CAT 2019 Slot 1

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Verbal Ability

Instructions

Scientists recently discovered that Emperor Penguins—one of Antarctica's most celebrated species—employ a particularly unusual technique for surviving the daily chill. As detailed in an article published today in the journal Biology Letters, the birds minimize heat loss by keeping
the outer surface of their plumage below the temperature of the surrounding air. At the same time, the penguins' thick plumage insulates their body and keeps it toasty. . . .

The researchers analyzed thermographic images . . . taken over roughly a month during June 2008. During that period, the average air temperature was 0.32 degrees Fahrenheit. At the same time, the majority of the plumage covering the penguins' bodies was even colder: the surface of their warmest body part, their feet, was an average 1.76 degrees Fahrenheit, but the plumage on their heads, chests and backs were -1.84, -7.24 and -9.76 degrees Fahrenheit respectively. Overall, nearly the entire outer surface of the penguins' bodies was below freezing at all times, except for their eyes and beaks. The scientists also used a computer simulation to determine how much heat was lost or gained from each part of the
body - and discovered that by keeping their outer surface below air temperature, the birds might paradoxically be able to draw very slight amounts of heat from the air around them. The key to their trick is the difference between two different types of heat transfer: radiation and
convection.

The penguins do lose internal body heat to the surrounding air through thermal radiation, just as our bodies do on a cold day. Because their bodies (but not surface plumage) are warmer than the surrounding air, heat gradually radiates outward over time, moving from a warmer material to a colder one. To maintain body temperature while losing heat, penguins, like all warm-blooded animals, rely on the metabolism of food. The penguins, though, have an additional strategy. Since their outer plumage is even colder than the air, the simulation showed that they might gain back a little of this heat through thermal convection—the transfer of heat via the movement of a fluid (in this case, the air). As the cold Antarctic air cycles around their bodies, slightly warmer air comes into contact with the plumage and donates minute amounts of heat back to the penguins, then cycles away at a slightly colder temperature.

Most of this heat, the researchers note, probably doesn't make it all the way through the plumage and back to the penguins' bodies, but it could make a slight difference. At the very least, the method by which a penguin's plumage wicks heat from the bitterly cold air that surrounds it helps to cancel out some of the heat that's radiating from its interior. And given the Emperors' unusually demanding breeding cycle, every bit of warmth counts. . . . Since [penguins trek as far as 75 miles to the coast to breed and male penguins] don't eat anything during [the incubation period of 64 days], conserving calories by giving up as little heat as possible is absolutely crucial.

Question 1

Which of the following can be responsible for Emperor Penguins losing body heat?

A Food metabolism.

B Plumage.

C Reproduction process.

D Thermal convection.

Answer: C

Explanation:
Option A: It has been mentioned that food metabolism is used to maintain body temperature. But it cannot be inferred that heat is lost due to food metabolism.

Option B: The colder temperature of plumage results in slight heat gain from the surrounding air. Hence this option is incorrect.

Option C: In the last paragraph of the passage, it has been mentioned that heat is very important for the breeding of Emperor Penguins. So it can be inferred that this conserved heat might be used in the reproductive process of Emperor Penguins. Hence C is the answer.

Option D: Consider the line: "Since their outer plumage is.....thermal convection—the transfer of heat via the movement of a fluid (in this case, the air)." It is clear that the process of thermal convection is responsible for heat gain and not heat loss. Hence D is incorrect.

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Question 2

All of the following, if true, would negate the findings of the study reported in the passage EXCEPT:

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A the penguins' plumage were made of a material that did not allow any heat transfer through convection or radiation.

B the average temperature of the feet of penguins in the month of June 2008 were found to be 2.76 degrees Fahrenheit.

C the average air temperature recorded during the month of June 2008 in the area of study were -10 degrees Fahrenheit.

D the temperature of the plumage on the penguins' heads, chests and backs were found to be 1.84, 7.24 and 9.76 degrees Fahrenheit respectively.

Answer: B

Explanation:
The primary findings of the study conclude that Emperor Penguins reduce the heat loss by keeping the temperature of the outer surface of their plumage lower than the surrounding air. In fact, they gain a little heat from the surrounding air through thermal convection.

Option A: If the plumage did not allow thermal convection, it would contradict the findings of the study. Hence A is not the answer.

Option B: Since the transfer of heat takes place through the plumage, variation in the average temperature of feet will not affect the conclusions of the study. Hence B is the answer.

Option C: The average temperature of plumage should be lower than that of the air. It has been mentioned in the passage that the temperatures of the plumage on their heads, chests and backs were -1.84, -7.24 and -9.76 degrees Fahrenheit respectively. If the temperature of the air is -10 degrees Fahrenheit, Penguins would not be able to gain the heat. Hence, this will negate the study findings.

Option D: All the temperatures mentioned in this option are higher than the temperature of the air, but the study assumes the surrounding air temperature to be higher. This option will also negate the study findings.

Question 3

Which of the following best explains the purpose of the word "paradoxically" as used by the author?

A Keeping their body colder helps penguins keep their plumage warmer.

B Heat gain through radiation happens despite the heat loss through convection.

C Heat loss through radiation happens despite the heat gain through convection.

D Keeping a part of their body colder helps penguins keep their bodies warmer.

Answer: D

Explanation:
The word "paradoxically" has been used by the author to indicate the two contradictory characteristics mentioned in the statement.

Option A: This option states the exact opposite conclusion mentioned in the passage. As per the passage, penguins keep their plumage colder to keep their body warmer. Hence A is incorrect.

Option B: It has been mentioned that the penguins lose heat through radiation and gain heat through convection. Hence B is incorrect.

Option C: Although this statement is true, it does not contain self-contradictory parts. It has been mentioned that the heat loss and heat gain happen through the given processes but one has no relation to the other. Hence C is not the answer.

Option D: This statement combines two contradictory qualities. The penguins are keeping their plumage colder, which is responsible for the heat gain from the surrounding air and making their body warmer. Hence D is the answer.

Question 4

In the last sentence of paragraph 3, "slightly warmer air" and "at a slightly colder temperature" refer to _____ AND _____ respectively:

A the cold Antarctic air whose temperature is higher than that of the plumage AND the fall in temperature of the Antarctic air after it has transmitted some heat to the plumage.

B the cold Antarctic air which becomes warmer because of the heat radiated out from penguins' bodies AND the fall in temperature of the surrounding air after thermal convection.

C the air trapped in the plumage which is warmer than the Antarctic air AND the fall in temperature of the trapped plumage air after it radiates out some heat.

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D the air inside penguins' bodies kept warm because of metabolism of food AND the fall in temperature of the body air after it transfers some heat to the plumage.

Answer: A

Explanation:
Option A: Consider the sentence: "As the cold Antarctic air cycles around their bodies, slightly warmer air comes into contact with the plumage and donates minute amounts of heat back to the penguins, then cycles away at a slightly colder temperature." It has been mentioned in the passage that the plumage temperature is lower than the surrounding air temperature. Hence, "slightly warmer air" refers to the Antarctica air that surrounds the plumage and "at a slightly colder temperature" refers to the fall in temperature due to heat loss.

Option B: The process of convections and not radiation is involved in this case. Hence the first part of the option is incorrect. B is not the answer.

Option C: The passage does not mention air trapped in plumage. Hence this option is rejected.

Option D: "slightly warmer air" refers to the Antarctica air and not the air inside the penguins' bodies. Hence D is incorrect.

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Instructions

Contemporary internet shopping conjures a perfect storm of choice anxiety. Research has consistently held that people who are presented with a few options make better, easier decisions than those presented with many. . . . Helping consumers figure out what to buy amid an endless sea of choice online has become a cottage industry unto itself. Many brands and retailers now wield marketing buzzwords such as curation, differentiation, and discovery as they attempt to sell an assortment of stuff targeted to their ideal customer. Companies find such shoppers through the data gold mine of digital advertising, which can catalog people by gender, income level, personal interests, and more. Since Americans have lost the ability to sort through the sheer volume of the consumer choices available to them, a ghost now has to be in the retail machine, whether it's an algorithm, an influencer, or some snazzy ad tech to help a product follow you around the internet. Indeed, choice fatigue is one reason so many people gravitate toward lifestyle influencers on Instagram—the relentlessly chic young moms and perpetually vacationing 20-somethings—who present an aspirational worldview, and then recommend the products and services that help achieve it. . . .

