

Answers

1. Answer: d

Explanation:

Understanding the Idiom 'All Agog'

The question asks for the meaning of the idiom "All agog". An idiom is a phrase whose meaning cannot be deduced from the literal meanings of its constituent words. "All agog" specifically describes a state of being very eager, curious, or excited, often in anticipation of something.

We need to examine the provided options to find the one that best matches this definition.

Examining Options for the Meaning of 'All Agog'

- Option 1: Almighty

The word "Almighty" refers to having supreme power or the power to do anything. This meaning is unrelated to the idiom "All agog".

- Option 2: Unmoved

To be "unmoved" means not being affected emotionally or physically. This is contrary to the meaning of "All agog", which signifies strong emotion and eagerness.

- Option 3: Praise someone

This phrase relates to expressing admiration or approval for a person. It does not reflect the anticipation and excitement inherent in the idiom "All agog".

- Option 4: Full of interest and excitement

This option accurately describes the meaning of "All agog". It conveys a state of heightened interest and eager anticipation for something.

- Option 5:

This option appears to be incomplete or empty and therefore cannot represent the meaning of the idiom.

Clarifying the Idiom 'All Agog'

The idiom "All agog" is used to describe people who are very excited, curious, and eager to know or see something. For instance, if there was exciting news about to be announced, the people gathered would be described as being **all agog**.

Comparing the options, the phrase "Full of interest and excitement" is the most accurate explanation for the idiom "All agog".

2. Answer: b

Explanation:

Understanding the Idiom 'To the Manner Born'

The idiom 'To the manner born' describes a person who possesses a natural skill, talent, or comfort in a particular situation or environment. It suggests that they fit in perfectly or excel as if they were born with that specific quality or into that specific context.

Exploring the Origin of 'To the Manner Born'

This expression comes from William Shakespeare's famous play, *Hamlet*. In the play, Prince Hamlet uses this phrase to explain his familiarity with the customs and excessive drinking habits of the Danish court. He means that although he is from Denmark and accustomed to these ways, he finds the tradition itself questionable. The key idea is deep-seated familiarity and comfort.

Evaluating the Options for 'To the Manner Born'

Let's analyze each option provided to find the best fit for the idiom's meaning:

- **Option 1: One of low birth**
This interpretation relates to social class or status. The idiom '**To the manner born**' does not relate to whether someone is of high or low birth; it focuses on their natural aptitude or comfort level in a specific situation.
- **Option 2: Naturally at ease**
This option accurately captures the essence of the idiom. Being '**To the manner born**' implies an inherent comfort, skill, and belonging, meaning someone is '**naturally at ease**' in a specific role, place, or activity.
- **Option 3: Place of one's birth**
This focuses on the location where someone was born. While the idiom contains the word 'born', it doesn't refer to the geographical place of birth but rather to an innate quality acquired from the very beginning.
- **Option 4: Caesarean birth**
This refers to a specific medical procedure for childbirth and is entirely unrelated to the meaning of the idiom '**To the manner born**'.

Final Explanation for 'To the Manner Born'

The idiom '**To the manner born**' signifies a natural inclination or ingrained habit, leading to a state of being perfectly suited and comfortable. Therefore, '**Naturally at ease**' provides the most accurate and fitting explanation for this expression, reflecting innate skill and comfort.

3. Answer: c

Explanation:

The correct answer is Become insane.

★ Key Points

- To '**lose one's marbles**' is to lose one's mind. (पागल हो जाना)
- Let us try to explore the given options:

- " **Lose something dear to you** " means the emotional cost of losing something you love.
For example, " *Never **lose something dear to you** , it hurts .*"
- " **Suffer a setback** " means to experience or encounter some kind of minor delay, obstacle, impasse, or failure.
For example, " *Every time something happens, we **suffer a setback***".
- " **Become drunk** " means being in a temporary state in which one's physical and mental faculties are impaired by an excess of alcoholic drink; intoxicated.
For example, " *Drink wine and **become drunk***."
- " **Become insane** " to become mentally ill: to go crazy (usually used in an exaggerated way)
For example, " *Yes, there's ample regret and sadness and the ever-present fear of **losing one's marbles** before the body gives out.* "
- Hence , "Become insane" is the meaning of "Lose one's marbles".

★ Important Points

- In the 1954 film "The Caine Mutiny Humphrey Bogart" linked insanity with **marbles** when he showed his character.
- It has been suggested that the ' **losing one's mind** ' meaning derives from the Elgin Marbles.
- These are the collection of sculptures, some from the Parthenon Frieze, which was taken from Athens by Lord Elgin in 1806.
- It's more likely that ' **marbles** ' was coined as a slang term meaning 'wits/common sense', as a reference to the marbles that youngsters play with.

4. Answer: b

Explanation:

Idiom Explanation: Understanding 'Bolt from the blue'

The idiom 'Bolt from the blue' refers to an event that happens suddenly and is completely unexpected. Imagine a clear blue sky with no clouds; a sudden bolt of lightning appearing in such a sky would be entirely surprising and shocking. This imagery captures the essence of the idiom.

Analyzing the Meaning

Let's break down the meaning:

- **Bolt:** This suggests something sudden, like a lightning bolt, often implying a shock or impact.
- **From the blue:** This refers to the clear blue sky, a setting where one would not expect a storm or lightning. It signifies a lack of warning or anticipation.

Therefore, the phrase describes an occurrence that is completely unexpected and comes without any prior indication.

Evaluating the Options

Now, let's look at the given options in relation to the idiom 'Bolt from the blue':

- **Sea swimming:** This option describes an activity and has no connection to the meaning of the idiom.
- **Complete surprise:** This perfectly matches the meaning derived from the idiom. An event that is a 'bolt from the blue' is indeed a complete surprise.
- **Reckless:** This describes behavior that is unnecessarily risky or rash. While an unexpected event might cause someone to act recklessly, the idiom itself doesn't mean 'reckless'.
- **Careless:** This means not paying enough attention or being negligent. Like 'reckless', it describes a state or behavior, not an unexpected event.

Conclusion on Idiom Meaning

Based on the analysis, the phrase 'Bolt from the blue' is best explained by the concept of something happening unexpectedly, catching people off guard. The option that best reflects this is 'Complete surprise'.

5. Answer: a

Explanation:

Idiom Explanation: Understanding 'Bear with a Sore Head'

The idiom "like a bear with a sore head" is used to describe a person who is feeling very grumpy, irritable, and easily angered. Imagine a large bear that has a painful sore on its head – it wouldn't be a pleasant creature to encounter! It would likely be agitated, snappish, and generally unpleasant due to its discomfort. The idiom captures this feeling of intense bad temper and irritability.

Analyzing the Options for the Idiom

Let's look at the given options to see which best matches the meaning of being "like a bear with a sore head":

- **Be in a foul mood:** This directly corresponds to the meaning of the idiom. Someone in a foul mood is irritable, grumpy, and unpleasant to be around, just like the bear with a sore head.
- **Have Headache:** This refers to a literal physical pain. While a headache can certainly make someone irritable, the idiom itself describes the *resulting mood* (the foul mood), not the physical cause (the headache).
- **Powerful and arrogant:** Bears can be powerful, but this option focuses on arrogance, which isn't the primary meaning of the idiom. The idiom emphasizes irritability caused by discomfort, not inherent personality traits like arrogance.
- **Restless:** Being restless means you can't keep still or calm. While someone in a bad mood might seem agitated, restlessness isn't the core meaning. The idiom specifically points to grumpiness and anger.

Therefore, the phrase that best explains the meaning of the idiom "like a bear with a sore head" is being in a very bad temper or a foul mood.

6. Answer: b

Explanation:

Identifying the Opposite Meaning for 'Beguile'

This question requires us to find a word from the given options that has a meaning opposite to the word 'Beguile'. We need to understand the meaning of 'Beguile' and then compare it with the meanings of the options provided.

Understanding the Word 'Beguile'

The word **Beguile** means to charm someone, often in a deceptive way. It can also mean to trick, mislead, or pass time pleasantly.

- Key aspects: Charm, Deception, Trickery, Misleading.

Analyzing the Provided Options

Let's examine each option:

- **1. Deceive:** To cause someone to believe something that is not true, typically in order to gain some personal advantage. This is very similar in meaning to 'Beguile', making it a synonym.
- **2. Honest:** To be truthful and sincere; free of deceit and hypocrisy. This describes the absence of deception and trickery.
- **3. Charm:** To please someone or attract them. While charming someone can be part of the act of beguiling, 'charm' itself doesn't necessarily involve deception and is not the opposite of 'Beguile'.
- **4. Cheat:** To act dishonestly or unfairly in order to gain an advantage. This is another word that aligns closely with the deceptive meaning of 'Beguile', acting as a synonym.

Determining the Antonym

Based on the analysis:

- 'Deceive' and 'Cheat' are synonyms, sharing the meaning of dishonesty and trickery with 'Beguile'.
- 'Charm' is related to the method used in 'Beguile' but is not its opposite.
- 'Honest' directly contrasts the core meaning of deception and trickery inherent in 'Beguile'. Being honest means being truthful and sincere, the opposite of misleading someone.

Therefore, the word that is nearly opposite in meaning to 'Beguile' is **Honest**.

7. Answer: a

Explanation:

Understanding the Opposite of Ameliorate

The question asks us to find a word that means the opposite of **Ameliorate** from the given options. Let's break down the meaning of the word and the options provided.

Meaning of Ameliorate

The word **Ameliorate** means to make something bad or unpleasant better. It signifies improvement or making a situation better. For example, one might try to ameliorate poverty or ameliorate a difficult situation.

Analyzing the Options

Now, let's look at the meanings of the given options to find the best opposite:

1. Deteriorate

The word **Deteriorate** means to become progressively worse or of a lower standard in quality or strength. If something deteriorates, it gets worse, not better.

2. Procrastinate

To **Procrastinate** means to delay or postpone action; putting off doing something. This relates to delaying tasks and is not directly related to improving or worsening a situation's quality.

3. Stagnate

To **Stagnate** means to stop developing, growing, progressing, or becoming inactive or dull. While this indicates a lack of improvement, it doesn't necessarily mean becoming worse.

4. Deviate

To **Deviate** means to depart from an established course, norm, or procedure. It means to stray or wander off, which is different from improving or worsening a state.

Identifying the Antonym

Comparing the meanings:

- **Ameliorate**: To improve, make better.
- **Deteriorate**: To worsen, become worse.
- **Procrastinate**: To delay.
- **Stagnate**: To stop growing/progressing.
- **Deviate**: To stray from a course.

The most direct opposite of making something better (**Ameliorate**) is making something worse (**Deteriorate**). Therefore, **Deteriorate** is the word that is nearly opposite in meaning to **Ameliorate**.

8. Answer: c

Explanation:

Understanding the Opposite Meaning of "Feckless"

The question asks to identify the word that is nearly opposite in meaning to the word "**Feckless**". To find the correct answer, we need to understand the meaning of "**Feckless**" and compare it with the meanings of the given options.

Meaning of "Feckless"

"**Feckless**" is an adjective used to describe someone or something that is characterized by a lack of initiative, spirit, or strength. It essentially means ineffective, irresponsible, incompetent, or weak. Someone who is **feckless** often lacks purpose or is unable to act effectively.

Analyzing the Options

Let's examine the meaning of each option provided:

- **Spotted**: This word means having spots or noticing something. It does not relate to character or effectiveness.
- **Fatuous**: This adjective means silly, foolish, or lacking sense. While it implies a lack of good judgment, it's not a direct opposite of lacking strength or effectiveness.
- **Strong**: This adjective means having power, strength, or resilience. It implies effectiveness, capability, and robustness.
- **Fawning**: This word describes someone who behaves in an excessively flattering or servile way. It relates to behavior towards others, not inherent effectiveness or strength.

Identifying the Antonym for "Feckless"

We are looking for a word that means the opposite of ineffective, irresponsible, and weak.

- "Spotted" is unrelated.
- "Fatuous" (silly, foolish) is not the opposite of being ineffective or weak.
- "Fawning" (flattering) is also unrelated.
- "Strong" directly contrasts with the lack of strength, initiative, and effectiveness implied by "**Feckless**". A strong person is capable and effective, the very opposite

of a **feckless** one.

Therefore, the word "**Strong**" is the best choice as it represents the opposite meaning of "**Feckless**".

9. Answer: b

Explanation:

Exploring the Antonym of Cacophonous

The question asks us to find a word that is nearly opposite in meaning to the given word, **Cacophonous**. To solve this, we first need to understand what **Cacophonous** means and then look at the meanings of the provided options.

Defining Cacophonous

The term **Cacophonous** describes a sound that is harsh, jarring, and discordant. It refers to a mixture of unpleasant, noisy sounds that clash with each other. Think of a combination of loud, unmusical noises; that's what **cacophonous** describes.

Analyzing the Word Options

Let's examine the meaning of each option provided:

- **Tamed:** This word means brought under control or made less wild or aggressive. While it implies a change, it doesn't directly relate to the quality of sound.
- **Harmonious:** This term describes sounds that are pleasing, agreeable, and consistent. It suggests a lack of dissonance, where different sounds blend well together, creating a pleasant effect.
- **Silent:** This means making or having no sound. While the absence of sound is different from a harsh sound, it's not the direct opposite of a *type* of sound. A sound can be pleasant or unpleasant; silence is the lack of sound altogether.
- **Domestic:** This relates to the running of a home or to family relations, or describes something native to or originating in a country. It has no connection

to sound quality.

Determining the Opposite Meaning

We are looking for the word that contrasts most directly with the meaning of **Cacophonous** (harsh, discordant sound).

- **Cacophonous** relates to unpleasant, clashing sounds.
- **Harmonious** relates to pleasant, blending sounds.
- The contrast between harsh, clashing sounds (**Cacophonous**) and pleasing, blended sounds (**Harmonious**) is a direct opposition in terms of sound quality.
- The other options, **Tamed**, **Silent**, and **Domestic**, do not represent a direct opposite quality of sound compared to **Cacophonous**. **Silent** is the absence of sound, not a type of sound quality, while **Tamed** and **Domestic** are unrelated concepts.

Therefore, the word that is nearly opposite in meaning to **Cacophonous** is **Harmonious**.

10. Answer: d

Explanation:

The correct answer is option 4) i.e. squeeze.

★ Key Points

- The passage is all about "*The Human Body*."
- From the phrase "*you would obtain about fifty litres of water*" and the first sentence "*About sixty percent of the human body is water*" we get a meaningful sentence that "*if you could squeeze out a human being, you would obtain fifty litres of water as about sixty per cent of the human being is water.*"
- Therefore, in "*If you could (1) out a human being*", the option '*squeeze*' is best suitable to be fitted in the blank from the above explanation.
- Hence, the option '*squeeze*' is contextually correct.

★ Important Points

- Read thoroughly: Read the passage thoroughly to get an idea of the passage. Read slowly and gain an understanding of the text. Once the theme of the paragraph is clear, it becomes easy to fill in the blanks.
- Type of word to fill in: Look at the blanks carefully and try to assess which kind of word to put in the blank. Words can be based on grammar, prepositions, tenses, vocabulary etc.
- Tone: Passage may contain some specific tone like narrative, critical, sarcastic, humorous etc. So, always make the right choice of a word.
- Negate options: Sometimes, words are too close, eliminating wrong choices can help.
- Link the sentences together: Always remember, it is a passage, so the sentences are linked to one another. Never make a mistake of treating every sentence an individual one.
- Keywords: Pay close attention to keywords/ clues in the sentences before and after the given blank.

11. Answer: b

Explanation:

Choosing the Correct Word Form for Blank (2)

This question requires selecting the most appropriate word to fill in the blank numbered (2) in the given text. The sentence in question is: "If you could ___ (1) ___ out a human being like a ___ (2) ___, you would obtain about fifty litres of water." The sentence uses a comparison or analogy involving squeezing a human being to illustrate the amount of water in the human body.

Understanding the Analogy

The analogy compares the process of extracting water from a human body to squeezing something else. The key action is "squeezing out" liquid. We need to

identify which option, when squeezed, is most commonly associated with yielding liquid.

Evaluating Word Options Against the Context

Let's examine each option provided:

- **Mango:** While a mango contains juice, it's not typically the primary example used when talking about squeezing things forcefully to extract liquid.
- **Lemon:** Lemons are famously known for being squeezed to extract their juice. It's a common action and a frequent element in comparisons related to extracting liquid contents.
- **Fruit:** This is a general category. While many fruits contain liquid, the specific example of a 'lemon' is stronger and more culturally relevant in the context of squeezing for juice.
- **Banana:** Bananas are primarily eaten and are not suited for squeezing to extract significant amounts of liquid.

Selecting the Best Fit for Blank (2)

The most fitting word for blank (2) is 'lemon'. The analogy works because squeezing a lemon is a universally understood action for obtaining its juice. The comparison highlights the idea of extracting the inherent liquid from something, similar to how water is considered a major component of the human body.

Final Explanation

The sentence uses the comparison "like a ___ (2) ___" to help visualize the process of obtaining water from a human body through a squeezing action. Out of the given options, a 'lemon' is the most appropriate item to use in this analogy because it is commonly squeezed to extract its liquid content (juice).

12. Answer: d

Explanation:

Understanding the Correct Word Choice for Blank (3) in Human Body Water Context

The question asks us to select the most appropriate word to fill in blank (3) in the sentence: "This water which is not like ___ (3) ___ water because of the substance it ___ (4) ___ is necessary to the life of the human being." This involves understanding the context and choosing the word that best fits the intended meaning, highlighting the difference between water found inside the human body and a standard reference of water.

Analyzing the Sentence Context

The sentence compares the **water** present within a human body to another type of water. The key phrase is "not like ___ (3) ___ water". This indicates a contrast. The reason provided for this difference is "because of the substance it ___ (4) ___". This suggests that the water inside the body contains substances, making it different from the reference water.

We need to find a word for blank (3) that represents this reference type of water, against which the body's internal water is being compared. The comparison highlights a deviation from a standard or typical state due to the presence of dissolved substances.

Evaluating Options for Blank (3)

Let's examine each option to see how well it fits the context:

Option 1: `usual` Water

Using **usual** water would imply "not like water that is typically found or encountered". While plausible, 'usual' often refers to frequency or habit rather than a baseline state or composition, which seems to be the focus here due to the mention of substances.

Option 2: `ordinary` Water

Choosing **ordinary** water suggests "not like plain or common water". Similar to 'usual', 'ordinary' implies a lack of special features, but 'normal' provides a stronger contrast regarding the inherent state or composition.

Option 3: `common` Water

Selecting **common** water would mean "not like water that is widespread or frequently found". This relates more to availability or prevalence than to the inherent quality or state of the water itself, making it less suitable for contrasting composition.

Option 4: `normal` Water

Using **normal** water implies "not like standard or typical water". In scientific or biological contexts, 'normal' often refers to a baseline, expected, or standard condition. The water inside the human body, containing various dissolved substances (salts, proteins, etc.), is different from pure water or water in its standard, less complex state. Therefore, saying it's "not like **normal** water" accurately captures this contrast based on composition.

Final Selection for Blank (3)

The sentence structure, particularly the phrase "because of the substance it ___ (4) ___", strongly suggests a comparison based on composition or state. The term **normal** best represents the standard, un-altered state of water that contrasts with the solute-rich environment of water within the human body. It implies a deviation from the expected baseline state, which is precisely what the presence of substances causes.

Therefore, **normal** is the most appropriate word to complete the sentence, highlighting that the water within the human body differs from standard water due to the substances it contains.

13. Answer: c

Explanation:

Understanding Human Body Water Content

The question asks us to fill in the blanks in a passage describing the composition of the human body, specifically focusing on its water content. We need to determine the most appropriate word for blank (4) in the sentence: "This water which is not like ___ (3) ___ water because of the substance it ___ (4) ___ is necessary to the life of the human being." This sentence highlights that the water within the human body differs from ordinary water due to the substances it holds.

Analyzing Word Choices for Blank (4)

Let's examine the options provided for blank (4) to see which word best fits the context:

- **1. dissolves:** While water in the body does dissolve many substances, the sentence structure "the substance it dissolves" focuses on the action of dissolving rather than what the water holds. The uniqueness comes from the substances present *in* the water.
- **2. carries:** The body's water does carry substances, such as nutrients in the blood. However, "carries" might imply movement more than simply holding substances, which contribute to the water's unique properties.
- **3. contains:** This option implies that the water holds or includes various substances within it. The body's water is distinct because it *contains* dissolved salts, minerals, proteins, and other compounds essential for bodily functions. This fits the context perfectly, explaining the difference from pure water.
- **4. includes:** Similar to 'contains', 'includes' means to have something as part of a whole. However, 'contains' often better describes the relationship of substances dissolved or suspended within a liquid medium like body water.

Explanation for Best Fit: 'contains'

The core idea is that the water inside a human body is different from regular water because of the **substances** present within it. The sentence is explaining what the water does with these substances that makes it unique. The most accurate way to describe the relationship between the body's water and these essential components

is that the water **contains** them. These substances are integral parts of the body's internal fluids, contributing to their specific properties and functions.

Therefore, the phrase "the substance it **contains**" accurately conveys that the presence of these various components within the body's water is what distinguishes it from simple H₂O.

14. Answer: d

Explanation:

Selecting the Correct Word Form for 'Circulating'

This section explains the process of selecting the most appropriate word to fill the blank in the given sentence concerning the circulation of water in the human body.

Understanding the Sentence Context

The sentence in question is: "About a gallon of it is in the blood vessels and is ___ (5) ____ circulating by temperature."

