CUET UG (General Test)

15 May 2024 Shift 3

Question 1

From the given options, which pass connects Jammu with Srinagar ?

Options:

A. Banihal pass

B. Nathu La pass

C. Niti pass

D. Rohtang pass

Answer: A

Solution:

The correct answer is **Banihal Pass**.

Key Points

- **Banihal Pass** is a mountain pass located in the Pir Panjal range in the Indian union territory of Jammu and Kashmir.
- The pass connects the towns of Banihal in Jammu with Qazigund in the Kashmir Valley.
- It is situated at an elevation of approximately 2,832 meters (9,291 feet) above sea level.
- The pass is crucial for road transport, especially the Jammu-Srinagar National Highway (NH44), which is a vital link between the two regions.

Additional Information

- **Nathu La Pass**
  - Located in the Himalayas, Nathu La Pass connects the Indian state of Sikkim with China's Tibet Autonomous Region.
  - It is a significant trade route and was part of the ancient Silk Road.
  - The pass is situated at an elevation of 4,310 meters (14,140 feet).
- **Niti Pass**
  - Niti Pass is located in the state of Uttarakhand, India, and connects the region to Tibet.
  - The pass is situated at an elevation of approximately 5,070 meters (16,634 feet).
  - It is historically significant for trade and movement between India and Tibet.

- **Rohtang Pass**
  - Rohtang Pass is situated in the state of Himachal Pradesh and connects the Kullu Valley with the Lahaul and Spiti Valleys.
  - It is located at an elevation of 3,978 meters (13,050 feet).
  - The pass is a popular tourist destination known for its scenic beauty.

Question 2

Which of the following is not correctly matched regarding Padma Awards-2024 ?

Options:

A. Padma Vibhushan Award → Shri Konidela Chiranjeevi

B. Padma Shri Award → Mithun Chakraborty

C. Padma Bhushan Award → M. Fathima Beevi

D. Padma Bhushan Award → Sitaram Jindal

Answer: B

Solution:

The correct answer is **Padma Shri Award → Mithun Chakraborty**.

Key Points

- Mithun Chakraborty is a renowned Indian actor and former Rajya Sabha Member. However, there is no official record of him receiving the Padma Shri Award in 2024.
- The Padma Awards are one of the highest civilian awards in India, classified into three categories: Padma Vibhushan, Padma Bhushan, and Padma Shri.
- These awards are announced annually on the eve of Republic Day by the Government of India.
- Recipients of the Padma Awards are selected based on their contributions in various fields such as arts, social work, public affairs, science, and more.

Additional Information

- **Padma Vibhushan:**
  - This is the second-highest civilian award in India.
  - Awarded for exceptional and distinguished service in any field, including government service.
- **Padma Bhushan:**
  - This is the third-highest civilian award in India.
  - Awarded for distinguished service of a high order in any field.
- **Padma Shri:**

- This is the fourth-highest civilian award in India.
- Awarded for distinguished service in any field.

- **Selection Process:**
  - The awards are decided by the Padma Awards Committee, constituted by the Prime Minister of India.
  - The recommendations are sent by the State Governments, Union Territory Administrations, central ministries, and departments, among others.

Question 3

Match List-I with List-II :

List-I Person		List-II Area of work	
(A)	Vishakhadatta	(I)	Medicine
(B)	Kartikeya Sarabhai	(II)	Poet
(C)	Charaka	(III)	Environmentalist
(D)	Satyendra Nath Bose	(IV)	Mathematics

Choose the correct answer from the options given below.

Options:

A. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)

B. (A) - (II), (B) - (III), (C) - (I), (D) - (IV)

C. (A) - (II), (B) - (I), (C) - (III), (D) - (IV)

D. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Answer: B

Solution:

The correct answer is **(A) - (II), (B) - (III), (C) - (I), (D) - (IV)**.

Key Points

- **Vishakhadatta** was an ancient Indian poet and playwright, best known for his work "Mudrarakshasa".
- **Kartikeya Sarabhai** is a notable Indian environmentalist and the founder of the Centre for Environment Education (CEE).

- **Charaka** is considered one of the principal contributors to Ayurveda, known for the "Charaka Samhita", a foundational text on Indian medicine.
- **Satyendra Nath Bose** was an Indian physicist famous for his work in quantum mechanics in the early 1920s, leading to the development of Bose-Einstein statistics and the theory of the Bose-Einstein condensate.

Additional Information

- **Charaka Samhita**
  - One of the oldest and most authoritative texts on Ayurveda.
  - It covers various aspects of medicine, including diagnosis, treatment, and surgery.
  - Attributed to Charaka, an ancient Indian physician.
- **Bose-Einstein Statistics**
  - A significant contribution to quantum mechanics.
  - Describes the statistical distribution of indistinguishable particles.
  - Fundamental to the field of quantum mechanics and condensed matter physics.
- **Centre for Environment Education (CEE)**
  - Founded by Kartikeya Sarabhai in 1984.
  - Works towards environmental education and sustainable development.
  - Engages in various educational programs and initiatives globally.
- **Vishakhadatta's Mudrarakshasa**
  - An important historical play in Sanskrit literature.
  - Depicts the political intrigue and strategies of the Mauryan Empire.
  - Provides insights into ancient Indian politics and society.

Question 4

If $\sin A = \frac{4}{5}$, then $(3 - \tan A)(2 + \cos A) =$

Options:

A. $\frac{12}{5}$

B. $\frac{13}{3}$

C. $\frac{13}{5}$

D. 3

Answer: B

Solution:

Given:

$\sin A = 4/5$

Formula Used:

$\sin^2 A + \cos^2 A = 1$

tan A = sin A / cos A

Calculation:

$\sin^2 A + \cos^2 A = 1$

$(4/5)^2 + \cos^2 A = 1$

$16/25 + \cos^2 A = 1$

$\cos^2 A = 1 - 16/25$

$\cos^2 A = 25/25 - 16/25$

$\cos^2 A = 9/25$

cos A = 3/5

tan A = \sin A / cos A

tan A = (4/5) / (3/5)

tan A = 4/3

(3 - tan A) (2 + cos A)

(3 - 4/3) (2 + 3/5)

(9/3 - 4/3) (10/5 + 3/5)

(5/3) (13/5)

5/3 × 13/5

65/15

13/3

The value of (3 - tan A) (2 + cos A) is 13/3.

Question 5

A man can row a boat at 8 km/h in still water. If the speed of the water current is 2 km/h and it takes him 2 hours to row to a place and come back, then how far off (in km) is the place ?

Options:

A. 7.5

B. 6

C. 9.5

D. 10

Answer: A

Solution:

Given:

Speed of the man in still water = 8 km/h.

Speed of the water current = 2 km/h.

Time taken to row to a place and come back = 2 hours.

Formula Used:

Speed downstream = (Speed in still water + Speed of current)

Speed upstream = (Speed in still water - Speed of current)

Distance = Speed × Time

Calculation:

Speed downstream = 8 + 2 = 10 km/h

Speed upstream = 8 - 2 = 6 km/h

Let the distance to the place be x km.

Time taken downstream = x / 10

Time taken upstream = x / 6

Total time = (x / 10) + (x / 6) = 2 hours

⇒ (x / 10) + (x / 6) = 2

⇒ (3x + 5x) / 30 = 2

⇒ 8x / 30 = 2

⇒ 8x = 60

⇒ x = 60 / 8

⇒ x = 7.5 km

The place is 7.5 km away.

Question 6

The following states were formed after 1960. What was the correct sequence of their formation ?

(A) Haryana

(B) Sikkim

(C) Nagaland

(D) Goa

Choose the correct answer from the options given below.

Options:

A. (C), (B), (A), (D)

B. (C), (A), (B), (D)

C. (C), (D), (A), (B)

D. (D), (C), (A), (B)

Answer: B

Solution:

The correct answer is **(C), (A), (B), (D)**.

Key Points

- **Nagaland** was formed on 1st December 1963, becoming the 16th state of India.
- **Haryana** was carved out from the state of Punjab on 1st November 1966.
- **Sikkim** became the 22nd state of India on 16th May 1975.
- **Goa** was granted statehood on 30th May 1987, making it the 25th state of India.

Additional Information

- **Reorganization of States:**
  - The States Reorganisation Act of 1956 was a major reform of the boundaries and governance of India's states and territories.
  - It was based on linguistic lines to ensure better administration.
- **Formation of Nagaland:**
  - Initially, Nagaland was a part of Assam, but due to ethnic and cultural differences, it was formed as a separate state.
- **Formation of Haryana:**
  - Haryana was formed from the Hindi-speaking regions of Punjab after the Punjab Reorganisation Act of 1966.
- **Formation of Sikkim:**
  - Sikkim was an independent kingdom before it became part of India in 1975 through a referendum.
- **Formation of Goa:**
  - Goa was a Portuguese colony until 1961 when it was annexed by India and later granted statehood in 1987.

Question 7

Out of the given options, which scheme's objective is to conduct an annual survey at the gram panchayat level to monitor the progress in the development process of rural areas ?

Options:

A. Mission Antyodaya (2022-23)

B. Mission Karmayogi (2022-23)

C. Mission Rashtriya Gokul (2022-23)

D. Mission Atmanirbhar Bharat (2022-23)

Answer: A

Solution:

The correct answer is **Mission Antyodaya (2022-23)**.

Key Points

- Mission Antyodaya aims to ensure the transformation of rural areas through the convergence of various schemes.
- The primary objective is to conduct an annual survey at the gram panchayat level to monitor the progress in the development process of rural areas.
- This initiative is a part of the Ministry of Rural Development's efforts to strengthen the planning and implementation of projects in rural India.

- The mission involves comprehensive data collection and analysis to identify gaps and ensure the effective delivery of services.
- Through this scheme, the government aims to achieve sustainable development goals and improve the quality of life in rural areas.

Additional Information

- **Gram Panchayat Development Plan (GPDP)**
  - GPDP involves the preparation of plans for the economic development and social justice of the gram panchayat.
  - It is formulated through a participatory process involving the local community.
  - The plan covers activities related to agriculture, education, health, sanitation, and other sectors.
  - It aims to integrate various government schemes and programs at the village level.
- **National Rural Employment Guarantee Act (NREGA)**
  - Launched in 2005, it provides legal guarantee for at least 100 days of wage employment in a financial year to rural households.
  - The aim is to enhance the livelihood security of rural poor through wage employment opportunities.
  - Projects under NREGA include water conservation, drought-proofing, and land development.
  - It is implemented by the Ministry of Rural Development.
- **Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)**
  - DDU-GKY aims to transform rural poor youth into economically independent and globally relevant workforce.
  - It targets youth aged 15-35 years from poor families.
  - The program provides skill training and placement support.
  - It is part of the National Rural Livelihood Mission (NRLM).
- **Pradhan Mantri Awaas Yojana - Gramin (PMAY-G)**
  - PMAY-G aims to provide housing for all in rural areas by 2022.
  - The scheme provides financial assistance for constructing houses to the homeless and those living in dilapidated houses.
  - Beneficiaries are selected based on the socio-economic caste census (SECC) 2011 data.
  - It ensures the provision of basic amenities such as toilets, drinking water, and electricity.

Question 8

Which one of the following countries is not a member of the "Quadrilateral Security Dialogue", also known as "QUAD" ?

Options:

A. China

B. Japan

C. India

D. Australia

Answer: A

Solution:

The correct answer is **China**.