For a relatively new class of consumer-products start-ups, th ere's another method entirely. Instead of making sense of a sea of existing stuff, these companies claim to disrupt stuff as Americans know it. Casper (mattresses), Glossier (makeup), Away (suitcases), and many others have sprouted up to offer consumers freedom from choice: The companies have a few aesthetically pleasing and supposedly highly functional options, usually at mid-range prices. They're selling nice things, but maybe more importantly, they're selling a confidence in those things, and an ability to opt out of the stuff rat race. . . .

One-thousand-dollar mattresses and $300 suitcases might solve choice anxiety for a certain tier of consumer, but the companies that sell them, along with those that attempt to massage the larger stuff economy into something navigable, are still just working within a consumer market that's broken in systemic ways. The presence of so much stuff in America might be more valuable if it were more evenly distributed, but stuff's creators tend to focus their energy on those who already have plenty. As options have expanded for people with disposable income, the opportunity to buy even basic things such as fresh food or quality diapers has contracted for much of America's lower classes.

For start-ups that promise accessible simplicity, their very structure still might eventually push them toward overwhelming variety. Most of these companies are based on hundreds of millions of dollars of venture capital, the investors of which tend to expect a steep growth rate
that can't be achieved by selling one great mattress or one great sneaker. Casper has expanded into bedroom furniture and bed linens. Glossier, after years of marketing itself as no-makeup makeup that requires little skill to apply, recently launched a full line of glittering color cosmetics. There may be no way to opt out of stuff by buying into the right thing.

Question 5

Which one of the following best sums up the overall purpose of the examples of Casper and Glossier in the passage?

A They are exceptions to a dominant trend in consumer markets.

B They are increasing the purchasing power of poor Americans.

C They might transform into what they were exceptions to.

D They are facilitating a uniform distribution of commodities in the market.

Answer: C

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Explanation:
Option A: The startups Casper and Glossier are certainly breaking the trend of choice anxiety. Yet, the author argues that they are turning into something that they intended to disrupt. Hence, this does not capture the purpose of the author.

Option B: The author argues that even these startups are targeting select few mid-range customers rather than the lower classes. Hence, this option directly contradicts the author's claim.

Option C: These startups initially started as an exception to offering a wide variety of choices. Yet, due to limited customers, and want of steep growth, they might transform into a type of company that they intended to disrupt. Hence, this option correctly resounds the authors fear and captures his purpose of argument. Hence C is correct

Option D: This option is largely vague and can have multiple interpretations. One interpretation can be that these startups are targeting a selected band of customers and do not have offering for lower-class customers. Hence, there is no uniform distribution.

Question 6

All of the following, IF TRUE, would weaken the author's claims EXCEPT:

A the annual sale of companies that hired lifestyle influencers on Instagram for marketing their products were 40% less than those that did not.

B product options increased market competition, bringing down the prices of commodities, which, in turn, increased purchasing power of the poor.

C the empowerment felt by purchasers in buying a commodity were directly proportional to the number of options they could choose from.

D the annual sales growth of companies with fewer product options were higher than that of companies which curated their products for target consumers.

Answer: D

Explanation:
Option A: Paragraph 1 says "choice fatigue is one reason so many people gravitate toward lifestyle influencers on Instagram". Hence, as per the passage, a company with wide range of products and a lifestyle influencer is likely to perform better than a company with only wide range of products. Hence, this statement negates the claim of the author.

Option B: "As options have expanded for people with disposable income, the opportunity to buy even basic things such as fresh food or quality diapers has contracted for much of America's lower classes." The author argues that variety of products are offered only for a certain class of consumers other than the lower class. If variety of options indeed helped the poor, then his argument is weakened.

Option C: "Research has consistently held that people who are presented with a few options make better, easier decisions than those presented with many". "Americans have lost the ability to sort through the sheer volume". Clearly, people are overwhelmed by options and prefer lesser variety. Hence, option C is contradictory.

Option D: This option is largely vague and leaves unanswered questions behind. Also, the author doesn't make any comparison between the growth of these two type of companies. The author only says that, as the company targets only few consumers, for the want of growth they are likely to expand to variety of products. As there is no information about their growths, this option neither strengthens nor weakens the claim.

Question 7

Based on the passage, all of the following can be inferred about consumer behaviour EXCEPT that:

A having too many product options can be overwhelming for consumers.

B too many options have made it difficult for consumers to trust products.

C consumers tend to prefer products by start-ups over those by established companies.

D consumers are susceptible to marketing images that they see on social media.

Answer: C

Explanation:
Option A: Paragraph 1 says "Since Americans have lost the ability to sort through the sheer volume of the consumer choices available to them" Since the product options are overwhelming, they are unable to sort through the options. Hence, option A can be inferred from the passage.

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Option B: Paragraph 1 says "Research has consistently ..... industry unto itself." As people experience choice anxiety due to overwhelming options, they are unable to trust products while selecting. Hence, they look-out for celebrities and curators to make a decision.

Option C: There is no such comparison in the passage that shows people's preference towards products by startups. Hence, option C cannot be inferred.

Option D: Paragraph 1 says "a ghost now has to be in the retail machine, whether it's an algorithm, an influencer, or some snazzy ad tech to help a product follow you around the internet". Due to our inability to sort, we depend on influencers or we are vulnerable to snazzy ads to purchase products. Hence, D can be inferred.

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Question 8

A new food brand plans to launch a series of products in the American market. Which of the following product plans is most likely to be supported by the author of the passage?

A A range of 10 products priced between $5 and $10.

B A range of 25 products priced between $5 and $10.

C A range of 10 products priced between $10 and $25.

D A range of 25 products priced between $10 and $25.

Answer: A

Explanation:
The author principally argues for lesser choices. He says that choice anxiety is overwhelming and people make better decisions with lesser choices.

He is also critical about companies targeting only certain band of well-off customers and critiques them for not offering products for consumers of lower classes.

Hence, a product group with lesser variety, and targeted to lower class customers would be most acceptable to the author.

Question 9

Which of the following hypothetical statements would add the least depth to the author's prediction of the fate of start-ups offering few product options?

A An exponential surge in their sales enables start-ups to meet their desired profit goals without expanding their product catalogue.

B Start-ups with few product options are no exception to the American consumer market that is deeply divided along class lines.

C With Casper and Glossier venturing into new product ranges, their regular customers start losing trust in the companies and their products.

D With the motive of promoting certain rival companies, the government decides to double the tax-rates for these start-ups.

Answer: A

Explanation:
By "Depth", the author suggests a scenario that adds value or supplies additional information which supports his claim.

Option A: If the startup products grow exponentially and are self-sufficient and do not expand to other products, this scenario directly contradicts the author's probable prediction of these companies. Hence, it would add the least depth to the author's argument. A is the correct answer.

Option B: Lets consider that startups with few product options already exist. In such a case, these startups are no exceptions. For the sake of steep growth and surviving, they might have to expand into different product categories. Hence it adds some depth to the author's prediction.

Option C: "There may be no way to opt-out of stuff by buying into the right thing." The author is clearly displeased with startups ending up with overwhelming variety. Losing regular customers for better growth further invigorates the author's claim against numerous choices. Hence, it adds some value to his criticism.

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Option D: If the government doubles their tax rates, as these startups are dependent on select customers for income, they might have to venture into other products and varieties to accentuate their returns and keep the company afloat. Hence, their fate would likely end up the way author predicted it to be.

Instructions

As defined by the geographer Yi-Fu Tuan, topophilia is the affective bond between people and place. His 1974 book set forth a wide-ranging exploration of how the emotive ties with the material environment vary greatly from person to person and in intensity, subtlety, and mode of expression. Factors influencing one's depth of response to the environment include cultural background, gender, race, and historical circumstance, and Tuan also argued that there is a biological and sensory element. Topophilia might not be the strongest of human emotions—
indeed, many people feel utterly indifferent toward the environments that shape their lives - but when activated it has the power to elevate a place to become the carrier of emotionally charged events or to be perceived as a symbol.

Aesthetic appreciation is one way in which people respond to the environment. A brilliantly colored rainbow after gloomy afternoon showers, a busy city street alive with human interaction—one might experience the beauty of such landscapes that had seemed quite ordinary only moments before or that are being newly discovered. This is quite the opposite of a second topophilic bond, namely that of the acquired taste for certain landscapes and places that one knows well. When a place is home, or when a space has become the locus of memories or the means of gaining a livelihood, it frequently evokes a deeper set of attachments than those predicated purely on the visual. A third response to the environment
also depends on the human senses but may be tactile and olfactory, namely a delight in the feel and smell of air, water, and the earth.