The goal is to find the correct word form for blank (5) that logically connects the state of 'circulating' water with the influence of 'temperature'. The word should describe how temperature affects the ongoing movement of water within the blood vessels.

Evaluating Word Options for Blank (5)

Let's analyze the given options to see which one fits best:

- **Option 1: continued**

Using 'continued' results in "...is *continued* circulating by temperature." While temperature does help circulation to continue, the phrase "continued circulating" sounds slightly redundant and not the most natural way to express the idea.

- **Option 2: made**

With 'made', the sentence reads "...is *made* circulating by temperature." This implies that temperature creates or causes the circulation. While temperature is a factor, "made circulating" is not standard phrasing for a process that is maintained or ongoing.

- **Option 3: got**

The sentence would be "...is *got* circulating by temperature." The word 'got' is informal and grammatically awkward in this context. It suggests acquiring the state of circulation rather than maintaining it, which doesn't fit the scientific context.

- **Option 4: kept**

Using 'kept' results in "...is *kept* circulating by temperature." This phrasing suggests that temperature helps to maintain or sustain the circulation of water within the blood vessels. This is a natural and accurate way to describe how factors like temperature influence ongoing biological processes. Temperature affects blood flow and viscosity, thus playing a role in **keeping** the circulatory system functioning.

Conclusion on Word Choice

The word 'kept' best fits the blank because it accurately describes how temperature acts as a factor that maintains the continuous process of circulation for the water within the blood vessels. It implies a sustained state of movement influenced by temperature, which aligns perfectly with the context provided.

15. Answer: a

Explanation:

Correct Spelling Identification

The task is to identify the correctly spelled word from the provided options. The word relates to the concept of dominance or control.

Meaning of 'Ascendancy'

'Ascendancy' refers to the state or position of having a dominant influence, power, or control. It signifies a rise to a position of power.

Evaluating Spelling Options

We will now look at each option provided:

- **Ascendancy:** This is the standard and correct English spelling for the word meaning dominance or control.
- **Ascendncy:** This spelling is incorrect as it omits the letter 'a' which is necessary in the middle part of the word.
- **Ascandency:** This spelling is incorrect because it is missing the second 'e' in the word.
- **Ascndancy:** This spelling is incorrect as it is missing both the second 'e' and the 'a'.

Finalizing the Correct Spelling

Comparing the options with the standard spelling, 'Ascendancy' is the correctly spelled word. The other options contain spelling errors, typically missing essential vowels required for the correct formation of the word.

16. Answer: b

Explanation:

Identifying the Correctly Spelt Word

The question requires us to choose the option that correctly spells the word related to dominance or leadership. We need to carefully check the spelling of each provided option.

Examining Word Spelling Options

Let's look at each option:

- **Option 1: Hegamony** – This spelling is incorrect. It is missing the vowel 'e' after the 'g' and uses 'o' instead of 'e' in the second syllable.
- **Option 2: Hegemony** – This is the correct spelling. It accurately represents the word meaning supreme power or leadership.
- **Option 3: Hegemoney** – This spelling is incorrect. The suffix 'money' is wrongly used instead of the correct suffix 'mony'.
- **Option 4: Hegamoney** – This spelling is also incorrect. It is missing the 'e' after 'g' and uses the incorrect suffix 'money'.

Defining Hegemony

The word **hegemony** refers to the influence or dominance exerted by one country, social group, or entity over others. Proper spelling is crucial for conveying the correct meaning.

The correct spelling requires the sequence H-E-G-E-M-O-N-Y.

Therefore, the correctly spelt word is **Hegemony**.

17. Answer: c

Explanation:

Choosing the Correct Spelling of 'Perpetuate'

This question requires us to identify the word that is spelled correctly from the given options. We need to carefully examine the spelling of each option to find the accurate one.

Analyzing Spelling Options

Let's look at each option:

- Option 1: **Parpetuate** – This spelling is incorrect. The first vowel after 'P' should be 'e', not 'a'.
- Option 2: **Perpetuete** – This spelling is incorrect. It has an unnecessary 'e' at the end.
- Option 3: **Perpetuate** – This spelling is correct. It follows the standard English spelling rules for this word.
- Option 4: **Perpatuate** – This spelling is incorrect. Similar to option 1, the vowel after 'P' is wrong ('a' instead of 'e').
- Option 5: This option is not provided or is empty.

Identifying the Correctly Spelt Word

The word 'perpetuate' means to make something continue indefinitely or for a very long time. Comparing the options with the correct spelling, we find that option 3 is the accurately spelt word.

Therefore, the correctly spelt word is **Perpetuate**.

18. Answer: c

Explanation:

Identifying the Correctly Spelt Word: 'Apocalyptic'

This explanation focuses on identifying the correctly spelt word among the provided options. Proper spelling is essential for effective written communication in English.

Detailed Analysis of Spelling Options

We need to carefully examine each option to find the one with the correct standard English spelling for the word relating to catastrophic final events.

- Option 1: **Apocaleptic** – This spelling is incorrect. It deviates from the standard spelling pattern.

- **Option 2: Apocalaptic** – This is also an incorrect spelling. It differs from the correct version, often due to vowel placement.
- **Option 3: Apocalyptic** – This is the **correctly spelt word**. It adheres to the standard English spelling rules for this adjective.
- **Option 4: Apacalyptic** – This spelling is incorrect. It is missing the 'o' vowel in the second syllable, which is a common mistake.

Understanding 'Apocalyptic' Spelling

The word '**Apocalyptic**' is an adjective that means 'relating to or foreshadowing the end of the world' or 'having the terrifyingly great or horrifying scale of destruction'.

The correct spelling follows this pattern: A-p-o-c-a-l-y-p-t-i-c.

Key elements to remember for the correct spelling include:

- The sequence 'apo-' at the beginning.
- The sequence '-caly-' in the middle.
- The ending '-ptic'.

Conclusion on Correct Spelling

After reviewing the options, '**Apocalyptic**' is confirmed as the accurately spelt word. It's important to remember this specific sequence of letters to spell the word correctly.

19. Answer: c

Explanation:

Understanding the Meaning of 'Preposterous'

The question asks us to find the word that has the **nearest meaning** to the word '**Preposterous**'. First, let's understand what 'Preposterous' means. 'Preposterous'

describes something that is completely contrary to nature, reason, or common sense; utterly absurd or ridiculous.

Analyzing the Options for 'Preposterous'

We need to examine each option to see which one best matches the meaning of 'Preposterous'.

- **Formal:** This word means something done according to established customs, rules, or principles. It often relates to ceremonies or official occasions. This is quite different from the meaning of 'Preposterous'. For example, a formal dinner follows specific etiquette, which is the opposite of being absurd.
- **Judicious:** This word means having or showing good judgment or sense. It implies wisdom and careful consideration. Something judicious is reasonable, which is the opposite of being 'Preposterous'. For instance, a judicious decision is a wise one.
- **Ridiculous:** This word means deserving or inviting mockery because it is absurd, unreasonable, or silly. This aligns closely with the meaning of 'Preposterous', as both words describe something that is completely illogical or nonsensical. For example, wearing socks on your hands is a ridiculous idea.
- **Ceremonious:** Similar to 'Formal', this refers to behavior that follows a ceremony or involves elaborate etiquette. It emphasizes formality and ceremony, not absurdity. For example, a ceremonious occasion is one with many rituals.

Determining the Nearest Meaning

Comparing the definitions, 'Ridiculous' is the word that most closely matches 'Preposterous'. Both words highlight a lack of sense, absurdity, and illogicality.

- 'Preposterous' emphasizes being contrary to reason and nature.
- 'Ridiculous' emphasizes being absurd and worthy of mockery.

Therefore, 'Ridiculous' is the best synonym among the given choices for 'Preposterous'.

20. Answer: d

Explanation:

Dissemble: Understanding the Closest Meaning

The question asks us to identify the word that is nearest in meaning to the word "Dissemble". This is a vocabulary question focusing on synonyms.

Meaning of "Dissemble"

"Dissemble" means to hide or disguise your true feelings, intentions, or character. It involves putting on a false appearance or pretending, often to mislead others. Essentially, it's about not showing your real self.

Analyzing the Provided Options

Let's examine the meaning of each option to find the best synonym for "dissemble":

- **Disagree:** This means to hold a different opinion or to refuse to agree. It relates to opinions and viewpoints, not to hiding one's true nature.
- **Shake:** This refers to a physical action of moving back and forth or trembling. It has no connection to hiding feelings or intentions.
- **Impeccable:** This word means faultless or perfect. It describes something without any flaws, which is unrelated to the concept of hiding or disguising.
- **Conceal:** This word means to keep something secret or hidden. It directly relates to hiding facts, information, or, in the context relevant to "dissemble", one's true feelings or motives.

Comparing "Dissemble" with "Conceal"

The core idea of "dissemble" is to hide or cover up one's true state of mind or intentions, often through pretense. The word "conceal" means to hide something or keep it from being known. Therefore, "conceal" shares the fundamental meaning of hiding or keeping secret, making it the closest synonym for "dissemble" among the given choices.

Conclusion on Nearest Meaning

Based on the analysis, "conceal" is the word nearest in meaning to "dissemble" because both words involve the act of hiding or keeping something hidden, particularly one's true intentions or feelings.

21. Answer: c

Explanation:

Understanding Synonyms: Finding the Closest Meaning to 'Raucous'

This question asks us to identify the word that has a meaning closest to the given word, **Raucous**. Finding synonyms helps us expand our vocabulary and understand the nuances of word meanings.

Defining the Key Term: Raucous

The word **Raucous** primarily describes a sound. It refers to a sound that is:

- Loud
- Harsh
- Unpleasant
- Often associated with rowdy or disorderly behaviour, like rough laughter or shouting.

Think of a loud, unrefined noise that might disturb you.

Analyzing the Options

Let's look at the meaning of each option provided:

- **Flavourful**: This word relates to taste or smell, indicating something that has a pleasant or distinct flavour. It has no connection to the meaning of **Raucous**.

- **Jarring:** This word describes something that causes a shock or has an unpleasant, harsh, or discordant effect, often on the senses (like sound or sight). A jarring sound is often unexpected and unpleasant.
- **Boisterous:** This word describes someone or something that is noisy, energetic, and cheerful, often in a rather uncontrolled or rowdy way. It implies high spirits and loudness.
- **Evil:** This word refers to profound immorality, wickedness, or something extremely bad or harmful. It relates to moral character or intent, not sound or behaviour type.

Comparing Meanings to Find the Best Synonym

Now, let's compare the definitions to find the best match for **Raucous**:

- *Raucous* focuses on the quality of the sound: loud, harsh, and unpleasant.
- *Flavourful* is about taste, so it's incorrect.
- *Evil* is about morality, so it's incorrect.
- *Jarring* shares the element of unpleasantness and harshness in sound, focusing on the discordant or shocking quality.
- *Boisterous* emphasizes the loudness, energy, and lack of restraint. This kind of behaviour often produces sounds that are indeed loud and potentially harsh, fitting the description of **Raucous**.

While both *Jarring* and *Boisterous* have related aspects, **Boisterous** often describes the energetic, loud, and unrestrained activity or manner that leads to **Raucous** sounds. For example, **boisterous** crowds often make **raucous** noise. *Jarring* focuses more specifically on the discordant or grating quality of a sound, which might be part of a *raucous* sound but isn't its defining characteristic. Therefore, **Boisterous** is generally considered the closest synonym among the choices, capturing the noisy and unrefined nature.

Conclusion

Based on the comparison, the word nearest in meaning to **Raucous** is **Boisterous**, as both relate to loud, energetic, and unrestrained activity or sound.

22. Answer: a

Explanation:

Abrogate Meaning and Explanation

The word **Abrogate** primarily means to repeal, cancel, or abolish something formally, especially a law, treaty, or agreement. It signifies the official ending or nullification of something that was previously in effect.

Analyzing the Options for Nearest Meaning

To find the word nearest in meaning to **Abrogate**, let's examine each option:

- **1. Put an end to:** This phrase means to stop something from continuing or happening. It aligns closely with the formal cancellation or abolition aspect of **Abrogate**.
- **2. Elope:** This means to run away secretly with a lover to get married. This meaning is unrelated to **Abrogate**.
- **3. Gatecrash:** This refers to attending an event or party without an invitation. This definition does not match the meaning of **Abrogate**.
- **4. Send away:** This means to cause someone or something to leave a place. While it implies removal, it doesn't capture the formal, official act of repeal or cancellation inherent in **Abrogate**.

Identifying the Best Synonym for Abrogate

Comparing the definitions, the phrase "Put an end to" is the most suitable synonym for **Abrogate**. It accurately reflects the core meaning of formally cancelling or abolishing something.

23. Answer: b

Explanation:

Identifying the Energy Source from the Passage

This question asks to identify the primary source of energy based on the provided text. The passage emphasizes the importance of discovering a significant goal and dedicating oneself to it to generate energy.

Passage Analysis on Energy Generation

The passage quotes the great Acharyas, stating that upon discovering a great goal, one should dedicate themselves to it and draw inspiration from it. This act is described as yielding "a new column of energy". The text strongly links the discovery and pursuit of a specific, great goal to the generation of this energy.

The passage specifically mentions: "...having discovered a great goal, surrender yourself to that goal and act towards it drawing your inspiration from that goal whereby you will get a new column of energy."

This highlights that the **inspiration** derived from a defined **goal** is presented as the direct catalyst for obtaining energy.

Evaluation of Options

Let's examine each option in the context of the passage:

- **Option 1: A column that supports a building**

This option refers to a physical structure and is completely unrelated to the psychological and inspirational energy discussed in the passage.

- **Option 2: Stimulation obtained from a set aim**

The passage explicitly states that drawing **inspiration** from a **great goal** (which is synonymous with a set aim) provides energy. The stimulation or inspiration derived from having a clear objective is the core idea presented.

- **Option 3: Highest creative action**

The passage describes "highest creative action" as the result or application of the focused energy, not the source of the energy itself. Energy is channeled into creative action.

- **Option 4: Proper training of the mind to achieve perfection**

While the passage acknowledges that training the mind to focus this energy requires effort, and that we might be "perfect in imperfections" due to wrong training, it identifies the **goal** as the source of the energy. Training helps to manage and direct this energy effectively, but it is not presented as the initial source.

Conclusion on the Source of Energy

Based on the passage's emphasis on drawing inspiration from a goal to gain energy, the most accurate answer is the stimulation or inspiration derived from a defined aim. This aligns directly with the text's explanation.

Therefore, the **source of energy**, as explained in the passage, is the **stimulation obtained from a set aim**.

24. Answer: c

Explanation:

Passage Analysis: Harnessing Energy for Achievement

This passage discusses the importance of achieving success through focused effort and effective energy management. It suggests that identifying a significant life goal, or a "great goal," is the first step. The author advises complete dedication to this goal, drawing motivation from it, which can unlock a powerful source of energy. A key point is the need to prevent this energy from being wasted on unproductive thoughts, such as "past regrets" or excessive focus on the "present." The passage stresses channeling this concentrated energy into purposeful action, termed the

"highest creative action," which leads to significant achievements, especially for those considered inefficient.

Furthermore, the text acknowledges that attaining this focused state requires substantial mental discipline and "considerable training." This is because individuals often struggle with controlling and directing their mental energy, leading to mistakes and inefficiency, described as being "perfect in imperfections." The author notes that while intellect is powerful, the lack of ability to properly guide mental energy hinders progress.

Key Themes and Author's Focus

The author's central message revolves around several interconnected ideas:

- Identifying a significant life purpose ("great goal").
- Generating and channeling energy ("new column of energy") towards that goal.
- Avoiding the dissipation of energy on negative thoughts or distractions.
- The necessity of mental training to control and direct this energy.
- Achieving peak performance ("highest creative action") through focused energy.

Evaluating the Provided Options

Let's examine how each option relates to the author's primary message:

- **Option 1: Establishment of socialistic pattern** - This topic is not addressed in the passage at all. The passage focuses entirely on individual action and self-management.
- **Option 2: Discovery of great goal in the life** - Discovering a "great goal" is presented as the essential starting point. However, the majority of the passage focuses on the actions and energy management required *after* the goal is found, not just the act of discovery itself.
- **Option 3: Regulation of energy in the proper direction** - This theme is strongly emphasized throughout the passage. The author explicitly discusses focusing energy, preventing its waste ("dissipated"), controlling mental energy, and

guiding it effectively ("proper destination"). This regulation is presented as the core mechanism for achieving creative action and success. Phrases like "entire energy focussed into activity" and the critique of people not knowing "how to control the mental energy and direct" it support this as the main concern.

- **Option 4: Training of the mind** – The passage mentions that "considerable training" is needed to achieve the desired outcome. However, the training is presented as a method or a requirement to enable the effective regulation of energy. The author's ultimate concern appears to be the result of this training – the controlled and directed energy itself – rather than the training process in isolation.

Concluding Thought on Author's Chief Concern

Based on the emphasis placed on controlling, focusing, and directing energy to avoid waste and achieve peak performance, the author's chief concern is clearly the **regulation of energy in the proper direction**. This involves the disciplined management of one's focus and motivation, stemming from a defined goal, leading to effective and creative action.

25. Answer: d

Explanation:

Effect of Wrong Mind Training Explained

This question asks about the consequences of training the mind incorrectly, as described in the provided passage. The passage emphasizes the importance of focusing one's mental energy and actions towards a significant goal to achieve success and efficiency.

Passage Insights on Mind Training

The passage highlights a crucial point about how we train our minds. It states that training the mind towards focus and a specific goal requires effort because, often,

our minds have been trained incorrectly. The passage uses specific phrases to describe this condition:

- "we have already trained the mind wrongly to such an extent that we have become perfect in imperfections."
- "Not knowing the art of action, we have become a master artist in doing wrong things."

This suggests that wrong training leads to proficiency in mistakes and flaws, rather than overall perfection or skill in correct actions.

Analyzing the Options

Let's examine each option in light of the passage's statements about **wrong mind training**:

- **Option 1: We have become perfect in all aspects**

The passage explicitly contradicts this. It states we become "perfect in imperfections," meaning we are skilled at making mistakes or being flawed, not perfect in every way.

- **Option 2: Art of action is too much emphasized**

The passage implies the opposite. It says we have become masters at doing *wrong* things and are *not* knowing the "art of action." The focus is on the lack of correct action, not an overemphasis on its art.

- **Option 3: Each of us could become a master artist**

While the passage mentions becoming a "master artist in doing wrong things," it presents this as a negative consequence of wrong training. It doesn't suggest that everyone can become a master artist in a positive sense through this process; rather, it points to a skill developed in negative actions.

- **Option 4: None of these**

Based on the analysis of the first three options, none of them accurately reflect the specific outcomes of **wrong mind training** as described in the text. The

passage details becoming "perfect in imperfections" and a "master artist in doing wrong things," which are not covered by options 1, 2, or 3.

Conclusion on Wrong Mind Training

The passage clearly indicates that the effect of **training the mind wrongly** leads to becoming skilled in flaws ("perfect in imperfections") and proficient in performing incorrect actions ("a master artist in doing wrong things"). Since the given options (1, 2, and 3) do not capture these specific effects mentioned in the passage, the most appropriate answer is that none of the provided options are correct.

26. Answer: c

Explanation:

'On My terms' Autobiography Analysis

The book titled 'On My terms: From the Grassroots to the Corridors of Power' is a significant autobiography that chronicles the life and political journey of a prominent Indian leader. This autobiography offers readers a unique perspective on Indian politics from the viewpoint of someone who has been deeply involved for decades.

Understanding Sharad Pawar's Autobiography

The autobiography, 'On My terms: From the Grassroots to the Corridors of Power', details the life experiences and political career of **Sharad Pawar**. He is a veteran Indian politician who has served multiple terms as the Chief Minister of Maharashtra and has held key ministerial positions at the national level, including Defence Minister and Minister of Agriculture.

Key Aspects of the Book

- The title itself, '*On My terms*', suggests a narrative focused on Pawar's independent approach and decision-making throughout his political life.
- The subtitle, '*From the Grassroots to the Corridors of Power*', highlights the book's scope, covering his rise from humble beginnings to influential positions in the highest echelons of Indian governance.
- The book provides insights into major political events, alliances, and challenges faced during his extensive career.
- It explores his strategies, ideologies, and the evolution of politics in India, particularly in Maharashtra.

Sharad Pawar's Political Journey

Sharad Pawar has been a central figure in Indian politics for over five decades. His career began in the student politics of Maharashtra and evolved into national leadership. He has been associated with several major political parties and has played a crucial role in coalition governments. His experience spans state governance, national policy-making, and international relations.

This autobiography serves as a valuable resource for understanding the complexities of Indian democracy and the leadership dynamics that have shaped the nation. It offers personal reflections on his interactions with various political leaders and his perspective on the events that have defined modern Indian political history.

27. Answer: c

Explanation:

Deciphering the COP21 Climate Conference Location

This question requires identifying the host city for the 21st Conference of Parties (COP21) on Climate Changes, which was held in late 2015.

About the Conference of Parties (COP)

The Conference of the Parties (COP) serves as the supreme governing body for the United Nations Framework Convention on Climate Change (UNFCCC). It convenes annually to assess the progress and strategies related to climate change mitigation and adaptation efforts globally.

Key Details of COP21

The **21st Conference of Parties (COP21)**, often referred to as the 2015 Paris Climate Conference, was a particularly important summit.

- **Timing:** The conference took place from November 30th to December 12th, 2015.
- **Objective:** The primary goal was to secure a global agreement on climate action, aiming to keep global warming below specific targets.
- **Outcome:** This conference famously culminated in the adoption of the **Paris Agreement**, a landmark international treaty on climate change.

