regarded as one of the greatest batsmen in the history of the sport.
⬜ **Kapil Dev**: Known as "The Haryana Hurricane," Kapil Dev is celebrated for leading India to its first World Cup win in 1983.

Q.25 Where is the headquarters of Red Cross?

A. Switzerland
B. UK
C. Austria
D. Sweden

Answer: A

Sol:

The headquarters of the **International Red Cross** is located in **Geneva, Switzerland**. Established in 1863, the International Committee of the Red Cross (ICRC) is a humanitarian institution that focuses on protecting the lives and dignity of victims of armed conflict and other situations of violence. It also provides them with assistance. Switzerland, known for its neutrality, has been the host country for the ICRC since its inception.

Important Key Points:
1. The **International Red Cross** headquarters is located in **Geneva, Switzerland**.
2. The ICRC was founded in 1863 by **Henry Dunant**, a Swiss businessman.
3. The Red Cross plays a crucial role in humanitarian assistance worldwide, particularly in war zones.
4. The organization is guided by its seven principles: Humanity, Impartiality, Neutrality, Independence, Voluntary Service, Unity, and Universality.
5. Switzerland's tradition of neutrality makes it an ideal host for international organizations like the ICRC.
6. The Red Cross and its emblem are recognized symbols of humanitarian aid and protection.

Knowledge Booster:
⬜ **UK**: Home to the British Red Cross, part of the international Red Cross and Red Crescent Movement.
⬜ **Austria**: Hosts its national Red Cross society, which operates within the guidelines of the International Red Cross.
⬜ **Sweden**: Another country with a strong tradition of humanitarian aid, though not the headquarters of the ICRC.

Q.26 Who expelled Dawood from Patna and Hajipur?

A. Humayun
B. Babar
C. Jahangir
D. Akbar

Answer: D

Sol:

Akbar, the Mughal emperor, is credited with expelling **Dawood** from Patna and Hajipur. This action was part of his broader campaign to consolidate Mughal control over the eastern regions of India, including Bihar and Bengal. Akbar's reign is marked by his efforts to expand and secure his empire through military conquests and diplomatic alliances.

Important Key Points:
1. **Akbar** was one of the greatest Mughal emperors, known for his military conquests and administrative reforms.
2. His campaign in Bihar led to the expulsion of Dawood, strengthening Mughal control over the region.
3. Akbar's reign (1556-1605) is known for the expansion of the Mughal Empire across most of the Indian subcontinent.
4. He is also remembered for his policy of religious tolerance and efforts to foster unity among his diverse subjects.
5. Akbar established an efficient administrative system and encouraged the arts and culture.
6. His legacy includes significant architectural contributions, such as the construction of Fatehpur Sikri and the Lahore Fort.

Knowledge Booster:
⬜ **Humayun**: Akbar's father, who faced significant challenges during his reign, including exile after losing his kingdom to Sher Shah Suri.
⬜ **Babar**: The founder of the Mughal Empire in India and Akbar's grandfather.
⬜ **Jahangir**: Akbar's son and successor, who continued many of his father's policies.

Q.27 How many 'Gems' were there in Akbar's court?

A. 7
B. 9
C. 100
D. 24

Answer: B

Sol:

Akbar's court was known for its **Nine Gems** or **Navaratnas**, a group of nine extraordinary people who were experts in various fields such as literature, music, and administration. These included famous figures like **Birbal** (advisor), **Tansen** (musician), and **Abul Fazl** (historian). The Nine Gems were instrumental in helping Akbar in governance and in promoting arts and culture during his reign.

Important Key Points:
1. **Akbar's court** had **Nine Gems** or **Navaratnas** who were renowned for their expertise in various fields.
2. **Birbal** was known for his wisdom and wit and was one of Akbar's closest advisors.
3. **Tansen** was a legendary musician whose contributions to Indian classical music are still celebrated.
4. **Abul Fazl** was the author of the **Akbarnama** and **Ain-i-Akbari**, important historical texts on Akbar's reign.
5. The Nine Gems played a crucial role in Akbar's administration and cultural development.
6. Akbar's encouragement of intellectuals and artists helped in making his court a center of cultural renaissance in India.

Knowledge Booster:
⬜ **Seven Gems**: This term does not relate to Akbar's court but could refer to other historical or mythical references in different cultures.
⬜ **100 Gems**: An exaggerated term, not historically accurate for Akbar's court.
⬜ **24 Gems**: Not related to Akbar, but the number 24 is significant in other contexts, such as the Tirthankaras in Jainism.

Q.28 Before Goa, which was the capital of the Portuguese in India?

A. Cochin
B. Madras
C. Bombay
D. Patna

Answer: A

Sol:

Before **Goa** became the capital of Portuguese India, **Cochin** (now Kochi) served as the first capital. The Portuguese established their presence in Cochin in 1503, making it their initial stronghold in India. Cochin was strategically important due to its access to spice trade routes. However, in 1530, the capital was moved to Goa, which remained the center of Portuguese India until its annexation by India in 1961.

Important Key Points:

1. **Cochin** was the first capital of Portuguese India before it was moved to **Goa**.
2. The Portuguese arrived in Cochin in 1503, establishing it as their stronghold due to its strategic location.
3. **Goa** became the capital in 1530, and it remained the administrative center of Portuguese India until 1961.
4. The Portuguese influence in Cochin is still visible in its architecture, culture, and cuisine.
5. The shift from Cochin to Goa marked the consolidation of Portuguese control over the western coast of India.
6. Cochin was an important port city, playing a significant role in the spice trade during the Portuguese era.

Knowledge Booster:
❑ **Madras**: Now known as Chennai, was an important British colonial city but not associated with the Portuguese capital.
❑ **Bombay**: Became a significant British port and later the capital of Maharashtra, but not related to Portuguese rule.
❑ **Patna**: The capital of Bihar, with historical significance during the Maurya and Mughal periods, but not linked to Portuguese rule.

Q.29 Where was Guru Nanak born?

A. Amritsar
B. Lahore
C. Talvandi
D. Dehradun

Answer: C

Sol:
Guru Nanak, the founder of Sikhism, was born in **Talvandi** (now known as Nankana Sahib in Pakistan) in 1469. This location is one of the most revered sites in Sikhism, and it is celebrated annually during Guru Nanak's Gurpurab, marking his birth. Guru Nanak's teachings laid the foundation for Sikhism, focusing on the principles of monotheism, equality, and social justice. His messages emphasized living an honest life, engaging in selfless service, and the remembrance of God.

Important Key Points:
1. **Guru Nanak** was born in **Talvandi**, now called **Nankana Sahib**, located in modern-day Pakistan.
2. He is the founder of Sikhism, one of the major religions in India.
3. Guru Nanak's teachings emphasized the oneness of God and the importance of living a righteous life.
4. The city of Nankana Sahib is a significant pilgrimage site for Sikhs around the world.
5. Guru Nanak traveled extensively to spread his message, which are now known as **Udasis**.
6. His teachings form the core of the **Guru Granth Sahib**, the central religious scripture of Sikhism.

Knowledge Booster:
❑ **Amritsar**: Known for the Golden Temple, the holiest shrine in Sikhism, but not Guru Nanak's birthplace.
❑ **Lahore**: A major city in Pakistan, historically important but not related to Guru Nanak's birth.
❑ **Dehradun**: A city in Uttarakhand, India, known for its educational institutions but unrelated to Guru Nanak's origins.

Q.30 Where did the British send Bahadur Shah-II out of the country?

A. Rangoon
B. Sri Lanka
C. Black Water
D. Nepal

Answer: A

Sol:
The last Mughal emperor, **Bahadur Shah II**, also known as Bahadur Shah Zafar, was exiled to **Rangoon** (now Yangon, Myanmar) by the British after the failure of the Indian Rebellion of 1857. Following his capture, Bahadur Shah Zafar was tried and found guilty of aiding the rebellion. He was sent to Rangoon, where he spent the remainder of his life in captivity until his death in 1862. His exile marked the formal end of the Mughal Empire.

Important Key Points:
1. **Bahadur Shah Zafar** was the last Mughal emperor, and he was exiled to **Rangoon** after the 1857 rebellion.
2. His exile marked the end of the Mughal Empire and the beginning of direct British rule in India.
3. Bahadur Shah Zafar was a symbolic figurehead during the 1857 rebellion, which sought to overthrow British rule.
4. He spent his final years in Rangoon, where he died in 1862 and was buried.
5. His poetry, especially his ghazals, remains popular, reflecting his sorrowful exile and the end of an era.
6. The exile of Bahadur Shah Zafar symbolizes the complete collapse of Mughal sovereignty in India.

Knowledge Booster:
❑ **Sri Lanka**: Not related to Bahadur Shah Zafar's exile but historically significant for other exiles and colonial history.
❑ **Black Water**: Refers to Kala Pani, the Cellular Jail in Andaman, where many Indian freedom fighters were exiled, but not Bahadur Shah Zafar.
❑ **Nepal**: A neighboring country of India, with no direct relation to the exile of Bahadur Shah Zafar.

Q.31 Who did the first English translation of Abhijnanam Shakuntala?

A. Nehru
B. Chetan Bhagat
C. Sir William Jones
D. John Nicholson

Answer: C

Sol:
Sir William Jones was the first to translate Abhijnana Shakuntalam into English in 1789. Jones was an officer who translated Sanskrit, Persian, and other Indian languages into English. He first translated the play into Latin, and then re-translated it into English as Sacontala or The Fatal RingImportant Key Points:
1. Sir William Jones (1746–1794) was a British Orientalist, linguist, and judge who is renowned for his contributions to the study of Asian languages and cultures. He was a founder of the Asiatic Society of Bengal, which played a crucial role in the academic study of Indian languages and literature.
2. Abhijnanashakuntalam is known for its poetic beauty and has been translated into many languages worldwide.
3. The translation helped in the cultural exchange between India and Europe during the colonial period.

Knowledge Booster:
❑ **Nehru**: Jawaharlal Nehru, India's first Prime Minister, was known for his writings on Indian history, including "The Discovery of India," but did not translate Sanskrit texts.
❑ **Chetan Bhagat**: A contemporary Indian author known for his novels on modern Indian youth, not related to ancient Sanskrit literature.
❑ **John Nicholson**: A British Army officer during the Indian Rebellion of 1857.

Q.32 Who was the last former Viceroy during British rule in India?

A. Mountbatten
B. Wavell
C. irwin
D. Minto

Answer: A

Sol:
Lord Louis Mountbatten was the last Viceroy of British India. He oversaw the transfer of power from British rule to independent India and Pakistan in 1947. Mountbatten played a crucial role in the partition process, and his tenure marked the end of British colonial rule in India. After independence, he served as the first Governor-General of independent India until June 1948.

Important Key Points:
1. **Lord Mountbatten** was the last Viceroy of British India, serving from 1947 to 1948.
2. He played a key role in the partition of India and the creation of Pakistan.
3. Mountbatten was also the first Governor-General of independent India.
4. His tenure as Viceroy ended with the transfer of power on August 15, 1947.

5. Mountbatten's role in the partition has been both praised and criticized by historians.

6. His departure from India marked the end of British colonial rule after nearly 200 years.

Knowledge Booster:

☐ **Wavell**: Lord Wavell was the Viceroy of India before Mountbatten, serving from 1943 to 1947.

☐ **Irwin**: Lord Irwin, later known as the Earl of Halifax, was the Viceroy of India from 1926 to 1931.

☐ **Minto**: The Earl of Minto served as Viceroy of India from 1905 to 1910, known for the Morley-Minto Reforms.

Q.33   When did Champaran Satyagraha start?

A. 1929

B. 1917

C. 1857

D. 1946

Answer: B

Sol:

The **Champaran Satyagraha** of 1917 was the first civil disobedience movement led by Mahatma Gandhi in India. It was initiated to address the grievances of indigo farmers in the Champaran district of Bihar who were forced by British planters to grow indigo on a portion of their land and sell it at unfair prices. Gandhi's leadership in Champaran marked his emergence as a prominent figure in the Indian independence movement, showcasing his strategy of nonviolent resistance.

Important Key Points:

1. The **Champaran Satyagraha** took place in 1917 and was led by **Mahatma Gandhi**.

2. It was Gandhi's first major civil disobedience movement in India.

3. The movement was launched to support the indigo farmers in Champaran, Bihar, who were exploited by British planters.

4. The success of the Satyagraha led to the abolition of the exploitative system imposed on the farmers.

5. Champaran marked the beginning of Gandhi's active involvement in the Indian freedom struggle.

6. The movement demonstrated the effectiveness of nonviolent protest in challenging colonial authority.

Knowledge Booster:

☐ **1929**: The year of the Lahore Session of the Indian National Congress, where the demand for complete independence (Purna Swaraj) was made.

☐ **1857**: The year of the First War of Indian Independence, also known as the Sepoy Mutiny.

☐ **1946**: The year of the Royal Indian Navy Mutiny and the Cabinet Mission to India.

Q.34   Who started the National Herald newspaper?

A. Motilal Nehru

B. Jawaharlal Nehru

C. Indira Gandhi

D. Rahul Gandhi

Answer: B

Sol:

The **National Herald** newspaper was founded by **Jawaharlal Nehru** in 1938. Established as a medium to express the views of the Indian National Congress and to promote the fight against British rule, the National Herald played a crucial role during the Indian independence movement. Nehru, who later became India's first Prime Minister, used the platform to advocate for freedom, democracy, and social justice. The newspaper's motto was "Freedom is in Peril, Defend it with All Your Might," reflecting its commitment to the nationalist cause.

Important Key Points:

1. **Jawaharlal Nehru** founded the **National Herald** in 1938.

2. The newspaper was a vital tool for the Indian National Congress during the freedom struggle.

3. It advocated for independence, democracy, and social justice in India.

4. The National Herald's motto was "Freedom is in Peril, Defend it with All Your Might."

5. The newspaper continued to play a significant role in post-independence India, supporting progressive policies.

6. The National Herald symbolized Nehru's vision for a free and democratic India.

Knowledge Booster:

☐ **Motilal Nehru**: Jawaharlal Nehru's father and a prominent leader in the Indian freedom movement, but not the founder of the National Herald.

☐ **Indira Gandhi**: Nehru's daughter and India's Prime Minister, who later revived the National Herald after its temporary closure.

☐ **Rahul Gandhi**: A contemporary Indian politician and great-grandson of Jawaharlal Nehru, associated with the Congress Party, but not involved in the founding of the newspaper.

Q.35   Who was Megasthenes during the reign of Chandragupta Maurya?

A. Invader

B. Ambassador

C. Priest

D. Minister

Answer: B

Sol:

Megasthenes was an ancient Greek ambassador sent by Seleucus I Nicator, a successor of Alexander the Great, to the court of **Chandragupta Maurya**, the founder of the Maurya Empire in India. His work, **Indica**, is a valuable source of information about ancient India, describing the society, economy, and governance of the Mauryan period. Megasthenes' observations have provided historians with insights into the political and cultural life of India during the 4th century BCE.

Important Key Points:

1. **Megasthenes** was a Greek ambassador sent to the court of **Chandragupta Maurya**.