Topophilia—and its very close conceptual twin, sense of place—is an experience that, however elusive, has inspired recent architects and planners. Most notably, new urbanism seeks to counter the perceived placelessness of modern suburbs and the decline of central cities through neo-traditional design motifs. Although motivated by good intentions, such attempts to create places rich in meaning are perhaps bound to disappoint. As Tuan noted, purely aesthetic responses often are suddenly revealed, but their intensity rarely is longlasting. Topophilia is difficult to design for and impossible to quantify, and its most articulate interpreters have been self-reflective philosophers such as Henry David Thoreau, evoking a marvelously intricate sense of place at Walden Pond, and Tuan, describing his deep affinity for the desert.

Topophilia connotes a positive relationship, but it often is useful to explore the darker affiliations between people and place. Patriotism, literally meaning the love of one's terra patria or homeland, has long been cultivated by governing elites for a range of nationalist projects, including war preparation and ethnic cleansing. Residents of upscale residential developments have disclosed how important it is to maintain their community's distinct identity, often by casting themselves in a superior social position and by reinforcing class and racial differences. And just as a beloved landscape is suddenly revealed, so too may landscapes of fear cast a dark shadow over a place that makes one feel a sense of dread or anxiety—or topophobia.

Question 10

In the last paragraph, the author uses the example of "Residents of upscale residential developments" to illustrate the:

A manner in which environments are designed to minimise the social exclusion of their clientele.

B introduction of nationalist projects by such elites to produce a sense of dread or topophobia.

C social exclusivism practised by such residents in order to enforce a sense of racial or class superiority.

D sensitive response to race and class problems in upscale residential developments.

Answer: C

Explanation:
"Residents of upscale residential developments have disclosed how important it is to maintain their community's distinct identity, often by casting themselves in a superior social position and by reinforcing class and racial differences."

Option A: The option implies that the clients are made to feel at home. While the phrase "Residents of upscale residential developments" is used to capture the intent of social dominance of a particular class. Hence this option is incorrect.

Option B: The option implies that jingoism of a certain class might lead to topophobia. The option is yet again unrelated.

Option C: Residents of upscale residential developments intend to promote their community by reinforcing sectarian differences. This exclusivism(Practice of being exclusive/important) is clearly captured in the option. Hence C is correct.

Option D: Sensitive response indicates a considerate response where other's sentiments are considered. While these residents are inconsiderate and consider themself superior. Also, the option doesn't capture the purpose clearly. Hence, incorrect

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Question 11

Which one of the following comes closest in meaning to the author's understanding of topophilia?

A Scientists have found that most creatures, including humans, are either born with or cultivate a strong sense of topography.

B The tendency of many cultures to represent their land as "motherland" or "fatherland" may be seen as an expression of their topophilia

C Nomadic societies are known to have the least affinity for the lands through which they traverse because they tend to be topophobic.

D The French are not overly patriotic, but they will refuse to use English as far as possible, even when they know it well.

Answer: B

Explanation:
Option A: The entire passage deals with "TOPOPHILIA" and "TOPOGRAPHY" is unrelated. Also, the author says that we experience topophilia in three forms and that we are not born with it.

Option C: An illustration of topophobia doesn't represent the author's view on topophilia

Option D: The option speaks about glossophilia(Love of language) and is unrelated to topophilia

Option B: "Topophilia connotes a positive relationship, but it often is useful to explore the darker affiliations between people and place. Patriotism, literally meaning the love of one's terra patria or homeland".
Despite a negative tone, the author says that one form of topophilia is patriotism. Even though not wholesome, it comes "closest" to the author's understanding of topophilia among the given options. Hence B is correct.

Question 12

Which one of the following best captures the meaning of the statement, "Topophilia is difficult to design for and impossible to quantify . . ."?

A The deep anomie of modern urbanisation led to new urbanism's intricate sense of place.

B Architects have to objectively quantify spaces and hence cannot be topophilic.

C Philosopher-architects are uniquely suited to develop topophilic design

D People's responses to their environment are usually subjective and so cannot be rendered in design.

Answer: D

Explanation:
"As Tuan noted, purely aesthetic responses often are suddenly revealed, but their intensity rarely is longlasting. Topophilia is difficult to design for and impossible to quantify". The author says that people's response to aesthetics is shortlived and usually subsides overtime. Hence, it is difficult to design or quantify.

Option A: "Amomie" means lack of morals or ethics. It is unrelated to the passage.

Option B: An objective analysis by architects does not explain the reason as to why it is difficult to quantify topophilia.

Option C: This statement is in the form of an opinion and does not explain the above statement.

Option D: Since every person has different topophilic attractions and have different responses to aesthetics. Capturing topophilia in the form of design is impossible. This option elaborates and explains the reason for quantifying topophilia. Hence option D is correct.

Question 13

The word "topophobia" in the passage is used:

A to represent a feeling of dread towards particular spaces and places.

B to signify the fear of studying the complex discipline of topography.

C to signify feelings of fear or anxiety towards topophilic people.

D as a metaphor expressing the failure of the homeland to accommodate non-citizens.

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Answer: A

Explanation:
"And just as a beloved landscape is suddenly revealed, so too may landscapes of fear cast a dark shadow over a place that makes one feel a sense of dread or anxiety—or topophobia."

Option B speaks about topography, while Option C speaks about dread towards people.
Option D is unrelated to topophobia. Hence, all of them are incorrect

Option A clearly captures the essence of the last sentence in the passage.

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Question 14

Which of the following statements, if true, could be seen as not contradicting the arguments in the passage?

A New Urbanism succeeded in those designs where architects collaborated with their clients.

B Generally speaking, in a given culture, the ties of the people to their environment vary little in significance or intensity.

C The most important, even fundamental, response to our environment is our tactile and olfactory response.

D Patriotism, usually seen as a positive feeling, is presented by the author as a darker form of topophilia.

Answer: D

Explanation:
Option A: "new urbanism seeks to... Although motivated by good intentions, such attempts to create places rich in meaning are perhaps bound to disappoint." The author says new urbanism that tries to induce sense of place is bound to fail. Since there is no mention of clients, irrespectively new urbanism is going to fail. Hence, it is contradicting the author.

Option B: "His 1974 book set forth a wide-ranging exploration of how the emotive ties with the material environment vary greatly from person to person and in intensity, subtlety, and mode of expression." This option is contradicting the passage yet again.

Option C: The author lists out three ways of experiencing topophilia but doesn't emphasize about any one way. Hence, even though not contradictory, this option is factually misquoting the passage.

Option D: "Topophilia connotes a positive relationship, but it often is useful to explore the darker affiliations between people and place. Patriotism, literally meaning the love of one's terra patria or homeland.." Clearly, the author has a negative intonation when he says "darker affiliation". He presents patriotism as a darker manifestation of topophilia. Hence, this statement is correct and does not contradict the author. Hence option D is correct.

Instructions

"Free of the taint of manufacture" - that phrase, in particular, is heavily loaded with the ideology of what the Victorian socialist William Morris called the "anti-scrape", or an anticapitalist conservationism (not conservatism) that solaced itself with the vision of a preindustrial golden age. In Britain, folk may often appear a cosy, fossilised form, but when you look more closely, the idea of folk - who has the right to sing it, dance it, invoke it, collect it, belong to it or appropriate it for political or cultural ends - has always been contested territory.
. . .

In our own time, though, the word "folk" . . . has achieved the rare distinction of occupying fashionable and unfashionable status simultaneously. Just as the effusive floral prints of the radical William Morris now cover genteel sofas, so the revolutionary intentions of many folk historians and revivalists have led to music that is commonly regarded as parochial and conservative. And yet - as newspaper columns periodically rejoice - folk is hip again, influencing artists, clothing and furniture designers, celebrated at music festivals, awards ceremonies and on TV, reissued on countless record labels. Folk is a sonic "shabby chic", containing elements of the uncanny and eerie, as well as an antique veneer, a whiff of Britain's heathen dark ages. The very obscurity and anonymity of folk music's origins open up space for rampant imaginative fancies. . . .

[Cecil Sharp, who wrote about this subject, believed that] folk songs existed in constant transformation, a living example of an art form in a perpetual state of renewal. "One man sings a song, and then others sing it after him, changing what they do not like" is the most concise summary of his conclusions on its origins. He compared each rendition of a ballad to an acorn falling from an oak tree; every subsequent iteration sows the song anew. But there is tension in newness. In the late 1960s, purists were suspicious of folk songs recast in rock idioms. Electrification, however, comes in many forms. For the early-20th-century composers such as Vaughan Williams and Holst, there were thunderbolts of inspiration from oriental mysticism, angular modernism and the body blow of the first world war, as well as input from the rediscovered folk tradition itself.