COP21 Conference Host City

The significant international gathering for the 21st Conference of Parties (COP21) on Climate Changes was hosted in the city of **Paris**, France. The Paris Agreement reached during this event marked a crucial step forward in the global response to climate change.

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28. Answer: a

Explanation:

Artificial Rain and Cloud Seeding Explained

The process of creating **artificial rain** involves a technique known as **cloud seeding**. This method aims to increase the likelihood or intensity of precipitation from existing clouds by introducing specific substances into the atmosphere. These substances, called seeding agents, act as nuclei around which ice crystals or water droplets can form, ultimately leading to precipitation.

Common Cloud Seeding Agents Analyzed

Cloud seeding relies on materials that can effectively encourage precipitation formation. Let's look at the options provided:

- **Silver Iodide:** This is a compound often used in cloud seeding operations.
- **Potassium Nitrate:** Primarily used as a fertilizer and in gunpowder, not typically for weather modification.
- **Copper Sulphate:** Known for its use in agriculture and as an algicide, it's not the standard agent for inducing rain.
- **Silver Nitrate:** Used in photography and medicine, it lacks the specific properties needed for effective cloud seeding compared to other silver compounds.

Why Silver Iodide is Used for Artificial Rain

Silver Iodide (chemical formula: AgI) is the most common and effective substance used for **cloud seeding**. Its effectiveness stems from its physical structure.

Here's a breakdown of why it works:

- **Crystal Structure Similarity:** The crystalline structure of **Silver Iodide** is very similar to that of ice.
- **Ice Nucleation:** In clouds where temperatures are below freezing but water remains in a liquid state (supercooled water), **Silver Iodide** particles act as excellent artificial ice nuclei.
- **Ice Crystal Formation:** When supercooled water droplets encounter these **Silver Iodide** particles, they freeze onto them, forming ice crystals.
- **Precipitation Growth:** These ice crystals grow larger by collecting more water vapor or by colliding with other supercooled droplets.
- **Falling Precipitation:** Once the ice crystals become heavy enough, they fall. If the air below the cloud is warm enough (above 0°C or 32°F), the falling ice crystals melt into raindrops before reaching the ground.

The process essentially mimics and enhances the natural ice crystal formation process that occurs in cold clouds, leading to increased precipitation.

Conclusion on Cloud Seeding Materials

Therefore, seeding clouds with **Silver Iodide** is the standard practice for attempting to produce **artificial rain** due to its ability to initiate ice crystal formation in supercooled clouds.

29. Answer: b

Explanation:

Retreating Monsoon Rainfall Patterns in India

The climate of India is significantly influenced by monsoon winds. The country experiences rainfall primarily from two distinct monsoon systems: the Southwest monsoon (advancing monsoon) and the Northeast monsoon (retreating monsoon). Understanding the characteristics of the **retreating monsoon** is key to identifying the regions that receive rainfall during this phase.

Understanding the Northeast Monsoon

The **retreating monsoon** season, also known as the Northeast monsoon, occurs roughly between October and December. This phase marks the withdrawal of the Southwest monsoon from most parts of India. As the Southwest monsoon winds retreat, the winds start blowing from the landmass towards the sea, predominantly from the northeast direction.

Key features of the Northeast monsoon:

- Winds blow from land to sea over most of India.
- These winds originate from the landmass, carrying dry conditions over the mainland.
- However, as these winds pass over the Bay of Bengal, they pick up moisture.
- This moisture-laden wind then strikes the southeastern coast of India, causing rainfall in specific regions.

Analysis of Rainfall Regions during Retreating Monsoon

Let's evaluate each region mentioned in the options to determine which one receives rainfall from the **retreating monsoon**:

1. North East India

Regions like Assam, Meghalaya, and the other northeastern states primarily receive their monsoon rainfall from the advancing Southwest monsoon, typically from June to September. The Northeast monsoon has a minimal impact on this area.

2. Tamil Nadu Coast

The **Tamil Nadu Coast** is the principal region that receives substantial rainfall during the Northeast monsoon period. The winds blowing from the northeast direction gather moisture from the Bay of Bengal and deposit it along the Tamil Nadu coast, South Andhra Pradesh, and parts of Kerala. This rainfall is crucial for agriculture in these areas, occurring during the autumn and early winter months.

3. Mahanadi Delta

The Mahanadi Delta, situated in Odisha, largely benefits from the Southwest monsoon. The Bay of Bengal branch of the Southwest monsoon brings significant rainfall to this region during the summer monsoon season (June–September). The **retreating monsoon** does not significantly contribute to the rainfall here.

4. Malabar Coast

The Malabar Coast, part of Kerala and Karnataka along the western side of the Western Ghats, receives heavy rainfall from the Southwest monsoon. The winds coming from the Arabian Sea branch of the Southwest monsoon are responsible for the heavy precipitation experienced here from June to September. The retreating monsoon has little to no effect on the Malabar Coast.

Conclusion on Retreating Monsoon Rainfall

Considering the direction of the winds and their moisture source during the Northeast monsoon phase, the **Tamil Nadu Coast** is distinctly identified as the region that receives rainfall from the **retreating monsoon**.

30. Answer: c

Explanation:

Order of Australia Honour

The **Order of Australia** serves as the nation's highest civilian honour, established to recognise Australians who have demonstrated outstanding service and achievement.

Awards under the Order of Australia are typically announced on Australia Day, January 26th, and during the King's Birthday celebrations. The question specifically asks about the recipient acknowledged in the January honours list.

Identifying the January Honouree

In the specific January honours list referenced, Sajeev Koshy was recognised with an award within the **Order of Australia** framework. This honour acknowledges individuals for their significant contributions and service to the community and the country.

- **Awarded Individual:** Sajeev Koshy
- **Award Context:** Received recognition in the January honours list.
- **Nature of Contribution:** The honour was granted for his service, notably benefiting the Indian community and promoting multicultural affairs. He received the Medal of the Order of Australia (OAM).

Understanding the Award System

The **Order of Australia** includes various levels, such as Companion (AC), Officer (AO), Member (AM), and Medal (OAM). The Medal of the Order of Australia (OAM) is

typically awarded for service in a particular locality or group, or in specific fields, contributing to a sense of community pride.

Assessing Other Candidates

The question lists other notable individuals. It's important to note that while they are recognized figures in their respective fields, they were not the recipients of the **Order of Australia** during the January honours period in question:

- **Yashwant Sinha:** Known for his career in Indian politics and public service.
- **Vashu Bhagnani:** A prominent figure in the Indian film industry as a producer.
- **Sanjeev Kapoor:** An internationally acclaimed Indian chef and restaurateur.

The specific recognition within the **Order of Australia** in January was thus conferred upon Sajeew Koshy for his dedicated service and contributions.

31. Answer: a

Explanation:

Understanding the Ashoka Chakra Award The Ashoka Chakra is India's highest peacetime military decoration awarded for valour, courageous action, or self-sacrifice away from the battlefield. It is the equivalent of the Param Vir Chakra, but awarded during peacetime. The award can be given posthumously. The question specifically asks for the recipient of this prestigious award on 26 January 2016, awarded posthumously. **Analysis of Gallantry Award Recipients** Let's examine the options provided in the context of the Ashoka Chakra awarded on Republic Day 2016:

- **Lance Naik Mohan Nath Goswami:** This soldier was indeed awarded the Ashoka Chakra posthumously on 26 January 2016. He received the award for his exceptional bravery, leadership, and supreme sacrifice during counter-terrorism operations in Kupwara district, Jammu and Kashmir, in August 2015. He single-handedly killed terrorists and saved the lives of his colleagues before succumbing to his injuries. His actions exemplified the highest standards of courage and devotion to duty.

- **Lance Naik Albert Ekka:** Lance Naik Albert Ekka was a valiant soldier of the Brigade of the Guards. He was awarded the **Param Vir Chakra** (PVC), India's highest wartime gallantry award, posthumously for his conspicuous bravery and leadership during the Indo-Pak War of 1971. He was not awarded the Ashoka Chakra in 2016.
- **Lance Naik Hanamanthappa Koppad:** Lance Naik Hanamanthappa Koppad was a brave soldier who tragically survived an avalanche in the Siachen Glacier in 2016. Sadly, he passed away shortly after being rescued due to complications from extreme hypothermia. While he was recognized for his resilience and service, he was not awarded the Ashoka Chakra posthumously on 26 January 2016. He was awarded the Sena Medal (Distinguished) in 2003.
- **Lance Naik Hemraj:** Lance Naik Hemraj was awarded the **Vir Chakra** posthumously for his actions during Operation Rhino in Assam in 2008. He was known for his bravery, but the specific award and date mentioned in the question (Ashoka Chakra, 26 Jan 2016) do not align with his commendations.

Conclusion on the Ashoka Chakra Recipient Based on the historical records and the specific criteria mentioned in the question – India's highest peacetime gallantry award, Ashoka Chakra, awarded posthumously on 26 January 2016 – the correct awardee is Lance Naik Mohan Nath Goswami. His sacrifice and bravery in the face of extreme danger led to him being honoured with this highest peacetime decoration.

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32. Answer: b

Explanation:

Understanding Solar Eclipse Occurrence

A **solar eclipse** is a spectacular astronomical event where the Sun's light is blocked by the Moon. This happens when the Moon passes directly between the Sun and Earth, casting a shadow on parts of the Earth.

For a **solar eclipse** to occur, a specific alignment of the three celestial bodies – the Sun, the Moon, and the Earth – is necessary. The order must be the Sun, followed by

the Moon, and then the Earth. We can represent this alignment conceptually as Sun → Moon → Earth.

Crucially, this alignment must happen during a particular phase of the Moon. The phase required is the **new moon**. During the new moon phase, the Moon is positioned between the Sun and Earth. From Earth, the sunlit side of the Moon faces away from us, making the Moon appear dark or invisible in the sky. It's only during this phase, when the Moon is precisely in this position relative to the Sun and Earth, that it can potentially block the Sun's light, causing an eclipse.

Analyzing the Options for Solar Eclipse

Let's examine the provided options to determine the best explanation for the **occurrence** of a **solar eclipse**:

- **Option 1: Position of the Moon between Sun and Earth**
This statement describes the basic geometrical arrangement needed. However, it's incomplete because this alignment (Sun → Moon → Earth) occurs every month during the new moon phase, but a solar eclipse only happens occasionally. It misses the critical detail of the specific lunar phase.
- **Option 2: Position of the Moon between Sun & Earth on a new moon**
This option is more precise. It includes both the necessary spatial alignment (Moon between Sun and Earth) and the essential condition of the lunar phase (**new moon**). This is the most accurate description because eclipses can only happen when the Moon is in the new moon phase and aligns perfectly.
- **Option 3: Both (a) and (b)**
While the condition in Option 1 is true, Option 2 provides a more complete and accurate explanation. Option 2 implicitly includes the condition from Option 1 but adds the necessary phase information. Therefore, Option 2 is considered the **best** or most defining explanation.
- **Option 4: None of these**
This is incorrect because Option 2 accurately explains the phenomenon.

In summary, the most accurate and complete explanation for the **occurrence** of a **solar eclipse** involves the specific alignment of the Sun, Moon, and Earth during the **new moon** phase, where the Moon blocks the Sun's light.

33. Answer: a

Explanation:

Bharat Ratna Awardee in 2015: Atal Bihari Vajpayee

The question asks to identify the recipient of India's highest civilian award, the **Bharat Ratna**, in the year **2015**.

Understanding the Bharat Ratna Award

The **Bharat Ratna** is the highest civilian award bestowed by the Republic of India. It is awarded in recognition of exceptional service or performance of the highest order, without distinction of race, occupation, position, or sex.

Bharat Ratna Recipients in 2015

In the year **2015**, the Government of India conferred the **Bharat Ratna** award upon two distinguished individuals:

- **Atal Bihari Vajpayee**: Former Prime Minister of India.
- **Madan Mohan Malaviya**: Prominent freedom fighter and educator (awarded posthumously).

Therefore, **Atal Bihari Vajpayee** is correctly identified as a recipient of the **Bharat Ratna** in 2015.

Analysis of Options

Let's examine the provided options in the context of the **2015** award:

- **1. Atal Bihari Vajpayee**: This option is correct as he was indeed awarded the **Bharat Ratna** in 2015.
- **2. LK Advani**: Shri Lal Krishna Advani, a senior politician, has not been conferred with the **Bharat Ratna** award.

- **3. Jai Prakash Narain:** Jaiprakash Narayan, a socialist and political leader, was awarded the **Bharat Ratna** in 1999, not 2015.
- **4. Pranab Mukherjee:** Shri Pranab Mukherjee, a former President of India, was awarded the **Bharat Ratna** in 2019, not 2015.

Conclusion

Based on the official records, **Atal Bihari Vajpayee** was one of the recipients of the **Bharat Ratna** award in **2015**. This makes option 1 the correct answer to the question.

34. Answer: c

Explanation:

The correct answer is **Option 3: IRNSS**.

Key Information

IRNSS stands for **Indian Regional Navigation Satellite System**.

Its operational name is **NavIC** (**N**avigation with **I**ndian **C**onstellation).

It is an independent regional satellite navigation system developed indigenously by India (**ISRO** – Indian Space Research Organisation) to provide accurate position information services in India and the region extending up to 1,500 km around its boundary.

Quick Breakdown of Other Options:

Galileo: The global navigation satellite system created by the European Union (EU).

GLONASS: The global navigation satellite system operated by Russia.

IGRPS: Not a standard navigational satellite system.

35. Answer: b

Explanation:

Bajirao's Peshwa Appointment Details

This solution explains the historical context of Bajirao I's appointment as Peshwa, focusing on his age at the time and the ruler under whose authority he served.

Historical Context of Bajirao's Peshwa Role

Bajirao I is a historically significant figure in the Maratha Empire, known for his military leadership and expansionist policies. He was appointed to the high office of Peshwa (Prime Minister) which was a key administrative and military position within the empire.

Key Facts about Bajirao's Appointment

- **Individual:** Bajirao I
- **Position Granted:** Peshwa
- **Age at Appointment:** 20 years
- **Year of Appointment:** 1720 AD
- **Ruler at the Time:** The appointment occurred during the reign of Chhatrapati Shahu Maharaj.

Bajirao's Age Calculation

Bajirao I was born in the year 1700. To determine his age at the time of his appointment as Peshwa in 1720, we perform a simple calculation:

Age = Year of Appointment - Year of Birth

Age = 1720 - 1700 = 20 years

This confirms that Bajirao I was indeed 20 years old when he took office.

Understanding the Reign of Chhatrapati Shahu

Chhatrapati Shahu Maharaj, the grandson of the Maratha founder Shivaji Maharaj, was the ruling Chhatrapati (King) of the Maratha Empire. He was known for his administrative skills and for recognizing the potential of capable individuals to serve the empire. His reign saw the Maratha Empire expand its influence considerably.

It was under Chhatrapati Shahu Maharaj's rule that Bajirao I was appointed as the Peshwa. Shahu Maharaj's decision to appoint such a young individual highlights his confidence in Bajirao's abilities and foresight.

Significance of the Appointment under Chhatrapati Shahu

The appointment of Bajirao I as Peshwa by Chhatrapati Shahu Maharaj in 1720 was a pivotal moment. Bajirao I served as Peshwa for twenty years until his death in 1740, during which time he dramatically expanded the Maratha Empire, solidifying its position as a major power in India.

Analysis of Other Options

The other options represent rulers from different periods of Maratha history and are not associated with Bajirao I's appointment as Peshwa at the age of 20:

- **Sambhaji:** He was the son of Shivaji Maharaj and ruled the Maratha Empire from 1680 to 1689, significantly earlier than Bajirao I's appointment.
- **Rajaram Chhatrapati:** He was also a son of Shivaji Maharaj and ruled from 1689 to 1700.
- **Rajaram II of Satara:** He ascended the throne much later, in 1749, long after Bajirao I had established his influence as Peshwa.

Therefore, the correct context for Bajirao I's appointment as Peshwa at the age of 20 years is the reign of Chhatrapati Shahu Maharaj.

36. Answer: d

Explanation:

Col C K Naidu Lifetime Achievement Award 2015 Cricketer

The Col C K Naidu Lifetime Achievement Award represents the highest recognition given by the Board of Control for Cricket in India (BCCI). This prestigious award is presented annually to honour cricketers for their invaluable and lasting contributions to the sport throughout their careers in India.

Understanding the 2015 Col C K Naidu Award Recipient

The question asks to identify the specific **cricketer** who was honoured with the **Col C K Naidu Lifetime Achievement Award** in the year **2015**. This award celebrates a player's enduring legacy and impact on Indian cricket.

Syed Kirmani: The 2015 Awardee

In 2015, the esteemed Col C K Naidu Lifetime Achievement Award was presented to **Syed Kirmani**. He is a former Indian Test wicket-keeper, celebrated for his exceptional skills and significant contributions to Indian cricket over many years.

- **Who is Syed Kirmani?:** A prominent former Indian cricketer, known primarily for his role as a wicket-keeper.
- **Career Highlights:** Kirmani represented India in international cricket from 1976 to 1986. He played 88 Test matches and 37 One Day Internationals (ODIs).
- **Major Achievement:** He was a crucial member of the Indian team that won the 1983 Cricket World Cup, a landmark victory in Indian cricket history.
- **Recognition:** His consistent performance and excellent glovework behind the stumps earned him accolades, culminating in this lifetime achievement award.

Therefore, Syed Kirmani is the cricketer who received the Col C K Naidu Lifetime Achievement Award in 2015, acknowledging his remarkable career and dedication to the sport.

37. Answer: a

Explanation:

Exploring Qutab-ud-din Aibak's Architectural Contributions

Qutab-ud-din Aibak, the founder of the Delhi Sultanate and the first ruler of the Ghurid dynasty in India, was a notable patron of architecture. His reign laid the foundation for distinctive Indo-Islamic architectural styles, blending Indian and Islamic design elements. His architectural legacy is primarily associated with major constructions in Delhi and other parts of North India.

Qutab-ud-din Aibak's Landmark Delhi Monuments

Among the most significant structures initiated by **Qutab-ud-din Aibak** are the **Qutab Mosque**, officially known as Quwwat-ul-Islam Mosque, and the **Qutab Minar**. The Quwwat-ul-Islam Mosque, built using materials from demolished Hindu and Jain temples, was started by Aibak in Delhi. He also commenced the construction of the impressive **Qutab Minar**, a towering victory tower. While Aibak managed to build only the first storey of the minaret, the subsequent three storeys were added by his successor, Iltutmish, and the top storey was later repaired by Firuz Shah Tughlaq.

Adhai-din-ka Jhopra Mosque: A Key Architectural Work

Beyond his famous Delhi monuments, historical sources indicate that **Qutab-ud-din Aibak** was also responsible for building the **Adhai-din-ka Jhopra mosque** at Ajmer, Rajasthan. This mosque is a significant example of early Sultanate architecture. It is traditionally believed to have been erected rapidly, possibly within

two and a half days ('Adhai Din'), hence its name. The mosque was built on the site of an older Sanskrit college and temple complex. This makes the **Adhai-din-ka Jhopra mosque** another crucial construction attributed to **Qutab-ud-din Aibak's** patronage.

Analyzing Other Architectural Attributions

It is important to distinguish Aibak's contributions from other historical structures:

- **Khirki Masjid at Jahanpanah:** This mosque was constructed much later, during the Tughlaq dynasty, by Ghiyas-ud-din Tughlaq.
- **Mausoleum of Khan-i-Jahan Tilangani:** This tomb belongs to the Lodi period and was built for Khan-i-Jahan Tilangani, a prominent noble during the reign of Firuz Shah Tughlaq (14th century).
- **Kila-i-Kunha Mosque at Delhi:** This historic mosque, located within the Purana Qila, was built by Sher Shah Suri, the founder of the Sur Empire, in the 16th century.

Considering these historical facts, the **Adhai-din-ka Jhopra mosque at Ajmer** stands as another significant monument built by **Qutab-ud-din Aibak**, besides the Qutab Mosque and the Qutab Minar.

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38. Answer: c

Explanation:

Analyzing Indian Rulers Who Challenged the Early British Rule

The question asks to identify an Indian ruler who successfully defeated the British forces during the initial phase of British influence and expansion in India. This period involved the consolidation of the British East India Company's power through military conflicts and political maneuvering. Understanding the key figures who resisted this expansion is crucial.

Hyder Ali's Resistance Against the British

Hyder Ali, the de facto ruler of the Kingdom of Mysore, was a formidable opponent of the British East India Company in the late 18th century. His military campaigns significantly challenged British dominance in Southern India during the **early stages** of their rule.

- **Anglo-Mysore Wars:** Hyder Ali fought two major wars against the British: the First Anglo-Mysore War (1767-1769) and the Second Anglo-Mysore War (1780-1784).
- **First Anglo-Mysore War:** In this conflict, Hyder Ali demonstrated considerable military skill, forcing the British to sign the Treaty of Madras (1769). The treaty terms were favorable to Mysore, and Hyder Ali successfully pushed back the British advance.
- **Second Anglo-Mysore War:** This war is particularly notable for Hyder Ali's early successes. He allied with the French and the Marathas and inflicted a severe defeat on the British forces at the **Battle of Pollilur** in 1780, capturing many British soldiers and officers. Although the war concluded after his death with the Treaty of Mangalore (1784), his campaigns severely tested the British military might in the region during that era.

Hyder Ali's military strategies and victories represent a significant instance where an Indian ruler effectively defeated the British in the early phase of their expansion.