2. He authored **Indica**, a detailed account of India during the Mauryan period.

3. Megasthenes' writings describe the social structure, economy, and governance in ancient India.

4. His work provides valuable historical insights, despite some exaggerations and inaccuracies.

5. Megasthenes' descriptions of India were among the first written accounts by a foreigner.

6. His role as an ambassador helped establish diplomatic relations between the Maurya Empire and the Hellenistic world.

Knowledge Booster:

☐ **Invader**: Megasthenes was not an invader but a diplomat representing the Greek empire.

☐ **Priest**: Megasthenes was a secular envoy, not a religious figure or priest.

☐ **Minister**: While influential, Megasthenes served as an ambassador, not as a minister in the Mauryan court.

Q.36   Among the symbols associated with occasions related to Buddha, the 'Stupa' symbolizes:

A. Death

B. First Sermon

C. Birth

D. Home Abandonment

Answer: A

Sol:

The **Stupa** is one of the most significant symbols associated with the **death (Parinirvana)** of the Buddha. It is a dome-shaped structure that contains relics of the Buddha and is used as a place of meditation. Stupas are constructed to commemorate the Buddha's passing into Nirvana, representing his final liberation from the cycle of birth and death. The design of the Stupa symbolizes the Buddha's path to enlightenment and is an important aspect of Buddhist architecture.

Important Key Points:

1. A **Stupa** symbolizes the **death (Parinirvana)** of the Buddha and his final release from the cycle of rebirth.

2. Stupas often contain relics of the Buddha or other important Buddhist figures.

3. The structure is dome-shaped, symbolizing the Buddha's enlightenment and the path to Nirvana.

4. Stupas are significant in Buddhist worship and meditation practices.
5. They are found across Asia, particularly in countries with a strong Buddhist tradition.
6. The design of a Stupa often includes elements representing earth, water, fire, air, and space, signifying the five elements.

Knowledge Booster:

☐ **First Sermon**: Represented by the **Dharmachakra (Wheel of Dharma)**, symbolizing the Buddha's first teaching.

☐ **Birth**: Represented by **Lumbini**, the birthplace of Buddha, often symbolized by a lotus flower.

☐ **Home Abandonment**: Symbolized by the **Great Departure**, when the Buddha left his princely life to seek enlightenment.

Q.37 The last ruler of the Gupta dynasty was

A. Purugupta
B. Vishnugupta
C. Skandagupta
D. Kumaragupta

Answer: B

Sol:

Vishnugupta was the last recognized ruler of the Gupta dynasty. His reign marked the end of the once-powerful Gupta Empire, which had significantly declined by the time he came to power. The Gupta dynasty, known for its advancements in art, science, and culture, saw its decline due to internal conflicts and invasions by the Huns. Vishnugupta's reign is considered the final chapter in the history of the Gupta Empire, after which the empire disintegrated into smaller regional kingdoms.

Important Key Points:

1. **Vishnugupta** was the last ruler of the **Gupta dynasty**, marking the end of the empire's prominence.
2. The Gupta Empire is often referred to as the **Golden Age of India** due to its cultural and scientific achievements.
3. Vishnugupta's reign came at a time of decline, with the empire weakened by invasions and internal strife.
4. The decline of the Gupta Empire led to the fragmentation of India into smaller kingdoms.
5. The Gupta period was known for significant contributions to mathematics, astronomy, and literature.
6. The end of Vishnugupta's reign is seen as the close of the classical age in Indian history.

Knowledge Booster:

☐ **Purugupta**: A ruler before Vishnugupta, not the last Gupta emperor.

☐ **Skandagupta**: Known for his military successes, particularly against the Huns, but not the last ruler.

☐ **Kumaragupta**: Another notable Gupta ruler, known for maintaining the empire's strength during his reign.

Q.38 Abacus was discovered during

A. Shang Civilization
B. Iranian Civilization
C. Greek Civilization
D. Roman Civilization

Answer: C

Sol:

The **Abacus**, a simple device used for arithmetic calculations, was invented during the **Greek Civilization**. It consists of rows of movable beads that represent numbers and are used for performing basic mathematical operations such as addition, subtraction, multiplication, and division. The abacus is one of the earliest tools used for calculation and has influenced the development of mathematical tools and concepts in various civilizations.

Important Key Points:

1. The **Abacus** was invented during the **Greek Civilization** as an early tool for arithmetic calculations.
2. It consists of a frame with rows of beads that can be moved to represent numbers.
3. The abacus was used for basic mathematical operations, including addition, subtraction, multiplication, and division.
4. The design of the abacus influenced later computational devices and mathematical thinking.
5. While it originated in Greece, the abacus was adopted and further developed in other cultures, particularly in China and Japan.
6. The abacus is still used today in some parts of the world, especially for teaching basic arithmetic.

Knowledge Booster:

☐ **Shang Civilization**: An early Chinese civilization, not associated with the invention of the abacus but known for its bronze work and early writing.

☐ **Iranian Civilization**: Ancient Persia, known for its contributions to culture and science but not related to the abacus.

☐ **Roman Civilization**: While influential in many areas, the abacus is more closely associated with the Greek civilization.

Q.39 Which country ruled Germany in the 18th century?

A. England
B. Austria
C. France
D. China

Answer: B

Sol:

During the 18th century, **Austria** was a significant power in Europe, and it exerted considerable influence over the German states as part of the **Holy Roman Empire**. The Austrian Habsburgs were the ruling dynasty of the Holy Roman Empire, which included many German territories. This period saw Austria as a dominant force in central European politics until the rise of Prussia and the eventual unification of Germany under Prussian leadership in the 19th century.

Important Key Points:

1. **Austria** was a dominant power in Europe during the 18th century and controlled many German states.
2. The **Holy Roman Empire** was largely controlled by the Austrian Habsburgs, making Austria influential in German affairs.
3. Austria's influence waned in the 19th century with the rise of Prussia and the eventual unification of Germany.
4. The rivalry between Austria and Prussia was a significant factor in the political landscape of 19th-century Europe.
5. The **Austro-Prussian War** of 1866 led to the exclusion of Austria from German affairs.
6. Austria's influence persisted in European politics until the dissolution of the Austro-Hungarian Empire after World War I.

Knowledge Booster:

☐ **England**: England (later the United Kingdom) was a significant global power but had no direct control over Germany during the 18th century.

☐ **France**: France was a rival of Austria and frequently engaged in conflicts with the Habsburgs during the 18th century.

☐ **China**: China was a powerful empire in Asia during the 18th century, with no involvement in European politics.

Q.40 What fraction of the total members is required for a quorum in both the Lok Sabha and the Rajya Sabha in India?

A. 1/20
B. 1/10
C. 1/5
D. 1/33

Answer: B

Sol:

In both the **Lok Sabha** and the **Rajya Sabha**, the quorum required to conduct a session is **1/10** of the total number of members. This means that at least 10% of the members must be present for the house to function and conduct its business. The concept of quorum ensures that decisions are made with a minimum level of participation, preventing a small minority from making decisions on behalf of the entire house.

Important Key Points:

1. The quorum required in both the **Lok Sabha** and Rajya Sabha is **1/10** of the total membership.
2. A quorum ensures that a minimum number of members are present for the house to conduct its business.

3. If the quorum is not met, the session cannot proceed, and the meeting is adjourned until the required number of members is present.

4. The rule applies to both houses of Parliament to ensure fair and representative decision-making.

5. The concept of quorum is a common parliamentary procedure used worldwide to maintain the legitimacy of legislative processes.

6. This rule prevents a small group of members from unilaterally making decisions on behalf of the entire legislative body.

Q.41 Where is the weekly Charlie Hewdo published?

A. London

B. Paris

C. New York

D. Berlin

Answer: B

Sol:

Charlie Hebdo is a French satirical weekly magazine published in **Paris**. The magazine is known for its provocative and controversial cartoons, articles, and reports, often focusing on politics, religion, and culture. **Charlie Hebdo** gained global attention after the tragic terrorist attack on its Paris office in January 2015, which resulted in the deaths of several staff members. The attack was carried out in response to the magazine's publication of cartoons depicting the Prophet Muhammad.

Important Key Points:

1. **Charlie Hebdo** is a satirical weekly magazine published in **Paris, France**.

2. The magazine is known for its provocative and often controversial content, especially its political and religious satire.

3. **Charlie Hebdo** gained international notoriety after the terrorist attack on its offices in January 2015.

4. The attack led to global discussions on freedom of speech, press freedom, and the right to satire.

5. Despite the attack, **Charlie Hebdo** continued publication, reinforcing its commitment to free expression.

6. The magazine's history dates back to the 1960s, and it has often been at the center of debates on media ethics and censorship.

Knowledge Booster:

❑ **London**: The capital of the UK, home to several prominent publications but not associated with **Charlie Hebdo**.

❑ **New York**: A global media hub in the US, known for publications like **The New York Times**, but not related to **Charlie Hebdo**.

❑ **Berlin**: The capital of Germany, known for its own media outlets but not connected to the publication of **Charlie Hebdo**.

Q.42 H1N1 is caused by:

A. Virus

B. Bacteria

C. Fungus

D. Reason unknown

Answer: A

Sol:

H1N1 is a strain of the **influenza virus** responsible for causing the H1N1 flu, commonly known as "swine flu." The virus first gained widespread attention during the 2009 flu pandemic, which was declared a global pandemic by the World Health Organization (WHO). The H1N1 virus is a subtype of the influenza A virus, and it can cause respiratory illness in humans. Symptoms include fever, cough, sore throat, body aches, and in severe cases, pneumonia or respiratory failure.

Important Key Points:

1. **H1N1** is a strain of the **influenza virus**, responsible for causing the H1N1 flu or "swine flu."

2. The virus was first identified in April 2009 and led to a global pandemic.

3. H1N1 is a subtype of the influenza A virus and can cause a range of respiratory symptoms.

4. The 2009 H1N1 pandemic resulted in widespread vaccination campaigns and public health measures.

5. Symptoms of H1N1 flu include fever, cough, sore throat, body aches, and respiratory issues.

6. The virus spreads through respiratory droplets and can be prevented through vaccination and good hygiene practices.

Knowledge Booster:

❑ **Bacteria**: Single-celled organisms that can cause infections, but not responsible for H1N1.

❑ **Fungus**: A group of organisms that include yeasts, molds, and mushrooms, not related to the H1N1 virus.

❑ **Reason unknown**: H1N1 is well-understood to be caused by a virus, making this option incorrect.

Q.43 Where does the famous literature festival take place?

A. Jaipur

B. Varanasi

C. Udaipur

D. Delhi

Answer: A

Sol:

The **Jaipur Literature Festival** is one of the most prominent literary events in the world, held annually in **Jaipur**, Rajasthan, India. Since its inception in 2006, the festival has grown significantly, attracting authors, thinkers, and literary enthusiasts from around the globe. The festival provides a platform for discussions on a wide range of topics, including literature, politics, social issues, and the arts. It is known for its inclusive atmosphere, where people from all walks of life come together to celebrate the written word.

Important Key Points:

1. The **Jaipur Literature Festival** is held annually in **Jaipur**, Rajasthan.

2. It is one of the largest and most prestigious literary festivals in the world.

3. The festival was first held in 2006 and has since grown in size and stature.

4. It features a wide array of sessions on literature, politics, culture, and social issues.

5. The festival attracts notable authors, thinkers, and celebrities from around the world.

6. The Jaipur Literature Festival is known for its inclusive environment, welcoming diverse voices and audiences.

Knowledge Booster:

❑ **Varanasi**: An ancient city in India, known for its cultural and religious significance, but not the location of the Jaipur Literature Festival.

❑ **Udaipur**: A city in Rajasthan, famous for its lakes and palaces, but not related to the Jaipur Literature Festival.

❑ **Delhi**: The capital of India, hosting many cultural events but not the Jaipur Literature Festival.

Q.44 What is the state flower of UP?

A. Lotus

B. Palaash

C. Marigold

D. Rose

Answer: B

Sol:

The **Palaash** (Butea monosperma), often referred to as the "Flame of the Forest," is the **state flower of Uttar Pradesh (UP)**. The tree is known for its vibrant orange-red flowers, which bloom in the spring, creating a stunning visual effect. The Palaash flower is deeply ingrained in Indian culture, particularly in Uttar Pradesh, where it is celebrated for its beauty and significance. The tree also has medicinal properties and is used in traditional Ayurvedic medicine. Its flowers are used to make natural dyes, especially for the festival of Holi.

Important Key Points:

1. **Palaash** is the state flower of **Uttar Pradesh**.

2. The flower is known for its bright orange-red color, which blooms prominently in the spring.

3. The Palaash tree is also known as the "Flame of the Forest" due to its striking appearance.

4. The tree has cultural and religious significance in India, particularly during the festival of Holi.

5. Palaash is used in traditional medicine for various therapeutic purposes.

6. The tree contributes to the ecosystem by providing food and habitat for various wildlife species.
Knowledge Booster:
☐ **Lotus**: The national flower of India, symbolizing purity and beauty, but not the state flower of Uttar Pradesh.
☐ **Marigold**: A common flower used in Indian rituals and decorations, but not the state flower of Uttar Pradesh.
☐ **Rose**: Known for its beauty and fragrance, widely cultivated but not the state flower of Uttar Pradesh.

Q.45   Where is Valmiki National Park located?

A. UP
B. MP
C. Bihar
D. Odisha

Answer: C

Sol:

Valmiki National Park is located in the **West Champaran district of Bihar**. It is the only national park in the state and is part of the Valmiki Tiger Reserve. The park is named after the ancient sage Valmiki, the author of the Ramayana. Valmiki National Park is known for its rich biodiversity, including several endangered species such as tigers, leopards, and Indian rhinoceros. The park also hosts a variety of flora and fauna, making it an important ecological zone in Bihar.
Important Key Points:
1. **Valmiki National Park** is located in the **West Champaran district of Bihar**.
2. It is part of the Valmiki Tiger Reserve, which is the only tiger reserve in Bihar.
3. The park is named after the sage Valmiki, who is believed to have written the Ramayana in this region.
4. Valmiki National Park is home to a variety of wildlife, including tigers, leopards, and rhinoceros.
5. The park is an important ecological region, supporting a rich diversity of flora and fauna.
6. It is also a significant tourist destination in Bihar, attracting nature lovers and wildlife enthusiasts.
Knowledge Booster:
☐ **UP (Uttar Pradesh)**: Although UP has several wildlife sanctuaries, it does not host Valmiki National Park.
☐ **MP (Madhya Pradesh)**: Known for national parks like Kanha and Bandhavgarh, but not for Valmiki National Park.
☐ **Odisha**: Famous for national parks like Simlipal, but Valmiki National Park is located in Bihar.

Q.46   Where was the first woolen textile mill opened in India?

A. Panipat
B. Ludhiana
C. Kanpur
D. Agra

Answer: C

Sol:

The first woolen textile mill in India was established in **Kanpur** in 1876. Kanpur, known as the "Manchester of the East," became an important industrial city during the British colonial period due to its thriving textile industry. The establishment of this mill marked the beginning of the modern textile industry in India. Over time, Kanpur grew into a major center for the production of textiles, leather, and other goods, contributing significantly to India's industrial economy.
Important Key Points:
1. The first woolen textile mill in India was established in **Kanpur** in 1876.
2. Kanpur was a major industrial hub during the British colonial period, earning the nickname "Manchester of the East."
3. The woolen mill marked the beginning of the modern textile industry in India.
4. Kanpur's textile industry played a crucial role in the economic development of the region.
5. The city is also known for its leather industry, which is one of the largest in India.
6. The establishment of textile mills in Kanpur contributed to the growth of the Indian labor movement and industrialization.
Knowledge Booster:
☐ **Panipat**: Known for its handloom products, especially blankets, but not the location of the first woolen mill.
☐ **Ludhiana**: A significant center for textile and knitwear production in Punjab, but not the site of the first woolen mill.
☐ **Agra**: Known for its leather goods and marble crafts, but not associated with the textile industry.