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For the second wave of folk revivalists, such as Ewan MacColl and AL Lloyd, starting in the 40s, the vital spark was communism's dream of a post-revolutionary New Jerusalem. For their younger successors in the 60s, who thronged the folk clubs set up by the old guard, the lyrical
freedom of Dylan and the unchained melodies of psychedelia created the conditions for folkrock's own golden age, a brief Indian summer that lasted from about 1969 to 1971. . . . Four decades on, even that progressive period has become just one more era ripe for fashionable emulation and pastiche. The idea of a folk tradition being exclusively confined to oral transmission has become a much looser, less severely guarded concept. Recorded music and television, for today's metropolitan generation, are where the equivalent of folk memories are seeded. . . .

Question 15

At a conference on folk forms, the author of the passage is least likely to agree with which one of the following views?

A Folk forms, in their ability to constantly adapt to the changing world, exhibit an unusual poise and homogeneity with each change.

B The plurality and democratising impulse of folk forms emanate from the improvisation that its practitioners bring to it.

C The power of folk resides in its contradictory ability to influence and be influenced by the present while remaining rooted in the past.

D Folk forms, despite their archaic origins, remain intellectually relevant in contemporary times.

Answer: A

Explanation:
Cecil Sharp says "One man sings a song, and then others sing it after him, changing what they do not like". This signifies that folk music is constantly evolving. Hence, this adaptability contributes to its plurality. Hence the author is going to agree with option B

"Just as the effusive ..... on countless record labels" This indicates that - "Just as the radical views of Morris became popular and mainstream, similarly folk music which is considered parochial is becoming popular and conformist. This popularity is being rejoiced by media as "folk is hip again". Hence, option C correctly captures this sentiment.

"For the early-20th-century composers .... tradition itself." This line captures the idea that folk is also inspired by various philosophies and schools of thought. Hence, we can infer that folk is intellectually relevant in contemporary times. Option D is in coherence with the author's views.

Option A says that folk forms exhibit homogeneity. The author in the entire passage describes the diversity of folk and says it paves way for vivid imagination. "The very obscurity and anonymity of folk music's origins open up space for rampant imaginative fancies". Cecil Sharp cites an analogy of an oak tree to show the constant transformation of folk. Hence, this option is contradicting author's opinion and he is least likely to agree with it.

Question 16

The primary purpose of the reference to William Morris and his floral prints is to show:

A that despite its archaic origins, folk continues to remain a popular tradition.

B the pervasive influence of folk on contemporary art, culture, and fashion.

C that what is once regarded as radical in folk, can later be seen as conformist.

D that what was once derided as genteel is now considered revolutionary.

Answer: C

Explanation:
"Just as the effusive floral prints of the radical William Morris now cover genteel sofas, so the revolutionary intentions of many folk historians and revivalists have led to music that is commonly regarded as parochial and conservative.

Here the author compares two aspects. We know that William Morris is a radical conservationist as per para 1. (genteel refers to respectable/gentlemanly, genteel sofas refers to people in respectable place in life) As the footprints/views of William Morris becomes more popular i.e. as conservative folk forms once considered radical became more mainstream, similarly folk music which is considered parochial is now being revived by revivalists. The primary purpose is to show an analogy that a radical folk form became more mainstream/acceptable over time. This expression is best captured in option C

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Question 17

The author says that folk "may often appear a cosy, fossilised form" because:

A folk is a sonic "shabby chic" with an antique veneer.

B of its nostalgic association with a pre-industrial past.

C it has been arrogated for various political and cultural purposes.

D the notion of folk has led to several debates and disagreements.

Answer: B

Explanation:
"Free of the taint of manufacture" ..... been contested territory."

The phrase "Free of the taint of manufacture" is likely to have emerged post-industrialisation when conservationinsts(conserving status quo especially natural resources) fancied a pre-industrial age and expressed nostalgic attachment towards it. Hence the main point of the first paragraph can be summarised as "Conservationists envisioned a cosy folk form inspired by preindustrial times".

Hence option B is the correct answer

Question 18

Which of the following statements about folk revivalism of the 1940s and 1960s cannot be inferred from the passage?

A Electrification of music would not have happened without the influence of rock music.

B Even though it led to folk-rock's golden age, it wasn't entirely free from critique.

C It reinforced Cecil Sharp's observation about folk's constant transformation.

D Freedom and rebellion were popular themes during the second wave of folk revivalism.

Answer: A

Explanation:
" In the late 1960s, purists were suspicious of folk songs recast in rock idioms." Purists oppose any altercation or adaptation of original folk from and they criticized the adaptations by rock too. Hence, option B can be inferred

Folk music was inspired by revolutionary intentions in 1940s, various philosophies and school of thoughts in 1960s, Freedom of expression(Bob dylan) and psychedalia.

This shows a constant transformation of folk reinforcing the beliefs of Cecil Sharp. Option C is correct.
Option D can be rightly inferred from the lyrical freedom of bob dylan and revolutionary intentions in 1940s.

Option A : "In the late 1960s, purists were suspicious of folk songs recast in rock idioms. Electrification, however, comes in many forms." Even though the electrification of folk by rock was rejected by purists, electrification came in many forms and not individually by Rock alone. Hence, electrification of folk music is not causated by rock alone. Hence option A cannot be inferred.

Question 19

All of the following are causes for plurality and diversity within the British folk tradition EXCEPT:

A that British folk continues to have traces of pagan influence from the dark ages.

B paradoxically, folk forms are both popular and unpopular.

C the fluidity of folk forms owing to their history of oral mode of transmission.

D that British folk forms can be traced to the remote past of the country.

Answer: B

Explanation:
Option A and option D both signifies the inspiration of folk music from two different times. Folk is not limited to immediate past or to any

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specific time-line. This contributes to the plurality of folk music.

Option C talks about "fluidity". Fluidity indicates flexibility or different modes of oral rendition. For example different vocal styles can be generated by pitch, rhythm, style of rendition. Hence, the variance in oral transmission of music can lead to various iterations of one original form. Hence, this again contributes to the diversity and plurality of folk music.

Option B: Popularity or unpopularity is an opinion. An opinion in no way contributes to the diversity of a folk form. It might be regarded as diverse opinions but does not inherently contribute to the diversity of folk itself. Hence, option B does not contribute to folk's plurality.

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Instructions

In the past, credit for telling the tale of Aladdin has often gone to Antoine Galland . . . the first European translator of . . . Arabian Nights [which] started as a series of translations of an incomplete manuscript of a medieval Arabic story collection. . . But, though those tales were
of medieval origin, Aladdin may be a more recent invention. Scholars have not found a manuscript of the story that predates the version published in 1712 by Galland, who wrote in his diary that he first heard the tale from a Syrian storyteller from Aleppo named Hanna Diyab. . .

Despite the fantastical elements of the story, scholars now think the main character may actually be based on a real person's real experiences. . . . Though Galland never credited Diyab in his published translations of the Arabian Nights stories, Diyab wrote something of his own: a travelogue penned in the mid-18th century. In it, he recalls telling Galland the story of Aladdin [and] describes his own hard-knocks upbringing and the way he marveled at the extravagance of Versailles. The descriptions he uses were very similar to the descriptions of the lavish palace that ended up in Galland's version of the Aladdin story. [Therefore, author Paulo Lemos] Horta believes that "Aladdin might be the young Arab Maronite from Aleppo, marveling at the jewels and riches of Versailles." . . .

For 300 years, scholars thought that the rags-to-riches story of Aladdin might have been inspired by the plots of French fairy tales that came out around the same time, or that the story was invented in that 18th century period as a byproduct of French Orientalism, a fascination with stereotypical exotic Middle Eastern luxuries that was prevalent then. The idea that Diyab might have based it on his own life — the experiences of a Middle Eastern man encountering the French, not vice-versa — flips the script. [According to Horta,] "Diyab was ideally placed to embody the overlapping world of East and West, blending the storytelling traditions of his homeland with his youthful observations of the wonder of 18th-century France." . . .

To the scholars who study the tale, its narrative drama isn't the only reason storytellers keep finding reason to return to Aladdin. It reflects not only "a history of the French and the Middle East, but also [a story about] Middle Easterners coming to Paris and that speaks to our world
today," as Horta puts it. "The day Diyab told the story of Aladdin to Galland, there were riots due to food shortages during the winter and spring of 1708 to 1709, and Diyab was sensitive to those people in a way that Galland is not. When you read this diary, you see this solidarity
among the Arabs who were in Paris at the time. . . . There is little in the writings of Galland that would suggest that he was capable of developing a character like Aladdin with sympathy, but Diyab's memoir reveals a narrator adept at capturing the distinctive psychology of a young
protagonist, as well as recognizing the kinds of injustices and opportunities that can transform the path of any youthful adventurer."