Key Points

- The Quadrilateral Security Dialogue, commonly known as the QUAD, is a strategic forum comprising four key countries: the United States, Japan, India, and Australia.
- The QUAD was initially formed in 2007 but saw a renewed focus from 2017 onwards, with the aim to ensure a free, open, and inclusive Indo-Pacific region.
- China is not a member of the QUAD, and the group is often seen as a counterbalance to China's growing influence in the Indo-Pacific region.
- The QUAD countries conduct joint military exercises, share intelligence, and collaborate on various security and economic initiatives to strengthen their strategic partnership.

Additional Information

- **Indo-Pacific Strategy**
  - The Indo-Pacific Strategy involves promoting peace, stability, and economic prosperity in the region, emphasizing the importance of maritime security and the rule of law.
  - The QUAD plays a significant role in this strategy by fostering cooperation among like-minded countries to address common challenges.
- **Malabar Exercise**
  - The Malabar Exercise is a trilateral naval exercise involving the United States, Japan, and India, with Australia joining in recent years.
  - It aims to enhance interoperability and strengthen maritime security cooperation among participating navies.
- **ASEAN**
  - ASEAN (Association of Southeast Asian Nations) is a regional intergovernmental organization comprising ten Southeast Asian countries.
  - While not directly part of the QUAD, ASEAN plays a crucial role in regional security and economic initiatives, and the QUAD often collaborates with ASEAN members.
- **Free and Open Indo-Pacific (FOIP)**
  - FOIP is a vision promoted by the United States and Japan to ensure a rules-based international order in the Indo-Pacific region.
  - The initiative seeks to promote connectivity, economic development, and security cooperation among countries in the region.

Question 9

Who has become the first woman chairperson of the Railway Board of Indian Railways in 2023 ?

Options:

A. Jaya Verma Sinha

B. Mita Vashishth

C. Ravneet Kaur

D. Vasudha Gupta

Answer: A

Solution:

The correct answer is **Jaya Verma Sinha**.

Key Points

- Jaya Verma Sinha became the first woman chairperson of the Railway Board of Indian Railways in 2023.
- She is a seasoned railway officer with vast experience, having joined the Indian Railway Traffic Service (IRTS) in 1988.
- Prior to her appointment as chairperson, she served as the Member (Operations and Business Development) of the Railway Board.
- Jaya Verma Sinha has played a crucial role in various operational and strategic initiatives within the Indian Railways.

Additional Information

- **Indian Railway Traffic Service (IRTS)**
  - IRTS is one of the prestigious Group 'A' services under the Government of India.
  - It is responsible for managing the transportation operations and commercial aspects of the Indian Railways.
  - Officers in this service ensure efficient and safe movement of passengers and freight.
- **Railway Board**
  - The Railway Board is the apex body of the Indian Railways, responsible for policy formulation, planning, and operational management.
  - It reports to the Ministry of Railways and is instrumental in the administration and functioning of the entire railway network in India.
  - The board consists of various members who handle different operational and strategic areas such as traffic, engineering, and finance.
- **Indian Railways**
  - Indian Railways is one of the largest and oldest railway networks in the world.
  - It operates under the Ministry of Railways and plays a critical role in the transport infrastructure of India.
  - It serves millions of passengers daily and facilitates the movement of goods across the country.

Question 10

Match List-I with List-II :

List-I Country		List-II Currency	
(A)	Myanmar	(I)	Ruble
(B)	Russia	(II)	Ngultrum
(C)	Malaysia	(III)	Kyat
(D)	Bhutan	(IV)	Ringgit

Choose the correct answer from the options given below.

Options:

A. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

B. (A) - (III), (B) - (I), (C) - (IV), (D) - (II)

C. (A) - (IV), (B) - (I), (C) - (III), (D) - (II)

D. (A) - (II), (B) - (I), (C) - (IV), (D) - (III)

Answer: B

Solution:

The correct answer is **Option 2**.

Key Points

- The currency of Myanmar is **Kyat**.
- The currency of Russia is **Ruble**.
- The currency of Malaysia is **Ringgit**.
- The currency of Bhutan is **Ngultrum**.
- The correct matching of countries and their currencies is:
  (A) Myanmar - (III) Kyat
  (B) Russia - (I) Ruble
  (C) Malaysia - (IV) Ringgit
  (D) Bhutan - (II) Ngultrum

Additional Information

- **Myanmar Kyat (MMK)**
  - The Kyat is the official currency of Myanmar and is abbreviated as MMK.
  - It was introduced in 1952 replacing the rupee.
- **Russian Ruble (RUB)**
  - The Ruble is the currency of Russia and some other countries in the region.
  - It is one of the oldest national currencies, first issued in the 13th century.
- **Malaysian Ringgit (MYR)**
  - The Ringgit is the currency of Malaysia, abbreviated as MYR.
  - It was formerly known as the Malaysian dollar.

- **Bhutanese Ngultrum (BTN)**
  - The Ngultrum is the currency of Bhutan and is abbreviated as BTN.
  - It is pegged at par with the Indian Rupee, which is also accepted as legal tender in Bhutan.

Question 11

"Jhulaghat Suspension Bridge" between India and which country has become fully operational now ?

Options:

A. Bhutan

B. Nepal

C. China

D. Myanmar

Answer: B

Solution:

The correct answer is **Nepal**.

Key Points

- The Jhulaghat Suspension Bridge is a significant link between India and Nepal.
- This bridge connects the town of Jhulaghat in India's Uttarakhand state with the district of Baitadi in Nepal.
- The bridge has become fully operational, enhancing connectivity and trade between the two nations.
- The operationalization of the bridge is expected to boost local economies on both sides of the border.
- The bridge facilitates easier and faster movement of people and goods, strengthening bilateral ties.

Additional Information

- **India-Nepal Relations**
  - India and Nepal share a long-standing relationship rooted in historical, cultural, and geographical proximity.
  - The two countries have an open border, allowing for free movement of people and goods.
  - Bilateral cooperation spans various sectors including trade, education, and infrastructure development.
  - India is one of Nepal's largest trading partners and provides significant aid for development projects.
- **Uttarakhand**
  - Uttarakhand is a northern state in India, known for its scenic landscapes and pilgrimage sites.
  - The state shares its international border with China (Tibet) and Nepal.

    - Important rivers like Ganga and Yamuna originate from this region.
    - It plays a crucial role in India's connectivity with Nepal through various road and bridge links.
- **Baitadi District**
    - Baitadi is a district in Sudurpashchim Province, Nepal.
    - It is known for its hilly terrain and rural economy.
    - The district is important for cross-border trade and movement between Nepal and India.
    - Improved infrastructure like the Jhulaghat Suspension Bridge aids in economic development.
- **Suspension Bridges**
    - Suspension bridges are a type of bridge in which the deck (the load-bearing portion) is hung below suspension cables.
    - They are known for their ability to span long distances and are often used in areas with challenging terrains.
    - These bridges are both functional and visually striking, making them landmarks in many regions.
    - Modern engineering techniques have made suspension bridges safer and more durable.

Question 12

Due to ocean acidification when the ocean becomes more acidic, what happens to the pH level of the ocean ?

Options:

A. The pH level goes down.

B. The pH level stays the same.

C. The pH level goes up.

D. The pH level becomes zero.

Answer: A

Solution:

The correct answer is **The pH level goes down.**.

Key Points

- Ocean acidification refers to the process by which the pH of the ocean decreases, making it more acidic.
- This phenomenon occurs primarily due to the absorption of excess carbon dioxide (CO_2) from the atmosphere.
- When CO_2 dissolves in seawater, it forms carbonic acid, which subsequently releases hydrogen ions, lowering the pH.
- A lower pH level in the ocean can have detrimental effects on marine life, particularly organisms that rely on calcium carbonate for their shells and skeletons.

Additional Information

- **pH Scale:**
  - The pH scale measures the acidity or alkalinity of a solution, ranging from 0 to 14.
  - A pH level below 7 indicates acidity, while a pH level above 7 indicates alkalinity.
  - Pure water has a neutral pH of 7.
- **Carbon Dioxide Absorption:**
  - The oceans absorb approximately 30% of the CO_2 released into the atmosphere by human activities.
  - This absorption helps mitigate the greenhouse effect but leads to ocean acidification.
- **Impact on Marine Life:**
  - Marine organisms such as corals, mollusks, and some plankton species are particularly vulnerable to lower pH levels.
  - Acidification can weaken the shells and skeletons of these organisms, making it harder for them to survive.
- **Global Implications:**
  - Changes in ocean chemistry can affect marine ecosystems, fisheries, and the livelihoods of communities that depend on the ocean.
  - Understanding and mitigating ocean acidification is crucial for maintaining biodiversity and marine resources.

Question 13

Who is the first para-athlete to receive the Padma Bhushan award in India ?

Options:

A. Bhavina Patel

B. Devendra Jhajharia

C. Avani Lekhara

D. Mariyappan Thangavelu

Answer: B

Solution:

The correct answer is **Devendra Jhajharia**.

Key Points

- **Devendra Jhajharia** is the first para-athlete to receive the Padma Bhushan award in India.
- He was honored with the Padma Bhushan in **2017** for his contributions to the field of sports.
- Devendra Jhajharia is a renowned javelin thrower and has won multiple medals in the Paralympics.

- He has also been awarded the Padma Shri in **2004** and the Rajiv Gandhi Khel Ratna in **2021**.

Additional Information

- **Padma Bhushan**
  - It is the third-highest civilian award in India.
  - The award recognizes distinguished service of a high order to the nation, in any field.
  - Instituted in 1954, the award is announced annually on Republic Day.
- **Paralympics**
  - The Paralympic Games are a major international multi-sport event for athletes with disabilities.
  - The Games are organized in parallel with the Olympic Games.
  - The International Paralympic Committee (IPC) governs the Paralympic Games.
- **Devendra Jhajharia's Achievements**
  - He won gold medals in the javelin throw at the 2004 Athens Paralympics and the 2016 Rio Paralympics.
  - He set a new world record in the F46 javelin throw category during the 2016 Rio Paralympics.

Question 14

Zemu Glacier is located in which state of India ?

Options:

A. Uttarakhand

B. Himachal Pradesh

C. Sikkim

D. Arunachal Pradesh

Answer: C

Solution:

The correct answer is **Sikkim**.

Key Points

- The Zemu Glacier is located in the northeastern state of India, **Sikkim**.
- It is the largest glacier in the Eastern Himalayas, spanning approximately 26 kilometers in length.
- The glacier is situated on the eastern side of **Kanchenjunga**, the third highest peak in the world.
- The Zemu Glacier feeds the **Zemu River**, which is a tributary of the Teesta River, a major river in Sikkim and West Bengal.

Additional Information

- **Himalayas:**
  - The Himalayas are the highest mountain range in the world, extending across five countries: Bhutan, China, India, Nepal, and Pakistan.
  - They are home to the world's highest peaks, including Mount Everest and Kanchenjunga.
  - The range plays a crucial role in regulating the climate and water cycles in the Indian subcontinent.
- **Kanchenjunga:**
  - Kanchenjunga is the third highest mountain in the world with an elevation of 8,586 meters (28,169 feet).
  - It is located on the border between Nepal and the Indian state of Sikkim.
  - Kanchenjunga translates to "The Five Treasures of Snows," referring to its five prominent peaks.
- **Glaciers:**
  - Glaciers are large masses of ice that form in regions where the accumulation of snow exceeds its melting and sublimation over many years.
  - They are important freshwater reservoirs, feeding many of the world's rivers and lakes.
  - Glacier retreat is a significant indicator of climate change and global warming.
- **Teesta River:**
  - The Teesta River originates from the Pahunri (or Teesta Kangse) glacier in the Eastern Himalayas.
  - It flows through the Indian states of Sikkim and West Bengal before entering Bangladesh, where it merges with the Brahmaputra River.
  - The Teesta is crucial for irrigation, drinking water, and hydroelectric power generation in the region.