Q.47   How many main varieties of natural silk are there?

A. 2
B. 4
C. 6
D. 8

Answer: B

Sol:

There are **four main varieties of natural silk**: **Mulberry silk, Tasar silk, Eri silk,** and **Muga silk**. Mulberry silk is the most common and accounts for the majority of silk production worldwide. Tasar silk is known for its rich texture and natural gold color. Eri silk, also known as "peace silk," is harvested without killing the silkworms. Muga silk, indigenous to Assam, is renowned for its natural golden-yellow color and durability.
Important Key Points:
1. There are **four main varieties of natural silk**: **Mulberry, Tasar, Eri,** and **Muga**.
2. **Mulberry silk** is the most widely produced and used type of silk.
3. **Tasar silk** is valued for its texture and natural golden hue.
4. **Eri silk** is known as "peace silk" because it is harvested without harming the silkworms.
5. **Muga silk**, native to Assam, is prized for its durability and natural golden color.
6. These varieties of silk are used in traditional and high-end fashion, contributing to the textile industry.
Knowledge Booster:
☐ **Mulberry silk**: The most common variety, produced by the silkworm Bombyx mori, which feeds on mulberry leaves.
☐ **Tasar silk**: Produced by silkworms that feed on trees like Arjun and Asan, known for its coarse texture.
☐ **Eri silk**: Also known as "peace silk" or "Ahimsa silk," primarily produced in Assam and Meghalaya.
☐ **Muga silk**: Exclusive to Assam, Muga silk is known for its natural golden-yellow color.

Q.48   Where is Jallianwala Bagh located?

A. Ludhiana
B. Rohtak
C. Amritsar
D. Delhi

Answer: C

Sol:

Jallianwala Bagh is a public garden located in **Amritsar**, Punjab. It is the site of the infamous Jallianwala Bagh massacre that took place on April 13, 1919. British troops, under the command of General Reginald Dyer, opened fire on a large, unarmed crowd that had gathered to protest against the Rowlatt Act. The massacre resulted in the deaths of hundreds of people and became a turning point in India's struggle for independence. The site is now a memorial to those who lost their lives in the tragic event.
Important Key Points:
1. **Jallianwala Bagh** is located in **Amritsar**, Punjab.
2. It was the site of the Jallianwala Bagh massacre on April 13, 1919, where hundreds of unarmed Indians were killed.
3. The massacre was ordered by General Reginald Dyer as a response to a peaceful protest against British colonial laws.

4. The event became a catalyst for the Indian independence movement, intensifying the demand for self-rule.

5. Jallianwala Bagh is now a national memorial, honoring the victims of the massacre.

6. The event is considered one of the darkest chapters in British colonial history and has left a lasting impact on India's collective memory.

Knowledge Booster:

▢ **Ludhiana**: A major industrial city in Punjab, known for its textiles, but not related to the Jallianwala Bagh massacre.

▢ **Rohtak**: A city in Haryana, known for its educational institutions, but not associated with Jallianwala Bagh.

▢ **Delhi**: The capital of India, with its own significant historical sites, but not related to Jallianwala Bagh.

Q.49 Where did Guru Gobind Singh get his education and where did he learn Persian?

A. Lahore

B. Amritsar

C. Patna

D. Anandpur Sahib

Answer: D

Sol:

Guru Gobind Singh received his early education in *Anandpur Sahib*, a place in the present-day state of Punjab, India. Born in Patna, Bihar, in 1666, he moved to Anandpur Sahib at an early age, where he was taught religious scriptures, martial arts, and various languages, including Punjabi, Sanskrit, and Persian.

Guru Gobind Singh learned Persian, which was a court language of the Mughal Empire at the time, likely under the tutelage of Persian scholars and teachers in Anandpur Sahib. Persian was an important language for communication, diplomacy, and administration during that period, making it essential for a leader like Guru Gobind Singh to be proficient in it.

Important Key Points:

1. **Guru Gobind Singh** was born and educated in **Patna**, Bihar.

2. The **Takht Sri Patna Sahib** Gurudwara is a major Sikh pilgrimage site in Patna.

3. He is the tenth and last human Sikh Guru and played a significant role in consolidating Sikhism.

4. Guru Gobind Singh established the Khalsa in 1699, a key moment in Sikh history.

5. Patna remains a city of great importance for Sikhs worldwide due to its association with Guru Gobind Singh.

Knowledge Booster:

▢ **Lahore**: While an important city in Sikh history, it is not where Guru Gobind Singh was educated.

▢ **Amritsar**: The location of the Golden Temple, the holiest shrine in Sikhism, but not the Guru's place of birth or early education.

Q.50 Amjad Ali Khan is known for playing:

A. Sarod

B. Sarangi

C. Sitar

D. Tabla

Answer: A

Sol:

Amjad Ali Khan is a renowned Indian classical musician, known for playing the **Sarod**. He belongs to a family of musicians and is considered one of the greatest Sarod players in the world. Amjad Ali Khan has performed globally and has received numerous awards, including the Padma Vibhushan, India's second-highest civilian honor. His contribution to Indian classical music, especially in popularizing the Sarod, is immense.

Important Key Points:

1. **Amjad Ali Khan** is a maestro of the **Sarod**, a prominent instrument in Indian classical music.

2. He hails from a family with a rich musical heritage, known as the **Senia Bangash Gharana**.

3. Amjad Ali Khan has performed worldwide, bringing Indian classical music to global audiences.

4. He has received prestigious awards, including the **Padma Vibhushan**.

5. His unique style and contribution to the Sarod have made him a celebrated figure in Indian music.

6. Amjad Ali Khan has also composed numerous ragas and contributed to the evolution of Indian classical music.

Knowledge Booster:

▢ **Sarangi**: A bowed string instrument, commonly used in Hindustani classical music, but not associated with Amjad Ali Khan.

▢ **Sitar**: A plucked string instrument, popularized by Ravi Shankar, but not played by Amjad Ali Khan.

▢ **Tabla**: A pair of hand drums, commonly used in Indian classical music, but Amjad Ali Khan is known for the Sarod.

Q.51 What is the size of particles to which the laws of classical physics apply?

A. $>10^{-6}$ m

B. $>10^{-7}$ m

C. 10^8 m

D. 10^{-4} m

Answer: A

Sol:

The laws of classical physics apply to particles with a size greater than 10^{-6} **meters**. Classical physics, also known as Newtonian physics, governs the behavior of macroscopic objects—those that are large enough to be observed directly, without the need for microscopes. These laws break down when dealing with particles on the atomic or subatomic scale, where quantum mechanics becomes necessary to accurately describe physical phenomena.

Important Key Points:

1. The laws of **classical physics** apply to particles with sizes greater than 10^{-6} **meters**.

2. Classical physics includes laws like Newton's laws of motion, which describe the behavior of macroscopic objects.

3. Objects smaller than 10^{-6} **meters** typically require quantum mechanics for accurate description.

4. Classical physics is applicable in everyday situations involving visible objects and traditional mechanics.

5. The transition to quantum physics is necessary for understanding particles at the atomic and subatomic levels.

6. Classical physics forms the foundation for much of the engineering and technological advancements in history.

Knowledge Booster:

▢ 10^{-7} **m**: Approaches the scale where quantum effects begin to dominate, beyond the scope of classical physics.

▢ 10^8 **m**: A scale far beyond macroscopic objects, dealing with astronomical distances.

▢ 10^{-4} **m**: Still within the range where classical physics generally applies but closer to the threshold where quantum effects may be considered.

Q.52 Which option is correct about the wheel of a car moving on the road?

A. Rolling friction > Static friction > Kinetic friction

B. Static friction > Kinetic friction > Rolling friction

C. Static Friction > Rolling Friction > Kinetic Friction

D. Rolling friction > Kinetic friction > Static friction

Answer: B

Sol:

In the context of a car wheel moving on the road, the correct relationship is **Static friction > Kinetic friction > Rolling friction**. Static friction is the force that keeps the wheel from slipping and is generally higher than kinetic friction, which occurs once the wheel starts slipping. Rolling friction, which occurs when the wheel rolls without slipping, is the smallest of the three because it involves less surface area in contact and less deformation.

Important Key Points:

1. **Static friction** is the strongest, preventing the wheel from slipping on the surface.

2. **Kinetic friction** comes into play when there is relative motion between the surfaces, i.e., when the wheel slips.

3. **Rolling friction** is the weakest and occurs when the wheel rolls without slipping.

4. This relationship is crucial for understanding the motion of vehicles and the efficiency of different types of friction.

5. Proper tire maintenance and surface conditions help maximize static and rolling friction for safe driving.

6. The low rolling friction in properly inflated tires contributes to fuel efficiency in vehicles.

Knowledge Booster:

☐ **Rolling friction > Static friction > Kinetic friction:** Incorrect because rolling friction is generally the weakest.

☐ **Static Friction > Rolling Friction > Kinetic Friction:** Incorrect because rolling friction is less than kinetic friction.

☐ **Rolling friction > Kinetic friction > Static friction:** Incorrect as rolling friction is usually the smallest.

Q.53 What is the relationship between the speed of sound and the density of the medium?

A. $v^2 \propto 1/\rho$

B. $v^2 \propto \rho$

C. $v^2 \propto 1/\rho^2$

D. $v^2 \propto \rho^2$

Answer: A

Sol:

The speed of sound in a medium is **inversely proportional** to the square root of the density (ρ) of the medium. Mathematically, this is represented as:

$v \propto \frac{1}{\sqrt{\rho}}$

This means that as the density of the medium increases, the speed of sound decreases. However, the speed of sound also depends on the medium's **elastic properties**. The complete equation for the speed of sound is:

$v = \sqrt{\frac{B}{\rho}}$

Where:

☐ v is the speed of sound,

☐ B is the bulk modulus (elasticity),

☐ ρ is the density.

The inverse relationship between sound speed and density is more pronounced in gases, where the speed of sound decreases with increasing density.

Important Key Points:

1. The speed of sound is **inversely proportional** to the square root of the density (ρ) of the medium.

2. $v^2 \propto \frac{1}{\rho}$ indicates that as density increases, the speed of sound decreases, assuming constant elastic properties.

3. The speed of sound varies depending on the medium: **fastest in solids**, **slower in liquids**, and **slowest in gases**.

4. **Temperature and pressure** also affect the speed of sound, especially in gases.

5. Understanding the relationship between sound speed and density is important in fields like **acoustics, engineering, and meteorology**.

6. This relationship is crucial for technologies like **sonar and ultrasound**.

Knowledge Booster:

☐ $v^2 \propto 1/\rho$: This is the correct relationship, as sound speed is inversely proportional to the density of the medium.

☐ $v^2 \propto \rho$: Incorrect, as it suggests a direct relationship, which is not true for sound speed.

☐ $v^2 \propto 1/\rho^2$: Incorrect, as it suggests a more complex inverse square relationship, which does not apply.

☐ $v^2 \propto \rho^2$: Incorrect, as it implies a quadratic relationship, which is not accurate for sound speed.

The correct relationship shows that as density increases, the speed of sound decreases, contrary to the direct relationship proposed in the original explanation.

Q.54 What is the range (in nm) of λ of violet light?

A. 450-500

B. 380-450

C. 500-570

D. 620-780

Answer: B

Sol:

The wavelength of **violet light** lies in the range of **380-450 nanometers (nm)**. Violet light has the shortest wavelength and highest frequency in the visible spectrum, giving it its characteristic color. This range of wavelengths corresponds to the visible light that appears violet to the human eye.

Important Key Points:

1. **Violet light** has a wavelength range of **380-450 nm**.

2. It is the shortest wavelength in the visible spectrum, resulting in the highest frequency.

3. Violet light is at the edge of the visible spectrum, with wavelengths just above ultraviolet light.

4. The color violet is associated with high energy, as shorter wavelengths correspond to higher energy photons.

5. This wavelength range is critical in fields such as optics, astronomy, and biology.

6. Violet light plays a role in various technologies, including spectroscopy and light therapy.

Knowledge Booster:

☐ **450-500 nm:** Wavelength range of blue light, not violet.

☐ **500-570 nm:** Wavelength range of green light.

☐ **620-780 nm:** Wavelength range of red light, the longest wavelength in the visible spectrum.

Q.55 What is useful for looking inside a patient's body?

A. Concave lens

B. Convex lens

C. Optical tissue

D. Prism

Answer: C

Sol:

Optical tissue in this context likely refers to the tissues in the human body, particularly in the eyes, such as the lens and cornea, that are transparent and allow light to pass through to the retina. These tissues are crucial for vision, as they refract and focus light onto the retina, where it is converted into neural signals and sent to the brain for image processing. Proper functioning of these optical tissues is essential for clear vision.

Important Key Points:

1. **Optical tissues** include the **lens** and **cornea** of the eye, which play a key role in focusing light.

2. These tissues are transparent and refract light to focus it on the retina.

3. The cornea provides most of the eye's optical power, while the lens fine-tunes the focus.

4. Diseases affecting optical tissues, such as cataracts or corneal scarring, can lead to vision impairment.

5. The health and clarity of these tissues are vital for proper vision.

6. Optical tissues can be affected by age, injury, or disease, and treatments may include corrective lenses, surgery, or transplantation.

Knowledge Booster:

☐ **Concave lens:** Used in corrective lenses for nearsightedness, but not a tissue.

☐ **Convex lens:** Used in corrective lenses for farsightedness and in magnifying glasses, but not a tissue.

☐ **Prism:** A transparent optical element used to refract light, but not related to body tissues.

Q.56 When is the longest night in the Northern Hemisphere?

A. June 21

B. December 22

C. December 25

D. January 01

Answer: B

Sol:

The **longest night in the Northern Hemisphere** occurs on **December 22**, during the winter solstice. On this day, the North Pole is tilted farthest away from the Sun, resulting in the shortest day and longest night of the year. The winter solstice marks the beginning of winter in the Northern Hemisphere, and after this day, the length of daylight gradually increases until the summer solstice.

Important Key Points:

1. The **winter solstice** on **December 22** is the day with the longest night in the Northern Hemisphere.
2. It marks the point when the North Pole is tilted farthest from the Sun.
3. The winter solstice is also the shortest day of the year in terms of daylight hours.
4. After the winter solstice, the days begin to lengthen, leading up to the summer solstice.
5. The winter solstice has been celebrated in many cultures as a time of renewal and rebirth.
6. This event is significant in astronomy and is often used to mark the start of winter.

Knowledge Booster:

❑ **June 21**: The date of the summer solstice in the Northern Hemisphere, with the longest day and shortest night.
❑ **December 25**: Celebrated as Christmas Day in many parts of the world but not related to the solstice.
❑ **January 01**: New Year's Day, not related to the solstice or astronomical events.

Q.57 Where is the city of Graz?

A. India
B. Austria
C. Australia
D. Angola

Answer: B

Sol:

The city of **Graz** is located in **Austria**. Graz is the second-largest city in Austria and is known for its well-preserved medieval architecture, vibrant cultural scene, and as a center for education and research. The city's historic center is a UNESCO World Heritage Site. Graz has a rich history and is also known for its universities, making it a hub for students and academics.