Comparing Other Notable Rulers

Let's briefly consider the other options in the context of defeating the British in their ***early*** stages:

- **Maharaja Ranjit Singh:** While a powerful ruler, his conflicts and treaties with the British occurred later, and the major wars leading to the fall of the Sikh Empire happened after his death.
- **Mahadaji Scindhia:** A key Maratha leader, he had successes against the British, particularly regaining control of Delhi. However, his primary military engagements were often intertwined with the broader Maratha-British conflicts, which intensified later compared to Hyder Ali's initial challenges.

- **Tipu Sultan:** As Hyder Ali's son, Tipu Sultan continued the valiant struggle against the British and is renowned for his resistance. However, Hyder Ali's initial military successes laid the foundation for this resistance and marked a distinct early defeat for the British forces.

Conclusion on Early British Defeats

Based on historical accounts, **Hyder Ali** stands out as a prominent Indian ruler who inflicted significant defeats upon the British East India Company during the critical early period of their establishment in India, particularly through his military campaigns in Mysore.

39. Answer: b

Explanation:

Understanding the OROP Judicial Committee Head

The question asks to identify the person who led the specific **judicial Committee** established to examine the '**One Rank One Pension (OROP)**' scheme. This committee was formed to address grievances and provide recommendations regarding the implementation and scope of the OROP policy for ex-servicemen.

Role of the OROP Judicial Committee

The Central Government established a **judicial Committee** to review the '**One Rank One Pension (OROP)**' scheme. The primary goal of this committee was to analyze the existing formula and address the concerns raised by veterans regarding its implementation. The committee's findings and recommendations were crucial for the government's policy decisions concerning the pension parity for armed forces personnel.

Identifying the Committee Head

The specific individual appointed to head this important **judicial Committee** for the 'One Rank One Pension (OROP)' scheme was **L Narasimha Reddy**. He is a former Chief Justice of the Patna High Court, bringing extensive judicial experience to the role.

- **L Narasimha Reddy**: Appointed as the Chairperson of the judicial Committee to review the OROP scheme.
- **Y V Reddy**: A distinguished economist and former Governor of the Reserve Bank of India, not associated with this specific judicial committee.
- **Sanjay Mishra**: Associated with judicial roles, but not the head of the OROP judicial committee.
- **N S Reddy**: Another individual, but not the designated head of the OROP judicial committee.

Therefore, **L Narasimha Reddy** is the correct individual who chaired the **judicial Committee** tasked with reviewing the 'One Rank One Pension (OROP)' scheme.

40. Answer: c

Explanation:

South Asian Games 2016 Mascot Details

The question asks to identify the mascot for the South Asian Games that took place in February 2016. Understanding the mascots associated with major sporting events is a common topic in general knowledge and sports quizzes.

Understanding the Mascot for the 2016 South Asian Games

The South Asian Games is a significant regional multi-sport event featuring athletes from countries in South Asia. The specific edition held in February 2016 was hosted jointly by Guwahati and Shillong in India.

The official mascot chosen for these 2016 Games was **Tikhor**. Tikhor was designed as a cheetah cub, representing qualities like speed, dynamism, and the spirit of youth and sportsmanship that are central to the games.

Analysis of Mascot Options

Let's examine the given options in relation to the 2016 South Asian Games:

- **Chikor**: This name does not correspond to the mascot of the 2016 South Asian Games.
- **Shera**: Shera was the mascot for the 2010 Commonwealth Games, which were held in Delhi, India. It represented a tiger.
- **Tikhor**: This was indeed the mascot for the South Asian Games held in February 2016. The name 'Tikhor' signifies energy and vitality.
- **Appu**: Appu was the beloved elephant mascot for the 1982 Asian Games, hosted in New Delhi.

Based on the historical records of the South Asian Games mascots, **Tikhor** is the correct mascot for the February 2016 event.

41. Answer: a

Explanation:

Jitu Rai's Gold at ISSF World Cup Bangkok 2016

This question asks to identify the Indian shooter who won the gold medal in the **50 m pistol** event at the International Shooting Sport Federation (ISSF) World Cup held in **Bangkok, Thailand, in March 2016**.

Understanding the ISSF World Cup Bangkok 2016

The ISSF World Cup is a prestigious international shooting competition. The 2016 edition held in Bangkok was a significant event for shooters worldwide, serving as a platform to showcase their skills and qualify for major championships.

Performance in the 50 m Pistol Event

In the Men's **50 m pistol** competition at the Bangkok event, Indian shooter **Jitu Rai** delivered an outstanding performance.

- **Athlete:** Jitu Rai
- **Event:** Men's 50 m Pistol
- **Competition:** ISSF World Cup, Bangkok
- **Year:** 2016 (March)
- **Result:** Gold Medal

Jitu Rai's Achievement

Jitu Rai is a renowned Indian sport shooter who has represented India in numerous international events. His victory in the **50 m pistol** event at the **ISSF World Cup in Bangkok** marked a significant achievement in his career and brought pride to Indian sports. He competed against other top international shooters, including Pang Wei and Wang Zhiwei, who are also prominent figures in the sport.

Based on the results of the 2016 ISSF World Cup in Bangkok, **Jitu Rai** was indeed the shooter who secured the gold medal in the men's 50 m pistol discipline.

42. Answer: b

Explanation:

Australia Hosted the 2018 Commonwealth Games

The Commonwealth Games is a significant international multi-sport event contested by athletes from the Commonwealth of Nations. This question asks to identify the specific country that served as the host for the 2018 edition of this major sporting event. Knowing the history of the Commonwealth Games is essential to pinpoint the correct host nation.

Examining the Options for the 2018 Commonwealth Games Host

Let's review the provided options to determine which country hosted the Commonwealth Games in 2018:

- **New Zealand:** While New Zealand is a member of the Commonwealth and has hosted the Games previously (Christchurch in 1974), it was not the host nation for the 2018 event.
- **Australia:** This country has a history of hosting the Commonwealth Games and was indeed the host for the 2018 Games.
- **Scotland:** Scotland hosted a memorable Commonwealth Games in Glasgow in 2014. However, Scotland did not host the 2018 Games.
- **Malaysia:** Malaysia hosted the Commonwealth Games in Kuala Lumpur in 1998. It was not the host country in 2018.

Confirming Australia as the 2018 Host Country

Based on the historical records of the Commonwealth Games, **Australia** was the confirmed host country for the 2018 event.

Details Regarding the 2018 Commonwealth Games

The 2018 Commonwealth Games, officially known as the XXI Commonwealth Games, took place in Australia.

- **Host Nation:** Australia
- **Host City:** Gold Coast, Queensland
- **Event Dates:** The Games were held from April 4 to April 15, 2018.
- **Key Features:** The event featured approximately 4,426 athletes competing in 275 medal events across 18 sports. It was the fifth time Australia had hosted the Commonwealth Games, and the first time the Gold Coast hosted the event.

The successful hosting of the 2018 Commonwealth Games in Gold Coast, Australia, highlighted the nation's commitment to international sports and provided a platform for athletes from across the Commonwealth to compete.

43. Answer: b

Explanation:

The question asks about the geographical location where the **largest concentration of Harappan sites** has been discovered. The Harappan Civilization, also known as the Indus Valley Civilization, thrived in the Bronze Age (around 2500–1900 BCE) across parts of modern-day Pakistan, northwest India, and Afghanistan.

Analyzing Harappan Site Distribution

To answer this question, we need to consider the major river systems associated with the Harappan Civilization and analyze archaeological findings regarding settlement density:

- **Indus River System:** The civilization is named after the Indus River, and major urban centers like Mohenjo-daro were located on its banks. Other important sites were found along its tributaries, such as the Jhelum, Chenab, Ravi, Sutlej, and Beas.
- **Ghaggar-Hakra River System:** This river system, often identified with the Sarasvati River mentioned in ancient Indian texts, flows through parts of Pakistan and northwest India. Archaeological surveys have revealed a significant number of Harappan settlements along its dried-up channels.
- **Sutlej River:** This is a major tributary of the Indus, and sites like Rupar are located on its banks.
- **Ravi River:** The major Harappan city of Harappa was situated on the Ravi River, an Indus tributary.

Ghaggar-Hakra: The Area of Largest Concentration

Extensive archaeological work has shown that while the Indus River was vital for major cities, the river basin of the Ghaggar-Hakra system contains the **largest concentration** of discovered **Harappan sites**. This region is estimated to have hosted thousands of settlements, ranging from small villages to large towns, particularly

during the Mature Harappan period. The sheer density of sites found along the Ghaggar-Hakra riverbeds is notable.

Key sites found along the Ghaggar-Hakra include:

- Kalibangan (Rajasthan)
- Rakhigarhi (Haryana)
- Banawali (Haryana)
- Prahladpur (Haryana)

The Ghaggar-Hakra river system is believed to have been more substantial in the past, potentially receiving water from the Sutlej and Yamuna rivers, making it a fertile region conducive to settlement growth.

Conclusion on Harappan Settlement Patterns

Based on current archaeological evidence, the Ghaggar-Hakra river valley represents the region with the highest density and **largest concentration of Harappan sites**, indicating its significant role in the civilization's expansion and development, complementing the importance of the Indus River core.

44. Answer: d

Explanation:

Understanding the Name: Heavy Water Explained

Heavy water is a unique form of water that differs from ordinary water in its molecular composition. The name "heavy water" directly relates to the specific type of hydrogen atoms it contains.

Composition of Heavy Water vs. Ordinary Water

Ordinary water, with the chemical formula ' H_2O ', is composed of two atoms of hydrogen and one atom of oxygen. The hydrogen atoms typically present are of the

isotope known as protium (^1H).

Heavy water, chemically represented as ' D_2O ', is composed of two atoms of deuterium (^2H or ' D ') and one atom of oxygen. Deuterium is an isotope of hydrogen.

The Key Difference: Hydrogen Isotopes

Hydrogen has three main isotopes: protium, deuterium, and tritium.

- **Protium (^1H):** This is the most common isotope of hydrogen. Its nucleus consists of just one proton. Its atomic mass is approximately 1 atomic mass unit (amu).
- **Deuterium (^2H or D):** This isotope of hydrogen has one proton and one neutron in its nucleus. Because it contains an extra neutron, deuterium is significantly heavier than protium, with an atomic mass of approximately 2 amu.

The presence of deuterium, the **heavier isotope of hydrogen**, is the fundamental reason why ' D_2O ' is called heavy water.

Molecular Weight Comparison

The difference in the isotopes of hydrogen leads to a difference in the molecular weight of the water molecules:

- Molecular weight of ordinary water (H_2O): Approximately $(2 \times 1 \text{ amu}) + 16 \text{ amu} = 18 \text{ amu}$.
- Molecular weight of heavy water (D_2O): Approximately $(2 \times 2 \text{ amu}) + 16 \text{ amu} = 20 \text{ amu}$.

This increase in molecular weight makes heavy water heavier overall compared to ordinary water.

Analysis of Options

Let's examine the given options in light of this explanation:

- **It is denser than ordinary water:** This statement is true. Heavy water has a higher density than ordinary water due to the greater mass of deuterium atoms. However, the higher density is a consequence of the heavier isotope, not the primary reason for the name itself. The name highlights the isotopic composition.
- **It is an oxide of deutron:** This statement is chemically accurate, describing the composition. Deutron is the nucleus of deuterium. However, the term "heavy" specifically points to the mass difference resulting from the isotope.
- **It has a heavy (or bad) taste:** This is incorrect. The perceived taste of water is not the scientific basis for its classification or naming.
- **It has a heavier isotope of hydrogen:** This option correctly identifies the core reason for the name "heavy water." The substitution of ordinary hydrogen (protium) with its heavier counterpart, deuterium, increases the mass of the water molecule, leading to the designation "heavy."

45. Answer: d

Explanation:

Selecting the Best Soil for Cotton Growth

Understanding the ideal soil conditions is crucial for maximizing crop yield, especially for important crops like cotton. Different soil types possess varying characteristics that influence water retention, nutrient availability, and aeration, all vital for plant health. Let's explore the suitability of the mentioned soil types for cotton cultivation.

Soil Types and Their Suitability for Cotton

Cotton is a crop that requires specific soil conditions to thrive. It needs soil that can retain moisture well, particularly during its growth stages, but also allows for adequate drainage to prevent root diseases. It also benefits from soils rich in nutrients.

- **Alluvial Soil:** This type of soil is formed by the deposition of silt by rivers. It is generally fertile and well-drained, making it suitable for a wide variety of crops. While alluvial soils can support cotton, they may not offer the same level of water retention as other types, which can be a limiting factor in drier climates or periods.
- **Red Soil:** Red soils are typically formed from the weathering of crystalline rocks. They often have a porous and crumbly texture but tend to be less fertile and have lower water-holding capacity compared to black soils. Red soils often require significant amendments and irrigation to support cotton effectively.
- **Laterite Soil:** Laterite soils develop in regions with high temperatures and heavy rainfall, leading to leaching of essential nutrients. They are rich in iron and aluminum oxides but are often deficient in nitrogen, phosphorus, and potassium. These characteristics make laterite soils generally unsuitable for the intensive cultivation of cotton.
- **Black Soil (Regur Soil):** Black soils, also known as Regur soils or black cotton soils, are highly renowned for their suitability for growing cotton. These soils are characterized by their high clay content, particularly montmorillonite, which gives them excellent water-holding capacity. They swell when wet, forming a protective mulch that prevents evaporation, and shrink when dry, creating deep cracks that help in aeration. Black soils are also typically rich in nutrients like calcium carbonate, magnesium, and potash, which are beneficial for cotton plants.

Why Black Soil is Ideal for Cotton

The unique properties of black soil make it the most conducive for cotton growth among the options provided:

- **Excellent Water Retention:** The high clay content allows black soil to absorb and retain moisture effectively, providing a consistent water supply to the cotton roots, which is crucial during dry spells. The formula for water retention in soil relates to factors like particle size distribution and organic matter content, where higher clay content generally leads to better retention.
- **Nutrient Richness:** Black soils are naturally fertile, containing essential nutrients required for robust cotton plant development.

- **Good Drainage (when cracked):** Although they retain moisture well, the deep cracks that form when the soil dries out allow excess water to drain and improve aeration, preventing waterlogging.
- **Self-mulching Property:** The swelling and shrinking behaviour acts as a natural mulching mechanism, conserving moisture and suppressing weeds.

Considering these factors, black soil provides the optimal environment for the successful cultivation of cotton.

46. Answer: b

Explanation:

Indian Air Force Fighter Aircraft: French Connection

The question asks to identify a French-origin fighter aircraft in the Indian Air Force (IAF) fleet, other than the recently acquired Dassault Rafale. The Indian Air Force operates a diverse fleet of aircraft, including several models with French origins.

Understanding the Dassault Rafale Deal

India has signed a significant deal with France to procure the Dassault Rafale fighter jet. The Rafale is a twin-engine, canard-delta wing, multi-role fighter aircraft manufactured by the French aerospace company Dassault Aviation. It is known for its advanced technology and combat capabilities.

Analyzing Aircraft Options

Let's examine the origins of the aircraft listed in the options:

- **MiG 21:** This is a series of supersonic jet fighters originally designed by the Mikoyan-Gurevich Design Bureau in the Soviet Union. Therefore, it is of Russian origin, not French.

- **Mirage 2000:** This is a French multirole, single-engine, fourth-generation jet fighter manufactured by Dassault Aviation. The Indian Air Force has operated the Mirage 2000 for many years and it has played a significant role in various operations. This matches the criteria of being a French fighter aircraft in the IAF inventory.
- **AJT Hawk:** The Hawk is a British multirole aircraft developed by Hawker Siddeley that was later redesigned and produced by British Aerospace (BAE Systems). It is primarily used as an advanced jet trainer (AJT), not typically classified as a frontline fighter in the same category as Rafale or Mirage. It is of British origin.
- **Su-30 MKI:** The Sukhoi Su-30MKI is a twin-engine, two-seat, supermaneuverable fighter derived from the Sukhoi Su-30. It is manufactured under license by Hindustan Aeronautics Limited (HAL) for the Indian Air Force. The original design is Russian.

Identifying the Other French Fighter

Based on the analysis of the options, the **Mirage 2000** is the French-origin fighter aircraft that has been a part of the Indian Air Force inventory alongside the newer Rafale jets.

47. Answer: b

Explanation:

Understanding the Purna Swaraj Resolution

The question asks about the location where the significant Purna Swaraj resolution was passed on January 26, 1930. This resolution was a pivotal moment in India's struggle for independence.

The Purna Swaraj (Complete Self-Rule) resolution was actually declared based on a decision made earlier by the Indian National Congress. The resolution itself was passed at the Lahore Session of the Indian National Congress in December 1929.

The Lahore Session of 1929

The 1929 session of the Indian National Congress was held in Lahore. This session was presided over by Jawaharlal Nehru. During this session, a major decision was taken:

- The Congress declared Purna Swaraj or complete independence as its main goal.
- It rejected the earlier demand for Dominion Status.
- It decided to observe January 26, 1930, as the first 'Independence Day'.
- It also decided to launch a Civil Disobedience Movement if the British government did not accept the demand for complete independence.

Although the resolution setting the goal of Purna Swaraj was adopted at the Lahore session in December 1929, January 26, 1930, was the day publicly declared for its celebration nationwide.

Significance of January 26, 1930

Following the Lahore Resolution of December 1929, the Congress leadership urged Indians to celebrate January 26 every year as 'Purna Swaraj Day'. On this day in 1930, people across India held public meetings and took a pledge to achieve complete independence from British rule.

Conclusion on the Resolution Location

Based on the historical facts, the resolution setting the goal of Purna Swaraj was passed during the Indian National Congress session held in Lahore in December 1929, leading to the declaration of January 26, 1930, as Purna Swaraj Day.

Therefore, the correct location related to the passing of the Purna Swaraj resolution referenced in the context of January 26, 1930, is Lahore.

The final answer is **Lahore**.

Revision Table: Key Facts on Purna Swaraj

Event	Purna Swaraj (Complete Self-Rule) Resolution
Body	Indian National Congress
Session Location	Lahore
Session Year	December 1929
Resolution Goal	Complete Independence for India
First Purna Swaraj Day	January 26, 1930
Significance of Jan 26	Day of public declaration and celebration of the goal

Additional Information: Indian National Congress Sessions

The Indian National Congress held annual sessions where major decisions regarding the freedom struggle were made. These sessions were important milestones. Some notable sessions and their significance include:

- **Calcutta Session (1906):** Dadabhai Naoroji declared 'Swaraj' (self-rule) as the goal of the Congress.
- **Surat Session (1907):** Witnessed a split between the Moderates and Extremists.
- **Lucknow Session (1916):** Saw the reunion of the Moderates and Extremists and the Lucknow Pact between Congress and the Muslim League.
- **Karachi Session (1931):** Adopted resolutions on Fundamental Rights and the National Economic Programme, presided over by Sardar Vallabhbhai Patel.
- **Haripur Session (1938):** Presided over by Subhas Chandra Bose, emphasizing national planning.

The Lahore Session of 1929 remains particularly famous for the Purna Swaraj declaration which intensified the demand for complete independence.

48. Answer: d

Explanation:

Deepika Padukone's 2016 Filmfare Best Actress Award: A Closer Look

This explanation focuses on identifying the specific movie for which the acclaimed actress Deepika Padukone won the Filmfare Award for Best Actress in the year 2016. We'll examine her prominent roles around that period.

Understanding the Filmfare Award Recognition

The Filmfare Awards are highly regarded in the Indian film industry. Winning the award for Best Actress signifies a standout performance in a leading role. The question specifically asks about the award ceremony held in 2016, which typically honors films released in the preceding year (2015).

Deepika Padukone's Performance in 'Piku'

In 2015, Deepika Padukone starred in the critically acclaimed film **Piku**, directed by Shoojit Sircar. She played the lead role of Piku Banerjee, a young woman navigating her professional life, family responsibilities, and a unique road trip with her father and their driver. Her portrayal was lauded for its realism, emotional depth, and subtle handling of a complex character.

This performance resonated strongly with audiences and critics alike, ultimately earning Deepika Padukone the Filmfare Award for Best Actress at the 61st Filmfare Awards ceremony, which took place in January 2016.

Analysis of Other Movie Options

Let's consider the other films mentioned in the options:

- **Bajirao Mastani:** Deepika Padukone played the role of Mastani in this Sanjay Leela Bhansali directorial. It was a significant performance in a major film released in 2015. However, the Filmfare Best Actress award for 2016 was awarded for 'Piku'.

- **Tamasha:** This Imtiaz Ali film, also released in 2015, featured Deepika Padukone alongside Ranbir Kapoor. While her performance was noted, it was not the basis for her 2016 Filmfare Best Actress win.
- **Happy New Year:** Released in 2014, this Farah Khan film was a commercial entertainer. Deepika Padukone's role was significant, but the timeframe (2016 award) points away from this film for the specific award mentioned.

Confirming the Award-Winning Film

The Filmfare Awards 2016 recognized Deepika Padukone's exceptional performance in the slice-of-life drama **Piku**. Her ability to portray the character's vulnerability, independence, and emotional journey made it a memorable role and secured her the prestigious award.

49. Answer: c

Explanation:

Gujarat's Largest Oil Field: Ankleshwar

This question asks to identify the location of the most significant oil field within the Indian state of Gujarat. Gujarat is known for its substantial contribution to India's oil and natural gas production, with several oil fields contributing to its output. Identifying the largest among them is key to answering this question correctly.