Question 15

Who among the following is Chile’s first woman President ?

Options:

A. Mary Robinson

B. Michelle Bachelet

C. Kim Campbell

D. Jennifer Shipley

Answer: B

Solution:

The correct answer is **Michelle Bachelet**.

Key Points

- Michelle Bachelet was elected as the President of Chile in 2006, becoming the first woman to hold this office in the country's history.
- She served as President of Chile for two non-consecutive terms, from 2006 to 2010 and from 2014 to 2018.

- Bachelet is a member of the Socialist Party of Chile and has a background in medicine, having trained as a pediatrician.
- Her presidency focused on social reforms, including education, healthcare, and pension systems.

Additional Information

- **Women in Politics**
  - Globally, the participation of women in politics has been increasing, with many countries seeing their first female leaders in recent decades.
  - Women leaders often bring different perspectives and priorities to governance, including a stronger focus on social issues and gender equality.
- **Chile's Political Landscape**
  - Chile is a democratic republic where the President serves as both the head of state and government.
  - The country has experienced significant political and economic transformations over the past decades, transitioning from military rule to a vibrant democracy.
- **Social Reforms in Chile**
  - Under Bachelet's leadership, Chile implemented various social reforms aimed at reducing inequality and improving public services.
  - These reforms included changes to the education system, healthcare services, and pension schemes.
- **International Roles**
  - After her presidency, Michelle Bachelet served as the United Nations High Commissioner for Human Rights from 2018 to 2022.
  - In this role, she focused on promoting and protecting human rights globally.

Question 16

Which organisation developed and launched 'Ugram' Indigenous Assault Rifle for the armed forces ?

Options:

A. ISRO

B. BEL

C. HAL

D. DRDO

Answer: D

Solution:

The correct answer is **DRDO**.

Key Points

- The Defence Research and Development Organisation (DRDO) developed the 'Ugram' Indigenous Assault Rifle for the Indian armed forces.
- This rifle is designed to enhance the combat capabilities of the Indian military, providing them with a reliable and efficient weapon.
- The 'Ugram' rifle is an example of DRDO's commitment to indigenization in defense technology and reducing dependency on foreign arms.
- It incorporates advanced features and is tailored for the specific needs of the Indian armed forces in various operational scenarios.

Additional Information

- **DRDO (Defence Research and Development Organisation)**
  - Established in 1958, DRDO is an agency under the Department of Defence Research and Development in Ministry of Defence, India.
  - Its mandate includes developing defense technologies, systems, and equipment to enhance the Indian armed forces' operational capabilities.
  - DRDO's research spans diverse fields including aeronautics, electronics, armaments, combat vehicles, engineering systems, and life sciences.
  - It has been instrumental in making India self-reliant in defense technology through the development of various indigenous systems such as missiles, radars, and naval systems.
- **Indigenization in Defense**
  - Indigenization refers to the development and production of defense equipment within the country, reducing reliance on foreign suppliers.
  - This strategy ensures national security, technological autonomy, and economic benefits by promoting local industries.
  - India's efforts towards indigenization include projects like the Tejas fighter aircraft, Arjun tank, and the 'Ugram' rifle.
  - Indigenization is also supported by policies such as 'Make in India' and 'Atmanirbhar Bharat' (self-reliant India).
- **Assault Rifles**
  - Assault rifles are firearms designed for use in combat, providing the capability to switch between semi-automatic and fully-automatic fire.
  - They are the primary weapon for infantry soldiers, combining accuracy, range, and firepower.
  - Key features often include a detachable magazine, intermediate cartridge, and selective fire options.
  - Examples of assault rifles include the AK-47, M16, and the newly developed 'Ugram' by DRDO.

Question 17

Which of the following substances is a bad conductor of electricity ?

Options:

A. Diamond

B. Gold

C. Silver

D. Graphite

Answer: A

Solution:

The correct answer is **Diamond**.

Key Points

- **Diamond** is an allotrope of carbon where each carbon atom is bonded to four other carbon atoms in a tetrahedral structure, making it an excellent insulator.
- Due to its rigid lattice structure, **diamond** does not have free electrons to conduct electricity.
- Unlike **graphite**, another carbon allotrope, diamond lacks delocalized electrons, which are necessary for electrical conductivity.
- Diamond's primary use is in cutting, grinding, and drilling tools due to its hardness, and it is also used in jewelry.
- Despite its poor electrical conductivity, diamond is an excellent conductor of heat.

Additional Information

- **Gold**
  - Gold is a highly conductive metal used extensively in electronic components due to its excellent conductivity and resistance to corrosion.
  - It is a good conductor because it has free electrons that can move easily through the metal lattice.
  - Gold is often used in high-reliability applications such as connectors and switches in computers and other electronic devices.
- **Silver**
  - Silver is the best conductor of electricity among all metals, even better than copper.
  - It is used in various applications such as electrical contacts, conductors, and in some high-end electronic devices.
  - Silver's high conductivity is due to its free electrons that facilitate the easy flow of electric current.
- **Graphite**
  - Graphite, another allotrope of carbon, is a good conductor of electricity due to the presence of delocalized electrons in its structure.
  - It is used in applications such as electrodes in batteries and as a lubricant.
  - Graphite conducts electricity because of its layered structure where electrons can move freely within the layers.

Question 18

Which of the following disease is caused due to the deficiency of proteins ?

Options:

A. Arthritis

B. Kwashiorkor

C. Goitre

D. Night Blindness

Answer: B

Solution:

The correct answer is **Kwashiorkor**.

Key Points

- Kwashiorkor is a severe form of malnutrition caused by a deficiency in dietary proteins.
- It typically affects children in developing countries where diets are low in protein but high in carbohydrates.
- Symptoms include swelling (edema), an enlarged liver, thinning hair, and a distended abdomen.
- Immediate medical treatment and dietary intervention are crucial to prevent long-term health complications and mortality.

Additional Information

- **Protein-Energy Malnutrition (PEM)**
  - PEM is a range of pathological conditions arising from coincident lack of dietary protein and energy.
  - It includes conditions like Kwashiorkor and Marasmus.
  - Marasmus is characterized by severe weight loss and muscle wasting due to a significant deficiency in caloric intake.
- **Micronutrient Deficiencies**
  - Besides protein, deficiencies in vitamins and minerals like Vitamin A, Iron, and Iodine also lead to serious health issues.
  - Goitre is caused by Iodine deficiency, while Night Blindness is due to a lack of Vitamin A.
- **Nutritional Interventions**
  - Programs such as supplementary feeding, food fortification, and public health campaigns are crucial in combating malnutrition.
  - Education on balanced diets and accessible healthcare services are essential for preventing protein-energy malnutrition.

Question 19

Match List-I with List-II :

List-I **Navy (Institution)**		**List-II** **Place**	
(A)	INS Chilka	(I)	Goa

(B)	INS Hansa	(II)	Andhra Pradesh
(C)	INS Satavahana	(III)	Kerala
(D)	INS Garuda	(IV)	Odisha

Choose the correct answer from the options given below.

Options:

A. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

B. (A) - (I), (B) - (IV), (C) - (II), (D) - (III)

C. (A) - (IV), (B) - (I), (C) - (III), (D) - (II)

D. (A) - (IV), (B) - (I), (C) - (II), (D) - (III)

Answer: D

Solution:

The correct answer is **(A) - (IV), (B) - (I), (C) - (II), (D) - (III)**.

Key Points

- **INS Chilka** is located in **Odisha** and serves as a premier training establishment for new recruits of the Indian Navy.
- **INS Hansa** is an air station located in **Goa**, it is one of the busiest naval air stations and hosts the Indian Navy's fighter aircraft.
- **INS Satavahana** is located in **Andhra Pradesh**, it serves as a training establishment for submarine and diving training.
- **INS Garuda** is a naval air station located in **Kerala**, it supports naval aviation operations.

Additional Information

- **INS Chilka**
  - Located on the banks of Chilka Lake in Odisha.
  - Known as the premier basic training establishment of the Indian Navy.
  - Trains sailors in various disciplines and prepares them for naval service.
- **INS Hansa**
  - Located near Dabolim in Goa.
  - Acts as the base for Indian Navy's fixed-wing aircraft and helicopters.
  - Plays a key role in maritime surveillance, reconnaissance, and defense operations.
- **INS Satavahana**
  - Located in Visakhapatnam, Andhra Pradesh.
  - Specializes in the training of submariners and divers.
  - Equipped with facilities for simulated underwater training.
- **INS Garuda**
  - Located in Kochi, Kerala.
  - Supports naval aviation operations and aircraft maintenance.

- Acts as a hub for naval air operations in the southern region.

Question 20

DRDO has conducted the first successful flight test of Agni-5 missile equipped with MIRV technology. What is the full form of MIRV ?

Options:

A. Multiple Independently Targetable Re-Entry Vehicle

B. Mission India Target Re-Entry Vehicle

C. Multiple Independently Technology Re-Entry Vehicle

D. Multiple Indirect Targetable Re-Entry vehicle

Answer: A

Solution:

The correct answer is **Multiple Independently Targetable Re-Entry Vehicle**.

Key Points

- **MIRV stands for Multiple Independently Targetable Re-Entry Vehicle**, which refers to missile technology that allows a single missile to carry multiple nuclear warheads.
- The Agni-5 missile, tested by DRDO, is equipped with MIRV technology, enhancing its **strategic capabilities** by enabling it to hit several targets simultaneously.
- MIRV technology allows each warhead to be directed at a different target, increasing the missile's effectiveness and making it more difficult to intercept.
- The successful test of the Agni-5 missile with MIRV technology represents a significant milestone in India's defense capabilities, **bolstering its deterrence and second-strike capabilities**.

Additional Information

- **Agni-5 Missile:**
  - It is an intercontinental ballistic missile (ICBM) developed by the Defence Research and Development Organisation (DRDO) of India.
  - Agni-5 has a range of over 5,000 kilometers, making it capable of reaching targets across Asia and parts of Europe.
  - The missile is designed to carry nuclear warheads and can be launched from mobile platforms, enhancing its operational flexibility.
- **DRDO:**
  - The Defence Research and Development Organisation is India's premier agency responsible for the development of technology for use by the military.

    - DRDO works under the Department of Defence Research and Development in the Ministry of Defence.
    - It has been instrumental in developing a range of military hardware, including missiles, aircraft, and electronics systems.
- **Strategic Deterrence:**
    - Strategic deterrence refers to the use of credible threats of retaliation to deter adversaries from taking hostile actions, particularly involving weapons of mass destruction.
    - MIRV technology enhances a country's strategic deterrence by ensuring that even if some missiles are intercepted, others will still reach their targets.
- **Second-Strike Capability:**
    - Second-strike capability is the assured ability to respond to a nuclear attack with powerful nuclear retaliation against the aggressor.
    - It is a critical component of nuclear deterrence, ensuring that a country can still retaliate even if its own forces are heavily damaged by a first strike.