Important Key Points:

1. **Graz** is the second-largest city in **Austria**.
2. The city is renowned for its well-preserved medieval architecture and cultural heritage.
3. Graz's historic center is a UNESCO World Heritage Site.
4. The city is a major center for education, with several universities and research institutions.
5. Graz has a vibrant cultural scene, including festivals, museums, and theaters.
6. The city's location makes it a gateway to exploring the southeastern regions of Austria.

Knowledge Booster:

❑ **India**: Graz is not located in India, but the city does have historical ties with Indian culture through academic exchanges.
❑ **Australia**: A continent and country in the Southern Hemisphere, often confused with Austria but not related to Graz.
❑ **Angola**: A country in Southern Africa, unrelated to Graz, Austria.

Q.58 What is the amplitude of the quantity ut+1/2 at^2 (the sign means normal)?

A. 1/T
B. L
C. LT
D. LT^2

Answer: D

Sol:

The given equation ut+12at2u t + \frac{1}{2} a t^2ut+21at2 represents the **displacement** of an object moving under uniform acceleration. Let's break down the units:

❑ uuu is the **initial velocity**, which has the dimensions of $LT-1LT^{-1}LT-1$ (length per unit time),
❑ ttt is **time**, which has the dimensions of TTT,
❑ aaa is the **acceleration**, which has the dimensions of $LT-2LT^{-2}LT-2$ (length per square of time),
❑ The term 12at2\frac{1}{2} a t^221at2 describes the displacement due to acceleration.

When analyzing the dimensions:

1. The first term, utu tut, has dimensions:
$u×t=(LT-1)×(T)=Lu \times t = (LT^{-1}) \times (T) = Lu×t=(LT-1)×(T)=L$
This represents the displacement due to the initial velocity.

2. The second term, 12at2\frac{1}{2} a t^221at2, has dimensions:
$a×t2=(LT-2)×(T2)=La \times t^2 = (LT^{-2}) \times (T^2) = La×t2=(LT-2)×(T2)=L$
This represents the displacement due to the acceleration.

Thus, the entire expression ut+12at2u t + \frac{1}{2} a t^2ut+21at2 represents the **displacement** of the object, and the dimensions of displacement are **length (L)**.

The dimensional analysis reveals that the overall quantity for displacement is expressed as **LT2L T^2LT2**, where:

❑ **L** represents length,
❑ **T** represents time squared.

Important Key Points:

1. The term ut+12at2u t + \frac{1}{2} a t^2ut+21at2 describes the displacement of an object under constant acceleration.
2. The dimensions of the displacement are LT2L T^2LT2, where LLL is length and TTT is time.
3. The first term utu tut accounts for displacement due to initial velocity, while the second term 12at2\frac{1}{2} a t^221at2 accounts for displacement due to acceleration.
4. Understanding dimensions is essential for verifying the correctness of physical equations.

Knowledge Booster:

❑ **1/T**: Represents the reciprocal of time, commonly used in frequency-related contexts.
❑ **L**: Represents length alone but does not account for the time factor necessary for displacement.
❑ **LT**: Represents length multiplied by time, which describes distance traveled at constant speed but not under acceleration.

This equation is fundamental in kinematics and is used widely to calculate the distance traveled by an object under uniform acceleration.

Q.59 What happens when light enters another medium?

A. Its frequency changes.
B. Its frequency does not change.
C. Its speed does not change.
D. Its wavelength does not change.

Answer: B

Sol:

When light enters another medium, **its frequency does not change**. The speed and wavelength of light change as it passes from one medium to another due to refraction, but the frequency remains constant. This principle is crucial in optics and is used in various applications, such as lenses and optical fibers.

Important Key Points:

1. When light enters a different medium, **its frequency remains unchanged**.
2. The change in speed and wavelength of light when it passes through different media is due to refraction.
3. The constant frequency is what allows the color of light to remain the same across different media.
4. The change in wavelength and speed is governed by the refractive index of the medium.
5. This principle is fundamental in the study of optics and has applications in designing lenses, prisms, and optical instruments.
6. The invariance of frequency is important in technologies like fiber optics and communication systems.

Knowledge Booster:

❑ **Its speed does not change**: Incorrect because the speed of light does change depending on the medium.
❑ **Its wavelength does not change**: Incorrect because the wavelength changes when light enters a different medium.
❑ **Its frequency changes**: Incorrect, as the frequency remains constant while the wavelength and speed change.

Q.60 The HCF and LCM of two digits x and y are 4 and 48 respectively. What will be the value of xy?

A. 192
B. 48
C. 86
D. 1920

Answer: A

Sol:

Given: HCF of two numbers x and y is 4, and LCM is 48.
Relationship: HCF × LCM = x × y
Substitute values: 4 × 48 = x × y
x × y = 192.
Sol. 192.

Q.61 What is true about the HCF and LCM of two fractions?

A. HCF = HCF of the numerator / LCM of the Denominator
B. HCF = HCF of the numerator/ HCF of denominator
C. LCM = HCF of the numerator / denominator of LCM
D. None of these

Answer: A

Sol:

For two fractions a/b and c/d:
HCF = HCF of numerators / LCM of denominators.
Sol. HCF = HCF of the numerator / LCM of the denominator.

Q.62 What is the greatest common factor of 48, 108, and 140?

A. 5
B. 7
C. 4
D. 2

Answer: C

Sol:

Given numbers: 48, 108, 140. Prime factorization:
$48 = 2^4 \times 3$, $108 = 2^2 \times 3^3$, $140 = 2^2 \times 5 \times 7$.
Common factor $= 2^2 = 4$.

Q.63 What is 5° F in Celsius?

A. 5°
B. 258°
C. +15°
D. -15°

Answer: D

Sol:

To convert **5° Fahrenheit** to Celsius, use the formula:
°C = (°F - 32) × 5/9
Plugging in the value:
°C = (5 - 32) × 5/9
°C = (-27) × 5/9
°C = -135/9
°C = **-15°C**.
Thus, 5° Fahrenheit is equivalent to **-15°C**.
Important Key Points:
1. The formula to convert Fahrenheit to Celsius is **°C = (°F - 32) × 5/9**.
2. **5°F** converts to **-15°C** using this formula.
3. Understanding temperature conversion is essential in scientific calculations and daily life.
4. The Fahrenheit scale is primarily used in the United States, while the Celsius scale is used worldwide in scientific contexts.
5. Accurate temperature conversion is crucial for processes in chemistry, physics, and engineering.
6. The ability to convert between temperature scales ensures clarity and consistency in international communication.
Knowledge Booster:
 5°C: Incorrect conversion, would be the same on both scales at 41°F.
 258°C: Incorrect and unrealistically high.
 +15°C: Incorrect conversion, as it represents a different positive temperature.

Q.64 What is the relationship between the force F between two point charges and the distance (r) between them?

A. F∝1/r
B. F∝r
C. F∝r^2
D. F∝1^2

Answer: D

Sol:

The force F between two point charges is inversely proportional to the square of the distance r between them, expressed as F∝1/r2F ∝ 1/r^2F∝1/r2. This relationship is described by Coulomb's law, which states that the electrostatic force between two charges decreases as the distance between them increases, following the inverse-square law.
Important Key Points:
1. Coulomb's law states that F∝1/r2F ∝ 1/r^2F∝1/r2, meaning the force between two charges decreases with the square of the distance.
2. This inverse-square relationship is fundamental in electrostatics and is analogous to Newton's law of gravitation.
3. Coulomb's law is used to calculate the magnitude of the force between two charged particles.
4. The law applies to point charges in a vacuum and is crucial for understanding electric fields and forces.
5. The inverse-square law is a common principle in physics, applicable to other forces like gravity and light intensity.
6. Accurate application of Coulomb's law is essential in designing electrical equipment and understanding natural phenomena.
Knowledge Booster:

☐ F∝**1**/r: Incorrect, as it suggests a linear relationship rather than an inverse-square relationship.
☐ F∝r: Incorrect, as this would imply the force increases with distance.
☐ F∝r^2: Incorrect, as it suggests a direct square relationship rather than an inverse square.

Q.65 What is true about the magnetic susceptibility of a ferromagnetic material?

A. Low
B. More
C. 3
D. 4

Answer: B

Sol:

The magnetic susceptibility of a ferromagnetic material is **high**. This means that ferromagnetic materials, such as iron, cobalt, and nickel, are strongly magnetized when placed in a magnetic field. The high susceptibility indicates that these materials can enhance the magnetic field within them significantly. Ferromagnetic materials retain their magnetism even after the external magnetic field is removed, which is why they are used in permanent magnets.

Important Key Points:

1. **Ferromagnetic materials** have **high magnetic susceptibility**.
2. These materials are strongly magnetized in the presence of a magnetic field.
3. Ferromagnetic materials include iron, cobalt, and nickel, which are commonly used in magnets.
4. High susceptibility means that the material can greatly amplify an external magnetic field.
5. These materials retain their magnetization even after the external magnetic field is removed.
6. Ferromagnetic materials are widely used in applications such as transformers, electric motors, and magnetic storage devices.

Q.66 What is the simple form of $12^{1/2}$?

A. $2\sqrt{3}$
B. $3\sqrt{2}$
C. $\sqrt{2 \times 3}$
D. $\sqrt{\frac{3}{2}}$

Answer: A

Sol:

Simplifying 12^(1/2):
12^(1/2) = √12 = √(4×3) = 2√3.
Sol. 2√3.

Q.67 A digit which, when subtracted 15 from 7 times that digit, gives 10 more than twice that digit. What is that number?

A. 5
B. 15
C. 7.5
D. 4

Answer: A

Sol:

Let the digit be x.
Equation: 7x - 15 = 2x + 10.
Solving gives x = 5.
Sol. The number is 5.

Q.68 There is a difference of 16 years between the ages of elder Ram and younger Shyam. 6 years ago, Ram was 3 times as old as Shyam. What is the present age of Ram?

A. 28
B. 30
C. 32
D. 34

Answer: B

Sol:

Let Shyam's age be x, Ram's age = x + 16.
6 years ago: (x + 16) - 6 = 3(x - 6).
Solving gives x = 14.
Ram's age = 14 + 16 = 30
Sol. Ram's age is 30

Q.69 A and B take 4 days to finish work. A alone can complete the job in 12 days. In how many days will B alone finish the work?

A. 4 days
B. 5 days
C. 6 days
D. 7 days

Answer: C

Sol:

Let B take x days. We know:
1/12 + 1/x = 1/4
Solving gives x = 6
Sol. B will take 6 days

Q.70 What is the lowest digit among $\frac{5}{6}, \frac{7}{8}, \frac{11}{12}$ And $\frac{3}{10}$?

A. 5/6
B. 7/8
C. 11/12

D. 3/10

Answer: D

Sol:

Compare fractions: 5/6 = 0.8333, 7/8 = 0.875, 11/12 = 0.9167, 3/10 = 0.3.
The smallest fraction is 3/10.
Sol. 3/10.

Q.71 The cost price of 20 books is equal to the selling price of x books. What is the value of x if the profit is 25%?

A. 15
B. 16
C. 18
D. 25

Answer: B

Sol:

Let CP = cost price of each book. Profit is 25%.
20 × CP = x × 1.25 × CP. Solving gives x = 16.
Sol. x = 16.

Q.72 $7500 + \left(\frac{1250}{50}\right)$ is equal to what?

A. 7500
B. 7525
C. 7550
D. 8000

Answer: B

Sol:

Simplify 7500 + 1250/50 = 7500 + 25 = 7525.
Sol. 7525

Q.73 Which has sp hybridized carbon?

A. CH_4
B. CH_3=CH_2
C. CH≡CH
D. CH_3 CH_3

Answer: C

Sol:

CH≡CH represents **ethyne (acetylene)**, which features an **sp hybridized carbon**. In sp hybridization, one s orbital mixes with one p orbital, resulting in two linearly arranged hybrid orbitals. This type of hybridization occurs in molecules where the carbon forms two sigma bonds and two pi bonds, as in a triple bond.
Important Key Points:
1. **sp hybridization** occurs when one s orbital and one p orbital mix, creating two linearly oriented orbitals.
2. **CH≡CH (ethyne)** is a classic example of sp hybridization, featuring a carbon-carbon triple bond.
3. The bond angles in sp hybridized molecules are 180°, indicating a linear geometry.
4. **sp hybridization** is also found in molecules like carbon dioxide (CO_2) and hydrogen cyanide (HCN).
5. The triple bond in ethyne consists of one sigma bond and two pi bonds.
6. **sp hybridization** results in the formation of strong, short bonds, as seen in triple bonds.
Knowledge Booster:
 CH_4 **(methane)**: Has sp^3 hybridization with a tetrahedral structure.
 $CH_2=CH_2$ **(ethylene)**: Has sp^2 hybridization with a trigonal planar structure.
 CH_3CH_3 **(ethane)**: Has sp^3 hybridization with a tetrahedral structure.

Q.74 What is the H-bomb based on?

A. Nuclear fission
B. Nuclear fusion
C. Accession reactions
D. Artificial transmutation

Answer: B

Sol:

The **hydrogen bomb (H-bomb)** is based on **nuclear fusion**, a process where lighter atomic nuclei combine to form a heavier nucleus, releasing vast amounts of energy. This is the same reaction that powers the sun. In an H-bomb, isotopes of hydrogen, like deuterium and tritium, fuse under extremely high temperatures and pressures, producing a much more powerful explosion than nuclear fission bombs.
Important Key Points:
1. **Nuclear fusion** powers the hydrogen bomb, combining light nuclei to form a heavier nucleus.
2. The fusion process in an H-bomb releases significantly more energy than fission.
3. **Deuterium and tritium** are the isotopes commonly used in fusion reactions in H-bombs.
4. The explosion in an H-bomb can be thousands of times more powerful than that of a fission bomb.
5. **Fusion** requires extremely high temperatures and pressures, often initiated by a fission bomb in H-bombs.
6. The principle behind fusion is similar to the process powering stars, including our sun.
Knowledge Booster:
 Nuclear fission: The process used in atomic bombs, where heavy nuclei split into lighter nuclei, releasing energy.
 Artificial transmutation: Changing one element into another through nuclear reactions, not related to H-bombs.
 Accession reactions: A term not directly related to nuclear fusion or fission.

Q.75 Whose oxidation number is always -1?

A. F
B. Cl
C. Br
D. I

Answer: A

Sol:

Fluorine (F) always has an oxidation number of **-1** in its compounds. Fluorine is the most electronegative element and always attracts electrons strongly in a bond, ensuring its oxidation state is -1 in all its compounds.

Important Key Points:

1. **Fluorine** is the most electronegative element and always has an oxidation number of **-1**.
2. This constant oxidation state is due to fluorine's ability to attract electrons strongly.
3. **Fluorine** forms compounds like hydrogen fluoride (HF) and sodium fluoride (NaF), where it always carries a -1 charge.
4. Understanding oxidation numbers is essential for balancing redox reactions and predicting chemical behavior.
5. **Fluorine's** oxidation state does not change, unlike other halogens that can have multiple oxidation states.
6. **Fluorine** is used in various applications, including in toothpaste (as fluoride) and in Teflon (PTFE).