Exploring Gujarat's Oil Fields

Gujarat has been a major hub for oil exploration and production in India for many decades. Several fields have been discovered and developed, primarily in the Cambay Basin. Let's look at the options provided:

- **Senand:** While Senand is an oil-producing area, it is not considered the largest.
- **Kadi:** Kadi is another notable oil field in Gujarat, located in the Mehsana district, but it is surpassed in size by others.

- **Ankleshwar:** Located in the Bharuch district, Ankleshwar is widely recognized as one of the most significant and prolific oil fields in Gujarat, often referred to as the largest or one of the largest. It has been a cornerstone of the state's petroleum industry.
- **Kalol:** Kalol is also an important oil and gas field in Gujarat, situated in the Gandhinagar district, but it doesn't hold the top position in terms of sheer size or production volume compared to Ankleshwar.

Significance of Ankleshwar Oil Field

The Ankleshwar oil field, discovered in 1960, is situated in the Cambay Basin. It has historically been the largest onshore oil field in India and remains a major contributor to Gujarat's energy sector. Its extensive reserves and long production history make it a landmark field in India's petroleum geography. The field's development has significantly boosted the regional economy and national oil production capacity.

Conclusion

Based on the established importance and scale of operations, **Ankleshwar** stands out as the largest oil field in Gujarat among the given options. Its discovery and sustained production have cemented its position as a critical asset in India's oil sector.

50. Answer: b

Explanation:

- The question asks about the specific location within the **Constitution of India** where **Fundamental Rights** are enshrined.
- **Fundamental Rights** are a crucial set of rights guaranteed to citizens, forming the bedrock of democracy and individual liberty in India.

Fundamental Rights in the Constitution of India

The **Constitution of India** is the supreme law of the country. It organizes governmental powers, sets out fundamental principles, and guarantees certain basic rights to its citizens. Among these are the **Fundamental Rights**, which are essential for the overall development of individuals. These rights are considered fundamental because they are indispensable for the development of every individual's personality and are essential to protect their dignity and freedom.

Locating Fundamental Rights: Part III of the Constitution

The **Fundamental Rights** of Indian citizens are specifically detailed in **Part III** of the **Constitution of India**. This part covers Articles 12 to 35.

- **Article 12** defines the term 'State'.
- **Article 13** states that the State shall not make any law which takes away or abridges any of the rights conferred by this Part and provides for the nullity of laws inconsistent with or in derogation of the Fundamental Rights.
- Subsequent articles (from Article 14 onwards) enumerate specific **Fundamental Rights**, such as the Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, and Right to Constitutional Remedies.

Analysis of Constitutional Parts Mentioned

To understand why **Part III** is the correct answer, let's look at the other options provided:

Part of the Constitution	Subject Matter
Part I	Deals with the Union and its territory . It includes articles related to the name and territory of the Union, admission and establishment of new states, etc.
Part III	Deals with Fundamental Rights (Articles 12-35). This is where the core rights like equality, freedom, and life are guaranteed.
Part IV	Contains the Directive Principles of State Policy (Articles 36-51). These are guidelines for the government to follow while formulating laws and policies for socio-economic justice.
Part V	Deals with The Union . This part covers the executive (President, Prime Minister), Parliament, legislative powers of the President, the Union judiciary (Supreme Court), Comptroller and Auditor-General of India, etc.

Based on this analysis, the correct location for **Fundamental Rights** in the Constitution of India is **Part III**.

51. Answer: d

Explanation:

Understanding the Travel Claim Calculation

This question requires us to determine the distance a worker travelled by taxi based on specific reimbursement rates for taxi use and personal car use. We are given the total distance travelled and the total amount claimed for the week.

Identifying Key Information for Calculation

- **Reimbursement Rate (Taxi):** Rs. 1.50 for every kilometer travelled by taxi.
- **Reimbursement Rate (Own Car):** 50 paise for every kilometer travelled using their own car. Since Rs. 1 = 100 paise, this rate is Rs. 0.50 per kilometer.

- **Total Distance Covered:** The worker travelled a total of 80 km in the week.
- **Total Amount Claimed:** The worker claimed Rs. 50 for the week's travel.

Formulating Equations for Travel Distance

Let's use algebra to represent the unknown distances. We can define:

- Let t be the distance in kilometers (km) travelled by taxi.
- Let c be the distance in kilometers (km) travelled using the worker's own car.

Based on the problem, we can set up two main equations:

1. **Total Distance Equation:** The sum of the distances travelled by taxi and by car equals the total distance.

$$t + c = 80$$

2. **Total Claim Amount Equation:** The total claim is the sum of the amount claimed for taxi travel and the amount claimed for car travel.

$$(\text{Rate}_{\text{taxi}} \times t) + (\text{Rate}_{\text{car}} \times c) = \text{Total Claim}$$

$$(1.50 \times t) + (0.50 \times c) = 50$$

Solving the System of Equations

We need to find the value of t (distance travelled by taxi). We can use the first equation to express c in terms of t and substitute it into the second equation.

1. **Express c using the Total Distance:** From $t + c = 80$, we get:

$$c = 80 - t$$

2. **Substitute c into the Total Claim Equation:** Replace c in the equation $1.50t + 0.50c = 50$:

$$1.50t + 0.50(80 - t) = 50$$

3. **Simplify and Solve for t :** First, distribute 0.50:

$$1.50t + (0.50 \times 80) - (0.50 \times t) = 50$$

$$1.50t + 40 - 0.50t = 50$$

4. Combine the terms with t :

$$(1.50t - 0.50t) + 40 = 50$$

$$1.00t + 40 = 50$$

$$t + 40 = 50$$

5. Isolate t : Subtract 40 from both sides of the equation:

$$t = 50 - 40$$

$$t = 10$$

Final Answer for Taxi Travel Distance

The calculation shows that $t = 10$. Therefore, the worker travelled 10 km by taxi.

Checking the Calculation

We can verify this result:

- Distance by taxi (t): 10 km
- Distance by own car (c): 80 km – 10 km = 70 km
- Amount claimed for taxi: 10 km $\times$ Rs. 1.50/km = Rs. 15
- Amount claimed for own car: 70 km $\times$ Rs. 0.50/km = Rs. 35
- Total claim: Rs. 15 + Rs. 35 = Rs. 50

The total claim of Rs. 50 matches the information given in the question, confirming that the distance travelled by taxi is correct.

52. Answer: b

Explanation:

Finding the Number When Calculations Go Wrong

This problem involves a scenario where a student makes a mistake while performing a calculation in an examination. We need to determine the original number based on the difference between the correct answer and the student's incorrect answer.

Understanding the Problem Statement

- The student was asked to calculate $\frac{3}{14}$ of a specific number.
- The student mistakenly calculated $\frac{3}{4}$ of the same number.
- The result the student obtained was 150 greater than the actual correct answer.
- Our goal is to find the original number.

Setting Up the Calculation

Let's represent the unknown number with the variable x . We can then express the correct calculation and the incorrect calculation using this variable.

- **Correct Calculation:** The student was supposed to find $\frac{3}{14}$ of the number. This can be written mathematically as:

$$\text{Correct Answer} = \frac{3}{14} \times x = \frac{3x}{14}$$

- **Incorrect Calculation:** The student mistakenly found $\frac{3}{4}$ of the number. This can be written as:

$$\text{Incorrect Answer} = \frac{3}{4} \times x = \frac{3x}{4}$$

Formulating the Equation

The problem states that the incorrect answer was 150 more than the correct answer. We can translate this into an equation:

$$\text{Incorrect Answer} = \text{Correct Answer} + 150$$

Substituting the expressions we found:

$$\frac{3x}{4} = \frac{3x}{14} + 150$$

Solving the Equation Step-by-Step

Now, we need to solve this equation for x .

1. First, gather the terms involving x on one side of the equation:

$$\frac{3x}{4} - \frac{3x}{14} = 150$$

2. To subtract the fractions, find a common denominator for 4 and 14. The least common multiple (LCM) of 4 and 14 is 28.
3. Rewrite the fractions with the common denominator:

$$\frac{3x \times 7}{4 \times 7} - \frac{3x \times 2}{14 \times 2} = 150$$

$$\frac{21x}{28} - \frac{6x}{28} = 150$$

4. Combine the fractions:

$$\frac{21x - 6x}{28} = 150$$

$$\frac{15x}{28} = 150$$

5. Isolate x . Multiply both sides by 28:

$$15x = 150 \times 28$$

6. Divide both sides by 15:

$$x = \frac{150 \times 28}{15}$$

7. Simplify the expression:

$$x = 10 \times 28$$

$$x = 280$$

Verification

Let's check if this number satisfies the condition given in the problem.

- The number is 280.
- Correct answer = $\frac{3}{14} \times 280 = 3 \times \frac{280}{14} = 3 \times 20 = 60$.
- Incorrect answer = $\frac{3}{4} \times 280 = 3 \times \frac{280}{4} = 3 \times 70 = 210$.
- The difference is $210 - 60 = 150$. This matches the information provided in the question, confirming our calculation.

Conclusion

The number the student was working with is 280.

53. Answer: d

Explanation:

Understanding the Division Problem: A, B, and C's Shares

This problem involves dividing a total amount of money among three people, A, B, and C, based on a specific condition related to their shares if they received less. We need to find the original amount C received.

Initial Information Breakdown

- Total amount distributed: Rs. 735
- Number of people: 3 (A, B, C)
- Condition: If each person received Rs. 25 less, their shares would be in the ratio 1:3:2.
- Objective: Find the amount C originally received.

Calculating Adjusted Amounts Based on the Ratio

First, let's determine the total amount that would be distributed if each person received Rs. 25 less.

- Reduction per person: Rs. 25
- Total reduction for three people: $3 \times 25 = \text{Rs. } 75$
- Adjusted total amount: Original Total Amount – Total Reduction
- Adjusted total amount: $735 - 75 = \text{Rs. } 660$

This adjusted total amount of Rs. 660 is now divided among A, B, and C in the new ratio.

Determining Shares from the New Ratio

The shares of A, B, and C are in the ratio 1:3:2 after the reduction.

- Sum of the ratio parts: $1 + 3 + 2 = 6$
- This means the adjusted total amount (Rs. 660) is divided into 6 equal parts.

Let's calculate the value of one part:

- Value of 1 part = $\frac{\text{Adjusted Total Amount}}{\text{Sum of ratio parts}}$
- Value of 1 part = $\frac{660}{6} = \text{Rs. } 110$

Now we can find the adjusted share for each person:

- A's adjusted share = $1 \times 110 = \text{Rs. } 110$
- B's adjusted share = $3 \times 110 = \text{Rs. } 330$
- C's adjusted share = $2 \times 110 = \text{Rs. } 220$

We can verify this by summing the adjusted shares: $110 + 330 + 220 = 660$, which matches the adjusted total amount.

Finding C's Original Share

The question asks for the amount C *originally* received. The calculation above gives C's share *after* receiving Rs. 25 less.

- C's adjusted share (received Rs. 25 less): Rs. 220
- To find C's original share, we need to add back the Rs. 25 that was hypothetically deducted.
- C's original share = C's adjusted share + Rs. 25

- C's original share = $220 + 25 = \text{Rs. } 245$

Final Answer Confirmation

Therefore, the money originally received by C was Rs. 245.

54. Answer: b

Explanation:

Understanding the Initial Mixture Ratio

We start with a total mixture volume of 20 litres. This mixture contains milk and water, and their ratio is given as 5 : 3. Key terms here are **mixture**, **ratio**, and **volume**.

To determine the initial amounts of milk and water, we first calculate the total number of parts in the ratio: $\text{Total Parts} = 5 + 3 = 8$

Now, we can calculate the initial quantity of milk in the 20-litre mixture:

$$\text{Initial Milk} = \left(\frac{\text{Milk Ratio Part}}{\text{Total Ratio Parts}} \right) \times \text{Total Volume} \quad \text{Initial Milk} = \left(\frac{5}{8} \right) \times 20 \text{ litres} \quad \text{Initial Milk} = \frac{100}{8} \text{ litres} = 12.5 \text{ litres}$$

Similarly, we calculate the initial quantity of water:

$$\text{Initial Water} = \left(\frac{\text{Water Ratio Part}}{\text{Total Ratio Parts}} \right) \times \text{Total Volume} \quad \text{Initial Water} = \left(\frac{3}{8} \right) \times 20 \text{ litres} \quad \text{Initial Water} = \frac{60}{8} \text{ litres} = 7.5 \text{ litres}$$

So, the initial mixture consists of 12.5 litres of milk and 7.5 litres of water.

Calculating Amounts During Mixture Replacement

The problem states that 4 litres of this mixture is removed. It's important to understand that when a portion of a mixture is removed, it retains the original ratio of its components. This is a crucial step in solving **mixture replacement** problems.

Therefore, the 4 litres of mixture removed contains milk and water in the same 5 : 3 ratio.

The quantity of milk removed is:

$$\text{Milk Removed} = \left(\frac{5}{8}\right) \times 4 \text{ litres} \quad \text{Milk Removed} = \frac{20}{8} \text{ litres} = 2.5 \text{ litres}$$

The quantity of water removed is:

$$\text{Water Removed} = \left(\frac{3}{8}\right) \times 4 \text{ litres} \quad \text{Water Removed} = \frac{12}{8} \text{ litres} = 1.5 \text{ litres}$$

Determining Mixture Amounts After Replacement

After removing 4 litres of the mixture, we need to calculate the remaining quantities of milk and water.

$$\text{Remaining Milk} = \text{Initial Milk} - \text{Milk Removed} \quad \text{Remaining Milk} = 12.5 \text{ litres} - 2.5 \text{ litres} = 10 \text{ litres}$$

$$\text{Remaining Water} = \text{Initial Water} - \text{Water Removed} \quad \text{Remaining Water} = 7.5 \text{ litres} - 1.5 \text{ litres} = 6 \text{ litres}$$

The problem then states that 4 litres of pure milk is added to the mixture.

The new quantity of milk is calculated by adding the added milk to the remaining milk:

$$\text{New Milk} = \text{Remaining Milk} + \text{Milk Added} \quad \text{New Milk} = 10 \text{ litres} + 4 \text{ litres} = 14 \text{ litres}$$

The quantity of water does not change in this step, as only milk was added:

$$\text{New Water} = \text{Remaining Water} = 6 \text{ litres}$$

Finding the Final Milk and Water Ratio

The final step is to determine the new ratio of milk to water in the mixture after the replacement process.

We have the final quantities: 14 litres of milk and 6 litres of water.

The new ratio is calculated by comparing these final amounts:

$$\text{New Ratio} = \text{New Milk} : \text{New Water} \quad \text{New Ratio} = 14 : 6$$

To express the ratio in its simplest form, we divide both quantities by their greatest common divisor, which is 2:

$$\text{Simplified Ratio} = \frac{14}{2} : \frac{6}{2} \quad \text{Simplified Ratio} = 7 : 3$$

Thus, the ratio of milk to water in the new mixture is 7 : 3.

55. Answer: d

Explanation:

This question asks us to find the speed of a boat in still water, given the distances it travels upstream and downstream and the time taken for each journey. We need to use the relationship between speed, distance, and time.

Understanding Boat Speed Concepts

When a boat travels on a river, its speed is affected by the river's current (stream).

- **Upstream Journey:** When the boat travels against the current, its effective speed is reduced. The upstream speed is calculated as: $\text{Upstream Speed} = \text{Speed of boat in still water} - \text{Speed of the stream}$
- **Downstream Journey:** When the boat travels with the current, its effective speed is increased. The downstream speed is calculated as: $\text{Downstream Speed} = \text{Speed of boat in still water} + \text{Speed of the stream}$

We can also use the fundamental formula: $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$

Calculating Speeds

Let's denote:

- b = Speed of the boat in still water (in km/h)
- s = Speed of the stream (in km/h)

Calculating Upstream Speed

The man rows upstream a distance of 9 km in 3 hours.

Using the speed formula:

$$\text{Upstream Speed} = \frac{\text{Distance Upstream}}{\text{Time Upstream}} \quad \text{Upstream Speed} = \frac{9 \text{ km}}{3 \text{ hours}} \quad \text{Upstream Speed} = 3 \text{ km/h}$$

From the concept, we know:

$$\text{Upstream Speed} = b - s$$

Therefore, we have our first equation:

$$b - s = 3 \quad \text{--- (1)}$$

Calculating Downstream Speed

The man rows downstream a distance of 18 km in 3 hours.

Using the speed formula:

$$\text{Downstream Speed} = \frac{\text{Distance Downstream}}{\text{Time Downstream}} \quad \text{Downstream Speed} = \frac{18 \text{ km}}{3 \text{ hours}} \quad \text{Downstream Speed} = 6 \text{ km/h}$$

From the concept, we know:

$$\text{Downstream Speed} = b + s$$

Therefore, we have our second equation:

$$b + s = 6 \quad \text{--- (2)}$$

Solving for Boat Speed

Now we have a system of two linear equations with two variables:

$$1. \quad b - s = 3$$

$$2. b + s = 6$$

To find the speed of the boat in still water (b), we can add the two equations together. This method eliminates the speed of the stream (s).

Adding equation (1) and equation (2):

$$(b - s) + (b + s) = 3 + 6 \quad b - s + b + s = 9 \quad 2b = 9$$

Now, divide by 2 to solve for b :

$$b = \frac{9}{2} \quad b = 4.5 \text{ km/h}$$

To express this as a mixed fraction, 4.5 is equal to $4\frac{1}{2}$.

Final Answer

The speed of the boat in still water is $4\frac{1}{2}$ km/h.

56. Answer: a

Explanation:

Calculating Combined Work Time for A and B

This solution explains how to determine the total time required for individuals A and B to complete a work together, based on their individual work rates and the time they spend working.

Understanding Individual Work Rates

First, we need to determine the rate at which each person works. The rate is the fraction of the total work completed per day.

- Person A can complete the work in 10 days.
- Therefore, A's daily work rate is $\frac{1}{10}$ of the work per day.

Calculating Work Done by A

A works on the task for 4 days before B takes over. We calculate the portion of the work A completes during this time.

- A works for 4 days.
- Work done by A = (A's daily rate) $\times$ (Number of days A worked)
- Work done by A = $\frac{1}{10} \times 4 = \frac{4}{10} = \frac{2}{5}$
- So, A completes $\frac{2}{5}$ of the total work in 4 days.

Determining the Remaining Work

After A works for 4 days, some portion of the work is still left to be completed.

- Total work = 1 (representing the whole task)
- Remaining work = Total work - Work done by A
- Remaining work = $1 - \frac{2}{5} = \frac{5}{5} - \frac{2}{5} = \frac{3}{5}$
- This means $\frac{3}{5}$ of the work is left after A has worked for 4 days.

Calculating B's Work Rate

We are told that B finishes the remaining work in 9 days. We can use this information to find B's daily work rate.

- B completes $\frac{3}{5}$ of the work in 9 days.
- B's daily work rate = (Remaining work) / (Number of days B took)
- B's daily work rate = $\frac{3/5}{9} = \frac{3}{5 \times 9} = \frac{3}{45} = \frac{1}{15}$ of the work per day.

Calculating the Combined Work Rate

To find out how quickly A and B can complete the work together, we add their individual daily work rates.

- Combined daily work rate = A's daily rate + B's daily rate
- Combined daily work rate = $\frac{1}{10} + \frac{1}{15}$
- To add these fractions, we find a common denominator, which is 30.
- Combined daily work rate = $\frac{3}{30} + \frac{2}{30} = \frac{5}{30} = \frac{1}{6}$ of the work per day.

Finding the Total Time Together

The time it takes for A and B to complete the work together is the inverse of their combined daily work rate.

- Time taken together = $1 / (\text{Combined daily work rate})$
- Time taken together = $\frac{1}{1/6} = 6$ days.

Therefore, A and B working together can finish the work in 6 days.

57. Answer: a

Explanation:

Finding Total Mangoes in a Crate

This problem involves working backward from the number of unsalable mangoes to find the total number of mangoes in a crate. We are given information about the ratios of bruised mangoes and unsalable mangoes.

Step 1: Calculating the Total Number of Bruised Mangoes

We know that 3 out of every 4 bruised mangoes are considered unsalable. We are also told that there are 12 unsalable mangoes in the crate.

Let B represent the total number of bruised mangoes in the crate.

The relationship given is:

$$\text{Number of Unsalable Mangoes} = \frac{3}{4} \times \text{Total Bruised Mangoes}$$

Substituting the known value of unsalable mangoes:

$$12 = \frac{3}{4} \times B$$

To find the total number of bruised mangoes (B), we can rearrange the equation:

$$B = 12 \times \frac{4}{3}$$

$$B = \frac{12 \times 4}{3}$$

$$B = \frac{48}{3}$$

$$B = 16$$

Therefore, there are 16 bruised mangoes in the crate.

Step 2: Calculating the Total Number of Mangoes in the Crate

Next, we use the information that one out of every 30 mangoes in the crate is bruised. We found that there are 16 bruised mangoes in total.

Let T represent the total number of mangoes in the crate.

The relationship given is:

$$\text{Number of Bruised Mangoes} = \frac{1}{30} \times \text{Total Mangoes}$$

Substituting the total number of bruised mangoes we calculated:

$$16 = \frac{1}{30} \times T$$

To find the total number of mangoes (T), we rearrange the equation:

$$T = 16 \times 30$$

$$T = 480$$

So, there are 480 mangoes in the crate.

Step 3: Final Answer Verification

Let's check if our answer is consistent with the problem statement:

- Total Mangoes: 480
- Bruised Mangoes: $\frac{1}{30} \times 480 = 16$
- Unsalable Mangoes: $\frac{3}{4} \times 16 = 12$

The calculated number of unsalable mangoes (12) matches the number given in the problem, confirming our result.