Question 21

Which Indian has won the "Ramon Magsaysay Award-2023" ?

Options:

A. Korvi Rakshand

B. Ashwini Kumar

C. Dipti Ranjan Sahoo

D. Dr. Ravi Kannan R.

Answer: D

Solution:

The correct answer is **Dr. Ravi Kannan R.**.

Key Points

- Dr. Ravi Kannan R. is a prominent Indian oncologist who has dedicated his career to providing affordable cancer treatment to underprivileged patients.
- He is the director of the Cachar Cancer Hospital and Research Centre in Assam, which has become a beacon of hope for many cancer patients in the region.
- Dr. Kannan has been recognized for his relentless efforts in improving cancer care and making it accessible to the economically disadvantaged.
- His work has significantly reduced the burden of cancer in northeastern India through community-based programs and treatment initiatives.

Additional Information

- **Ramon Magsaysay Award**
  - The Ramon Magsaysay Award is often considered Asia's Nobel Prize, established to honor former Philippine President Ramon Magsaysay.
  - It is awarded annually to individuals or organizations in Asia who have shown integrity and courage in service to their communities.
  - The award recognizes achievements in government service, public service, community leadership, journalism, literature and creative communication arts, and peace and international understanding.
  - Recipients of the award are selected based on their transformative influence and leadership in addressing social issues and improving lives.
- **Cancer Treatment in India**
  - India faces a significant burden of cancer, with an estimated 1.16 million new cancer cases diagnosed each year.
  - The country has a wide network of cancer treatment facilities, including specialized hospitals and research centers.
  - Efforts are being made to make cancer treatment more affordable and accessible, especially for the underprivileged sections of society.
  - Government schemes like Ayushman Bharat provide financial assistance for cancer treatment to economically weaker patients.
- **Community-Based Health Programs**
  - Community-based health programs play a crucial role in improving healthcare access and outcomes, especially in rural and underserved areas.
  - These programs involve local communities in health education, prevention, and early diagnosis initiatives.
  - Such initiatives often focus on common diseases and health issues prevalent in the community, including cancer, maternal and child health, and infectious diseases.
  - Successful community health programs rely on the active participation of community health workers, local leaders, and healthcare providers.

Question 22

Who has been appointed the Chairman of the 16th Finance Commission of India ?

Options:

A. Ajay Narayan Jha

B. Smt. Annie George Mathew

C. Pradip Kumar Mohanty

D. Dr. Arvind Panagariya

Answer: D

Solution:

The correct answer is **Dr. Arvind Panagariya**.

Key Points

- Dr. Arvind Panagariya has been appointed as the Chairman of the 16th Finance Commission of India, a prestigious position.
- He is a renowned economist and former Vice Chairman of the NITI Aayog, India's policy think tank.
- The Finance Commission is responsible for recommending the distribution of the net proceeds of taxes between the Centre and the States.
- Dr. Panagariya has a distinguished academic career, having served as a professor of economics at Columbia University.

Additional Information

- **Finance Commission of India**
  - The Finance Commission is a constitutional body formed to define the financial relations between the central government and the individual state governments.
  - It is established under Article 280 of the Indian Constitution by the President of India.
  - The Finance Commission makes recommendations on the distribution of tax revenues between the Union and the States and amongst the States themselves.
  - It also addresses issues related to fiscal consolidation and debt management.
- **Dr. Arvind Panagariya**
  - Dr. Panagariya is an Indian-American economist and a professor of economics at Columbia University.
  - He served as the first Vice Chairman of the NITI Aayog from January 2015 to August 2017.
  - He has also worked for the World Bank, IMF, and UNCTAD in various capacities.
  - Dr. Panagariya is a prolific author and has written several books on economics and policy-making.
- **NITI Aayog**
  - The National Institution for Transforming India, also called NITI Aayog, was established in 2015 to replace the Planning Commission.
  - It aims to foster cooperative federalism through structured support initiatives and mechanisms with the States.
  - NITI Aayog designs strategic and long-term policies and programs for the Government of India.
  - It provides relevant technical advice to the Centre and States.

Question 23

Sri Ranganathswamy Temple which is situated in Tamil Nadu, is dedicated to which deity ?

Options:

A. Lord Shiva

B. Lord Vishnu

C. Goddess Durga

D. Goddess Lakshmi

Answer: B

Solution:

The correct answer is **Lord Vishnu**.

Key Points

- Sri Ranganathswamy Temple is dedicated to **Lord Vishnu**.
- This temple is located in Srirangam, **Tamil Nadu**.
- It is one of the largest functioning Hindu temples in the world.
- The temple is renowned for its architectural grandeur and spiritual significance.
- It is a major pilgrimage site for Vaishnavites.

Additional Information

- **Architectural Style**
  - The temple is built in the **Dravidian style of architecture**.
  - It has intricately carved **gopurams** (tower gateways) and expansive courtyards.
- **Religious Significance**
  - Sri Ranganathswamy Temple is considered one of the **108 Divya Desams**, the holy abodes of Lord Vishnu.
  - The temple is a central figure in the **Vaishnavism tradition**.
- **Festivals**
  - The temple hosts the grand **Vaikunta Ekadasi festival** which attracts thousands of devotees.
  - Other significant festivals include **Brahmotsavam** and **Panguni Uthiram**.
- **Historical Background**
  - The temple has a history dating back over a thousand years.
  - It has been mentioned in various ancient Tamil literature and inscriptions.

Question 24

The Election Commission of India gets the power to conduct elections from which of the following articles ?

Options:

A. Article 324

B. Article 280

C. Article 264

D. Article 26

Answer: A

Solution:

The correct answer is **Article 324**.

Key Points

- **Article 324** of the Indian Constitution provides for the establishment of the Election Commission of India.
- This article empowers the Election Commission to supervise, direct, and control the preparation of electoral rolls and the conduct of elections to Parliament, State Legislatures, and the offices of President and Vice-President.
- Article 324 establishes a multi-member Election Commission, with the Chief Election Commissioner and other Election Commissioners as deemed necessary by the President.
- The Election Commission of India is an autonomous constitutional authority responsible for administering election processes in India at both the national and state levels.

Additional Information

- **Article 280**
  - It deals with the composition and functions of the Finance Commission.
  - The Finance Commission is constituted by the President to recommend the distribution of revenues between the Union and the States.
- **Article 264**
  - It defines the extent of the executive power of the Union and the States.
  - This article specifies that the executive power of the Union and States extends to matters with respect to which Parliament and the State Legislature have the power to make laws.
- **Article 26**
  - It deals with the freedom to manage religious affairs.
  - This article ensures that every religious denomination or any section thereof shall have the right to establish and maintain institutions for religious and charitable purposes.
- **Election Commission of India**
  - Established on January 25, 1950, the Election Commission of India is responsible for administering election processes in India.
  - The Commission ensures that elections are free, fair, and transparent.

Question 25

Match List-I with List-II :

List-I Centre of Handicraft		List-II State	
(A)	Mon	(I)	Arunachal Pradesh
(B)	Nalbari	(II)	Assam

(C)	Pasighat	(III)	Meghalaya
(D)	Tura	(IV)	Nagaland

Choose the correct answer from the options given below.

Options:

A. (A) - (IV), (B) - (II), (C) - (I), (D) - (III)

B. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)

C. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)

D. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)

Answer: A

Solution:

The correct answer is **(A) - (IV), (B) - (II), (C) - (I), (D) - (III)**.

Key Points

- **Mon** is a prominent centre of handicraft in **Nagaland**.
- **Nalbari** is known for its handicraft tradition in **Assam**.
- **Pasighat** is a notable centre of handicrafts in **Arunachal Pradesh**.
- **Tura** is recognized for its handicrafts in **Meghalaya**.

Additional Information

- **Nagaland**
  - Nagaland is renowned for its rich tribal culture and vibrant traditional crafts.
  - Handicrafts include intricate beadwork, wood carvings, and handwoven textiles.
- **Assam**
  - Assam is famous for its silk weaving, particularly the Muga and Pat silk.
  - Other notable crafts include bamboo and cane products, pottery, and bell metal work.
- **Arunachal Pradesh**
  - Handicrafts of Arunachal Pradesh include weaving, basketry, and wood carving.
  - The state is known for its traditional handloom designs and patterns.
- **Meghalaya**
  - Meghalaya's handicrafts include weaving, bamboo and cane products, and traditional musical instruments.
  - The state is also known for its pottery and woodwork.

Question 26

In which state is “Amchang Wildlife Sanctuary” loacted ?

Options:

A. Assam

B. Rajasthan

C. Odisha

D. Manipur

Answer: A

Solution:

The correct answer is **Assam**.

Key Points

- Amchang Wildlife Sanctuary is located in the state of **Assam**, India.
- It is situated near the capital city of Assam, **Guwahati**.
- This sanctuary was officially declared as a wildlife sanctuary in **2004**.
- Amchang Wildlife Sanctuary covers an area of approximately **78.64 square kilometers**.

Additional Information

- **Flora and Fauna**
  - The sanctuary is home to various species of flora such as Sal, Teak, and Bamboo forests.
  - It also houses a diverse range of fauna, including Asian elephants, leopards, and several species of birds and reptiles.
- **Conservation Efforts**
  - Efforts are being made to protect and conserve the wildlife in the sanctuary through various initiatives.
  - Anti-poaching measures and habitat restoration are key activities undertaken by the forest department.
- **Tourism**
  - Amchang Wildlife Sanctuary is a popular destination for nature enthusiasts and bird watchers.
  - Guided tours and safaris are available for visitors to explore the rich biodiversity of the sanctuary.
- **Geographical Significance**
  - The sanctuary is part of the Eastern Himalayas Biodiversity Hotspot, known for its high level of endemism and diversity.
  - It plays a crucial role in maintaining ecological balance and supporting the livelihoods of nearby communities.

Question 27

India’s first 3D-printed Post Office has been inaugurated in :

Options:

A. Guwahati

B. Kolkata

C. Mumbai

D. Bengaluru

Answer: D

Solution:

The correct answer is **Bengaluru**.

Key Points

- India's first 3D-printed post office has been inaugurated in **Bengaluru, Karnataka**.
- The 3D-printed post office is located at **Cambridge Layout in Halasuru** area of Bengaluru.
- This innovative project was executed by **Larsen & Toubro (L&T)**, a leading Indian multinational company.
- The construction of the 3D-printed post office was completed in just **45 days**.
- This initiative is a part of the efforts to integrate **advanced technology** into public infrastructure in India.

Additional Information

- **3D Printing Technology**
  - 3D printing, also known as additive manufacturing, creates a physical object from a digital design by layering materials.
  - This technology is used in various industries including healthcare, automotive, aerospace, and construction.
  - It allows for rapid prototyping, customization, and efficient use of materials.
  - The primary materials used in 3D printing include plastics, resins, metals, and ceramics.
- **Applications of 3D Printing in Construction**
  - 3D printing in construction can significantly reduce the time and cost of building structures.
  - It allows for complex and customized architectural designs that are difficult to achieve with traditional methods.
  - This method also minimizes waste, as it uses only the material necessary for the construction.
  - 3D-printed buildings can incorporate sustainable and eco-friendly materials, contributing to green construction practices.
- **Larsen & Toubro (L&T)**
  - Larsen & Toubro is a major technology, engineering, construction, and manufacturing company in India.
  - L&T has been at the forefront of implementing cutting-edge technologies in construction and infrastructure projects.
  - The company has a strong presence in over 30 countries worldwide.