Question 20

All of the following serve as evidence for the character of Aladdin being based on Hanna Diyab EXCEPT:

A Diyab's narration of the original story to Galland.

B Diyab's humble origins and class struggles, as recounted in his travelogue.

C Diyab's description of the wealth of Versailles in his travelogue.

D Diyab's cosmopolitanism and cross-cultural experience.

Answer: A

Explanation:
The passage says "describes his own hard-knocks upbringing and the way he marvelled at the extravagance of Versailles. The descriptions he uses were very similar to the descriptions of the lavish palace that ended up in Galland's version of the Aladdin story." Hence, option B and option C depicts the similarities of Hanna Diyab's life and Aladdin's character

Option D:"Diyab was ideally placed to embody the overlapping world of East and West, blending the storytelling traditions of his homeland with his youthful observations of the wonder of 18th-century France.". Since Diyab is a middle eastern man who came to France, his cross-culture experience would make him ideal to embody the character of Aladdin. Hence, option D gives evidence for the claim aladdin

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is based on hana diyab's life.

Option A: Even though Diyab narrated the story, he might have read it somewhere or heard it from someone else, it doesn't necessarily give any insight about its relationship with his life.

Question 21

Which of the following is the primary reason for why storytellers are still fascinated by the story of Aladdin?

A The traveller's experience that inspired the tale of Aladdin resonates even today.

B The archetype of the rags-to-riches story of Aladdin makes it popular even today.

C The tale of Aladdin documents the history of Europe and Middle East.

D The story of Aladdin is evidence of the eighteenth century French Orientalist attitude.

Answer: A

Explanation:
It reflects not only “a history of the French and the Middle East, but also [a story about] Middle Easterners coming to Paris and that speaks to our world today,”

The above statement indicates that the primary reason for scholars to go back to aladdin is the intrigue about middle easteners coming to paris.

Option B and D have references from third paragragh which is unrelated to the context.

While option C is one of the reasons, the primary reason as per the author is option A(traveller's experience indicates midleeasteners experience in france).

Option A can be considered as one of primary importance as he says "that speaks to the world today" highlighting the importance of middle-easteners coming to paris.

Question 22

Which of the following does not contribute to the passage’s claim about the authorship of Aladdin?

A The narrative sensibility of Diyab’s travelogue.

B Galland’s acknowledgment of Diyab in his diary.

C The story-line of many French fairy tales of the 18th century.

D The depiction of the affluence of Versailles in Diyab’s travelogue.

Answer: C

Explanation:
The narrative sensibility of Diyab’s travelogue indicates similarity in characters of Aladdin and Diyab in terms of sensibility, being considerate. Hence, option A strengthens the passage's claim about Aladdin's character having ties with that of Diyab

Option B, Galland's acknowledgement again indicates that Aladdin might be predated than 1712 and might have some roots associated with Diyab

Option D, The affluence in the story of Aladdin and Diyab's travelogue have major similarities. This suggests that Aladdin maybe based on Diyab's life experiences. Hence, it supports the passage's claim about authorship.

As per option C, the french fairy tales inform us about the probable cause/motive behind writing Aladdin but doesn't lead to information regarding its authorship.

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Question 23

The author of the passage is most likely to agree with which of the following explanations for the origins of the story of Aladdin?

A Basing it on his own life experiences, Diyab transmitted the story of Aladdin to Galland who included it in Arabian Nights.

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B Galland derived the story of Aladdin from Diyab's travelogue in which he recounts his fascination with the wealth of Versailles.

C The story of Aladdin has its origins in an undiscovered, incomplete manuscript of a medieval Arabic collection of stories.

D Galland received the story of Aladdin from Diyab who, in turn, found it in an incomplete medieval manuscript.

Answer: A

Explanation:
'"Galland wrote in his diary that he first heard the tale from a Syrian storyteller from Aleppo named Hanna Diyab

Since he heard the story, option B is incorrect.

Also, the first paragraph implies that - While Arabian nights predates to medieval times, the earliest appearance of Aladdin is in 1712. Hence, option C and D are incorrect.

"Transmit" means passing from one person to another. This can imply that Diyab told it to Galland. Also, Aladdin is one of the stories of "Arabian Nights" (Others include Alibaba & 40 thieves, Sindbad). Hence option A is correct.

Question 24

Which of the following, if true, would invalidate the inversion that the phrase "flips the script" refers to?

A Diyab's travelogue described the affluence of the French city of Bordeaux, instead of Versailles.

B The French fairy tales of the eighteenth century did not have rags-to-riches plot lines like that of the tale of Aladdin.

C The description of opulence in Hanna Diyab's and Antoine Galland's narratives bore no resemblance to each other.

D Galland acknowledged in the published translations of Arabian Nights that he heard the story of Aladdin from Diyab.

Answer: C

Explanation:
The second paragraph says that there are 2 possible motivations for writing the story of Aladdin, first being french fairy tales and second being French orientalism. He goes on to say, if aladdin is actually based on the life of hanna Diyab, then the idea of french orientalism is inversed.

"or that the story was invented in that 18th century period as a byproduct of French Orientalism, a fascination with stereotypical exotic Middle Eastern luxuries that was prevalent then. The idea that Diyab might have based it on his own life — the experiences of a Middle Eastern man encountering the French, not vice-versa — flips the script."

French Orientalism implies an intrigue of French towards Middle-eastern luxuries, while Diyab coming to france shows an interest of middle-easteners in France. Hence, the script is inversed if Aladdin's story is based on Hanna Diyab.
The question is looking for option which invalidates the inversion. This implies that the script shouldn't be inversed. This occurs when Aladdin's story is not based on Diyab.

Option C says that Diyab's travellogue doesn't bear any resemblance to Galland's Aladdin. This implies that Aladdin is not based on Diyab. Hence, the inversion of script doesn't occur/invalidated. None of the other options invalidate the script.

Hence, option C is correct

Instructions
For the following questions answer them individually

Question 25

Five sentences related to a topic are given below in a jumbled order. Four of them form a coherent and unified paragraph. Identify the odd sentence that does not go with the four. Key in the number of the option that you choose.
1. 'Stat' signaled something measurable, while 'matic' advert ised free labour; but 'tron', above all, indicated control.
2. It was a totem of high modernism, the intellectual and cultural mode that decreed no process or phenomenon was too complex to be grasped, managed and optimized.
3. Like the heraldic shields of ancient knights, these morphemes were painted onto the names of scientific technologies to proclaim one's history and achievements to friends and enemies alike.
4. The historian Robert Proctor at Stanford University calls the suffix '-tron', along with '-matic' and '-stat', embodied symbols.
5. To gain the suffix was to acquire a proud and optimistic emblem of the electronic and atomic age.

Answer:2

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Explanation:
Option 4 and option 5 are related as both statement start with a suffix.
While option 3 is a continuation of the idea in option 3

Option 5 says that the suffix signifies pride, while option 3 elaborates on this and explains how it is displayed as pride to friends and families alike. Hence 53 is a logical block.

Among all the statements, 4 is the only one which doesn't have a pronoun or a tone indicating the presence of a preceding statement.

While 4 opens the statement, it must be succeeded by 1 as the terms cannot be explained at the end.

The logical coherence of this para jumble is 4(Introduction of terms)-1(Explanation of terms)-5(Consequence of terms(Pride))-3(Elaboration of consequence)

Statement 2 speaks about modernism and that every phenomenon can be easily grasped. It is unrelated to the context of the passage and a misfit.

Hence, option 2 is the odd one out

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Question 26

The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and key in the sequence of the four numbers as your answer.
1. People with dyslexia have difficulty with print-reading, and people with autism spectrum disorder have difficulty with mind-reading.
2. An example of a lost cognitive instinct is mind-reading: our capacity to think of ourselves and others as having beliefs, desires, thoughts and feelings.
3. Mind-reading looks increasingly like literacy, a skill we know for sure is not in our genes, since scripts have been around for only 5,000-6,000 years.
4. Print-reading, like mind-reading varies across cultures, depends heavily on certain parts of the brain, and is subject to developmental disorders.