Knowledge Booster:

□ **Chlorine (Cl)**: Can have multiple oxidation states, such as -1, +1, +3, +5, and +7.
□ **Bromine (Br)**: Can also have multiple oxidation states, including -1, +1, +3, +5, and +7.
□ **Iodine (I)**: Similarly can exhibit multiple oxidation states, such as -1, +1, +3, +5, and +7.

Q.76 1 mole of CO_2 contains .

A. 6×10^{23} O atoms
B. 18×10^{23} CO_2 molecules
C. 3 g of CO_2 atoms
D. 6×10^{23} C atoms

Answer: D

Sol:

1 mole of any substance contains **Avogadro's number** (6.022×10^{23}) of entities (atoms, molecules, etc.). For CO_2 **(carbon dioxide)**, the molecule consists of **1 carbon atom (C)** and **2 oxygen atoms (O)**.

In 1 mole of CO_2:

□ There are **1 mole of carbon atoms**, which equals 6.022×10^{23} carbon atoms.
□ There are **2 moles of oxygen atoms**, which equals $2 \times 6.022 \times 10^{23}$ oxygen atoms.

Thus, 1 mole of CO_2 contains 6.022×10^{23} carbon atoms.

Important Key Points:

1. **1 mole** of CO_2 contains **6.022×10^{23} CO_2 molecules**.
2. Each molecule of CO_2 has **1 carbon atom** and **2 oxygen atoms**.
3. Therefore, 1 mole of CO_2 contains **6.022×10^{23} carbon atoms** and **$2 \times 6.022 \times 10^{23}$ oxygen atoms**.
4. This is based on **Avogadro's constant** (6.022×10^{23}).

Information Booster:

□ **Avogadro's Number**: The number of particles (atoms, molecules, ions) in one mole of any substance, which is 6.022×10^{23}.
□ **Molar Mass of CO_2**: The molar mass of carbon dioxide is approximately **44 g/mol**.
□ **Oxygen Atoms**: 1 mole of CO_2 contains **2 moles** of oxygen atoms, or 1.204×10^{24} O atoms.

Hence, 1 mole of CO_2 contains **6.022×10^{23}** carbon atoms.

Q.77 For $N_2 + O_2 \rightleftharpoons 2$ NO

A. $K_c = K_p$
B. $K_p = 1/K_c$
C. $K_p = K_c$ (RT)
D. $K_p = K_c/RT$

Answer: C

Sol:

For the reaction $N_2 + O_2 \rightleftharpoons 2 NO$, the relationship between the equilibrium constant in terms of pressure (K_p) and concentration (K_c) is given by the equation $K_p = K_c (RT)^{\Delta n}$, where Δn is the change in the number of moles of gas between products and reactants. In this specific reaction, $\Delta n = 2 - (1 + 1) = 0$. Therefore, $K_p = K_c \times (RT)^0 = K_c$.

Important Key Points:

1. **Kp** and **Kc** are equilibrium constants, with **Kp** expressed in terms of partial pressures and **Kc** in terms of molar concentrations.
2. The relationship between **Kp** and **Kc** depends on the change in the number of moles of gas (Δn) in the reaction.
3. For the reaction $N_2 + O_2 \rightleftharpoons 2 NO$, $\Delta n = 0$, so **Kp** equals **Kc**.
4. The **RT** term represents the product of the gas constant (R) and temperature (T) in Kelvin.
5. Understanding this relationship is crucial in predicting how equilibrium will shift under different conditions.
6. **Kp** and **Kc** are used in various chemical processes, including the synthesis of ammonia, oxygen, and other industrial gases.

Knowledge Booster:

□ **Kp = 1/Kc**: Incorrect, this is not a general relationship for this reaction.
□ **Kp = Kc/RT**: Incorrect, this would be valid for a different value of Δn.
□ **Kp = Kc (RT)²**: Incorrect, this would apply if Δn were 2, which is not the case here.

Q.78 The principle $(\Delta p) (\Delta x) \geq h/4\pi$ is called .

A. Pauli's principle
B. Heisenberg uncertainty principle
C. Aufbau principle
D. Arrhenius theory

Answer: B

Sol:

The **Heisenberg Uncertainty Principle** states that it is impossible to simultaneously measure the exact position (Δx) and momentum (Δp) of a particle with absolute precision. The principle is mathematically represented as $(\Delta p)(\Delta x) \geq \frac{h}{4\pi}$, where h is Planck's constant. This fundamental principle of quantum mechanics introduces the concept of inherent uncertainty in the behavior of particles at the quantum level.

Important Key Points:

1. The **Heisenberg Uncertainty Principle** is a foundational concept in quantum mechanics, highlighting the limits of precision in measurement.
2. It states that the more accurately you know the position of a particle, the less accurately you can know its momentum, and vice versa.
3. This principle is significant in understanding the behavior of subatomic particles like electrons.
4. The principle challenges classical physics' idea of determinism, introducing probabilistic interpretations.
5. It has implications for technologies like electron microscopes, where the behavior of electrons is governed by quantum rules.
6. **Planck's constant (h)** plays a crucial role in defining the scale of quantum effects.

Knowledge Booster:

□ **Pauli's Exclusion Principle**: States that no two electrons in an atom can have the same set of quantum numbers, a different quantum mechanical principle.
□ **Aufbau Principle**: Refers to the method of building up electron configurations in atoms, filling the lowest energy orbitals first.
□ **Arrhenius Theory**: A theory in chemistry that defines acids and bases, unrelated to quantum mechanics.

Q.79 How many values of Spin Quantum Number are possible?

A. 2
B. 3
C. 4

D. 5

Answer: A

Sol:

The **Spin Quantum Number** can have two possible values: **+1/2** or **-1/2**. These values describe the intrinsic angular momentum (spin) of an electron within an atom. The spin quantum number is a fundamental concept in quantum mechanics, representing the two possible orientations of an electron's spin.

Important Key Points:

1. **Spin Quantum Number** represents the intrinsic angular momentum of an electron.
2. The possible values of the spin quantum number are **+1/2** and **-1/2**, corresponding to the two possible spin states.
3. These two spin states are often referred to as "spin-up" and "spin-down."
4. The spin quantum number is crucial for explaining the magnetic properties of electrons and atoms.
5. In an atom, no two electrons can have the same set of all four quantum numbers (Pauli Exclusion Principle), which includes the spin quantum number.
6. Understanding electron spin is essential for fields such as quantum computing and magnetic resonance imaging (MRI).

Q.80 The formula for the phosphate of metal is MHPO_4. The formula for its chloride will be:

A. MCl
B. M_2 Cl_2
C. MCl_2
D. MCl_3

Answer: C

Sol:

If the formula for the phosphate of a metal is $MHPO_4$, the formula for its chloride would be MCl_2. This indicates that the metal in the phosphate has a +2 oxidation state, so in the chloride form, it would bond with two chlorine atoms, each with a -1 charge, forming MCl_2.

Important Key Points:

1. $MHPO_4$ suggests that the metal (M) has a +2 oxidation state in the compound.
2. The corresponding chloride compound for a metal with a +2 oxidation state would be MCl_2.
3. Understanding the oxidation state helps in predicting the formula of compounds formed by the metal.
4. The charge balance in the compound is essential, ensuring that the total charge of the cation and anions equals zero.
5. The chloride ion (Cl^-) has a -1 charge, so two chloride ions are needed to balance the +2 charge of the metal.
6. This concept is fundamental in inorganic chemistry, particularly in the study of coordination compounds and salts.

Knowledge Booster:

☐ **MCl**: Represents a chloride where the metal has a +1 oxidation state, not applicable here.
☐ M_2Cl_2: Suggests a different bonding structure, not correct for this scenario.
☐ MCl_3: Would correspond to a metal with a +3 oxidation state, which is not indicated here.

Q.81 When a person is hungry, the first thing a person uses is his

A. glycogen
B. fat
C. blood protein
D. muscle protein

Answer: A

Sol:

When a person is hungry, the body first uses **glycogen** stores as an energy source. Glycogen is a form of stored glucose found primarily in the liver and muscles. It can be rapidly converted into glucose to meet the body's immediate energy needs during fasting or between meals.

Important Key Points:

1. **Glycogen** is the body's primary storage form of glucose, found mainly in the liver and muscles.
2. During fasting or prolonged periods without food, the body breaks down glycogen to maintain blood glucose levels.
3. Glycogen stores provide a quick source of energy, especially during physical activity.
4. Once glycogen stores are depleted, the body begins to metabolize fat for energy.
5. In extreme conditions, the body may also break down muscle protein to meet energy demands.
6. Glycogen storage is crucial for maintaining energy homeostasis, especially during periods of low food intake.

Knowledge Booster:

☐ **Fat**: Used as a secondary energy source after glycogen stores are depleted.
☐ **Blood protein**: Typically not used for energy unless in cases of extreme starvation.
☐ **Muscle protein**: Used as an energy source when both glycogen and fat stores are depleted.

Q.82 Which one is not a protein?

A. Collagen
B. Elastin
C. Silk
D. Lymphocyte

Answer: D

Sol:

Lymphocytes are a type of white blood cell and are not proteins. They play a crucial role in the immune system, particularly in adaptive immunity, where they help the body remember and respond more effectively to pathogens. Proteins, on the other hand, include substances like collagen, elastin, and silk, which have structural or functional roles in the body.

Important Key Points:

1. **Lymphocytes** are white blood cells, crucial for the immune response, particularly in adaptive immunity.
2. They are not proteins but are made up of proteins, among other molecules.
3. **Collagen** and **elastin** are structural proteins found in connective tissues, providing strength and elasticity.
4. **Silk** is a protein fiber produced by certain insects and spiders, used in various applications.
5. Lymphocytes include **B cells** and **T cells**, which are vital for recognizing and attacking pathogens.
6. The distinction between cells (like lymphocytes) and proteins is important for understanding biology and medicine.

Knowledge Booster:

☐ **Collagen**: A protein that forms the structure of bones, skin, and other connective tissues.
☐ **Elastin**: A protein that gives tissues their elastic properties, allowing them to stretch and return to shape.
☐ **Silk**: A natural protein fiber, known for its strength and used in textiles and medical sutures.

Q.83 Which of the following ion is not present in blood plasma?

A. Na^+
B. Ca^(++)
C. Mg^(++)
D. Cu

Answer: D

Sol:

Copper (Cu) is not present as a significant ion in blood plasma. Blood plasma primarily contains ions such as sodium (Na^+), calcium (Ca^{2+}), magnesium (Mg^{2+}), and potassium (K^+), which are essential for various physiological functions, including nerve conduction, muscle contraction, and maintaining osmotic balance. Copper is present in the body in trace amounts but not as a free ion in blood plasma.

Important Key Points:
1. **Sodium (Na⁺)** and **calcium (Ca²⁺)** are essential ions in blood plasma, involved in maintaining fluid balance and supporting cellular functions.
2. **Magnesium (Mg²⁺)** plays a critical role in enzyme activity and energy production within cells.
3. **Copper (Cu)** is a trace element in the body, mainly bound to proteins like ceruloplasmin, not present as a free ion in blood plasma.
4. The correct balance of these ions in blood plasma is crucial for homeostasis and overall health.
5. **Copper** is important for the formation of red blood cells and maintaining healthy nerves and the immune system, but it is not found as a free ion in plasma.
6. Blood plasma composition is a key area of study in medical fields, as imbalances can lead to various health issues.

Knowledge Booster:
⬜ **Sodium (Na⁺):** The most abundant cation in extracellular fluid, crucial for fluid balance and nerve function.
⬜ **Calcium (Ca²⁺):** Essential for bone health, blood clotting, and muscle contraction.
⬜ **Magnesium (Mg²⁺):** Important for energy production, enzyme function, and maintaining heart rhythm.

Q.84 Which of the following has a holophytic mode of nutrition?

A. Amoeba
B. Lion
C. Euglena
D. Earthworm

Answer: C

Sol:

Euglena exhibits a **holophytic mode of nutrition**, which is similar to photosynthesis in plants. Euglena contains chloroplasts, which allow it to produce its own food by converting sunlight into chemical energy through photosynthesis. However, Euglena is unique because it can also absorb nutrients from the environment when light is unavailable, exhibiting both autotrophic and heterotrophic modes of nutrition.

Important Key Points:
1. **Euglena** is a unicellular organism that can perform photosynthesis due to the presence of chloroplasts.
2. **Holophytic nutrition** refers to an organism's ability to produce its own food through photosynthesis, similar to plants.
3. Euglena can switch to heterotrophic nutrition by absorbing organic material from the environment in the absence of light.
4. The ability to exhibit both autotrophic and heterotrophic modes makes Euglena a mixotroph.
5. **Amoeba** and **Lion** exhibit heterotrophic nutrition, where they depend on other organisms for food.
6. **Earthworms** also rely on organic material in the soil for their nutrition, classifying them as heterotrophs.

Knowledge Booster:
⬜ **Amoeba:** Exhibits holozoic nutrition, engulfing food particles through phagocytosis.
⬜ **Lion:** A carnivorous animal that obtains energy by consuming other animals.
⬜ **Earthworm:** A detritivore that consumes decomposed organic matter, contributing to soil fertility.

Q.85 Which of the following secretes steroid?

A. Oral cavity
B. Stomach
C. Pancreas
D. None of the above

Answer: D

Sol:

Steroids are secreted by **endocrine glands**, specifically glands like the **adrenal glands, gonads (testes and ovaries)**, and the **placenta** in some cases. The glands mentioned above (oral cavity, stomach, pancreas, and gall bladder) do not secrete steroid hormones. Let's break down the functions of the options:
⬜ **Oral cavity:** Responsible for the secretion of saliva, which contains enzymes like amylase but does not secrete steroids.
⬜ **Stomach:** Secretes gastric juices, including hydrochloric acid and pepsin, but no steroids.
⬜ **Pancreas:** Secretes digestive enzymes and hormones like insulin and glucagon (which are peptide hormones, not steroids).

Important Key Points:
⬜ **Steroid hormones** are secreted by organs like the **adrenal glands** (cortisol, aldosterone), **gonads** (testosterone, estrogen), and the **placenta**.
⬜ **Oral cavity**, **stomach**, **pancreas**, and **gall bladder** are not involved in steroid hormone production.
⬜ The pancreas secretes important hormones but they are **peptide hormones**, not steroids

Knowledge Booster:
⬜ **Steroid hormones:** Derived from cholesterol, these include cortisol, testosterone, estrogen, and aldosterone.
⬜ **Peptide hormones:** Such as insulin and glucagon, are secreted by organs like the pancreas.
⬜ **Adrenal glands:** Secrete steroid hormones like cortisol and aldosterone.

Q.86 _____ produces energy in plant cells using the respiratory system.

A. Nucleus
B. Mitochondria
C. Ribosome
D. Chloroplast

Answer: B

Sol:

Mitochondria are known as the "powerhouses" of the cell because they produce energy through cellular respiration. In plant cells, mitochondria convert glucose and oxygen into ATP (adenosine triphosphate), the energy currency of the cell. This process is essential for fueling the cell's activities and is similar to the function of mitochondria in animal cells.