The total number of mangoes in the crate is 480.

58. Answer: a

Explanation:

Given,

A man can row 30 km upstream and 44 km downstream in = 10 hrs

A man can row 40 km upstream and 55 km downstream in = 13 hrs

Formula:

If speed of boat and stream are x km/hr and y km/hr respectively, then

Upstream speed = $(x - y)$ km/hr

Downstream speed = $(x + y)$ km/hr

Calculation:

Let speed of boat and stream be x km/hr and y km/hr respectively, then

Upstream speed = $(x - y)$

Downstream speed = $(x + y)$

According to the question

$$30/(x - y) + 44/(x + y) = 10$$

Let $(x - y) = a$ and $(x + y) = b$

$$30a + 44b = 10$$

$$15a + 22b = 5 \text{ ---(1)}$$

Similarly,

$$40/(x - y) + 55/(x + y) = 13$$

$$40a + 55b = 13 \text{ ---(2)}$$

Subtract equation (2) from equation (1) after multiplying by 5 in equation (1) and multiplying by 2 in equation (2)

$$5a = 1$$

$$a = 1/5$$

From equation (1)

$$15 \times 1/5 + 22b = 5$$

$$\Rightarrow 3 + 22b = 5$$

$$\Rightarrow 22b = 5 - 3$$

$$\Rightarrow b = 2/22$$

$$\Rightarrow b = 1/11$$

$$x - y = 5 \text{ ---(3)}$$

$$x + y = 11 \text{ ---(4)}$$

Add equation (3) and equation (4)

$$2x = 16$$

$$\Rightarrow x = 8$$

Speed of boat in still water is 8 km/hr.

From equation (4)

$$8 + y = 11$$

$$\Rightarrow y = 11 - 8$$

$$\Rightarrow y = 3$$

$\therefore$ Speed of current is 3 km/hr.

59. Answer: d

Explanation:

- **Question Breakdown:** The question asks for the time period (T) needed for an investment to grow by 40% of its initial value, given a simple interest rate (R) of 5% per annum.

Simple Interest Calculation Explained

This solution explains how to calculate the time required for an investment to increase its value by a specific percentage using simple interest.

Understanding the Simple Interest Problem

We need to find out how many years (T) it takes for an initial investment (Principal, P) to earn enough simple interest (SI) to increase its total value by 40%. The interest rate (R) is given as 5% per year.

An increase of 40% means the interest earned (SI) is equal to 40% of the Principal (P).

Key Concepts and Formula

The fundamental formula for calculating Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Where:

- SI = Simple Interest
- P = Principal amount (the initial investment)
- R = Rate of interest per annum (in %)
- T = Time period (in years)

We are given:

- Increase in value = 40% of P, which means $SI = 0.40 \times P$
- Rate (R) = 5%

Step-by-Step Solution

1. **Express Interest as a function of Principal:** The problem states the investment's value increases by 40%. This increase represents the simple interest earned. Therefore, the Simple Interest (SI) is 40% of the Principal (P).

$$SI = 40\% \times P$$

$$SI = \frac{40}{100} \times P$$

$$SI = 0.40P$$

2. **Apply the Simple Interest Formula:** Substitute the known values into the simple interest formula.

$$SI = \frac{P \times R \times T}{100}$$

We know $SI = 0.40P$ and $R = 5$. Plugging these in:

$$0.40P = \frac{P \times 5 \times T}{100}$$

3. **Solve for Time (T):** To find the time period (T), we need to solve the equation. Notice that 'P' appears on both sides, so we can cancel it out (assuming the

principal is not zero).

$$0.40 = \frac{5 \times T}{100}$$

Simplify the fraction on the right side:

$$0.40 = \frac{T}{20}$$

Now, isolate T by multiplying both sides by 20:

$$T = 0.40 \times 20$$

$$T = 8$$

Conclusion on Time Calculation

The calculation shows that $T = 8$. This means it will take 8 years for the sum of money invested at a simple interest rate of 5% per annum to increase its value by 40%.

60. Answer: c

Explanation:

This problem involves calculating the corrected mean of a dataset when an error in one of the observations is discovered. We are given the original mean and the number of observations, along with the incorrect value and the correct value of a specific observation.

Calculating the Corrected Mean for 50 Observations

We start with the information provided:

- Number of observations, $n = 50$
- Original Mean, $\bar{x}_{orig} = 36$
- An observation was wrongly recorded as 23.

- The correct value for that observation is 48.

Step 1: Calculate the Sum of the Original Observations

The mean is calculated as the sum of all observations divided by the number of observations. We can rearrange this formula to find the sum:

$$\text{Sum} = \text{Mean} \times \text{Number of observations}$$

Using the original values:

$$\text{Sum}_{orig} = \bar{x}_{orig} \times n$$

$$\text{Sum}_{orig} = 36 \times 50$$

$$\text{Sum}_{orig} = 1800$$

So, the sum of the initial 50 observations was 1800.

Step 2: Determine the Error in the Sum

An error occurred because one observation was recorded incorrectly. To find the corrected sum, we need to account for this mistake. We can calculate the difference between the correct value and the wrong value:

$$\text{Difference} = \text{Correct Value} - \text{Wrong Value}$$

$$\text{Difference} = 48 - 23$$

$$\text{Difference} = 25$$

This means the original sum was 25 less than it should have been.

Step 3: Calculate the Corrected Sum of Observations

To get the correct sum, we need to add the difference back to the original sum:

$$\text{Sum}_{corr} = \text{Sum}_{orig} + \text{Difference}$$

$$\text{Sum}_{corr} = 1800 + 25$$

$$\text{Sum}_{corr} = 1825$$

The corrected sum of the 50 observations is 1825.

Step 4: Calculate the Corrected New Mean

Now, we can calculate the corrected mean using the corrected sum and the same number of observations (since only one value was changed, not the count):

$$\bar{x}_{corr} = \frac{\text{Sum}_{corr}}{n}$$

$$\bar{x}_{corr} = \frac{1825}{50}$$

$$\bar{x}_{corr} = 36.5$$

Conclusion

After correcting the wrongly recorded observation (changing 23 to 48), the new mean of the 50 observations is 36.5.

61. Answer: c

Explanation:

Determining Cricket Match Average Scores

This explanation details the process of calculating the average score for a specific set of cricket matches based on overall averages and averages of subsets of matches. We'll focus on finding the **average score** for the **last four matches**.

Understanding the Core Concepts

The fundamental concept here is the relationship between average, total sum, and the count of items. The formula is:

Average Score = Total Runs / Number of Matches

This can be rearranged to find the total runs:

Total Runs = Average Score $\times$ Number of Matches

Analyzing the Given Information

We are provided with the following details about the cricketer's performance:

- Total number of matches played: 10
- The average score across these 10 matches: 38.9 runs
- The number of matches in the first set: 6
- The average score for the first 6 matches: 42 runs
- We need to find the average score for the last 4 matches (10 total matches – 6 first matches = 4 last matches).

Step-by-Step Calculation

Step 1: Calculate the Total Runs Scored in All 10 Matches

Using the formula Total Runs = Average Score $\times$ Number of Matches:

$$\text{Total Runs (10 matches)} = 38.9 \times 10$$

$$\text{Total Runs (10 matches)} = 389 \text{ runs}$$

Step 2: Calculate the Total Runs Scored in the First 6 Matches

Similarly, using the average for the first 6 matches:

$$\text{Total Runs (first 6 matches)} = 42 \times 6$$

$$\text{Total Runs (first 6 matches)} = 252 \text{ runs}$$

Step 3: Determine the Total Runs Scored in the Last 4 Matches

The total runs scored in the last 4 matches is the difference between the total runs scored in all 10 matches and the total runs scored in the first 6 matches:

$$\text{Total Runs (last 4 matches)} = \text{Total Runs (10 matches)} - \text{Total Runs (first 6 matches)}$$

$$\text{Total Runs (last 4 matches)} = 389 - 252$$

Total Runs (last 4 matches) = 137 runs

Step 4: Calculate the Average Score for the Last 4 Matches

Finally, we calculate the average score for the last 4 matches using the total runs scored in those matches and the number of matches:

Average Score (last 4 matches) = Total Runs (last 4 matches) / Number of last matches

$$\text{Average Score (last 4 matches)} = \frac{137}{4}$$

$$\text{Average Score (last 4 matches)} = 34.25 \text{ runs}$$

Final Answer Summary

By calculating the total runs for all matches and the first six matches, we can determine the runs scored in the remaining four matches. Dividing these runs by four gives us the average score for the last four matches, which is 34.25 runs.

62. Answer: b

Explanation:

Understanding Simple Interest Calculation

The question asks us to find the **rate percent** of simple interest when the interest earned over a specific period is a fraction of the principal amount (the initial **sum**). We are given the time period and the relationship between the simple interest (SI) and the principal (P).

Key Information Provided:

- Time (T): $6\frac{1}{4}$ years
- Simple Interest (SI): $\frac{3}{8}$ of the **sum** (Principal, P). This means $SI = \frac{3}{8}P$.

Formula for Simple Interest

The standard formula for calculating simple interest is:

$$SI = \frac{P \times R \times T}{100}$$

Where:

- SI = Simple Interest
- P = Principal (the original sum)
- R = Rate of interest per year (in percent)
- T = Time period (in years)

Step-by-Step Solution to Find the Rate Percent

We need to find the **rate percent** (R). Let's follow these steps:

1. **Convert Time to Fractional Form:** The time is given as $6\frac{1}{4}$ years. We convert this mixed fraction into an improper fraction:

$$T = 6\frac{1}{4} = \frac{(6 \times 4) + 1}{4} = \frac{24 + 1}{4} = \frac{25}{4} \text{ years}$$

2. **Substitute Known Values into the SI Formula:** We know that $SI = \frac{3}{8}P$ and $T = \frac{25}{4}$ years. Substitute these into the simple interest formula:

$$\frac{3}{8}P = \frac{P \times R \times \frac{25}{4}}{100}$$

3. **Simplify the Equation:** Since the Principal (P) is common on both sides and we assume $P \neq 0$, we can cancel it out:

$$\frac{3}{8} = \frac{R \times \frac{25}{4}}{100}$$

4. **Isolate R:** Now, let's simplify the fraction on the right side and solve for R :

$$\frac{3}{8} = \frac{R \times 25}{4 \times 100}$$

$$\frac{3}{8} = \frac{25R}{400}$$

5. **Calculate the Rate (R):** To find R , we can rearrange the equation:

$$R = \frac{3}{8} \times \frac{400}{25}$$

First, simplify $\frac{400}{25} : \frac{400}{25} = 16$. Now substitute this back:

$$R = \frac{3}{8} \times 16$$

$$R = 3 \times \frac{16}{8}$$

$$R = 3 \times 2$$

$$R = 6$$

Conclusion on Rate Percent

The calculation shows that the **rate percent** (R) is 6%. This matches one of the provided options.

63. Answer: b

Explanation:

Cost Price Calculation Based on Profit Changes

This problem involves calculating the original cost price (CP) of an item when changes in selling price (SP) and cost price affect the profit percentage. We need to find the initial **cost price** using the information provided about the initial profit and the scenario after the price reduction.

Understanding the Problem Parameters

- Initial Profit: The horse is sold at a **profit** of 25%.
- Price Adjustment: Both the cost price and selling price are reduced by Rs. 200.
- Resulting Profit Change: The new profit percentage is 5% higher than the initial profit percentage.

Step-by-Step Solution

1. Define Variables

Let's denote the original **cost price** as C and the original **selling price** as S .

2. Analyze the Initial Scenario

In the initial situation, the profit is 25% of the cost price. We can express the selling price (S) in terms of the cost price (C):

$$\text{Profit} = 0.25 \times C$$

$$\text{Selling Price } (S) = \text{Cost Price } (C) + \text{Profit}$$

$$S = C + 0.25C$$

$$S = 1.25C$$

From this, we can also state the initial profit amount as:

$$\text{Initial Profit} = S - C = 1.25C - C = 0.25C$$

3. Analyze the Changed Scenario

The cost price is reduced by Rs. 200, so the new cost price is $C - 200$.

The selling price is also reduced by Rs. 200, so the new selling price is $S - 200$.

The profit percentage increases by 5%. Therefore, the new profit percentage is $25\% + 5\% = 30\%$.

The new profit is calculated based on the new cost price:

New Profit = 30% of New Cost Price

$$\text{New Profit} = 0.30 \times (C - 200)$$

4. Relate New Profit to Price Difference

The profit is always the difference between the selling price and the cost price. In the changed scenario:

New Profit = New Selling Price - New Cost Price

$$\text{New Profit} = (S - 200) - (C - 200)$$

Simplifying this expression:

$$\text{New Profit} = S - 200 - C + 200$$

$$\text{New Profit} = S - C$$

We already know from the initial scenario that $S - C = 0.25C$. So, the New Profit is also equal to $0.25C$.

5. Formulate and Solve the Equation

Now we have two expressions for the New Profit:

1. $\text{New Profit} = 0.30 \times (C - 200)$

2. $\text{New Profit} = 0.25C$

Equating these two expressions:

$$0.30(C - 200) = 0.25C$$

Let's solve for C :

Expand the left side:

$$0.30C - (0.30 \times 200) = 0.25C$$

$$\text{\$ } 0.30C - 60 = 0.25C \text{ \text{\$}}$$

Rearrange the terms to isolate C :

$$\text{\$ } 0.30C - 0.25C = 60 \text{ \text{\$}}$$

$$\text{\$ } 0.05C = 60 \text{ \text{\$}}$$

Divide by 0.05 to find C :

$$\text{\$ } C = \frac{60}{0.05} \text{ \text{\$}}$$

$$\text{\$ } C = \frac{6000}{5} \text{ \text{\$}}$$

$$\text{\$ } C = 1200 \text{ \text{\$}}$$

Final Result

The original **cost price** of the horse was Rs. 1200.

64. Answer: d

Explanation:

Solving the Train Passing Problem: Opposite Directions

This problem involves calculating the length of a faster train based on its speed, the speed of an oncoming slower train, and the time it takes for the faster train to pass a man in the slower train. We need to understand the concepts of **relative speed** and the relationship between **distance**, **speed**, and **time**.

Understanding the Scenario

- Two trains are moving towards each other (**opposite directions**).
- The speed of the slower train is **36 km/hr**.
- The speed of the faster train is **45 km/hr**.

- A man is situated in the slower train.
- The time taken for the faster train to completely pass the man is **8 seconds**.
- We need to find the **length of the faster train**.

Step 1: Convert Speeds to Meters per Second (m/s)

Since the time is given in seconds, it's essential to convert the speeds from kilometers per hour (km/hr) to meters per second (m/s) for consistency. The conversion factor is $1 \text{ km/hr} = \frac{5}{18} \text{ m/s}$.

- Speed of the slower train (S_1): $S_1 = 36 \text{ km/hr} = 36 \times \frac{5}{18} \text{ m/s} = 10 \text{ m/s}$
- Speed of the faster train (S_2): $S_2 = 45 \text{ km/hr} = 45 \times \frac{5}{18} \text{ m/s} = \frac{225}{18} \text{ m/s} = 12.5 \text{ m/s}$

Step 2: Calculate the Relative Speed

When two objects move in **opposite directions**, their speeds add up to determine their **relative speed**. The man in the slower train experiences the faster train approaching him at this combined speed.

- Relative Speed (S_{rel}) = Speed of slower train (S_1) + Speed of faster train (S_2)
- $S_{rel} = 10 \text{ m/s} + 12.5 \text{ m/s} = 22.5 \text{ m/s}$

This means the faster train is effectively moving past the man at a speed of 22.5 meters every second.

Step 3: Calculate the Length of the Faster Train

The problem states that the man (in the slower train) passes the faster train in 8 seconds. From the perspective of the man, the faster train travels its entire length in this time. Therefore, the distance covered at the relative speed is equal to the length of the faster train.

- We use the formula: **Distance = Speed $\times$ Time**
- Here, Distance = Length of the faster train (L_2), Speed = Relative Speed (S_{rel}), Time = Time taken (T).
- $L_2 = S_{rel} \times T$
- $L_2 = 22.5 \text{ m/s} \times 8 \text{ s}$

- $L_2 = 180 \text{ m}$

Conclusion: Length of Faster Train

The calculation shows that the length of the faster train is 180 meters.

Comparing this result with the given options:

1. 80 m
2. 120 m
3. 160 m
4. 180 m
- 5.

The calculated length matches the fourth option.

65. Answer: c

Explanation:

Finding the Selling Price for a 15% Gain

This problem involves calculating the cost price of an item based on a previous sale price and loss percentage, and then determining a new selling price to achieve a specific profit percentage. We need to find the price at which a chair should be sold to gain 15%, given that selling it for Rs. 368 resulted in an 8% loss.

Understanding the Initial Sale

- Initial Selling Price (SP1) = Rs. 368
- Loss Percentage = 8%

When there is a loss, the selling price is less than the cost price. A loss of 8% means the selling price was 8% less than the cost price. Therefore, the initial selling price (Rs. 368) represents $100\% - 8\% = 92\%$ of the cost price (CP).

Calculating the Cost Price (CP)

We can set up an equation to find the cost price:

$$SP1 = CP \times (1 - \text{Loss Percentage})$$

Substituting the known values:

$$368 = CP \times (1 - 0.08)$$

$$368 = CP \times 0.92$$

To find the CP, we rearrange the equation:

$$CP = \frac{368}{0.92}$$

$$CP = \frac{368 \times \frac{100}{92}}{100}$$

$$CP = 368 \times \frac{100}{92}$$

$$CP = 4 \times 100$$

$$CP = 400$$

So, the cost price of the chair is **Rs. 400**.

Calculating the New Selling Price for a 15% Gain

Now, the goal is to achieve a **15%** gain. This means the new selling price (SP2) should be 15% more than the cost price.

Desired Gain Percentage = **15%**

The formula for the new selling price with a gain is:

$$SP2 = CP \times (1 + \text{Gain Percentage})$$

Substituting the cost price and the desired gain percentage:

$$SP2 = 400 \times (1 + 0.15)$$

$$SP2 = 400 \times 1.15$$

$$SP2 = 400 \times \frac{115}{100}$$

$$SP2 = 4 \times 115$$

$$SP2 = 460$$

Therefore, the chair should be sold for **Rs. 460** to gain 15%.

Conclusion

The required selling price to achieve a **15%** gain is **Rs. 460**. This matches one of the given options.

66. Answer: b

Explanation:

Solving Train Passing Man Problem

This problem involves calculating the time it takes for a moving train to pass a person also in motion, but in the opposite direction. We need to consider the length of the train and the relative speed between the train and the man.

Understanding the Core Concepts

Key factors in this problem are:

- **Train Length:** The distance the train must cover relative to the man is its own length.
- **Relative Speed:** When two objects move towards each other (opposite directions), their speeds add up to determine how quickly they approach each other.
- **Unit Conversion:** Speeds are given in km/h, but the length is in metres. We need to convert speeds to metres per second (m/s) for consistent calculations.

Calculating the Time to Pass

Here's a step-by-step breakdown of the calculation:

Step 1: Convert Speeds to Metres Per Second (m/s)

The formula for converting km/h to m/s is multiplying by $\frac{5}{18}$.

- **Train Speed (S_T):** $S_T = 60 \text{ km/h} = 60 \times \frac{5}{18} \text{ m/s} = \frac{300}{18} \text{ m/s} = \frac{50}{3} \text{ m/s}$
- **Man Speed (S_M):** $S_M = 6 \text{ km/h} = 6 \times \frac{5}{18} \text{ m/s} = \frac{30}{18} \text{ m/s} = \frac{5}{3} \text{ m/s}$

Step 2: Calculate the Relative Speed

Since the train and the man are moving in opposite directions, the relative speed (S_{rel}) is the sum of their individual speeds:

$$S_{rel} = S_T + S_M$$

$$S_{rel} = \frac{50}{3} \text{ m/s} + \frac{5}{3} \text{ m/s} = \frac{50+5}{3} \text{ m/s} = \frac{55}{3} \text{ m/s}$$

Step 3: Calculate the Time Taken

The time taken (t) to pass is the train's length (L) divided by the relative speed (S_{rel}).

Train Length (L): 110 metres

$$\text{Formula: } t = \frac{L}{S_{rel}}$$

Calculation:

$$t = \frac{110 \text{ m}}{\frac{55}{3} \text{ m/s}}$$

$$t = 110 \times \frac{3}{55} \text{ sec}$$

$$t = 2 \times 3 \text{ sec}$$

$$t = 6 \text{ sec}$$

Conclusion

The train will take 6 seconds to pass the man running in the opposite direction.

67. Answer: c

Explanation:

Understanding the Work Rate Equivalence

The problem states that **3 men** can plough a field in **43 days**, and alternatively, **4 women** can plough the same field in **43 days**. This means the total amount of work required to plough the field is the same in both cases.

From this information, we can establish an equivalence between the work rate of men and women:

Work done by 3 men in 43 days = Work done by 4 women in 43 days.

Since the time (43 days) is the same, the work capacity must be equal:

Work capacity of 3 men = Work capacity of 4 women.

Let M represent the work rate of one man (amount of field ploughed per day) and W represent the work rate of one woman. We can write the relationship as:

$$3 \times M = 4 \times W$$

From this, we can find the relative work rates:

$$M = \frac{4}{3}W$$

This tells us that one man works $\frac{4}{3}$ times as fast as one woman, or equivalently, 1 woman works $\frac{3}{4}$ as fast as 1 man ($W = \frac{3}{4}M$).