Answer:2341

Explanation:
Statement 1 displays a contrast of 2 kinds of reading. Logically these reading types must be defined before their negatives are discussed. This indicates that both statement 2 and 4 necessarily precede statement 1

Statement 4 and 1 form a logical block as statement 4 introduces the idea of developmental disorders while statement 1 cites example of such disorders.

Statement 4 cannot be opening as it has a phrase "like mind reading". While, Statement 3 can neither be an opening nor closing statement.

Hence, statement 2 is a good introductory statement as it starts by describing mind reading and statement 3 extends the idea of mindreading. As 3 doesn't fit anywhere else, it has to necessarily follow statement 2

Hence, the correct order is 2341

Question 27

The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and key in the sequence of the four numbers as your answer.
1. Metaphors may map to similar meanings across languages, but their subtle differences can have a profound effect on our understanding of the world.
2. Latin scholars point out carpe diem is a horticultural metaphor that, particularly seen in the context of its source, is more accurately translated as “plucking the day,” evoking the plucking and gathering of ripening fruits or flowers, enjoying a moment that is rooted in the sensory experience of nature, unrelated to the force implied in seizing.
3. The phrase carpe diem, which is often translated as “seize the day and its accompanying philosophy, has gone on to inspire countless people in how they live their lives and motivates us to see the world a little differently from the norm
4. It’s an example of one of the more telling ways that we mistranslate metaphors from one language to another, revealing in the process our hidden assumptions about what we really value.

Answer:3241

Explanation:

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Statement 3 and 2 form a natural block. While statement 3 describes "carpe diem", statement 4 explains how every language has subtle differences in its essence and interpretation. Statement 4 says "its an example of" suggesting to the logical block 32 which shows misinterpretation of metaphor. Hence, 324 forms a block. While statement 1 can serve as both opening as concluding closing statement. Both the sequesnces 3241 and 1324 seem accurate. Although CAT 2019, considered 3241 as the final answer to this parajumble with statement 1 concluding the paragragh.

Question 28

The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and key in the sequence of the four numbers as your answer.
1. We'll all live under mob rule until then, which doesn't help anyone.
2. Perhaps we need to learn to condense the feedback we receive online so that 100 replies carry the same weight as just one.
3. As we grow more comfortable with social media conversations being part of the way we interact every day, we are going to have to learn how to deal with legitimate criticism.
4. A new norm will arise where it is considered unacceptable to reply with the same point that dozens of others have already.

Answer:3241

Explanation:
Statement 1 suggests that we will live under mob-rule until a specific event occurs. Hence, it cannot be the opening statement.
Statement 2 is a suggestion to deal with criticism.
Statement 3 is a good opening statement as it sets the agenda for the passage.
Statement 4 says that in the upcoming future, repetitive criticism will not be permitted.

41 makes a logical block as statement 4 talks about a specific event, where mob frenzy attitude is curtailed by eliminating repetitive criticism. Until this occurs, we will live under mob-rule.

Statement 3 opens the passage that we need to learn to deal with criticism. While statement 2 extends the idea as to how one has to deal with criticism on a personal level. Then, the author speaks about curtailing mob culture by censoring repetitive criticism.

Hence, the correct logical order is 3241

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Question 29

The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

Vance Packard's The Hidden Persuaders alerted the public to the psychoanalytical techniques used by the advertising industry. Its premise was that advertising agencies were using depth interviews to identify hidden consumer motivations, which were then used to entice consumers to buy goods. Critics and reporters often wrongly assumed that Packard was writing mainly about subliminal advertising. Packard never mentioned the word subliminal, however, and devoted very little space to discussions of "subthreshold" effects. Instead, his views largely aligned with the notion that individuals do not always have access to their conscious thoughts and can be persuaded by supraliminal messages without their knowledge.

A Packard held that advertising as a 'hidden persuasion' understands the hidden motivations of consumers and works at the supraliminal level, though the people targeted have no awareness of being persuaded.

B Packard held that advertising as a 'hidden persuasion' builds on peoples' conscious thoughts and awareness, by understanding the hidden motivations of consumers and works at the subliminal level.

C Packard argued that advertising as a 'hidden persuasion' works at the supraliminal level, wherein the people targeted are aware of being persuaded, after understanding the hidden motivations of consumers and works.

D Packard argued that advertising as a 'hidden persuasion' understands the hidden motivations of consumers and works at the subliminal level, on the subconscious level of the awareness of the people targeted.

Answer: A

Explanation:
In this context, "Psychoanalytical analytical technique" implies that the advertising agencies are adapting methods to tap into the unconscious mind of the consumers. They are conducting detailed interviews to identify hidden motivations.

Here, subliminal advertising represents some portion of the ad being difficult to comprehend or simply put, when one of the motives of the ad is so subtle that it is difficult to be understood by a layman.

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While supraliminal advertising can be clearly conceived by most people.

Packard claims that the 'Hidden persuaders' use supraliminal advertising to entice customers by tapping into consumers without their knowledge. (....can be persuaded by supraliminal messages without their knowledge.)

Option B and D say that the method is subliminal, hence, it is incorrect
Option C says that people are well aware about being persuaded, hence incorrect.
Option A is a wholesome summary of the method of persuation.

Question 30

The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

A distinguishing feature of language is our ability to refer to absent things, known as displaced reference. A speaker can bring distant referents to mind in the absence of any obvious stimuli. Thoughts, not limited to the here and now, can pop into our heads for unfathomable reasons. This ability to think about distant things necessarily precedes the ability to talk about them. Thought precedes meaningful referential communication. A prerequisite for the emergence of human-like meaningful symbols is that the mental categories they relate to can be invoked even in the absence of immediate stimuli.

A Displaced reference is particular to humans and thoughts pop into our heads for no real reason.

B Thoughts precede all speech acts and these thoughts pop up in our heads even in the absence of any stimulus.

C Thoughts are essential to communication and only humans have the ability to think about objects not present in their surroundings.

D The ability to think about objects not present in our environment precedes the development of human communication.

Answer: D

Explanation:
The paragraph says that humans think about past occurrences suddenly without any immediate stimuli.
The author also says that thinking/thoughts about a certain distant past is a necessity before one can speak about it.
He says that thoughts are a pre-requisite before one talks about it. He also gives an example that various human-like symbols might have emerged without any immediate stimuli.

Option A and C: There is no mention of specificity to humans in the passage
Option B : "All speech acts" is a false generalisation. The passage says that speaking about distant past requires thinking about it first
Option D : It clearly captures the essence of the passage and says that one needs to think about distant past events before talking about them
Hence option D is correct.

Question 31

The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and key in the sequence of the four numbers as your answer.
1. If you've seen a little line of text on websites that says something like "customers who bought this also enjoyed that" you have experienced this collaborative filtering firsthand.
2. The problem with these algorithms is that they don't take into account a host of nuances and circumstances that might interfere with their accuracy.
3. If you just bought a gardening book for your cousin, you might get a flurry of links to books about gardening, recommended just for you! - the algorithm has no way of knowing you hate gardening and only bought the book as a gift.
4. Collaborative filtering is a mathematical algorithm by which correlations and cooccurrences of behaviors are tracked and then used to make recommendations.

Answer:4123

Explanation:
Statement 1 says "this collaborative filtering". Here "this" refers to a likely preceding statement which explains about collaborative filtering. While statement 1 is an example of collaborative filtering.
Statement 2 starts with "these algorithms". This doesn't look like an opening statement as it describes a certain algorithm ("these").
Statement 3 is explaining about the flaw in the algorithm
Statement 4 makes for a good opening statement
Statement 41 makes a logical block as the example in 1 refers to collaborative filtering of statement 4
Statement 2 must appear soon after the logical block of 41 as it contains the phrase "these algorithms". While statement 2 explains the problem in the algorithm, statement 3 extends the idea of the problem.

Statement 4 : Introduces collaborative filtering

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Statement 1 : Given an example of collaborative filtering
Statement 2 : Speaks about the drawback in the algorithm
Statement 3 : Gives an example of the drawback

Hence the logically coherent order is 4123

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Question 32

Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.
Choose its number as your answer and key it in.
1. His idea to use sign language was not a compl etely new idea as Native Americans used hand gestures to communicate with other tribes.
2. Ancient Greek philosopher Aristotle, for example, observed that men who are deaf are incapable of speech.
3. People who were born deaf were denied the right to sign a will as they were "presumed to understand nothing; because it is not possible that they have been able to learn to read or write."
4. Pushback against this prejudice began in the 16th century when Pedro Ponce de León created a formal sign language for the hearing impaired.
5. For millennia, people with hearing impairments encountered marginalization because it was believed that language could only be learned by hearing the spoken word.