Important Key Points:
1. **Mitochondria** are the organelles responsible for producing ATP through cellular respiration.
2. They are found in both plant and animal cells and are essential for energy production.
3. The process of cellular respiration involves glycolysis, the Krebs cycle, and the electron transport chain.
4. **ATP** produced by mitochondria powers various cellular functions, including muscle contraction and protein synthesis.
5. Mitochondria have their own DNA and are believed to have originated from an ancient symbiotic relationship with a prokaryote.
6. The number of mitochondria in a cell correlates with the cell's energy demands, with more active cells having higher numbers of mitochondria.

Knowledge Booster:
⬜ **Nucleus:** The control center of the cell, containing genetic material (DNA) and regulating cell activities.
⬜ **Ribosome:** The site of protein synthesis, where mRNA is translated into polypeptides.
⬜ **Chloroplast:** The site of photosynthesis in plant cells, converting light energy into chemical energy stored in glucose.

Q.87 Viruses have .

A. Only DNA
B. Only RNA
C. Both RNA and DNA
D. either RNA or DNA

Answer: D

Sol:

Viruses can have either **RNA or DNA** as their genetic material, but not both. This genetic material can be either single-stranded or double-stranded. RNA viruses include examples like the influenza virus, HIV, and the coronavirus, while DNA viruses include herpesvirus and smallpox virus. The type of genetic material in a virus determines its replication process and how it interacts with the host's cells.

Important Key Points:
1. **Viruses** are unique in that they can contain either RNA or DNA as their genetic material, not both.

2. The genetic material of viruses can be single-stranded or double-stranded.

3. **RNA viruses** (e.g., HIV, influenza) tend to mutate faster due to the lack of proofreading during replication.

4. **DNA viruses** (e.g., herpesvirus, smallpox) generally have more stable genomes due to the replication mechanism's proofreading abilities.

5. Understanding the type of genetic material in viruses is crucial for developing antiviral drugs and vaccines.

6. The replication cycle of a virus is determined by whether it is an RNA or DNA virus, influencing its pathogenesis.

Knowledge Booster:

☐ **Only DNA**: Incorrect, as some viruses have RNA as their genetic material.

☐ **Only RNA**: Incorrect, as some viruses have DNA as their genetic material.

☐ **Both RNA and DNA**: Incorrect, no virus contains both RNA and DNA.

Q.88 The size of the particles dispersed in an emulsion range between .

A. 100 Å - 1000 Å

B. 10 Å - 100 Å

C. 1000 Å - 10,000 Å

D. > 10,000 Å

Answer: A

Sol:

The size of particles dispersed in an emulsion ranges between **100 Å to 1000 Å**. Emulsions are colloidal systems where fine droplets of one liquid are dispersed within another liquid. These droplets are stabilized by emulsifying agents, which prevent the dispersed phase from coalescing. This size range is typical for colloidal particles, which are too small to be seen with the naked eye but large enough to scatter light, a phenomenon known as the Tyndall effect.

Important Key Points:

1. **Emulsions** are mixtures where one liquid is dispersed in another, forming small droplets.

2. The typical particle size in an emulsion ranges from **100 Å to 1000 Å**, placing them in the colloidal range.

3. **Emulsifying agents** like lecithin or surfactants stabilize emulsions by preventing the droplets from merging.

4. **Tyndall effect**: Light scattering by colloidal particles, which makes emulsions appear cloudy or opaque.

5. Emulsions are commonly found in everyday products like milk, mayonnaise, and lotions.

6. **Stability of emulsions** depends on factors such as the droplet size, the nature of the emulsifying agent, and external conditions like temperature.

Knowledge Booster:

☐ **10 Å - 100 Å**: This range corresponds to the size of particles in true solutions, where solutes are molecularly dispersed.

☐ **1000 Å - 10,000 Å**: This range would suggest larger colloidal particles, potentially leading to suspensions rather than stable emulsions.

☐ **> 10,000 Å**: Particles in this size range would form suspensions, where the particles are large enough to settle out over time.

Q.89 How many acyclic chain isomers of C_6H_{14} are possible?

A. 3

B. 4

C. 5

D. 6

Answer: C

Sol:

For the molecular formula C_6H_{14} (hexane), there are **five possible acyclic chain isomers**. Isomers are compounds with the same molecular formula but different structural arrangements. For hexane, these isomers include:

1. **n-Hexane** (straight chain)

2. **2-Methylpentane** (isohexane)

3. **3-Methylpentane**

4. **2,2-Dimethylbutane**

5. **2,3-Dimethylbutane**

These isomers differ in the branching of their carbon chains, leading to variations in their physical and chemical properties.

Important Key Points:

1. C_6H_{14} can form five different acyclic (non-cyclic) chain isomers.

2. **Isomers** have the same molecular formula but different structures, resulting in different properties.

3. The isomers of hexane include **n-hexane** (straight chain) and various branched forms.

4. **Chain isomerism** is a common type of structural isomerism in organic chemistry, where the carbon skeleton is arranged differently.

5. These isomers have slight differences in boiling points and other physical properties due to their different structures.

6. Understanding isomerism is crucial in fields like organic chemistry, where the structure of a compound determines its reactivity and interactions.

Q.90 If the blood group of both the parents is AB, then the possible blood group of their children will be:

A. A, B, AB and O

B. A, B and AB

C. A and B

D. A, B and O

Answer: B

Sol:

If both parents have **AB** blood type, their children can inherit either **A, B, or AB** blood types. The AB blood type results from the inheritance of both A and B alleles from each parent. Since neither parent carries the O allele, the O blood type is not possible for their offspring.

Important Key Points:

1. **AB blood type** parents can produce children with **A, B, or AB** blood types.

2. **Blood type inheritance** is governed by the ABO gene, with three possible alleles: A, B, and O.

3. A child with blood type **A** inherits the A allele from one parent and either the A or O allele from the other.

4. A child with blood type **B** inherits the B allele from one parent and either the B or O allele from the other.

5. A child with **AB** blood type inherits an A allele from one parent and a B allele from the other.

6. **Blood type O** is not possible in this scenario because both parents must have the O allele to produce an O type child.

Q.91 Where is the wettest place in the world?

A. Asia

B. Oceania

C. Africa

D. Australia

Answer: A

Sol:

The **wettest place in the world** is located in **Asia**—specifically, in the Indian state of Meghalaya. The two contenders are **Mawsynram** and **Cherrapunji**, both of which experience extremely high annual rainfall. These regions receive this rainfall due to their geographical position, which is conducive to monsoon winds and orographic precipitation.

Important Key Points:

1. **Mawsynram** and **Cherrapunji** in Meghalaya, India, are among the wettest places on Earth.

2. These areas receive high levels of rainfall due to their proximity to the Bay of Bengal, which funnels moist air towards the Khasi Hills.

3. **Orographic precipitation** occurs when moist air is forced to rise over mountains, cooling and condensing to form heavy rainfall.

4. The wet season typically spans from June to September, coinciding with the Indian monsoon.

5. The high rainfall supports lush vegetation and diverse ecosystems but also poses challenges for infrastructure and daily life.

6. This region's unique climatic conditions make it a significant point of interest for meteorologists and climatologists.

Knowledge Booster:

 Oceania: Includes countries like Australia and New Zealand, but no locations here are among the wettest on Earth.

 Africa: While it has regions with significant rainfall, it does not have the wettest places globally.

 Australia: The continent has varied climates but no locations that match the extreme rainfall of Mawsynram or Cherrapunji.

Q.92 Lines connecting equal depths of the sea on a map are called .

A. isonormal

B. isonomal

C. isobath

D. isohypse

Answer: C

Sol:

Lines connecting points of equal depth below the surface of a body of water on a map are called **isobaths**. These lines are similar to contour lines on land maps, which connect points of equal elevation. Isobaths are used in nautical charts to represent the depth of water bodies, helping in navigation and the study of underwater topography.

Important Key Points:

1. **Isobaths** are contour lines on maps that indicate points of equal depth below the water surface.

2. They are crucial for creating **bathymetric maps**, which are the underwater equivalents of topographic maps.

3. **Isobaths** help in understanding the underwater terrain, identifying hazards, and planning maritime routes.

4. These lines are used by oceanographers, marine geologists, and naval navigators.

5. **Nautical charts** often feature isobaths to ensure safe navigation in waters of varying depths.

6. The use of isobaths is essential for activities such as fishing, laying underwater cables, and conducting scientific research.

Knowledge Booster:

 Isonormal: Not a term commonly used in geographical mapping or marine navigation.

 Isonomal: Not a recognized term in the context of mapping or navigation.

 Isohypse: Refers to contour lines representing elevation on land maps, similar to isobaths for depth.

Q.93 is a cold and dry wind.

A. Hurricane

B. Tornado

C. Bora

D. Cyclone

Answer: C

Sol:

Bora is a **cold and dry wind** that occurs primarily in the Adriatic Sea region, particularly affecting countries like Croatia, Slovenia, and Italy. This wind originates from the mountains and flows down rapidly towards the coast, creating strong gusts and often leading to sudden drops in temperature. The Bora is a katabatic wind, meaning it is driven by the force of gravity as the cold air descends from higher elevations to lower areas.

Important Key Points:

1. **Bora** is a cold and dry wind that typically affects the Adriatic coast and surrounding regions.

2. It is a type of katabatic wind, characterized by its rapid descent from mountains towards the sea.

3. The wind can reach speeds of up to 100 km/h or more, making it a significant meteorological phenomenon.

4. The Bora wind often brings clear skies but cold, dry conditions, which can impact local weather and agriculture.

5. It occurs most frequently in winter but can happen at any time of the year.

6. Understanding the Bora wind is important for predicting weather in coastal and mountainous regions in Eastern Europe.

Knowledge Booster:

 Hurricane: A tropical cyclone with strong winds and heavy rain, typically occurring in the Atlantic and Northeast Pacific oceans.

 Tornado: A violently rotating column of air in contact with the ground, typically associated with severe thunderstorms.

 Cyclone: A system of winds rotating inward to an area of low atmospheric pressure, often bringing storms and heavy rain.

Q.94 Which of the following river is in Delhi?

A. Sutlej

B. Sarayu

C. Ganga

D. Yamuna

Answer: D

Sol:

The **Yamuna** River is the principal river flowing through **Delhi**. It is one of the most significant rivers in northern India and a major tributary of the Ganges. The Yamuna flows from the Himalayas in Uttarakhand and passes through several states, including Haryana and Uttar Pradesh, before meeting the Ganges at Prayagraj (Allahabad). In Delhi, the Yamuna is a critical water source and holds cultural and religious significance.

Important Key Points:

1. The **Yamuna River** is the main river flowing through Delhi, providing water to the city.

2. It originates from the Yamunotri Glacier in the Himalayas and flows through several states before merging with the Ganges.

3. The Yamuna is a sacred river in Hinduism, and many religious rituals are performed on its banks.

4. Despite its significance, the Yamuna is one of the most polluted rivers in India, especially as it flows through Delhi.

5. The river plays a vital role in agriculture, providing irrigation to the surrounding regions.

6. Efforts to clean and rejuvenate the Yamuna are ongoing, with various government and non-governmental initiatives in place.

Knowledge Booster:

 Sutlej: A major river flowing through the Punjab region but not through Delhi.

 Sarayu: A river in Uttar Pradesh, known for its association with the ancient city of Ayodhya.

 Ganga: The most sacred river in Hinduism, flowing through several states in northern India but not through Delhi.

Q.95 Irrawaddy River meets .

A. Bay of Bengal

B. Pacific ocean

C. Atlantic ocean

D. Amazon River

Answer: A

Sol:

The **Irrawaddy River** is the largest river in Myanmar (Burma) and flows into the **Bay of Bengal**. The river is vital for transportation, agriculture, and fisheries in Myanmar, and it plays a crucial role in the country's economy. The Irrawaddy Delta is particularly important for rice cultivation, making Myanmar one of the largest rice producers in the world.

Important Key Points:

1. The **Irrawaddy River** is Myanmar's most significant river, flowing from north to south through the country.

2. It empties into the **Bay of Bengal**, forming a large and fertile delta that is crucial for agriculture.

3. The river is essential for transportation, with many goods and people traveling along it.

4. The Irrawaddy Delta is one of the world's most productive rice-growing regions.

5. The river supports a rich biodiversity, including endangered species like the Irrawaddy dolphin.

6. The Irrawaddy River has significant cultural and historical importance in Myanmar.
Knowledge Booster:
❑ **Pacific Ocean**: Incorrect, as the Irrawaddy flows into the Bay of Bengal, not the Pacific.
❑ **Atlantic Ocean**: Incorrect, as the Atlantic Ocean is on the opposite side of the world from Myanmar.
❑ **Amazon River**: A major river in South America, entirely unrelated to the Irrawaddy.

Q.96 A shallow stretch of river that can be crossed by foot or by car is called:

A. Ford
B. Atoll
C. Reef
D. Lagoon

Answer: A

Sol:
A **ford** is a shallow stretch of a river or stream where it is possible to cross on foot or by vehicle. Fords have been used historically as natural crossing points before the construction of bridges. They are often located where the riverbed is firm, and the water level is low enough to allow safe passage.
Important Key Points:
1. A **ford** is a shallow part of a river or stream that can be crossed without the need for a bridge.
2. Fords are typically found where the water is not deep, and the riverbed is firm.
3. Historically, fords were critical for transportation, allowing people, animals, and vehicles to cross water bodies.
4. Some fords are still in use today, particularly in rural or less-developed areas.
5. The presence of a ford can influence the location of roads and settlements, making it a strategic point.
6. Modern bridges have replaced most fords in developed areas, but they remain an important feature in certain landscapes.
Knowledge Booster:
❑ **Atoll**: A ring-shaped coral reef, island, or series of islets surrounding a lagoon, found in tropical oceans.
❑ **Reef**: A ridge of jagged rock, coral, or sand just above or below the surface of the sea.
❑ **Lagoon**: A shallow body of water separated from a larger sea by a barrier such as a sandbar, coral reef, or barrier island.

Q.97 Which is the largest island in the world?

A. Borneo
B. Honshu
C. Greenland
D. Cuba

Answer: C

Sol:
Greenland is the **largest island in the world** that is not a continent. It is an autonomous territory within the Kingdom of Denmark, located between the Arctic and Atlantic Oceans. Despite its name, much of Greenland is covered by an ice sheet, making it one of the coldest places on Earth.
Important Key Points:
1. **Greenland** is the largest island in the world, with an area of over 2.1 million square kilometers.
2. It is geographically part of North America but politically associated with Europe as an autonomous territory of Denmark.
3. The island is known for its vast ice sheet, which covers about 80% of its surface.
4. Greenland's population is sparse, with most people living along the ice-free coastal regions.
5. The island has a rich indigenous culture, with the majority of the population being Inuit.
6. Greenland is significant in climate studies due to its ice sheet's impact on global sea levels.
Knowledge Booster:
❑ **Borneo**: The third-largest island in the world, located in Southeast Asia and politically divided among Malaysia, Indonesia, and Brunei.
❑ **Honshu**: The largest island of Japan, home to major cities like Tokyo and Osaka, but smaller than Greenland.
❑ **Cuba**: The largest island in the Caribbean, significantly smaller than Greenland.

Q.98 Which of the following is a composite fruit?