- L&T is known for its innovative solutions and commitment to quality and sustainability in construction.

- **India Post**
  - India Post, also known as the Department of Posts, operates under the Ministry of Communications.
  - It is the largest postal network in the world with over 1.5 lakh post offices across the country.
  - India Post offers a wide range of services including mail delivery, financial services, and retail services.
  - It plays a crucial role in providing postal services to remote and rural areas of India.

Question 28

What should come in the place of the question mark (?) in the following alphanumeric series ?

A1X, B4P, E25J, J100F, ?

Options:

A. O289D

B. O225E

C. Q289D

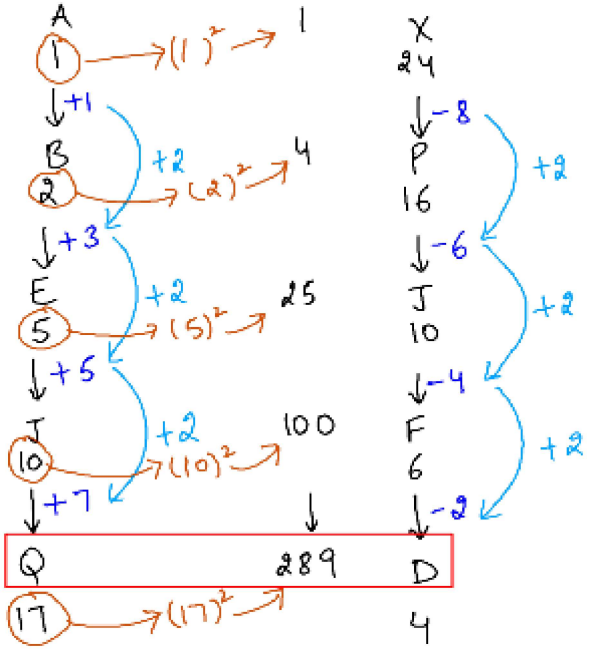
D. Q225E

Answer: C

Solution:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The logic followed here is:



Hence,**"Option 3"**is the correct answer.

Question 29

In the given analogy, choose the word which will replace the question mark :

NEGI : MVTR :: SING : ?

Options:

A. TRNS

B. TRNT

C. FRMT

D. HRMT

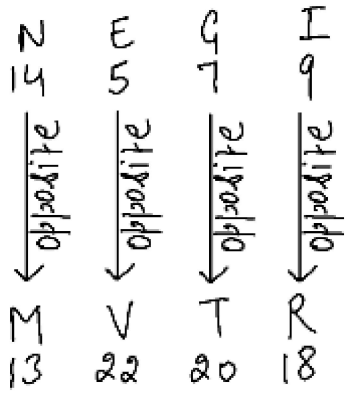
Answer: D

Solution:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

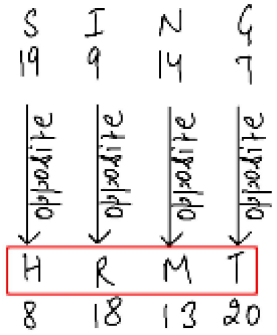
The logic followed here is:

NEGI : MVTR



Similarly,

SING : ?



Hence,**"Option 4"**is the correct answer.

Question 30

In a certain code language ‘ki ru pi’ means ‘nobody like cruel’, ‘ki mi cha’ means ‘king was cruel’ and ‘ru pi cha’ means ‘nobody like king’. What is the code for ‘was’ in the given code language ?

Options:

A. ki

B. mi

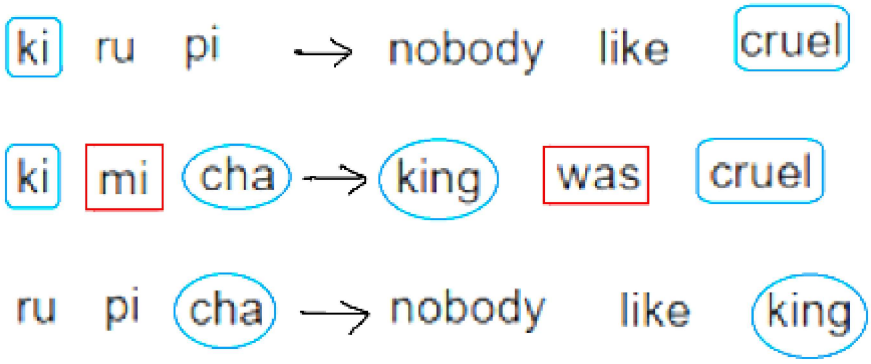
C. cha

D. ru

Answer: B

Solution:

According to the given information,



Thus, according to the given codes 'mi' is the code for the word 'was'.

Hence, the correct answer is**"Option 2".**

Question 31

Read the following information carefully to choose the best option for the question :

‘P % Q’ means that ‘P is the sister of Q’

‘P + Q’ means that ‘P is the son of Q’

‘P ×Q’ means that ‘P is the husband of Q’

‘P – Q’ means that ‘P is the brother of Q’

Which of the following means ‘A is the son-in-law of G’ ?

Options:

A. A × U % S × G

B. A + S % U × G

C. A – S + U × G

D. A × U % S + G

Answer: D

Solution:

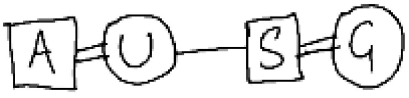
Symbol in Diagram	Meaning
○	Female
□	Male
=	Married couple
—	Siblings
|	Difference of a generation

Decoding symbols:

P is				
Symbol	%	+	×	–
Meaning	Sister	Son	Husband	Brother
to Q				

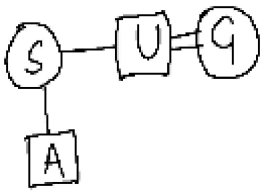
So, checking each option one by one:

Option 1) A × U % S × G→ A is the husbandof U who is the sister of S who is the husbandof G.



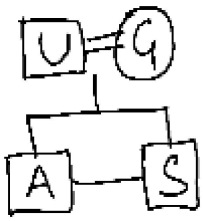
Here, A is G's husband's brother-in-law.

Option 2) A + S % U × G→A is the sonof S who is the sister of U who is the husbandof G.



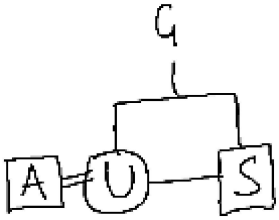
Here, A is G's niece.

Option 3) A – S + U × G→A is the brotherof S who is the son of U who is the husbandof G.



Here, A is G's son.

Option 4) A × U % S + G→A is the husbandof U who is the sister of S who is the sonof G.



Here, A is G's son-in-law.

Hence, the correct answer is**"Option 4".**

Question 32

If 26th January, 2020 was a Sunday, then what day of the week was it on 16th March of that year ?

Options:

A. Sunday

B. Monday

C. Tuesday

D. Wednesday

Answer: B

Solution:

Given:26thJanuary, 2020 was a Sunday

The number of odd days from26thJanuary, 2020to 16thMarch, 2020:

Year	Period	Calculation	Odd days
2020	26 January 2020 - 16 March 2020	5 January + 29 February + 16 March = 50 days	50 ÷ 7 = 1
Total odd days			**1**

So, one odd days will beadded toSunday because the day is asked in future.

∴Mondaywas the day of the week on16thMarch, 2020.

Hence,**"Option 2"**is the correct answer.

Question 33

What will be the measurement of the angle made by the hour and minute hands of a clock when the time is ‘quarter past 3’ ?

Options:

A. $6\frac{1}{2}°$

B. $10°$

C. $7\frac{1}{2}°$

D. $8\frac{1}{2}°$

Answer: C

Solution:

Given time:‘quarter past 3’→ 3:15

Given time gap = 15 minute

In one minutes, hour hand covers angular distance =0.5º

So, in 1 hours 20 minutes, minutes hand covers = 0.5º× 15 min⇒$7\frac{1}{2}$°

Hence,**"Option 3"**is the correct answer.

Additional Information

Movement of Hour head

12 hr = 360º

1 hr = 30º

60 min = 30º

1 min = 0.5º

Movement ofMinute head

1 hr =360º

60 min =360º

1 min = 6º

5 min = 30º

Movement ofSecondshead

1 min=360º

60 sec=360º

1 sec= 6º

5 sec= 30º

Gapping between hour head and minute head

55 min = 60 min

1 min = 60/55

Question 34

If in a certain code laguage, ‘MERCURY’ is coded as ‘NGUGZXF’, then how will ‘ENTANGLE’ be coded in the same code language ?

Options:

A. FPXFSMSM

B. FPWESMSM

C. FPWESNSN

D. FPWFTNSM

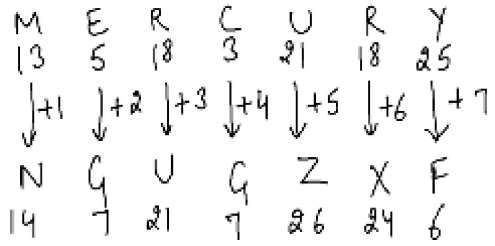
Answer: B

Solution:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

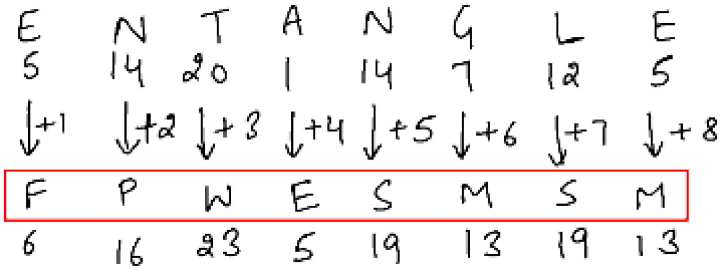
The logic followed here is:

'MERCURY' is coded as 'NGUGZXF'



Similarly,

'ENTANGLE' is coded as



Hence,**"Option 2"**is the correct answer.

Question 35

The problem given below consists of a question and two statements numbered I and II. You have to decide whether the data provided in the statements are sufficient to answer the question.

How many sisters does Sunny have ?

I. Sunny is the only son of his parents.

II. Sunny's parents have three children.

Options:

A. Only statement I alone is sufficient to answer the question.

B. Only statement II alone is sufficient to answer the question.

C. Statements I and II together are sufficient to answer the question.

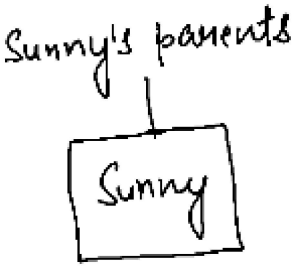
D. Either statement I or II alone is sufficient to answer the question.

Answer: C

Solution:

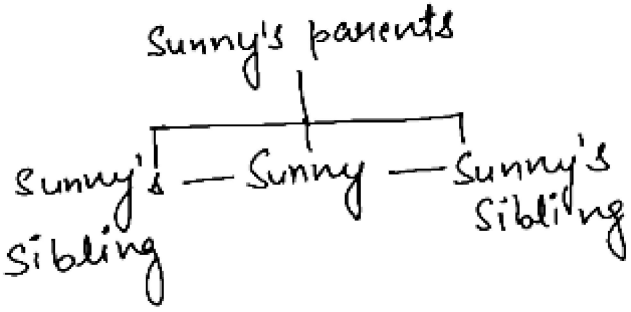
Symbol in Diagram	Meaning
○	Female
□	Male
=	Married couple
—	Siblings
|	Difference of a generation

StatementI. Sunny is the only son of his parents.