Answer:2

Explanation:
Statement 34 makes a logical block as statement 4 speaks about "this prejudice" against deaf people. While statement 3 highlights the prejudice by saying that they were considered to be dumb and not allowed to sign a will.

The idea of sign language is continued in statement 1 where the pronoun "he" refers to pedro and the statement discusses about the origin of the sign language.

Statement 5 is a good opening statement as it introduces the idea of discrimination against deaf and this idea is continued by an example in statement 3. Hence these statements can be arranged in the order 5341.

Statement 2 is a good standalone opening statement. Yet, this statement cannot be succeeded by any of the other statements as it is a misfit in the paragraph.

Hence statement 2 is the odd one out

Question 33

The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

Physics is a pure science that seeks to understand the behavior of matter without regard to whether it will afford any practical benefit. Engineering is the correlative applied science in which physical theories are put to some specific use, such as building a bridge or a nuclear reactor. Engineers obviously rely heavily on the discoveries of physicists, but an engineer's knowledge of the world is not the same as
the physicist's knowledge. In fact, an engineer's know-how will often depend on physical theories that, from the point of view of pure physics, are false. There are some reasons for this. First, theories that are false in the purest and strictest sense are still sometimes very good approximations to the true ones, and often have the added virtue of being much easier to work with. Second, sometimes the true theories
apply only under highly idealized conditions which can only be created under controlled experimental situations. The engineer finds that in the real world, theories rejected by physicists yield more accurate predictions than the ones that they accept.

A Though engineering draws heavily from pure science, it contributes to knowledge, by incorporating the constraints and conditions in the real world.

B Engineering and physics fundamentally differ on matters like building a bridge or a nuclear reactor.

C The relationship between pure and applied science is strictly linear, with the pure science directing applied science, and never the other way round.

D The unique task of the engineer is to identify, understand, and interpret the design constraints to produce a successful result.

Answer: A

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Explanation:
The passage says that pure science intends to discover without any end-goal in mind. While engineers use these benefits for practical applications. The author says that the science behind these practical applications are often considered false by pure science since they are approximated or not applied as per ideal conditions. In any case, even though they are rejected, these approximated science theories find lot of practical applications in everyday life.

Option A is correct. By diluting science, these theories are put into practical benefits. Hence, option A is correct

Option B is incorrect as no such implication can be drawn from the passage

Option C is incorrect. Linear relationship indicates that, if a certain theory is rejected by pure science, it is bound to be rejected by applied science too. This is clearly not the case as engineers use rejected theories for practical benefits.

Option D speaks only about engineers and has no reference to sciences or the main point of the paragraph. The paragraph intends to compare the functionalities of scientists and engineers while option D is specific to engineers and does not encapsulate the essence of the paragraph.

Hence, by way of elimination Option A is the most suitable summary

Question 34

Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.
Choose its number as your answer and key it in.
1. One argument is that actors that do not fit within a single, well-defined category may suffer an "illegitimacy discount".
2. Others believe that complex identities confuse audiences about an organization's role or purpose.
3. Some organizations have complex and multidimensional identities that span or combine categories, while other organizations possess narrow identities.
4. Identity is one of the most important features of organizations, but there exist opposing views among sociologists about how identity affects organizational performance.
5. Those who think that complex identities are beneficial point to the strategic advantages of ambiguity, and organizations' potential to differentiate themselves from competitors.

Answer:1

Explanation:
Statement 1 says that actors who do not fit within a certain category such as "humour", "action" etc will face certain difficulty

Statement 2 has a negative tone. It starts with "others" indicating that the preceding statement is likely to have a positive tone.

Statement 4 is a good opening statement as it sets the agenda for the passage by saying that there are opposing views with regard to effects of identities in organisations.

Statement 5 is a favourable view to complex identities, a positive tone. Hence 52 is a logical block.

Statement 3 cannot open the paragraph as the succeeding statement 4 will be disconnected to the central idea of statement 1. Statement 3 can neither be a conclusion as it is too generic. Hence, statement 3 can logically occur only after statement 4 and before the logical block 52.

4 - Idea of organisational identity introduced
3 - One of the features of organisational identities explained
52 - Two opposing views expressed

Statement 1 is unrelated to organisational identity as it speaks about stereotyping the actors.
Hence statement 1 is odd one out

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Instructions

A supermarket has to place 12 items (coded A to L) in shelves numbered 1 to 16. Five of these items are types of biscuits, three are types of candies and the rest are types of savouries. Only one item can be kept in a shelf. Items are to be placed such that all items of same type are clustered together with no empty shelf between items of the same type and at least one empty shelf between two different types of items. At most two empty shelves can have consecutive numbers.
The following additional facts are known.
1. A and B are to be placed in consecutively numbered shelves in increasing order.

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2. I and J are to be placed in consecutively numbered shelves both higher numbered than the shelves in which A and B are kept.
3. D, E and F are savouries and are to be placed in consecutively numbered shelves in increasing order after all the biscuits and candies.
4. K is to be placed in shelf number 16.
5. L and J are items of the same type, while H is an item of a different type.
6. C is a candy and is to be placed in a shelf preceded by two empty shelves.
7. L is to be placed in a shelf preceded by exactly one empty shelf.

Question 35

In how many different ways can the items be arranged on the shelves?

A 8

B 4

C 2

D 1

Answer: A

Explanation:
The total number of biscuits = 5, the total number of candies =3 and the total number of savouries = 12-(3+5)=4

Representing the candies as C, biscuits as B and savories as S. K is to be placed in shelf number 16. D, E and F are savouries and are to be placed in consecutively numbered shelves in increasing order after all the biscuits and candies. Since there is no empty shelf between the items of same type, D,E,F and K are savouries and placed at 13,14,15 and 16 respectively. This can be tabulated as follows:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code													D	E	F	K
Item Type													S	S	S	S

The shelf 12 will be empty.

It is given that items are to be placed such that all items of same type are clustered together.

From 1, A and B are to be placed in consecutively numbered shelves in increasing order.

From 6, C is a candy and is to be placed in a shelf preceded by two empty shelves and from 7, L is to be placed in a shelf preceded by exactly one empty shelf.

Hence C and L are items of different types. Since C is a candy, L will be a biscuit.

From 5, L and J are items of the same type, while H is an item of a different type.

Since I and J are clustered together, I, J and L are biscuits and H is a candy.

So C,H are candies and I,J,L are biscuits. It is given that A, B are place consecutively. Hence A and B are items of same types. So A, B should be biscuits because if they are candies, there will be 4 candies.

Hence, I,J,L,A,B are biscuits and C,H and G are candies.

Now there are two empty shelves before C and exactly one empty shelf before L, then the different cases can be tabulated as follows:

Case 1:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code	__	L	A	B	I/J	J/I	___	___	C	H/G	G/H	___	D	E	F	K
Item Type	__	B	B	B	B	B	___	___	C	C	C	___	S	S	S	S

Case 2:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code	__	__	C	H/G	G/H	__	L	A	B	I/J	J/I	___	D	E	F	K
Item Type	__	__	C	C	C	___	B	B	B	B	B	___	S	S	S	S

The number of arrangements for the first case = 2*2=4

The number of arrangements for the second case = 2*2=4

The total number of arrangements = 4+4=8

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Important Verbal Ability Questions for CAT (Download PDF)

Question 36

Which of the following items is not a type of biscuit?

A L

B A

C B

D G

Answer: D

Explanation:
The total number of biscuits = 5, the total number of candies =3 and the total number of savouries = 12-(3+5)=4

Representing the candies as C, biscuits as B and savories as S. K is to be placed in shelf number 16. D, E and F are savouries and are to be placed in consecutively numbered shelves in increasing order after all the biscuits and candies. Since there is no empty shelf between the items of same type, D,E,F and K are savouries and placed at 13,14,15 and 16 respectively. This can be tabulated as follows:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code													D	E	F	K
Item Type													S	S	S	S

The shelf 12 will be empty.

It is given that items are to be placed such that all items of same type are clustered together.

From 1, A and B are to be placed in consecutively numbered shelves in increasing order.

From 6, C is a candy and is to be placed in a shelf preceded by two empty shelves and from 7, L is to be placed in a shelf preceded by exactly one empty shelf.

Hence C and L are items of different types. Since C is a candy, L will be a biscuit.

From 5, L and J are items of the same type, while H is an item of a different type.

Since I and J are clustered together, I, J and L are biscuits and H is a candy.

So C,H are candies and I,J,L are biscuits. It is given that A, B are place consecutively. Hence A and B are items of same types. So A, B should be biscuits because if they are candies, there will be 4 candies.