A. Mulberry
B. Strawberry
C. Custard apple
D. Litchi

Answer: A

Sol:
Mulberry is an example of a **composite fruit**. Composite fruits develop from an inflorescence, which is a cluster of flowers. Each flower in the inflorescence produces a fruit, and these individual fruits then fuse together to form a single mass. In the case of the mulberry, each tiny drupelet in the cluster originates from a single flower, and together they form the entire fruit.
Important Key Points:
1. **Composite fruits** develop from an entire inflorescence, where multiple flowers contribute to the formation of the fruit.
2. **Mulberry** is an example of a composite fruit, formed by the fusion of multiple small fruits.
3. The individual fruits in a mulberry are called drupelets, each originating from a separate flower.
4. **Composite fruits** are also found in plants like pineapples and figs, where multiple fruits fuse to form a larger, cohesive fruit structure.
5. These fruits are typically involved in seed dispersal, relying on animals to eat them and spread the seeds.
6. Understanding composite fruits is important in botany for identifying and classifying different types of fruit development.
Knowledge Booster:
❑ **Strawberry**: A false fruit, where the fleshy part is derived not from the ovary but from the receptacle that holds the ovaries.
❑ **Custard apple**: A true fruit, developing from a single flower with multiple ovaries.
❑ **Litchi**: A true fruit that develops from a single ovary, not a composite fruit.

Q.99 Which of the following is obtained by the aqueous decomposition of fat by lipase?

A. fatty acid and amino acid
B. fatty acid and glycerol
C. glycerol and amino acid
D. glycerol and alcohol

Answer: B

Sol:
The enzyme **lipase** catalyzes the breakdown of triglycerides (fats) into **fatty acids and glycerol** during digestion. This process, known as **lipolysis**, occurs in the small intestine, where lipase, secreted by the pancreas, acts on dietary fats. The resulting fatty acids can be absorbed into the bloodstream and used for energy or stored as fat, while glycerol can be converted into glucose through gluconeogenesis.
Important Key Points:
1. **Lipase** is the enzyme responsible for breaking down triglycerides into fatty acids and glycerol.
2. **Triglycerides** are the primary form of fat stored in the body and found in dietary fat.
3. The breakdown process, called **lipolysis**, occurs mainly in the small intestine during digestion.
4. **Fatty acids** are used by the body as a significant energy source or stored in adipose tissue.
5. **Glycerol** can be converted into glucose, providing energy, especially during fasting or low carbohydrate intake.
6. Lipolysis is essential for energy metabolism, particularly during periods of energy demand such as exercise.
Knowledge Booster:

 ☐ **Amino acid**: Incorrect, as amino acids are the building blocks of proteins, not fats.
 ☐ **Glycerol and amino acid**: Incorrect, as amino acids are not products of fat breakdown.
 ☐ **Glycerol and alcohol**: Incorrect, alcohol is not a product of fat metabolism.

Q.100 Indian Standard Time is ahead of Greenwich Mean Time by .

A. 5 1/2 hour
B. 2 1/2 hour
C. 10 1/2 hour
D. 1 hour

Answer: A

Sol:
Indian Standard Time (IST) is **5 1/2 hours** ahead of **Greenwich Mean Time (GMT)**. IST is calculated based on the longitude 82.5°E, which passes through the town of Mirzapur in Uttar Pradesh, India. This time zone is used across India and Sri Lanka, maintaining a uniform time despite the country's vast geographic spread.
Important Key Points:
1. **Indian Standard Time (IST)** is UTC+5:30, meaning it is 5 1/2 hours ahead of GMT.
2. The longitude used to determine IST is 82.5°E, which is approximately the center of India's geographical expanse.
3. GMT is the time standard originally set in Greenwich, London, and is used as a reference for time zones worldwide.
4. IST applies uniformly across India, despite the country's wide longitudinal range, leading to differences in sunrise and sunset times across the country.
5. The 5 1/2 hour difference means that when it is 12:00 noon GMT, it is 5:30 PM IST.
6. **Daylight Saving Time (DST)** is not observed in India, keeping IST consistent throughout the year.
Knowledge Booster:
 ☐ **2 1/2 hours**: Incorrect as this would place IST much closer to GMT than it actually is.
 ☐ **10 1/2 hours**: Incorrect, as this would suggest a far greater difference than the actual 5 1/2 hours.
 ☐ **1 hour**: Incorrect, as this difference is too small for IST relative to GM

Q.101 How many days will be there between 26th January, 2008 and 15th May, 2008? (includes both days)

A. 111
B. 110
C. 112
D. 113

Answer: A

Sol:
We need to calculate the number of days between 26th January 2008 and 15th May 2008, including both days.
January: 6 days, February (leap year): 29 days, March: 31 days, April: 30 days, May: 15 days.
Total days = 6 + 29 + 31 + 30 + 15 = 111
Sol. The number of days is 111

Q.102 A and B are either of the same age or A is older than B. C and D are of the same age or D is older than C. B is greater than C.

A. A is greater than B.
B. B and D are of same age
C. D is older than C.
D. A is greater than C.

Answer: D

Sol:
A and B are either of the same age or A is older than B. C and D are of the same age or D is older than C.
B is older than C. Hence, A is older than C.
Sol. A is greater than C.

Q.103 In two standard cubes, 4 and 3 are written on the front faces. What will be the sum of the numbers written on the opposite faces?

A. 7
B. 10
C. 11
D. 5

Answer: A

Sol:
In a standard cube, the sum of the numbers on opposite faces is always 7.
Sol. The sum is 7.

Q.104 In a row of crows, A is 10th from the left and B is 9th from the right. A is 15th from the left when they interchange their positions. How many crows are there in the row?

A. 31
B. 19
C. 23
D. 28

Answer: C

Sol:
Initially, A is **10th from the left**, and B is **9th from the right**.
After interchanging positions, A is now at **15th from the left**.
This means B's position from the left is **15**.
Now, using the formula:
Total crows = Position from left + Position from right − 1
= 15 (left position of B) + 9 (right position of B) − 1
= **23**

Q.105 In a row of boys, a boy ranks 19th on either side. How many boys are there in the row?

A. 36
B. 37
C. 38
D. 20

Answer: B

Sol:

If a boy ranks 19th from both sides, the total number of boys is 19 + 19 - 1 = 37.
Sol. The total number of boys is 37.

Q.106 Directions: 5 cities P, Q, R, S and T are connected by different types of vehicles. P and Q by boat and rail, S and R by bus and boat, Q and T by airplane. P and R are connected by boat. T and R are connected by rail and bus.
Which vehicle can be used to travel from R to Q?

A. boat
B. rail
C. bus
D. airplane

Answer: A

Sol:

From the provided connections between cities:
 P and Q are connected by boat and rail.
 S and R are connected by bus and boat.
 Q and T are connected by airplane.
 P and R are connected by boat.
 T and R are connected by rail and bus.
The vehicle that can be used to travel from R to Q is a boat, as both cities are connected through P via boat.
Sol. The vehicle that can be used to travel from R to Q is a boat.

Q.107 Which pair of cities are connected in any way without going to the third city?

A. P and T
B. T and S
C. Q and R
D. none of these

Answer: D

Sol:

Let's examine the possible pairs of cities:
 P and T: There is no direct connection without going through a third city.
 T and S: There is no direct connection without going through a third city.
 Q and R: There is no direct connection without going through a third city.
Therefore, none of the given city pairs are directly connected without involving a third city.
Sol. None of these.

Q.108 Which of the following square is missing?
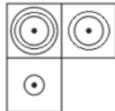
A.

B.

C.

D.

Answer: A

N/A

Q.109 In the following group of letters, which one is not correctly matched based on a specific pattern?

A. WTLS
B. PRKO
C. ZVRW
D. QSMN

Answer: B

Sol:

 (a) WTLS: Positions are W(23), T(20), L(12), S(19) – follows a descending pattern.
 (b) PRKO: Positions are P(16), R(18), K(11), O(15) – breaks the descending pattern.
 (c) ZVRW: Positions are Z(26), V(22), R(18), W(23) – follows a descending pattern.
 (d) QSMN: Positions are Q(17), S(19), M(13), N(14) – follows a descending pattern.
Hence, option (b) PRKO is the incorrect match as it does not follow the same descending pattern as the others.

Q.110 In the following set of numbers, which one is not correctly matched?

A. $0.50, 1\frac{1}{2}, 3.0, 0.25$

B. $\frac{1}{2}, 0.75, 1\frac{1}{2}, 1.0$

C. 0.5, 0.75, 1.5, 1

D. $1.00, 1\frac{1}{2}, 3.00, 2.00$

Answer: A

Sol:
Let's review each set of numbers for consistency:
☐ (a) 0.50, 1 1/2, 3.0, 0.25:
o This set does not show a logical progression or relationship between the numbers.
☐ (b) 1/2, 0.75, 1 1/2, 1.0:
o This set shows a consistent progression in fractional terms.
☐ (c) 0.5, 0.75, 1.5, 1:
o This set also shows a progression.
☐ (d) 1.00, 1 1/2, 3.00, 2.00:
o This set shows a progression as well.
Sol. (a) is not correctly matched due to the inconsistency in the sequence.

Q.111 Which of the following symbol is missing?

| ↑ | ⇓ | ⇐ |

A.

| → |

B.

| ↑ |

C.

| ⇑ |

D.

| ↑ |

Answer: A

N/A

Q.112 The value of x in sequence $3\frac{1}{2}, 2\frac{1}{3} \cdots \frac{x}{41}$ is:

A. 4
B. 5
C. 7
D. 9

Answer: D

Sol:
The given sequence is 3 1/2, 2 1/3, ... x/41.
We need to find the value of xxx. Let's analyze the pattern of the whole numbers and fractions:
The first number is 3 ½ =7/2
The second number is 2 1/3 = 7/3
The pattern in the denominators is reducing by 1 (2, 3, 4, ...), and the numerators remain the same (7). We can predict that the next term in the sequence follows the same numerator and denominator pattern, but now x/41, Thus x = 9

Q.113 The fourth number in sequence $2, 2\frac{1}{2}, 3\frac{1}{8}$ .... will be:

A. $4\frac{1}{9}$
B. $4\frac{9}{10}$
C. $3\frac{9}{10}$
D. $3\frac{29}{32}$

Answer: D

Sol:
The given sequence is 2, 2 1/2, 3 1/8, ...
Let's analyze the pattern:
1. The first number is 2.
2. The second number is 2 1/2.
3. The third number is 3 1/8.
Notice that both the whole numbers and fractions are increasing, but the fractions are getting smaller. Based on this trend, the fourth number in the sequence is expected to follow a similar pattern with smaller fractional increments.

Thus, the fourth number is $3\frac{29}{32}$

Q.114 The next number in sequence 100, 99.5, 98.5, 97, 95, 92.5, 89.5, ? will be:

A. 86
B. 68
C. 79
D. 85.5

Answer: A

Sol:
The sequence is 100, 99.5, 98.5, 97, 95, 92.5, 89.5...
Decreasing by alternating amounts, the next decrease is by 3.5: 89.5 - 3.5 = 86.
Sol. The next number is 86.

Q.115 If 7964325 means 6975234 and 5822139 means 2859312, then what is the meaning of 7469851?

A. 476985
B. 6471589
C. 9647158
D. 9647851

Answer: B

Sol:
Let's analyze the pattern between the given numbers:
□ 7964325 becomes 6975234.
□ 5822139 becomes 2859312.
The digits in the numbers are rearranged in a specific order:
1. The first three digits (starting with the second digit) are moved to the front.
2. The remaining digits are rearranged systematically.
Applying the same rearrangement to 7469851:
□ Move the first three digits (starting with the second digit): 647.
□ Rearrange the remaining digits: 1589.
Thus, 7469851 becomes 6471589

Q.116 Which of the following can be rearranged to form a meaningful English word?

A. HURLPO
B. MCIENA
C. EJBATC
D. XELPOD

Answer: B

Sol:
Rearranging 'MCIENA' gives the word 'CINEMA'.

Q.117 584 is related to 292 as 488 is related to:

A. 244
B. 371
C. 224
D. 581

Answer: A

Sol:
The pattern between 583 and 293 is divided 1st number by 2 can be applied to 488, yielding 244

Q.118 "BF" is related to "HL" as "EI" is related to:

A. KN
B. KO
C. JN
D. JO

Answer: B

Sol:
The difference between 'BF' and 'HL' is 6 positions in the alphabet. Applying the same logic to 'EI' gives 'KO'.
Sol. 'EI' is related to 'KO'.

Q.119 "Rubber" is related to "Tree" and "Silk" is related to:

A. Cloth
B. Worm
C. Fabric
D. knitting

Answer: B

Sol:
Rubber comes from a tree, and silk is produced by a worm.
Sol. Silk is related to a worm.

Q.120 Hodor stands at sunrise in such a way that his shadow is falling on his right. Where is Hodor's face?

A. North
B. East
C. West
D. South

Answer: D

Sol:

Since Hodor's shadow is to his right and it is sunrise, he must be facing south.
Sol. Hodor's face is towards the south.

Q.121 A boy walks 20m in north direction, turns right and walks 30m, turns right and walks 35m, turns left and walks 15m, turns left and walks 15m. Where is his last place from his starting place?

A. 15 meter west
B. 30 meter east
C. 30 meter west
D. 45 meter east

Answer: A

Sol:

The boy follows these steps:
1. Walks 20m north.
2. Turns right (east) and walks 30m.
3. Turns right (south) and walks 35m.
4. Turns left (east) and walks 15m.
5. Turns left (north) and walks 15m.
Final position: 45m east and 15m south from the starting point.
Answer: 15 meters west.

Q.122 If A × B means that A is to the south of B; A + B means A is to the north of B, A % B means A is to the east of B, A - B means A is to the west of B, then P % Q + R - S Means in which direction S is with respect to Q:

A. South-west
B. South-east
C. North-east
D. North

Answer: B

Sol:

Directional meanings:
A × B means A is to the south of B.
A + B means A is to the north of B.
A % B means A is to the east of B.
A - B means A is to the west of B.
For P % Q + R - S, S is to the south-east of Q.
Answer: South-east.

Q.123 Raja walks 90 m towards East, turns right and walks 20 m, turns right and walks 30 m, turns north and walks 100 m. How far is he from his starting point?

A. 80 meter
B. 140 meter
C. 100 meter
D. 260 meter

Answer: C

Sol:

Raja walks 90m east, then 20m south, 30m west, and finally 100m north.
Net horizontal distance: 60m east.
Net vertical distance: 80m north.
Using the Pythagorean theorem: Distance = $\sqrt{(60^2 + 80^2)}$ = 100 meters.
Answer: 100 meters.

Q.124 Which of the following words share similar characteristics with dirty, berry, gesture, knot?

A. part
B. price
C. near
D. open

Answer: A

Sol:

The words 'dirty', 'berry', 'gesture', and 'knot' can be changed to form new words by changing a letter. 'part' shares this characteristic.
Answer: part.

Q.125

The value of x in

is:

A. 86
B. 87
C. 83
D. 96

Answer: A

Sol:

Let's analyze the patterns in the circles to find the missing number in the third circle.
First Circle:The numbers are 48, 21, and 27. Relationship: 21 + 27 = 48. So, the central number is the sum of the two smaller numbers.
Second Circle:The numbers are 66, 22, and 44. Relationship: 22 + 44 = 66. Again, the central number is the sum of the two smaller numbers.
Third Circle:The numbers are ?, 71, and 15. Following the same pattern: 71 + 15 = 86. Therefore, the missing number is 86.
The missing number in the third circle is 86.