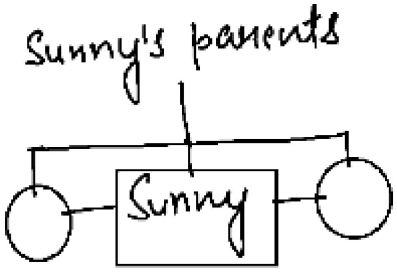
Here, no information regarding Sunny's sister(s), therefore statement (I) is not sufficient to answer the question.

StatementII. Sunny’s parents have three children.



Here, Sunny's sibling's can be either brother or sister, therefore statement (II) is not sufficient to answer the question.

Combined statement (I) and (II):Sunny is the only son of his parents.Sunny’s parents have three children.



Here, Sunny has two sisters.

Thus,Statements I and II together are sufficient to answer the question.

Hence, the correct answer is**"Option 3"**

Question 36

A boy leaves his house. He travels 6 km towards South, then travels 8 km towards West and further travels 9 km towards South. How far and in which direction is he from his house now ?

Options:

A. 13 km, South West

B. 17 km, South West

C. 17 km, North West

D. 13 km, West

Answer: B

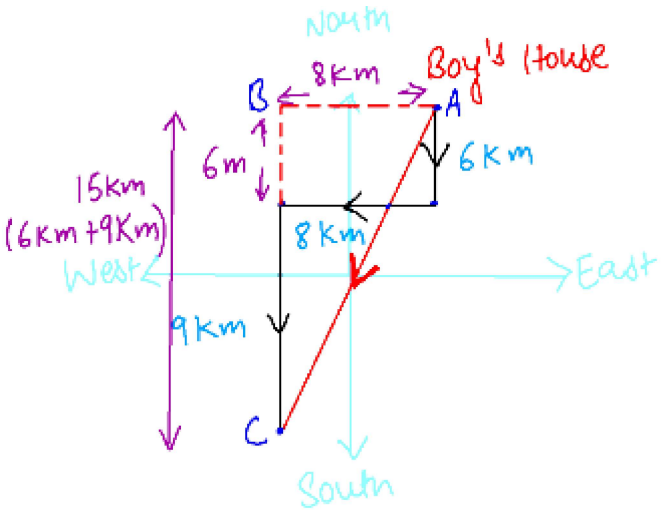
Solution:

Given:

A boy leaves his house.

He travels 6 km towards South, then travels 8 km towards West

and further travels 9 km towards South.



Applying Pythagorastheorem :

$(AC)^2 = (AB)^2 + (BC)^2$

$(AC)^2 = (8)^2 + (15)^2$

$(AC)^2 = 64 + 225$

$AC = \sqrt{289}$

AC = 17 km

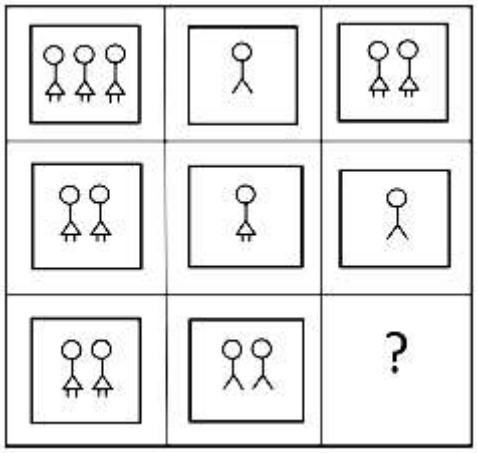
Thus, the boy is 17 km far in the southwest direction from his house.

Hence, **"Option 2"** is the correct answer.

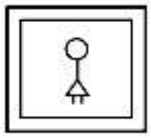
Question 37

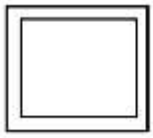
Find out which of the answer figures completes the figure matrix :

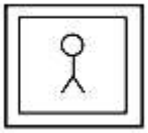
Problem figure :

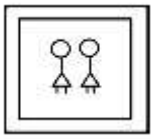


Options:

A. 

B. 

C. 

D. 

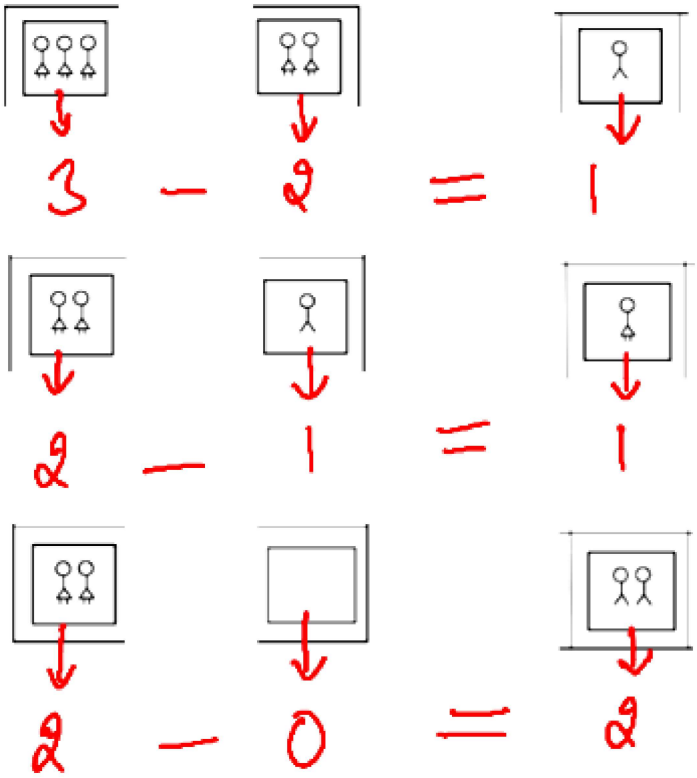
Answer: B

Solution:

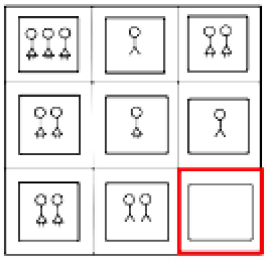
The logic followed here is :

1)The logic followed here is row wise.

2) Middle box of row = Difference of boxes at the sides of the row



Thus, the final series is :



Hence,**"Option 2"**is the correct answer.

Question 38

A clock seen through a mirror shows ‘quarter to seven’. What is the correct time shown by the clock ?

Options:

A. 6:15

B. 6:17

C. 5:17

D. 5:15

Answer: D

Solution:

Given: Time shown by the image of the clock is‘quarter to seven’ i.e. 6:45.

Concept used: For mirrorimage time is given by

(11-hours) : (60-minutes)

Calculation:

Hours = 6

Minutes = 45

Original time

(11 - 6) : (60 - 45)

5 : 15

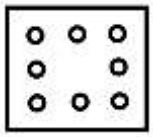
Thus, actual time is 5 : 15.

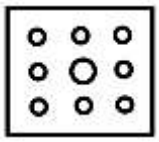
Hence,**"Option 4"**is the correct answer.

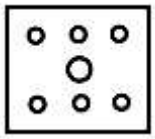
Question 39

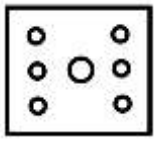
The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded ?

Options:

A. 

B. 

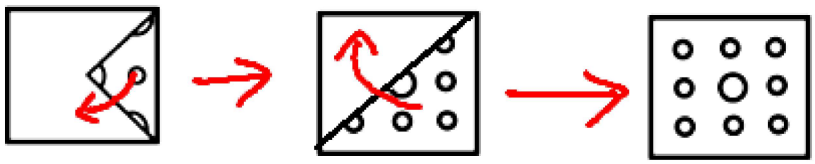
C. 

D. 

Answer: B

Solution:

The figure which willlook likethe paperwhen unfolded is shown below:

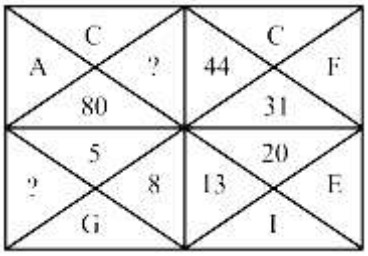


Thus, option Figure 2willlook likethe paperwhen unfolded.

Hence,**"Option 2"**is the correct answer.

Question 40

Find out the missing (?) number and letter.



Options:

A. 59 and K

B. 61 and L

C. 61 and K

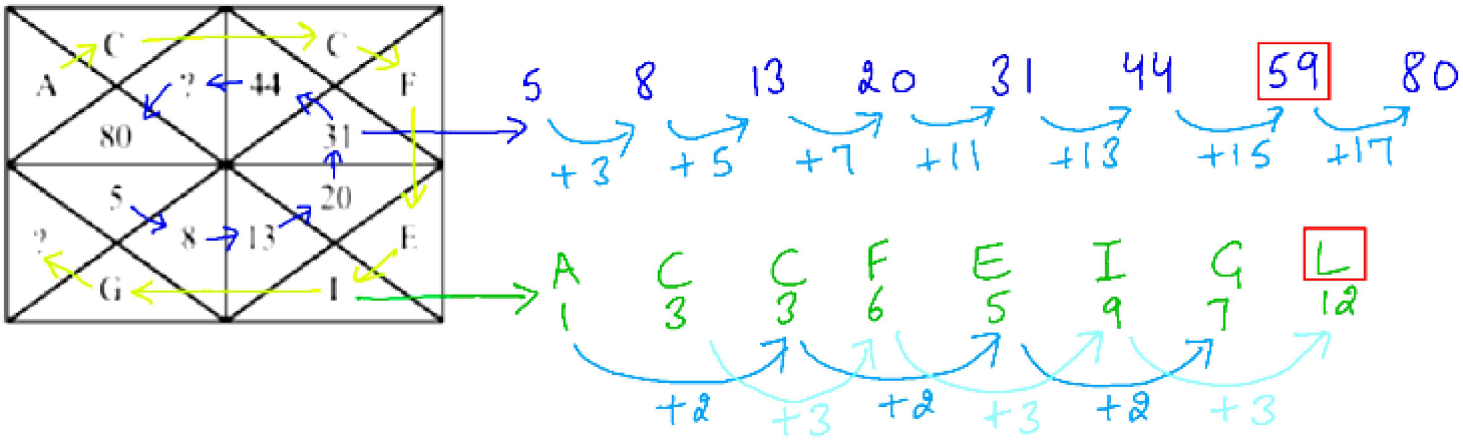
D. 59 and L

Answer: D

Solution:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The logic followed here is:



Hence,**"Option 4"**is the correct answer.

Question 41

What will be the next number of the series

3, 6, 10.5, 17, 26, ?