Calculating the Total Work Required

The total amount of work needed to plough the field can be calculated using the information given for either men or women. Let's use the information about women:

$$\text{Total Work} = (\text{Number of women}) \times (\text{Days taken}) \times (\text{Work rate of one woman})$$

$$\text{Total Work} = 4 \text{ women} \times 43 \text{ days}$$

We can express this in terms of "woman-days":

$$\text{Total Work} = 4 \times 43 = 172 \text{ woman-days.}$$

Determining the Combined Workforce Equivalent

We need to find out how long it takes for **7 men and 5 women** to plough the same field. First, let's convert the entire workforce into an equivalent number of women (or men). Using the relationship $1 \text{ man} = \frac{4}{3} \text{ women}$:

$$\text{Work capacity of 7 men} = 7 \times M = 7 \times \left(\frac{4}{3}W\right) = \frac{28}{3}W.$$

So, 7 men have the same work capacity as $\frac{28}{3}$ women.

Now, find the total equivalent number of women in the new group:

$$\text{Total Equivalent Women} = (\text{Equivalent women from men}) + (\text{Number of women})$$

$$\text{Total Equivalent Women} = \frac{28}{3} + 5$$

To add these, find a common denominator:

$$\text{Total Equivalent Women} = \frac{28}{3} + \frac{5 \times 3}{3} = \frac{28}{3} + \frac{15}{3} = \frac{43}{3} \text{ women.}$$

Calculating the Time Required for the Combined Group

Now we know the total work required (172 woman-days) and the combined work rate of the new group (equivalent to $\frac{43}{3}$ women working per day).

We can use the formula:

$$\text{Total Work} = (\text{Total Equivalent Workforce}) \times (\text{Time taken})$$

$$172 \text{ woman-days} = \frac{43}{3} \text{ women} \times D \text{ days}$$

Alternatively, using the equation derived earlier:

$$4 \times 43 = \frac{43}{3} \times D$$

To solve for D (the number of days), we can rearrange the equation:

$$D = \frac{4 \times 43}{\frac{43}{3}}$$

$$D = \frac{4 \times 43 \times 3}{43}$$

Cancel out the 43 from the numerator and denominator:

$$D = 4 \times 3$$

$$D = 12$$

So, it will take 12 days for 7 men and 5 women to plough the same field.

Final Answer Verification

The calculated time is 12 days, which matches one of the given options.

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68. Answer: a

Explanation:

Determining Total Gain or Loss Percentage for Two Watches

This problem asks us to find the overall gain or loss percentage when a person sells two watches for the exact same price. We know the selling price for each watch and the specific profit percentage on one and loss percentage on the other.

Key Details from the Question:

- Number of watches sold: 2
- Selling Price (SP) for each watch: Rs. 3750
- Profit on the first watch: 5%
- Loss on the second watch: 5%
- Goal: Calculate the total gain or loss percentage.

Step 1: Calculate the Cost Price (CP) for Each Watch

To find the total profit or loss, we must first determine how much the seller originally paid for each watch (their Cost Price or CP).

Cost Price of the First Watch (with 5% Gain)

When there is a gain, the formula relating Selling Price (SP), Cost Price (CP), and Profit Percentage is:

$$SP = CP \times \left(1 + \frac{\text{Profit}\%}{100}\right)$$

Rearranging to find CP:

$$CP = \frac{SP}{1 + \frac{\text{Profit}\%}{100}} = \frac{SP \times 100}{(100 + \text{Profit}\%)}$$

Plugging in the values for the first watch:

$$CP_1 = \frac{3750 \times 100}{(100 + 5)} = \frac{375000}{105}$$

$$CP_1 = \frac{25000}{7}$$

Cost Price of the Second Watch (with 5% Loss)

When there is a loss, the formula is:

$$SP = CP \times \left(1 - \frac{\text{Loss}\%}{100}\right)$$

Rearranging to find CP:

$$CP = \frac{SP}{1 - \frac{\text{Loss}\%}{100}} = \frac{SP \times 100}{(100 - \text{Loss}\%)}$$

Plugging in the values for the second watch:

$$CP_2 = \frac{3750 \times 100}{(100 - 5)} = \frac{375000}{95}$$

$$CP_2 = \frac{75000}{19}$$

Step 2: Calculate Total Selling Price and Total Cost Price

Now, let's find the total amount received from sales and the total amount spent on purchasing the watches.

Total Selling Price (Total SP)

This is the sum of the selling prices of both watches.

$$\text{Total SP} = SP_1 + SP_2 = 3750 + 3750 = 7500$$

So, the Total SP is Rs. 7500.

Total Cost Price (Total CP)

This is the sum of the cost prices calculated in Step 1.

$$\text{Total CP} = CP_1 + CP_2 = \frac{25000}{7} + \frac{75000}{19}$$

To add these, we find a common denominator, which is $7 \times 19 = 133$.

$$\text{Total CP} = \frac{(25000 \times 19) + (75000 \times 7)}{133}$$

$$\text{Total CP} = \frac{475000 + 525000}{133} = \frac{1000000}{133}$$

So, the Total CP is $\frac{1000000}{133}$ Rupees.

Step 3: Determine the Overall Gain or Loss

Compare the Total SP and Total CP.

- Total SP = Rs. 7500
- Total CP = $\frac{1000000}{133}$ Rs. $\approx$ Rs. 7518.80

Since the Total CP ($\frac{1000000}{133}$) is greater than the Total SP (7500), the seller incurred a loss.

Calculate the Total Loss Amount

The total loss is the difference between Total CP and Total SP.

$$\begin{aligned}\text{Total Loss} &= \text{Total CP} - \text{Total SP} \\ \text{Total Loss} &= \frac{1000000}{133} - 7500 \\ \text{Total Loss} &= \frac{1000000 - (7500 \times 133)}{133} \\ \text{Total Loss} &= \frac{1000000 - 997500}{133} = \frac{2500}{133}\end{aligned}$$

The total loss amount is $\frac{2500}{133}$ Rupees.

Step 4: Calculate the Total Loss Percentage

The percentage loss is calculated using the formula:

$$\text{Loss}\% = \frac{\text{Total Loss}}{\text{Total CP}} \times 100$$

Substituting the values:

$$\begin{aligned}\text{Loss}\% &= \frac{\frac{2500}{133}}{\frac{1000000}{133}} \times 100 \\ \text{Loss}\% &= \frac{2500}{1000000} \times 100\end{aligned}$$

$$\text{Loss}\% = \frac{250000}{1000000} = \frac{1}{4}\%$$

$$\text{Loss}\% = 0.25\%$$

Alternative Method: Using the Shortcut Rule

There is a shortcut for situations where two items are sold at the same selling price, one item making an $x\%$ profit and the other suffering an $x\%$ loss.

In such cases, there is always a loss, and the percentage loss is given by:

$$\text{Loss}\% = \left(\frac{x}{10}\right)^2\%$$

Here, the percentage gain/loss (x) is 5%.

$$\text{Loss}\% = \left(\frac{5}{10}\right)^2\% = \left(\frac{1}{2}\right)^2\% = \frac{1}{4}\% = 0.25\%$$

This shortcut confirms the result obtained through detailed calculation.

Final Answer Summary

The man experienced a total **0.25% loss** on the sale of the two watches.

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69. Answer: d

Explanation:

The alternative figure which contains figure (x) as its part is:

No.	Option	Question	Answer
1.			Not Embedded
2.			Not Embedded
3.			Not Embedded
4.			Embedded

Hence, the correct answer is "option (4)".

70. Answer: c

Explanation:

The Embedded part of this image is:

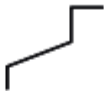
No.	Option	Question	Answer
1.			Not Embedded
2.			Not Embedded
3.			Embedded
4.			Not Embedded

Hence, the correct answer is "Option (3)".

71. Answer: d

Explanation:

The alternative figure which contains figure (X) as its part is,

No.	Option	Question	Answer
1.			Not Embedded
2.			Not Embedded
3.			Not Embedded
4.			Embedded

Hence, the correct answer is "option (4) " .

72. Answer: d

Explanation:

The alternative figure which contains figure (X) as its part is,

No.	Option	Question	Answer
1.			Not Embedded
2.			Not Embedded
3.			Not Embedded
4.			Embedded

Hence, the correct answer is "option (4)".

73. Answer: d

Explanation:

The alternative figure which contains figure (X) as its part is,

No.	Option	Question	Answer
1.			Not Embedded
2.			Not Embedded
3.			Not Embedded
4.			Embedded

Hence, the correct answer is "option (4)".

74. Answer: a

Explanation:

Some forests are also found on mountains.

Both forests and mountains are found on earth.

The correct Venn diagram is,



Hence, the correct answer is "option (1)".

75. Answer: b

Explanation:

The least possible Venn diagram for which represent best relation between Sun, Planets and Earth.

- 1) Earth is a planet.
- 2) Sun is a star and different from earth and planets.

Hence, the correct answer is "Option 2".

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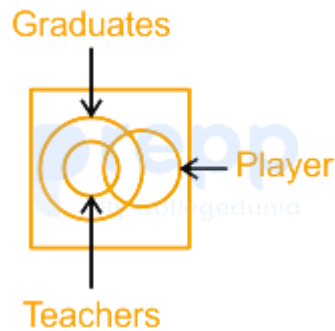
76. Answer: a

Explanation:

All teachers are graduates.

Some players can be both teachers and graduates.

The correct Venn diagram is,



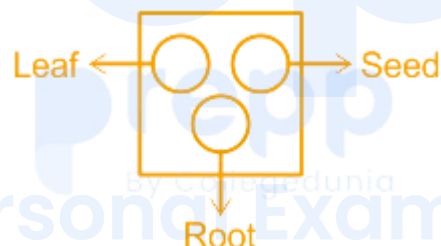
Hence, the correct answer is "option (1)".

77. Answer: c

Explanation:

Leaf, Seed and root are related to plants but they are different from each other.

The correct Venn diagram is,



Hence, the correct answer is "option (3)".

78. Answer: a

Explanation:

On observing the figures carefully, we get:

Figure a:



Here, the line without a dot in the given figure is ending with a straight line which is **not facing** towards the dotted line in the figure, it is facing opposite to the dot.

Figure b:



Here, the line without a dot in the given figure is ending with a straight line which is facing towards the dotted line

Figure c:



Here, the line without a dot in the given figure is ending with a straight line which is facing towards the dotted line

Figure d:



Here, the line without a dot in the given figure is ending with a straight line which is facing towards the dotted line

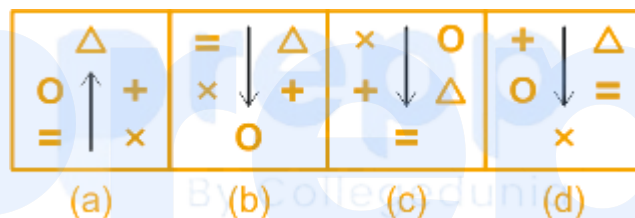
All follow the same pattern, except figure 'a'.

Hence, the correct answer is "option (1)".

79. Answer: a

Explanation:

The pattern followed is,



In figures b, c and d the figure in the middle is placed downwards.

Whereas,

In figure 'a', it is placed upwards.

All follow the same pattern, except figure 'a'.

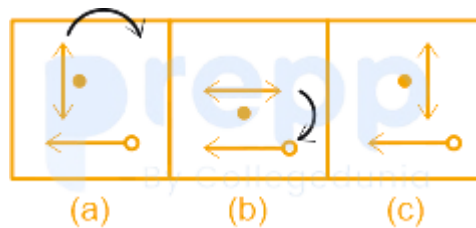
Hence, option 1 different from the rest.

80. Answer: d

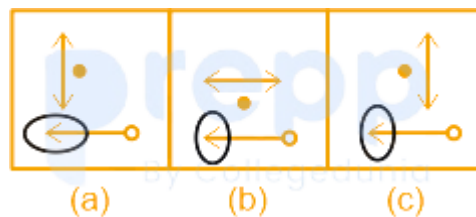
Explanation:

The pattern followed is,

1) The small arrow and the dot are moving 90° clockwise in figures a, b and c around the small dark circle.

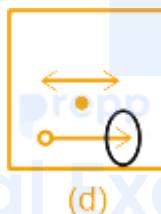


2) The bottom arrow is west facing in the figures a, b and c.



Thus, each figure can be obtained by rotating the previous figure clockwise.

Figure d does not follow the pattern. It cannot be obtained by rotating the previous figure clockwise. The bottom arrow is east facing in the figures d.



All follow the same pattern, except figure 'd'.

Hence, **option 4** is different from the rest.

81. Answer: b

Explanation:

Identifying the Different City: Bogota, Sydney, Doha, Brussels

The task is to identify which word, out of the given four city names (Bogota, Sydney, Doha, Brussels), is different from the others based on some common characteristic. We need to analyze the properties of each city to find this distinction.

Analyzing the Cities and Their Roles

Let's look into each city provided in the options:

- **Bogota:** Located in South America, Bogota serves as the capital city of Colombia.
- **Sydney:** Situated in Australia, Sydney is a very well-known and major global city. However, it is important to note that Sydney is not the capital of Australia. The capital is Canberra.
- **Doha:** This city is located in the Middle East and is the capital of Qatar.
- **Brussels:** Found in Europe, Brussels is the capital city of Belgium. It also holds significance as a major administrative hub for the European Union.

Finding the Differentiating Factor

A closer examination reveals that three of the cities share a specific status:

- Bogota is a national capital.
- Doha is a national capital.
- Brussels is a national capital.

The distinguishing feature here is the status of being a 'national capital'. Bogota, Doha, and Brussels all fulfill this role for their respective countries (Colombia, Qatar, and Belgium).

Sydney, conversely, although a prominent city, does not hold the status of the national capital of Australia. Canberra is the designated capital.

Here's a table summarizing the key information:

City	Country	Capital Status
Bogota	Colombia	National Capital
Sydney	Australia	Not the National Capital (Canberra is)
Doha	Qatar	National Capital
Brussels	Belgium	National Capital

Conclusion: The Odd Word Out

Since Bogota, Doha, and Brussels are all national capitals, and Sydney is not, Sydney is the word that differs from the rest based on this criterion. Therefore, Sydney is the correct choice for the different word.

82. Answer: c

Explanation:

Retina, Pupil, Vision, Cornea: Identifying the Odd One Out

This question asks us to identify which word among the given options is different from the others. We need to find a common characteristic shared by three words that the fourth word does not possess.

Analyzing the Options

Let's look at each word and its meaning, particularly in the context of the human eye:

- **Retina:** This is a specific physical part of the eye. It's located at the back of the eye and contains cells that detect light and color, sending signals to the brain.
- **Pupil:** This is also a physical part of the eye. It's the adjustable opening in the center of the iris that controls how much light enters the eye.

- **Vision:** This term refers to the ability to see. It is a process or a function that occurs using the eye, rather than a physical part of the eye itself.
- **Cornea:** This is another physical component of the eye. It is the transparent outer layer at the front of the eye that covers the iris, pupil, and anterior chamber. It refracts, or bends, light.

Determining the Different Word

By examining the options, we can see a clear pattern:

- The **Retina** is a physical structure within the eye.
- The **Pupil** is a physical structure (an opening) within the eye.
- The **Cornea** is a physical structure forming the outer layer of the eye.
- **Vision**, however, is the *process* or the functional *ability* to see, which is enabled by the physical parts like the retina, pupil, and cornea, but it is not a physical part itself.

Therefore, **Vision** is different because it represents a function or ability, while Retina, Pupil, and Cornea are all physical parts of the eye.

83. Answer: d

Explanation:

Identifying the Odd Word Out: Comparing Indian Landmarks

The task is to select the word that differs from the others, given that three words share a common characteristic. We need to analyze the nature of Udayagiri and Khandagiri, Badami, Elephanta, and Dodabetta.

Understanding the Options Provided

Let's examine each option to understand what it represents:

- **Udayagiri and Khandagiri:** These are historically significant twin rock-cut cave complexes situated in Odisha, India. They are primarily known for their ancient Jain monastic and temple architecture.
- **Badami:** This name refers to the Badami cave temples, a set of ancient rock-cut caves located in Karnataka, India. These temples are celebrated for their structural beauty and represent a blend of Hindu, Jain, and Buddhist art.
- **Elephanta:** The Elephanta Caves are a collection of sculpted caves located on Elephanta Island near Mumbai, India. They are famous for their impressive rock-cut architecture and sculptures, predominantly dedicated to Lord Shiva.
- **Dodabetta:** This is a mountain peak located in the Nilgiri mountain range in Tamil Nadu, India. It is notable for being the highest point in the Nilgiris and serves as a popular tourist destination offering panoramic views.

Analyzing the Commonality and Distinction

By comparing the descriptions, we can identify the shared characteristic:

- **Udayagiri and Khandagiri, Badami, and Elephanta** are all renowned examples of **rock-cut cave sites** or architectural marvels carved directly into rock faces. They are significant historical and archaeological monuments.
- **Dodabetta**, in contrast, is a natural **geographical feature** – a mountain peak. It is not an architectural site or a cave complex.

Conclusion: The Differentiating Factor

The key difference lies in the primary nature of the locations. Three options (Udayagiri and Khandagiri, Badami, Elephanta) are man-made, historical **rock-cut sites**. The fourth option, **Dodabetta**, is a natural peak. Therefore, Dodabetta is the word that is different from the rest.

84. Answer: a

Explanation:

Identifying the Odd Word Out: Tibia, Cortex, Cranium, Cerebellum

The objective of this question is to find the word that is different from the others among the given options: **Tibia**, **Cortex**, **Cranium**, and **Cerebellum**. We need to identify a common characteristic shared by three words that the fourth word lacks.

Detailed Analysis of Each Word

Let's break down the meaning and classification of each term:

- **Tibia**: This is the shin bone, a long bone found in the lower leg. It's a primary bone of the skeletal system located in the limb, far from the head.
- **Cranium**: This refers to the bones that form the skull and enclose the brain. It is a part of the skeletal system located in the head region.
- **Cerebellum**: This is a significant part of the brain, situated at the back of the head, below the cerebrum. It plays a key role in motor control, coordination, and balance. It belongs to the nervous system.
- **Cortex**: In this context, "Cortex" likely refers to the **Cerebral Cortex**, the outermost layer of the cerebrum. The cerebrum is the largest part of the brain, responsible for higher-level functions like thinking and consciousness. The Cerebral Cortex is also part of the nervous system and is located in the head.

Finding the Common Characteristic

By analyzing the location and function, we can see a pattern:

- The **Cranium** is a bony structure of the head.
- The **Cerebellum** is a part of the brain located within the head.
- The **Cortex** (likely Cerebral Cortex) is also a part of the brain located within the head.

Thus, **Cranium**, **Cerebellum**, and **Cortex** are all related to the head area and specifically involve the brain or its protective casing.

Determining the Different Word

The word **Tibia** stands out because it refers to a bone located in the lower leg.

Comparing the terms:

- **Tibia:** Lower leg bone (Skeletal System)
- **Cranium:** Skull bone (Skeletal System, Head)
- **Cerebellum:** Part of the brain (Nervous System, Head)
- **Cortex:** Outer part of the brain (Nervous System, Head)

The terms **Cranium**, **Cerebellum**, and **Cortex** are all associated with the head and brain. The **Tibia**, being a bone of the leg, does not fit this grouping.

Final Conclusion

Therefore, the word that is different from the rest is **Tibia** because it is the only term related to the lower limb, while the others are associated with the head and brain structures.

85. Answer: a

Explanation:

Analyzing Geographical Features: Identifying the Outlier

The task is to find the term that stands out from the others among the given geographical names. This involves understanding the nature of each location and identifying a common characteristic shared by most, but not all, of them.

Detailed Examination of Each Option

- **Saltoro Kangri:** This name refers to a significant mountain peak situated in the Karakoram mountain range. It lies on the border region often associated with the Siachen Glacier. Its primary identity is as a mountain summit.
- **Kongka:** Known commonly as Kongka La or Kongka Pass, this is a mountain pass located in the Himalayas. It serves as a significant point on the border

between India and China.

- **Zoji La:** Also spelled Zojila, this is a high-altitude mountain pass nestled within the Western Himalayas. It is a vital route connecting the Kashmir Valley with Ladakh in India.
- **Kumbharli Ghat:** This is identified as a mountain pass found within the Sahyadri mountain range, specifically in the state of Maharashtra, India.

Determining the Commonality and Difference

Upon reviewing the classifications:

- Kongka is a mountain pass.
- Zoji La is a mountain pass.
- Kumbharli Ghat is a mountain pass.

These three locations—Kongka, Zoji La, and Kumbharli Ghat—are all fundamentally classified as **mountain passes**. A mountain pass is a navigable route through a mountain range or over a mountain ridge.

In contrast, **Saltoro Kangri** is identified as a **mountain peak**. While located in a mountainous region and potentially near passes, its defining characteristic is being a summit, not a route through the mountains.

Conclusion: The Distinct Term

Since three of the options represent mountain passes and one represents a mountain peak, Saltoro Kangri is the term that differs from the others based on this geographical classification.

86. Answer: c

Explanation:

On observing the given figure carefully, we get:

In the question figure (X),

1. One dot is in the common area of the only circle and rectangle.

2. One dot is in the common area of the only square, triangle and circle.

Figure (A) → Common area of the only circle and rectangle isn't present.

Figure (B) → Common area of the only square, triangle and circle isn't present.

Figure (C) → Common area of the only square, triangle and circle isn't present.

Figure (D) → All the required conditions are fulfilled as shown below:



Hence, the correct answer is "Figure (D)".

★ Important Points

We should not think of the exact shape and size of the figures in these questions.