Q.126 If South-East becomes North and North-East becomes West, then West will become:

A. north-east
B. north-west
C. south-east
D. south-west

Answer: C

Sol:
The directions are being shifted as follows:
- South-East becomes North.
- North-East becomes West.
If you visualize this, each direction has been rotated 135° counterclockwise.
Thus, West will become South-East after this rotation.
Answer: South-East

Q.127 In a code, Air is called Green, Green is called Blue, Blue is called Sky, Sky is called Yellow and Yellow is called Water. What would be the color of "Clear Sky" in the code?

A. Blue
B. Sky
C. Yellow
D. Water

Answer: B

Sol:
In the given code:
- Air is called Green.
- Green is called Blue.
- Blue is called Sky.
- Sky is called Yellow.
- Yellow is called Water.
The color of 'Clear Sky' would be Blue in the original form. According to the code, Blue is called Sky.

Q.128 If in the code Z = 2197 and R = 729, then J is

A. 216
B. 124
C. 512
D. 125

Answer: D

Sol:
The pattern used is the cube of the position of the letter in the alphabet:
- Z is the 26th letter of the alphabet. Half of 26 = 13^3 = 2197.
- R is the 18th letter of the alphabet. Half of 18 = 9^3 = 729.
Now for J:
- J is the 10th letter of the alphabet. Half of 10 = 5^3 = 125
Answer: 125

Q.129 10 taxis ply between Chennai and Puducherry. In how many ways can X go from Chennai to Puducherry and return by different taxi?

A. 90
B. 100
C. 20
D. 19

Answer: A

Sol:
There are 10 taxis available for X to travel from Chennai to Puducherry. For the return journey, X cannot take the same taxi, so there are 9 choices left.
The number of ways X can go and return by different taxis is 10 × 9 = 90.
Answer: 90
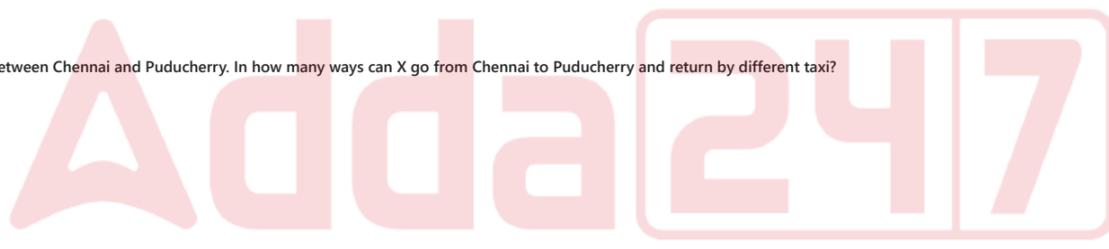
Q.130 How many numbers can be formed from the nine digits 1, 2, ... 9 by using the six digits?

A. 72
B. 64840
C. 60480
D. 120

Answer: C

Sol:
There are 9 digits available, and we need to form a number using 6 digits without repetition. The number of ways to select and arrange 6 digits from 9 is calculated using permutation:
P(9, 6) = 9! / (9-6)! = 60480.
Answer: 60480

Q.131 If Z = 52 and ACT = 48, then BAT is equal to:

A. 39
B. 41
C. 44
D. 46

Answer: D

Sol:

Each letter is assigned a value based on its position in the alphabet. The sum of the letter values is then double the resultant value:

Sum for BAT = 2 + 1 + 20 = 23 × 2 = 46

Q.132 If in a code 134 stands for "good and tasteful", 478 means "looks good picture", 729 means "picture is blurry", then which digit means "looks"?

A. 4
B. 7
C. 8
D. 9

Answer: C

Sol:

We are given the following information:
1. 134 stands for 'good and tasteful'.
2. 478 stands for 'looks good picture'.
3. 729 stands for 'picture is blurry'.
Analyzing the common elements:
- 'good' is represented by 4 (common in 134 and 478).
- 'picture' is represented by 7 (common in 478 and 729).
Thus, 'looks' is represented by the remaining digit in 478, which is 8.
Answer: 8

Q.133 If ROSE is coded as 6821 and CHAIR is coded as 73456, then SEARCH will be coded as

A. 246176
B. 214673
C. 3
D. 4

Answer: B

Sol:

We are given the following codes:
- ROSE is coded as 6821.
- CHAIR is coded as 73456.
Mapping the digits based on the letters:
- S → 6, E → 2, A → 3, R → 1, C → 4, H → 5.
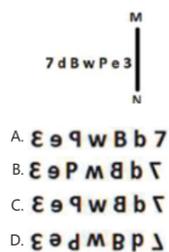Thus, the code for SEARCH is 214673.
Answer: 214673

Q.134 Identify the figure that completes the pattern (rotation is NOT allowed).
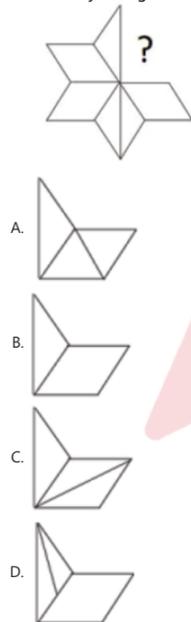
Answer: B

N/A

Q.135 Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.

Answer: C

N/A

Q.136 In how many ways can 5 toys be selected out of 12 toys if a particular toy is always included?

A. 990
B. 330
C. 792

D. 7920

Answer: B

Sol:

Given: A particular toy is always included in the selection.
Formula Used: The number of ways to select r items from n items is given by the combination formula C(n, r).
Solution:
Since 1 toy is already included, we need to select 4 more toys from the remaining 11 toys. This can be done in C(11, 4) ways.
C(11, 4) = (11 * 10 * 9 * 8) / (4 * 3 * 2 * 1) = 330
Thus, the number of ways to select 5 toys is 330.

Q.137 If X and Y rolls two dice and X starts the game, then the ratio of their chances of getting 9 first will be:

A. 9 : 8
B. 8 : 9
C. 5 : 4
D. 6 : 3

Answer: A

Sol:

Given: X and Y are rolling two dice, and X starts.
Formula Used: The probability of getting a sum of 9 with two dice is determined by the number of combinations that result in 9 divided by the total number of possible outcomes with two dice.
Solution:
To get a sum of 9, the possible outcomes are:
(3,6), (4,5), (5,4), (6,3)
There are 4 outcomes that sum to 9 out of 36 possible outcomes. Thus, the probability of rolling a 9 is 1/9.
Now, since X starts the game, the ratio of their chances is calculated based on turns. X rolls first, and the ratio of their chances will be 9:8.

Q.138 There are 9 balls in a box; 2 is red, 3 is blue, and 4 is black. What is the probability that all the balls will be of different colours, if 3 balls are drawn at random?

A. $\frac{2}{9}$
B. $\frac{2}{7}$
C. 3
D. 4

Answer: B

Sol:

Given: There are 9 balls, 2 red, 3 blue, and 4 black, and 3 balls are drawn at random.
Formula Used: The probability that all drawn balls are of different colors is the product of selecting one red, one blue, and one black ball divided by the total ways of selecting 3 balls from 9.
Solution:
The number of ways to choose 1 red ball from 2 red balls is C(2, 1) = 2.
The number of ways to choose 1 blue ball from 3 blue balls is C(3, 1) = 3.
The number of ways to choose 1 black ball from 4 black balls is C(4, 1) = 4.
Thus, the total number of favorable outcomes is:
2 * 3 * 4 = 24
The total number of ways to choose 3 balls from 9 is C(9, 3) = (9 * 8 * 7) / (3 * 2 * 1) = 84.
Therefore, the probability is:
24 / 84 = 2 / 7

Q.139 How many letters will not change their positions in the word FAINTS if the letters are arranged in alphabetical order?

A. 0
B. 2
C. 3
D. 1

Answer: B

Sol:

Given: The word is FAINTS, and we need to find how many letters will not change their position when arranged alphabetically.
Solution:
The alphabetical order of the letters in FAINTS is: A F I N S T.
Now compare this with the original arrangement: F A I N T S.
- A remains in its original position.
- F remains in its original position.
I, N, S, and T change positions.
Thus, the number of letters that do not change their position is 2.

Q.140 A man puts 9 peanuts in each saucer but 2 saucers are left empty. He tries again and this time puts 6 peanuts in each saucer. Now he is left with 3 peanuts. How many saucers did he have?

A. 9
B. 6
C. 7
D. 13

Answer: C

Sol:

Given: The man initially put 9 peanuts in each saucer, leaving 2 saucers empty. Later, he put 6 peanuts in each saucer and had 3 peanuts left over.
Solution:
Let the number of saucers be x.
From the first condition, when 9 peanuts are placed in each saucer and 2 saucers are left empty:
9(x - 2) = 9x - 18
From the second condition, when 6 peanuts are placed in each saucer and 3 peanuts are left over:
6x + 3
Equating both conditions for the total number of peanuts, we get:
9x - 18 = 6x + 3
Simplifying this equation:
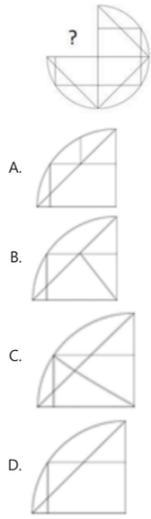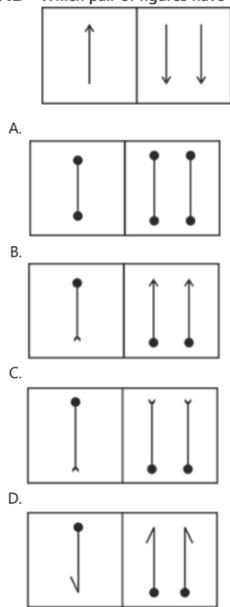9x - 6x = 3 + 18
3x = 21
x = 7
Thus, the number of saucers is 7

Q.141 Identify the figure that completes the pattern (rotation is Not allowed).

A.

B.

C.

D.

Answer: D

N/A

Q.142 Which pair of figures have the same relationship as in the following figures?

A.

B.

C.

D.

Answer: C

N/A

Q.143 If the face of a clock is divided into 3 equal parts such that the sum of the digits of each part is equal, then that sum will be

A. 62
B. 26
C. 3
D. 4

Answer: B

Sol:

Given: The clock face is divided into 3 equal parts such that the sum of the digits in each part is equal.
Solution:
The sum of the numbers from 1 to 12 on a clock face is:
1 + 2 + 3 + ... + 12 = (12 * (12 + 1)) / 2 = 78
Since the face is divided into 3 equal parts, the sum of each part is:
78 / 3 = 26
Thus, the sum for each part is 26.

Q.144 In how many different ways the letters of the word "BANK" can be arranged?

A. 12
B. 24
C. 16
D. 8

Answer: B

Sol:

Given: The word "BANK" contains 4 distinct letters.
Formula Used: The number of ways to arrange n distinct objects is n!.
Solution:
The number of different ways to arrange the letters in "BANK" is:
4! = 4 * 3 * 2 * 1 = 24
Thus, the number of different ways the letters can be arranged is 24.

Q.145 If 'WORK' is coded as 23 - 15 - 18 - 11, then "WOMAN" will be coded as

A. 4 - 12 - 14 - 26 - 13
B. 4 - 26 - 14 - 13 - 12

C. 23 - 12 - 26 - 14 - 13
D. 23 - 15 - 13 - 1 - 14

Answer: D

Sol:
Given: The code for "WORK" is 23 - 15 - 18 - 11. We need to find the code for "WOMAN".
The position of each letter in the alphabet is used as the code.
W = 23
O = 15
M = 13
A = 1
N = 14
Thus, the code for "WOMAN" is 23 - 15 - 13 - 1 - 14.

Q.146 If DRIVER = 12, PEDESTRIAN = 20, ACCIDENT = 16, then CAR will be-

A. 3
B. 6
C. 8
D. 10

Answer: B

Sol:
Given: DRIVER = 12, PEDESTRIAN = 20, ACCIDENT = 16, we need to find the code for CAR.
Solution:
The code corresponds to the number of letters in the word multiplied by 2.
- DRIVER has 6 letters, 6 * 2 = 12
- PEDESTRIAN has 10 letters, 10 * 2 = 20
- ACCIDENT has 8 letters, 8 * 2 = 16
- CAR has 3 letters, so the code for CAR is 3 * 2 = 6
Thus, the code for CAR is 6

Q.147 Tickets for a museum for 2 adults and 2 children cost Rs. is 24. If the cost of ticket for a child is half of the cost of ticket for an adult, then the cost of ticket for an adult is

A. Rs. 8
B. Rs. 10
C. Rs. 12
D. Rs. 6

Answer: B

Sol:
Given: Tickets for 2 adults and 2 children cost Rs. 24, and the cost of a child's ticket is half of an adult's ticket.
Solution:
Let the cost of an adult's ticket be x.
Then, the cost of a child's ticket is x / 2.
The total cost for 2 adults and 2 children is:
2x + 2 * (x / 2) = 2x + x = 3x
We are given that 3x = 24, so:
x = 24 / 3 = 8
Thus, the cost of an adult's ticket is Rs. 10

Q.148 The ascending order of $\sqrt{2}, \sqrt[4]{4}$ and $\sqrt[4]{6}$ is:

A. $\sqrt{2}, \sqrt[4]{6}, \sqrt[3]{4}$
B. $\sqrt[4]{6}, \sqrt{2}, \sqrt[3]{4}$
C. $\sqrt[4]{6}, \sqrt[3]{4}, \sqrt{2}$
D. $\sqrt{2}, \sqrt[3]{4}, \sqrt[4]{6}$

Answer: C

Sol:
Given: We need to arrange √2, ∛4, and ∜6 in ascending order.
Solution:
Converting each expression to a decimal:
√2 ≈ 1.414, ∛4 ≈ 1.587, ∜6 ≈ 1.565
Thus, the ascending order is ∜6, ∛4, √2.

Q.149 If $b = \frac{-50}{-2}$ and $a = (-5)^2$, then which of the following is true

A. a=b
B. a=-b
C. $a = \frac{1}{b}$
D. $a = \sqrt{b}$

Answer: A

Sol:
Given: b = (-50)/(-2) and a = (-5)^2.
Solution:
b = (-50)/(-2) = 25
a = (-5)^2 = 25
Thus, a = b.

Q.150 Minimum multiple of 7 that leaves a remainder of 4 when divided by 6, 9, 15 and 18:

A. 74
B. 94
C. 364
D. 184

Answer: C

Sol:

We are given that:

• A number leaves a remainder **4** when divided by **6, 9, 15, and 18**

⇒ So, (Number − 4) is divisible by **LCM of 6, 9, 15, 18**

Let the number be **N**

Then, N − **4** = **LCM (6, 9, 15, 18) × k**

Find LCM (6, 9, 15, 18)

• $6 = 2 \times 3$

• $9 = 3^2$

• $15 = 3 \times 5$

• $18 = 2 \times 3^2$

Take the highest powers of all primes:

LCM $= 2 \times 3^2 \times 5 = 90$

So, N − 4 = 90k ⇒ N = 90k + 4

Find the minimum value of N = 90k + 4 that is a multiple of 7

Try values of **k** starting from 1:

• k = 1 → 90×1 + 4 = **94** → 94 ÷ 7 = 13.42

• k = 2 → 180 + 4 = **184** → 184 ÷ 7 = 26.28

• k = 4 → 360 + 4 = **364** → 364 ÷ 7 = **52**

364 is divisible by 7 and satisfies the condition.