Options:

A. 31

B. 38

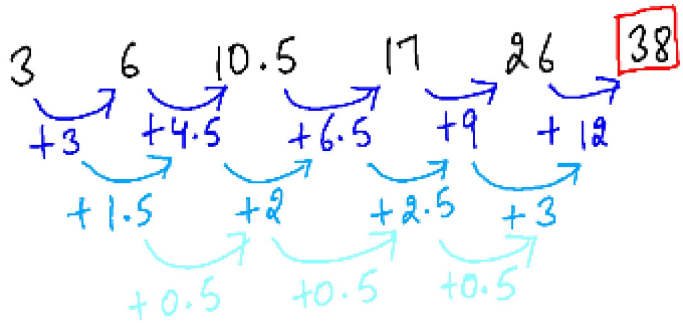
C. 40

D. 41

Answer: B

Solution:

The logic followed here is:



Hence, **"Option 2"** is the correct answer.

Question 42

In a class of 40 students, Anjali's rank is thrice that of Anita. There are 4 students who have ranks worse than that of Anjali. Anita's rank in the class is :

Options:

A. 9^{th}

B. 10^{th}

C. 18^{th}

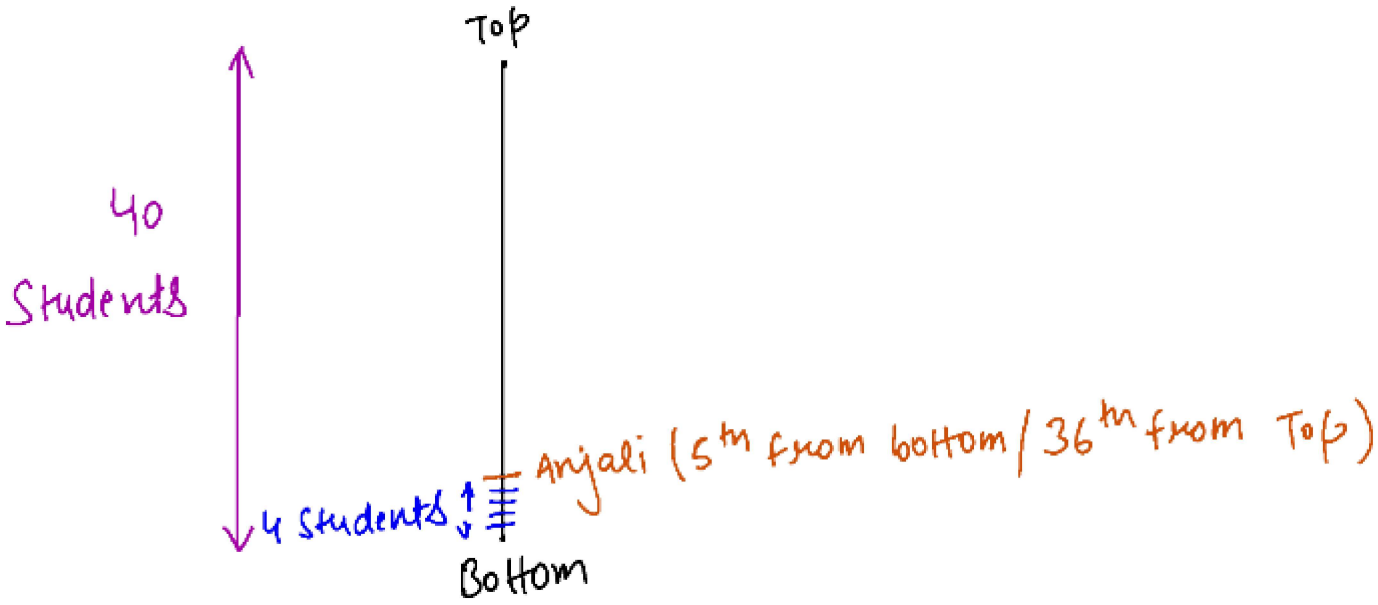
D. 12^{th}

Answer: D

Solution:

Given: Class of 40 students

1)There are 4 students who have ranks worse than that of Anjali.

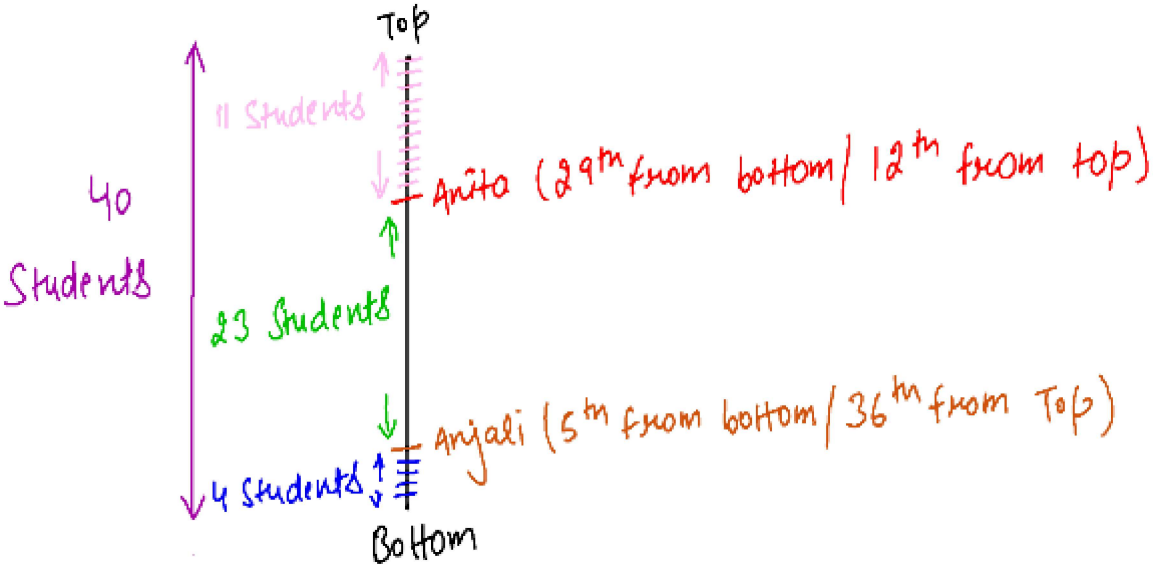


2)Anjali’s rank is thrice that of Anita.

Anjali's rank = 3× Anita's rank

36 = 3× Anita's rank

Anita's rank = 12 (from top)



Thus, Anita's rank is 12th in the class.

Hence, **"Option 4"** is the correct answer.

Question 43

Six people E, H, K, M, S and U are seated in a circle facing the centre. U and H are immediate neighbours of M. E is the only person sitting between K and S. H is to the immediate right of S. Who is to the immediate right of U ?

Options:

A. M

B. E

C. K

D. S

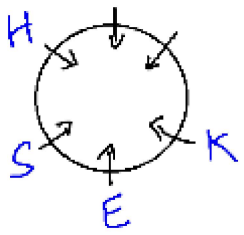
Answer: A

Solution:

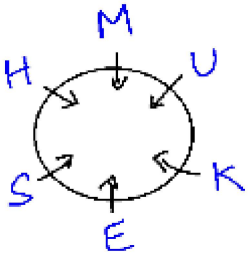
Given: Six peopleE, H, K, M, S and U are seated in a circle facing the centre.

1)E is the only person sitting between K and S.

2) H is to the immediate right of S.



3)U and H are immediate neighbours of M.



Thus, according to the final arrangement, M is to the immediate right of U.

Hence, **"Option 1"** is the correct answer.

Question 44

Find out which of the answer figures from the options can be formed using all the pieces given in the problem figure.

Problem figure

Options:

A. 

B. 

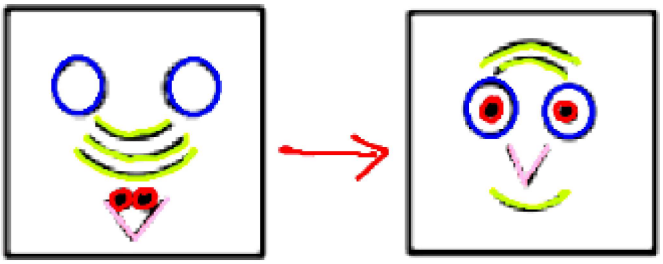
C. 

D. 

Answer: C

Solution:

The figureformed from the shapes given in the question figure is given below:



Hence, the correct answer is**"Figure 3**".

Question 45

Read the given statements and conclusions carefully assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts. Decide which of the given conclusion(s) logically follows from the statements.

Statements :

No keyboard is a mouse.

All mouses are computers.

All computers are laptops.

Conclusions :

I. All mouses are laptops.

II. All computers can never be keyboards.

Options:

A. Only conclusion I follows

B. Only conclusion II follows

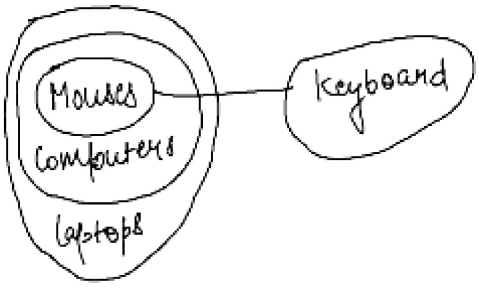
C. Neither conclusion I nor II follows

D. Both conclusions I and II follow

Answer: A

Solution:

The least possible Venn diagram for the given statements is as shown below :



Conclusions:

I. All mouses are laptops→**Follow**(Asall mouses are computers and all computers are laptops. As whole mouses comes in computers which wholecomesin laptops, therefore it is true)

II. All computers can never be keyboards→**Does not follow** (Asno keyboard is a mouseandall mouses are computers.As no direct relation is given between computers and keyboards, therefore it is false.)

∴ Here, Only conclusion I follows.

Hence, the correct answer is**"Option 1"**

Question 46

Simplify : 24÷ 4× 2 + 8 – 4 = ?

Options:

A. 1

B. 7

C. 16

D. 56

Answer: C

Solution:

Calculation:

$24 \div 4 \times 2 + 8 - 4 = ?$

$\Rightarrow 6 \times 2 + 4 = ?$

$\Rightarrow 12 + 4 = ?$

$\Rightarrow 16$

The correct answer is option 3.

Question 47

The difference of the greatest and the smallest of the fractions $\frac{1}{2}, \frac{8}{11}, \frac{7}{8}, \frac{7}{9}, \frac{5}{6}$ is:

Options:

A. $\frac{3}{8}$

B. $\frac{6}{7}$

C. $\frac{7}{9}$

D. $\frac{1}{3}$

Answer: A

Solution:

Given:

Fractions: 1/2, 8/11, 7/8, 7/9, 5/6

Convert all to decimal for easy comparison:

1/2 = 0.50

8/11 ≈ 0.727

7/8 = 0.875

7/9 ≈ 0.778

5/6 ≈ 0.833

Greatest = 7/8 = 0.875

Smallest = 1/2 = 0.50

Difference = 0.875 − 0.50 = 0.375

Convert back to fraction: 0.375 = 3/8

∴ **The difference is <u>3/8</u>**

Question 48

The sum of LCM and HCF of two numbers is 854. If the LCM is 60 times the HCF and one of the numbers is 70, then the other number is

Options:

A. 160

B. 164

C. 168

D. 172

Answer: C

Solution:

Given:

LCM + HCF = 854

LCM = 60 × HCF

One number = 70

Calculation:

Let HCF = x ⇒ LCM = 60x

So, x + 60x = 854

⇒ 61x = 854

⇒ x = 854 ÷ 61 = 14

So, HCF = 14, LCM = 60 × 14 = 840

Use formula: Product of two numbers = HCF × LCM

⇒ 70 × other number = 14 × 840

⇒ other number = (14 × 840) ÷ 70

⇒ other number = 11760 ÷ 70 = 168

∴ **The other number is <u>168</u>**

Question 49

The present age of Harish is 8 times the sum of the ages of his two sons at present. After 8 years, his age will be 2 times the sum of the ages of his two sons. The present age of Harish (in years) is :

Options:

A. 31

B. 32

C. 33

D. 34

Answer: B

Solution:

Given:

Let the present age of Harish be = H

Let the present age of Harish's son's (two sons) be = S

1) The present age of Harish is 8 times the sum of the ages of his two sons at present.