Just resemblance will work like if an Equilateral triangle is given in the question figure, any shape of the triangle in the answer figure will work, be it right triangle or scalene triangle.

87. Answer: a

Explanation:

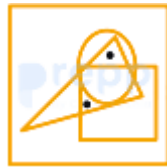
The pattern followed is,

In figure X,

One dot is in the common area of the triangle and circle.

One dot is in the common area of the triangle and the square.

(1):



Only Figure (a) satisfies two conditions.

(2):



One dot is in the common area of the triangle and the square.

(3):



One dot is in the common area of the triangle and the square.

(4):



One dot is in the common area of the triangle and the square.



Hence, **option 1** is the correct answer.

88. Answer: c

Explanation:

The pattern followed is,

In figure X,

One dot is in the common area of the square and the circle.

One dot is in the common area of the triangle and the circle.

One dot is solely in the circle alone.

Only Figure (C) satisfies these conditions.



Hence, option 3 is the correct answer.

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89. Answer: d

Explanation:

On observing the given figure carefully, we get:

In figure X, one dot lies in the triangle, circle and square. While the other dot is in the triangle and square.

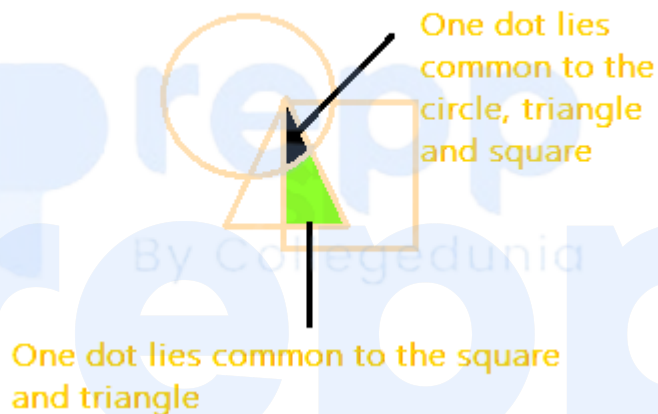
Similarly,

In figure a, one dot lies in circle, square and triangle but one doesn't lies in triangle and square.

In **figure b**, one dot lies in circle, square and triangle but one doesn't lies in triangle and square.

In **figure c**, dot doesn't lies in circle, square and triangle but one lies in triangle and square.

In **figure d** also one dot lies in the triangle, circle and square. While the other dot is in the triangle and square.

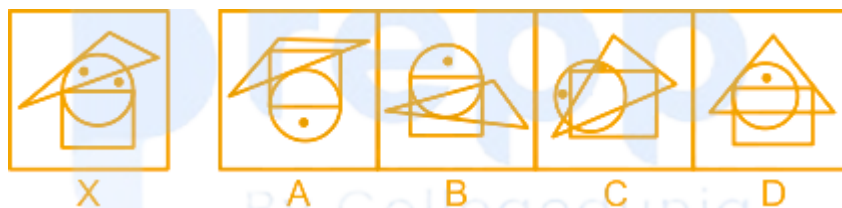


Hence, the correct answer is "option (4)"

90. Answer: c

Explanation:

The pattern followed is,



In figure X, one dot lies in the circle and the other dot is in the circle and triangle only.

In figure c also, one dot lies in the circle and the other dot is in the circle and triangle.

Hence, **option 3** is the correct answer.

91. Answer: d

Explanation:

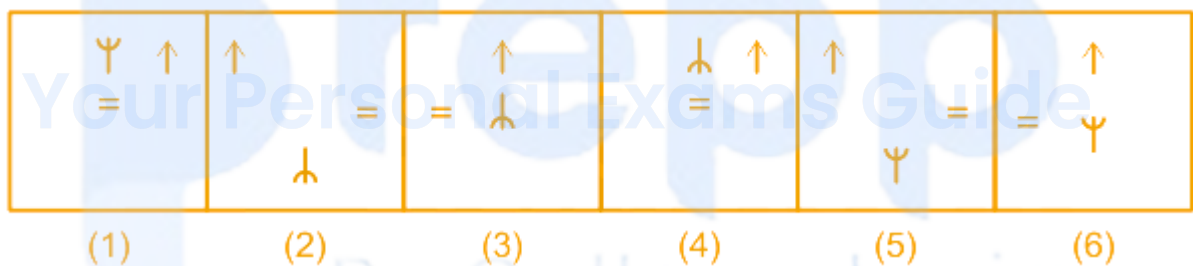
The pattern followed is,

'↑' and '=' moves one step horizontally.

And,

The other symbol moves two steps and one step vertically, and in the next figures it moves one step and two steps vertically.

The answer figure which will continue the same series as established by the five problem figures is,



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

92. Answer: c

Explanation:

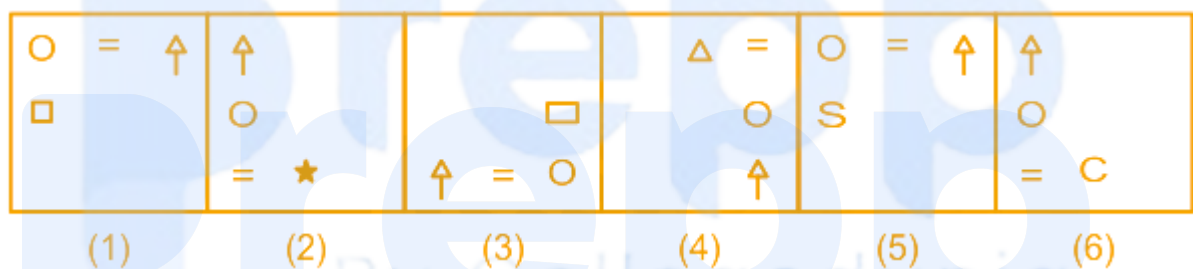
The pattern followed is,

- 1) '↑' moves two steps in anti - clock wise direction.
- 2) 'O' moves one step and then three steps anti - clock wise, and this is repeated.
- 3) '=' moves three steps first and then one step, this is repeated.

And,

- 4) 'Square' symbol moves two steps anti - clockwise with new image replacing it each time.

The answer figure which will continue the same series as established by the five problem figures is,



Hence, the correct answer is "Option 3".

93. Answer: a

Explanation:

Relation between two consecutive figures:

- 1) The horizontal arrowheads interchange their positions; similarly, the vertical arrowheads interchange their positions.
- 2) The triangular shaped arrowhead followed by the regular arrow head rotate clockwise by 45 degrees but at alternate steps.

Also, the triangular arrowhead changes its orientation at each step.

Hence, the correct answer is "option (1)".

94. Answer: a

Explanation:

The pattern followed is,

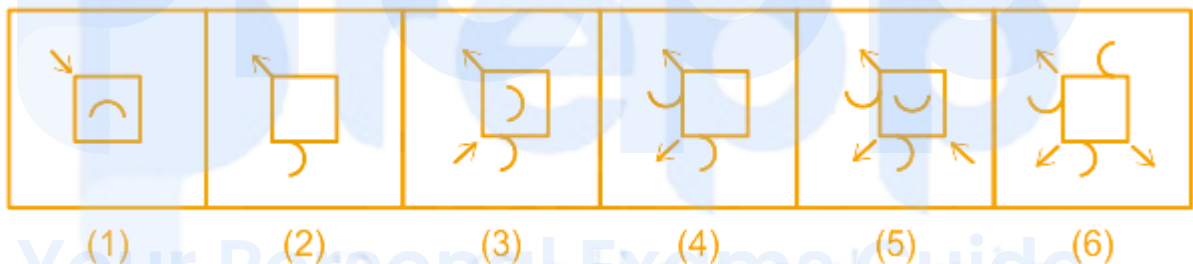
At each alternate step, a new arrow facing inside is placed at a vertex and a curve is added inside the square.

And,

Every arrow reverses its direction once at the consecutive step.

Similarly, every curve placed inside is placed outside at the consecutive

The answer figure which will continue the same series as established by the five problem figures is



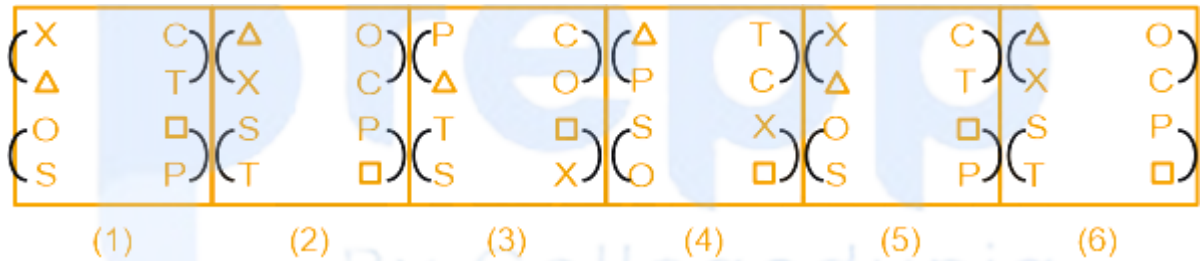
Hence, option 1 is the correct answer.

95. Answer: d

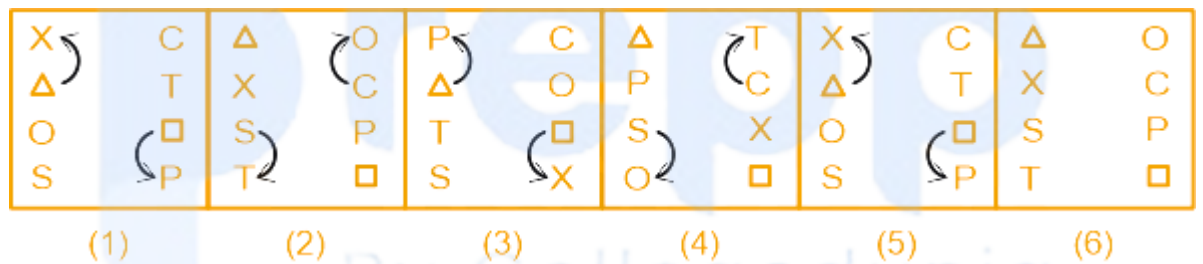
Explanation:

The pattern followed is,

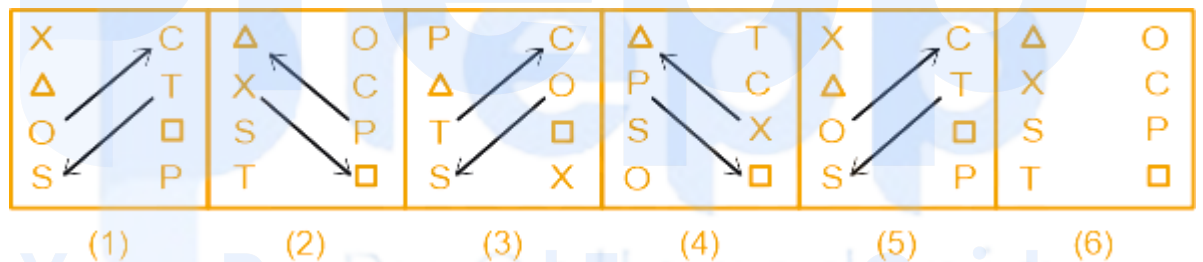
1) The first row and the last row elements are placed in the middle row



2) The elements in the two middle rows which is nearby to column are placed column wise at the corners.



3) The elements in the two middle rows which is far to column are placed diagonally opposite at the corners.



The answer figure which will continue the same series as established by the five problem figures is,



Hence, **option 4** is the correct answer.

96. Answer: b

Explanation:

Understanding Analogies: Anatomy and Paediatrics

This question tests your ability to understand relationships between different fields of study and apply that understanding to find a similar relationship. We need to identify the connection between the first pair of terms, "Anatomy : Zoology & Proportion", and then find the option that best matches this relationship for the second pair, "Paediatrics : ?".

Analysing the First Relationship: Anatomy : Zoology & Proportion

- **Anatomy** is the scientific study of the structure of living organisms and their parts.
- **Zoology** is the branch of biology concerned with the study of animals.
- **Proportion** refers to the relative size or extent of things, often related to the body or structure.

The relationship here can be seen as: Anatomy is a fundamental study of structure, which is applied within the field of Zoology (the study of animals). Proportion is a key characteristic often examined within Anatomy, especially in the context of Zoology. So, Anatomy is studied in relation to specific subjects like animals (Zoology) and focuses on aspects like their form (Proportion).

Analysing the Second Part: Paediatrics : ?

- **Paediatrics** is the branch of medicine concerned with the study, diagnosis, treatment, and prevention of diseases and conditions affecting infants, children, and adolescents.

We need to find a term that relates to Paediatrics in a similar way that Zoology & Proportion relate to Anatomy. Paediatrics is a specialized field. What is the broader

discipline or context it belongs to?

Evaluating the Options

Let's examine how each option relates to Paediatrics:

- **Option 1: Chemistry** – Chemistry is the study of matter and its properties. This has no direct relationship with Paediatrics.
- **Option 2: Medicine** – Medicine is the science and practice of diagnosing, treating, and preventing disease. Paediatrics is a well-established and major specialization within the broad field of Medicine. This establishes a strong hierarchical relationship, similar to how Anatomy is a core science studied within biological contexts like Zoology.
- **Option 3: Palaeontology** – Palaeontology is the study of fossils. This is unrelated to Paediatrics.
- **Option 4: Mechanics** – Mechanics is a branch of physics dealing with motion and forces. This is unrelated to Paediatrics.

Conclusion: Identifying the Correct Replacement

Comparing the relationships, Paediatrics is a specific branch that falls under the larger umbrella of **Medicine**. This mirrors the connection where fundamental studies are applied or specialized within broader fields. Therefore, Medicine is the most fitting replacement for the question mark.

97. Answer: d

Explanation:

Understanding the Eccrinology Analogy

This question presents an analogy based on the definition of scientific terms. We need to identify the relationship between "Eccrinology" and "Secretions" and apply the same relationship to "Selenography" to find the missing term.

Defining Eccrinology and Secretions

Eccrinology is the branch of medicine and physiology concerned with the study of **secretions**, particularly those produced by the endocrine glands (like sweat glands). The core relationship here is that eccrinology is the study of a specific biological product or process – secretions.

Exploring Selenography

Now let's look at the second part of the analogy: **Selenography** : ?. We need to find what selenography studies.

- **Selenography** is the scientific study of the surface of the Moon. It involves mapping and describing the features of the lunar surface, such as craters, mountains, and maria.

Connecting Selenography to the Options

The analogy requires us to find the subject that selenography studies. Based on its definition:

- Selenography is the study of the **Moon**.

Let's examine the given options in light of this:

- **Sun**: The study of the Sun is called heliography or solar physics.
- **Mantle**: This refers to a layer within planets or stars, not the primary subject of selenography.
- **Crust**: Similar to the mantle, this is a part of a celestial body, but not the overall subject of study for selenography.
- **Moon**: This is the direct object of study in selenography.

Final Answer Derivation

Since Eccrinology is the study of Secretions, the analogous relationship for Selenography is that it is the study of the **Moon**. Therefore, the term that replaces the question mark is "Moon".

The relationship is: [Field of Study] : [Subject of Study]

Eccrinology : Secretions :: Selenography : **Moon**

98. Answer: b

Explanation:

Analyzing the Analogy: Virology and Semantics

This question tests your ability to understand relationships between concepts and apply that understanding to find a similar relationship. We need to identify the connection between "Virology" and "Virus" and then find the option that has the same relationship with "Semantics". The term "& Proportion" associated with Virology seems extraneous or possibly a typo, as virology is fundamentally the study of viruses.

Understanding Virology

Virology is a specific branch of science. It focuses exclusively on the study of viruses. This includes their structure, classification, genetics, how they cause disease (pathogenesis), how they interact with their hosts, and how they can be prevented or treated.

- **Field of Study:** Virology
- **Subject of Study:** Virus

Understanding Semantics

Semantics is a branch of linguistics and logic. It is concerned with meaning. Specifically, semantics studies the meaning of words, phrases, signs, and symbols, and how these meanings are created and understood. The primary context for studying meaning in semantics is usually **language**.

- **Field of Study:** Semantics

- **Subject of Study:** Meaning within Language

Evaluating the Options

Now let's look at the options provided to find the one that parallels the relationship "Semantics : Language":

- **Option 1: Amoeba** – An amoeba is a type of single-celled organism. The study of amoebas falls under biology or protozoology. This does not relate to semantics.
- **Option 2: Language** – As discussed, semantics is the study of meaning, and meaning is fundamentally tied to language. Therefore, language is the primary subject or context for semantics. This fits the relationship perfectly.
- **Option 3: Nature** – The study of nature is a broad field encompassing biology, ecology, geology, etc. While language exists in nature, "nature" itself isn't the direct subject of study for semantics.
- **Option 4: Society** – The study of society is sociology. While language plays a vital role in society, semantics specifically focuses on the meaning within the language system itself, not the broader societal structures.

Conclusion

The relationship in the first pair is "Scientific Discipline : Primary Subject of Study". Virology studies viruses. Similarly, Semantics studies meaning, primarily within the context of language. Therefore, "Language" is the correct alternative to replace the question mark.

The analogy is: Virology is the study of Viruses, just as Semantics is the study of meaning in **Language**.

Hence, the correct option is **Language**.

99. **Answer: c**

Explanation:

Analogy Explained: Tectonics and Taxidermy

This question asks us to identify the relationship between the first pair of words, "Tectonics" and "Building & Proportion," and then apply that same relationship to find the missing word related to "Taxidermy." This is a common type of vocabulary question that tests reasoning skills.

Understanding the First Pair: Tectonics and Building & Proportion

Tectonics is the field of geology that studies the processes affecting the structure of the Earth's crust, especially those related to plate movements. Key aspects of tectonics involve understanding how large-scale geological structures are formed (**building**) and their resultant shapes and sizes (**proportion**). It's fundamentally about the structure and form of the Earth.

Understanding Taxidermy

Taxidermy is the practice of preparing, stuffing, and mounting the skins of animals in a lifelike form. It involves preserving the animal's appearance after death.

Analyzing the Options for Taxidermy

We need to find an option that relates to Taxidermy in the same way "Building & Proportion" relates to Tectonics. Let's look at each option:

- **Classification:** While classifying specimens might be part of a biologist's work, it's not the core technique of taxidermy itself. It's about sorting, not preserving the form.
- **Conserving:** This means preserving the specimen, which is a goal of taxidermy. However, "conserving" is a general term and doesn't describe the specific method used to achieve the lifelike appearance.
- **Stuffing:** This refers to the process of filling the prepared animal skin with material (like cotton, straw, or foam) to recreate its natural shape, volume, and proportions. This act of filling and shaping is directly analogous to how tectonics deals with the **building** and **proportion** of geological features. It's about creating the form.

- **Collecting:** This is the initial step of obtaining the animal specimen, usually before the taxidermy process even begins.

Conclusion

Just as **Tectonics** deals with the **Building** and **Proportion** of the Earth's structures, **Taxidermy** primarily involves the technique of **Stuffing** (and mounting) to recreate the lifelike form and proportions of an animal. Therefore, "Stuffing" is the most fitting word to replace the question mark.

100. Answer: d

Explanation:

Analogy Explanation: Annihilation & Fire vs. Cataclysm & ?

This question requires us to identify the relationship between the first pair of words, **Annihilation** and **Fire**, and then find the word from the options that has a similar relationship with **Cataclysm**.

Understanding the Annihilation and Fire Relationship

Let's break down the connection between **Annihilation** and **Fire**:

- **Annihilation** signifies complete destruction, utter ruin, or the state of being reduced to nothing.
- **Fire** is a powerful process involving combustion. A large-scale fire, such as a devastating wildfire or an explosion, can act as a potent agent causing widespread and total destruction, thus leading to annihilation.

In this pair, **Fire** represents a specific, potent cause or type of event that results in the broader concept of **Annihilation**.

Identifying the Relationship for Cataclysm

We need to apply the same logic to the word **Cataclysm**. We are looking for a specific event or phenomenon that relates to **Cataclysm** in the way **Fire** relates to **Annihilation**.

- **Cataclysm** refers to a sudden, violent, and significant upheaval or disaster, often causing immense destruction and major changes. Think of it as a large-scale disruptive event.

We need to find an option that represents a specific example or cause fitting this description.

Evaluating the Options

Let's consider each option in relation to **Cataclysm**:

- **1. Emergency:** An **emergency** is a serious, unexpected situation requiring immediate action. While a cataclysm can certainly cause emergencies, the term 'emergency' itself doesn't represent the large-scale destructive event in the same way 'fire' represents a cause of annihilation.
- **2. Tribulation:** **Tribulation** means a cause of great trouble or suffering, or a period of hardship. This term focuses more on the suffering or the cause of suffering rather than the catastrophic event itself.
- **3. Anxiety:** **Anxiety** is an emotional state characterized by feelings of worry, nervousness, or unease. This is a psychological response and not directly related to the physical destructive event implied in the analogy.
- **4. Flood:** A **flood** is an overflow of a large amount of water that submerges land normally dry. Floods can occur suddenly, be extremely violent, cover vast areas, and cause massive destruction and disruption. A significant flood is a classic example of a **cataclysm**. This option fits the pattern: just as **Fire** is a specific event/agent leading to **Annihilation**, a **Flood** is a specific event that exemplifies a **Cataclysm**.

Conclusion: Selecting the Best Replacement

Based on the analysis, the relationship between **Fire** and **Annihilation** (specific destructive event : result/broader destruction) is best mirrored by the relationship between **Flood** and **Cataclysm** (specific destructive event : broader category of disaster). A flood is a type of event that can be described as a cataclysm.

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