H = 8S ------- (I)

2)After 8 years, his age will be 2 times the sum of the ages of his two sons.

H + 8 = 2 (S + 16) , Here, '16' is added instead of 8, because there are two sons (8× 2 = 16)

H + 8 = 2S + 32

H - 2S = 24 -------- (II)

Putting, the value of H in equation (II):

H - 2S = 24

8S - 2S = 24

6S = 24

S = 4

So, Putting, the value of S in equation (I):

H = 8× 4

H = 32 years

Hence, **"Option 2"** is the correct answer.

Question 50

In an examination, it is required to get 300 marks to pass. A student gets 225 marks and is declared fail by 10% marks. What are the maximum marks of the examination ?

Options:

A. 700

B. 750

C. 800

D. 850

Answer: B

Solution:

Given:

Marks required to pass = 300

Marks obtained by student = 225

Student is declared fail by 10% marks.

Formula Used:

Fail marks percentage = (Marks required to pass - Marks obtained) / Maximum marks × 100

Calculation:

Let Maximum marks = M

Fail marks = 10% of M

Fail marks = 0.1 × M

Marks required to pass - Marks obtained = 0.1 × M

300 - 225 = 0.1 × M

75 = 0.1 × M

⇒ M = 75 / 0.1

⇒ M = 750

The maximum marks of the examination are 750.

Question 51

In a class of 40 students, ratio of boys and girls is 3: 2 and the average marks scored by boys is 42 and that by girls is 46. Then the average marks scored by the whole class is :

Options:

A. 43.4

B. 43.6

C. 43.8

D. 44

Answer: B

Solution:

Given:

Total number of students = 40

Ratio of boys to girls = 3 : 2

Average marks scored by boys = 42

Average marks scored by girls = 46

Formula Used:

Average marks of the whole class = (Total marks scored by boys + Total marks scored by girls) / Total number of students

Calculation:

Number of boys = (3/5) × 40 = 24

Number of girls = (2/5) × 40 = 16

Total marks scored by boys = 24 × 42 = 1008

Total marks scored by girls = 16 × 46 = 736

Total marks scored by the whole class = 1008 + 736 = 1744

Average marks of the whole class = 1744 / 40

⇒ Average marks of the whole class = 43.6

The average marks scored by the whole class is 43.6.

Question 52

The sum of three numbers is 136. If the ratio between the first number and the second number is 2∶ 3 and that between the second and the third number is 5 ∶ 3, then the first number is :

Options:

A. 42

B. 40

C. 36

D. 32

Answer: A

Solution:

Given:

Sum of three numbers = 136

First : Second = 2 : 3

Second : Third = 5 : 3

Calculation:

Combine ratios using the common term (second number):

First : Second = 2 : 3 = 10 : 15 (×5)

Second : Third = 5 : 3 = 15 : 9 (×3)

⇒ Combined ratio: First : Second : Third = 10 : 15 : 9

Total parts = 10 + 15 + 9 = 34

Value of 1 part = 136 ÷ 34 = 4

First number = 10 × 4 = 40

∴ **The first number is <u>40</u>**

Question 53

An item is sold for ₹504 after allowing 20% discount and still a profit of 5% has been earned. The marked price is how much more than the cost price ?

Options:

A. ₹120

B. ₹135

C. ₹150

D. ₹160

Answer: C

Solution:

Given:

Selling Price (SP) = ₹504

Discount = 20%

Profit = 5%

Formula used:

SP = MP × (1 − Discount%)

SP = CP × (1 + Profit%)

We need to find MP − CP

Calculation:

Let Cost Price (CP) = x

SP = x × (1 + 5/100) = 1.05x

⇒ 1.05x = 504 ⇒ x = 504 ÷ 1.05 = 480

Now, SP = MP × 80% ⇒ 504 = 0.8 × MP

⇒ MP = 504 ÷ 0.8 = 630

Required difference = MP − CP = 630 − 480 = 150

∴ The marked price is ₹<u>150</u> more than the cost price

Question 54

A certain sum becomes ₹2,356 in 3 years and ₹2,660 in 5 years on simple interest. The value of sum is :

Options:

A. ₹1,800

B. ₹1,880

C. ₹1,900

D. ₹1,980

Answer: A

Solution:

Given:

Amount after 3 years = ₹2,356

Amount after 5 years = ₹2,660

Formula used:

Simple Interest (SI) = Amount − Principal

Calculation:

Difference in SI over 2 years = ₹2,660 − ₹2,356 = ₹304

SI per year = 304 ÷ 2 = ₹152

Total SI for 3 years = 152 × 3 = ₹456

Principal = Amount − SI = 2356 − 456 = ₹1,900

∴ **The value of the sum is ₹1,900**

Question 55

In a square, lengths of the diagonals are (4k + 6) cm and (7k – 3) cm. The area of the square (in cm^2) is :

Options:

A. 144

B. 162

C. 169

D. 172

Answer: B

Solution:

Given:

Diagonals of a square: (4k + 6) cm and (7k − 3) cm

Property used:

In a square, both diagonals are equal.

Formula used:

Area of square = (Diagonal^2) ÷ 2

Calculation:

Equating diagonals:

4k + 6 = 7k − 3

⇒ 6 + 3 = 7k − 4k

⇒ 9 = 3k ⇒ k = 3

Now, diagonal = 4k + 6 = 4×3 + 6 = 18 cm

Area = (18 × 18) ÷ 2 = 324 ÷ 2 = 162 cm²

∴ Area of the square is <u>162 cm².</u>

Question 56

The volume of a cylinder having base radius 3 cm is 396 cm^3 . Find its curved surface area (in cm^2).

(Use $\pi=\frac{22}{7}$)

Options:

A. 280

B. 301.5

C. 264

D. 320.6

Answer: C

Solution:

Given:

Volume of cylinder = 396 cm^3

Radius (r) = 3 cm

$\pi = 22/7$

Formula used:

Volume of cylinder = $\pi \times r^2 \times h$

Curved Surface Area (CSA) = $2 \times \pi \times r \times h$

Calculation:

$396 = (22/7) \times 3^2 \times h$

$\Rightarrow 396 = (22/7) \times 9 \times h$

$\Rightarrow 396 = (198/7) \times h$

$\Rightarrow h = (396 \times 7) \div 198 = 2772 \div 198 = 14$ cm

$CSA = 2 \times (22/7) \times 3 \times 14$

$\Rightarrow CSA = 2 \times (22/7) \times 42 = (44 \times 42) \div 7 = 1848 \div 7 = 264\ cm^2$

$\therefore$ Curved Surface Area = <u>264 cm^2</u>

Question 57

A tap can fill a tank in 6 hours. After half the tank is filled, three more similar taps are opened. What is the total time taken to fill the tank completely ?

Options:

A. 4 hours

B. 5 hours

C. 3 hours 30 minutes

D. 3 hours 45 minutes

Answer: D

Solution:

Given:

1 tap fills the tank in 6 hours.

After half the tank is filled, 3 more similar taps are opened (total 4 taps).

Calculation:

Total capacity of tank = LCM of 6 = 6 units

⇒ 1 tap fills 6 ÷ 6 = 1 unit per hour

Half of the tank = 3 units

Time taken by 1 tap to fill 3 units = 3 ÷ 1 = 3 hours

Now 4 taps work together

4 taps fill = 4 × 1 = 4 units per hour

Remaining = 3 units

Time = 3 ÷ 4 = 3/4 hour = 45 minutes

Total time = 3 hours + 45 minutes = <u>3 hours 45 minutes</u>

Question 58

A train running at the speed of 80 km/h crosses a 350 m long tunnel in 36 seconds. The length of the train (in m) is

Options:

A. 350

B. 380

C. 420

D. 450

Answer: D

Solution:

Given:

Speed of train = 80 km/h

Time to cross tunnel = 36 seconds

Length of tunnel = 350 m

Formula used:

Speed = Distance ÷ Time

Total distance = Length of train + Length of tunnel

Calculation:

Convert speed to m/s

80 km/h = (80 × 1000) ÷ 3600 = 80000 ÷ 3600 = 22.22 m/s

Total distance = Speed × Time = 22.22 × 36 ≈ 800 m

Length of train = Total distance − Tunnel length = 800 − 350 = 450 m

∴ **Length of the train is <u>450 metres</u>**

Question 59

If the mean of 3, 4, 9, 2k, 10, 8, 6 and (k + 6) is 8, and mode of 2, 2, 3, 2p, (2p + 1), 4, 4, 5 and 6 (p is a natural number) is 4, then the value of (k – 2p) is :

Options:

A. 0

B. 1

C. 2

D. 3

Answer: C

Solution:

Given:

Mean of: 3, 4, 9, 2k, 10, 8, 6, (k + 6) = 8

Mode of: 2, 2, 3, 2p, (2p + 1), 4, 4, 5, 6 = 4

Formula used:

Mean = (Sum of all terms) ÷ (Number of terms)

Mode = Value occurring most frequently

Calculation:

Solve for k

Sum = 3 + 4 + 9 + 2k + 10 + 8 + 6 + (k + 6) = 46 + 3k

Mean = (46 + 3k) ÷ 8 = 8

⇒ 46 + 3k = 64

⇒ 3k = 18

⇒ k = 6

Solve for p

Numbers: 2, 2, 3, 2p, (2p + 1), 4, 4, 5, 6

Mode is 4 ⇒ 4 must occur most frequently

Try p = 1 ⇒ 2p = 2, 2p+1 = 3 ⇒ list: 2, 2, 3, 2, 3, 4, 4, 5, 6

2 occurs 3 times ⇒ mode = 2

Try p = 2 ⇒ 2p = 4, 2p+1 = 5 ⇒ list: 2, 2, 3, 4, 5, 4, 4, 5, 6

4 occurs 3 times ⇒ mode = 4

⇒ p = 2

Find k − 2p:

k = 6, p = 2 ⇒ k − 2p = 6 − 4 = 2

∴ **The value of (k − 2p) is 2**

Question 60

In triangle ABC, points D and E are on AB and AC respectively such that DE is parallel to BC. If AD = 6 cm, DB = 4 cm, AE = 9 cm, then the length of EC (in cm) is

Options:

A. 7

B. 6.4

C. 6

D. 5.5

Answer: C

Solution:

Given:

In triangle ABC:

Points D and E lie on AB and AC respectively

DE ∥ BC

AD = 6 cm, DB = 4 cm ⇒ AB = AD + DB = 10 cm

AE = 9 cm

Concept used:

By Basic Proportionality Theorem (Thales' Theorem):

If a line is drawn parallel to one side of a triangle intersecting the other two sides, then it divides those sides in the same ratio.

Formula used:

AD / DB = AE / EC

Calculation:

6 / 4 = 9 / EC

⇒ 3 / 2 = 9 / EC

⇒ EC = (2 × 9) ÷ 3 = 18 ÷ 3 = 6 cm

∴ **The length of EC is <u>6 cm</u>**