Hence, I,J,L,A,B are biscuits and C,H and G are candies.

Now there are two empty shelves before C and exactly one empty shelf before L, then the different cases can be tabulated as follows:

Case 1:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code	__	L	A	B	I/J	J/I	___	___	C	H/G	G/H	___	D	E	F	K
Item Type	__	B	B	B	B	B	___	___	C	C	C	___	S	S	S	S

Case 2:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code	__	__	C	H/G	G/H	__	L	A	B	I/J	J/I	___	D	E	F	K
Item Type	__	__	C	C	C	___	B	B	B	B	B	___	S	S	S	S

G is a candy. Hence D is the answer.

Question 37

Which of the following can represent the numbers of the empty shelves in a possible arrangement?

A 1, 7, 11, 12

B 1, 5, 6, 12

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C 1, 2, 6, 12

D 1, 2, 8, 12

Answer: C

Explanation:
The total number of biscuits = 5, the total number of candies =3 and the total number of savouries = 12-(3+5)=4

Representing the candies as C, biscuits as B and savories as S. K is to be placed in shelf number 16. D, E and F are savouries and are to be placed in consecutively numbered shelves in increasing order after all the biscuits and candies. Since there is no empty shelf between the items of same type, D,E,F and K are savouries and placed at 13,14,15 and 16 respectively. This can be tabulated as follows:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code													D	E	F	K
Item Type													S	S	S	S

The shelf 12 will be empty.

It is given that items are to be placed such that all items of same type are clustered together.

From 1, A and B are to be placed in consecutively numbered shelves in increasing order.

From 6, C is a candy and is to be placed in a shelf preceded by two empty shelves and from 7, L is to be placed in a shelf preceded by exactly one empty shelf.

Hence C and L are items of different types. Since C is a candy, L will be a biscuit.

From 5, L and J are items of the same type, while H is an item of a different type.

Since I and J are clustered together, I, J and L are biscuits and H is a candy.

So C,H are candies and I,J,L are biscuits. It is given that A, B are place consecutively. Hence A and B are items of same types. So A, B should be biscuits because if they are candies, there will be 4 candies.

Hence, I,J,L,A,B are biscuits and C,H and G are candies.

Now there are two empty shelves before C and exactly one empty shelf before L, then the different cases can be tabulated as follows:

Case 1:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code	__	L	A	B	I/J	J/I	___	___	C	H/G	G/H	___	D	E	F	K
Item Type	__	B	B	B	B	B	___	___	C	C	C	___	S	S	S	S

Case 2:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code	__	__	C	H/G	G/H	__	L	A	B	I/J	J/I	___	D	E	F	K
Item Type	__	__	C	C	C	___	B	B	B	B	B	___	S	S	S	S

From the table(case 2), only 1,2,6 and 12 are empty in the same arrangement. Hence, C is the answer.

Question 38

Which of the following statements is necessarily true?

A All biscuits are kept before candies.

B There are two empty shelves between the biscuits and the candies.

C All candies are kept before biscuits.

D There are at least four shelves between items B and C.

Answer: D

Explanation:
The total number of biscuits = 5, the total number of candies =3 and the total number of savouries = 12-(3+5)=4

Representing the candies as C, biscuits as B and savories as S. K is to be placed in shelf number 16. D, E and F are savouries and are to be placed in consecutively numbered shelves in increasing order after all the biscuits and candies. Since there is no empty shelf between the items of same type, D,E,F and K are savouries and placed at 13,14,15 and 16 respectively. This can be tabulated as follows:

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Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code													D	E	F	K
Item Type													S	S	S	S

The shelf 12 will be empty.

It is given that items are to be placed such that all items of same type are clustered together.

From 1, A and B are to be placed in consecutively numbered shelves in increasing order.

From 6, C is a candy and is to be placed in a shelf preceded by two empty shelves and from 7, L is to be placed in a shelf preceded by exactly one empty shelf.

Hence C and L are items of different types. Since C is a candy, L will be a biscuit.

From 5, L and J are items of the same type, while H is an item of a different type.

Since I and J are clustered together, I, J and L are biscuits and H is a candy.

So C,H are candies and I,J,L are biscuits. It is given that A, B are place consecutively. Hence A and B are items of same types. So A, B should be biscuits because if they are candies, there will be 4 candies.

Hence, I,J,L,A,B are biscuits and C,H and G are candies.

Now there are two empty shelves before C and exactly one empty shelf before L, then the different cases can be tabulated as follows:

Case 1:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code	__	L	A	B	I/J	J/I	___	___	C	H/G	G/H	___	D	E	F	K
Item Type	__	B	B	B	B	B	___	___	C	C	C	___	S	S	S	S

Case 2:

Shelf No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Item Code	__	__	C	H/G	G/H	__	L	A	B	I/J	J/I	___	D	E	F	K
Item Type	__	__	C	C	C	___	B	B	B	B	B	___	S	S	S	S

Option A and C are wrong as candies can come before biscuits and vice versa. B is not necessarily true as there can be one empty shelf too as shown in the table. Option D is true as there are at least 4 shelves between B and C. Hence D is the answer.

CAT Percentile Predictor

Instructions

Six players - Tanzi, Umeza, Wangdu, Xyla, Yonita and Zeneca competed in an archery tournament. The tournament had three compulsory rounds, Rounds 1 to 3. In each round every player shot an arrow at a target. Hitting the centre of the target (called bull's eye) fetched the highest score of 5. The only other possible scores that a player could achieve were 4, 3, 2 and 1. Every bull's eye score in the first three rounds gave a player one additional chance to shoot in the bonus rounds, Rounds 4 to 6. The possible scores in Rounds 4 to 6 were identical to the first three.

A player's total score in the tournament was the sum of his/her scores in all rounds played by him/her. The table below presents partial information on points scored by the players after completion of the tournament. In the table, NP means that the player did not participate in that round, while a hyphen means that the player participated in that round and the score information is missing.

	Round-1	Round-2	Round-3	Round-4	Round-5	Round-6
Tanzi	-	4	-	5	NP	NP
Umeza	-	-	-	1	2	NP
Wangdu	-	4	-	NP	NP	NP
Xyla	-	-	-	1	5	-
Yonita	-	-	3	5	NP	NP
Zeneca	-	-	-	5	5	NP

The following facts are also known.
1.Tanzi, Umeza and Yonita had the same total score.
2.Total scores for all players, except one, were in multiples of three.
3.The highest total score was one more than double of the lowest total score.
4.The number of players hitting bull's eye in Round 2 was double of that in Round 3.
5.Tanzi and Zeneca had the same score in Round 1 but different scores in Round 3.

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Question 39

What was the highest total score?

A 25

B 21

C 24

D 23

Answer: A

Explanation:

	Round-1	Round-2	Round-3	Round-4	Round-5	Round-6
Tanzi	-	4	-	5	NP	NP
Umeza	-	-	-	1	2	NP
Wangdu	-	4	-	NP	NP	NP
Xyla	-	-	-	1	5	-
Yonita	-	-	3	5	NP	NP
Zeneca	-	-	-	5	5	NP

It is given that every bull's eye score in the first three rounds gave a player one additional chance to shoot in the bonus rounds, Rounds 4 to 6, which means Tanzi scored Bull's eye only once in the first 3 rounds because she participated only once in round 4 to 6.
Similarly, Umeza scored Bull's eye exactly 2 times in the first 3 rounds. Wangdu did not score Bull's eye in the first three rounds and so on.

Now from 1, Tanzi, Umeza and Yonita had the same total score.

So, Total score of Tanzi will be 4+5+5+a=14+a, (She scored Bull's eye(a score of 5) in exactly one round and a is the unknown score)

Total score of Umeza = 1+2+5+5+b = 13+b (She scored Bull's eye(a score of 5) in exactly 2 rounds and b is the unknown score)

Total score of Yonita = 3+5+5+c=13+c (She scored Bull's eye(a score of 5) in exactly one round and c is the unknown score)

Now 14+a=13+b=13+c,

Also it is given that total scores for all players, except one, were in multiples of three, so these three will have to be a multiple of 3.

So, (a,b,c) can be either (1,2,2) or (4,5,5) in the same order. But the value (5,5) for b and c is not possible. (Umeza scored Bull's eye in exactly 2 rounds and Yonita in exactly 1 round)

Hence, a=1,b=2 and c=2. So each of Tanzi, Umeza and Yonita had total score of 15.

Tabulating the data, we have

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	1/5	4	1/5	5	NP	NP	15
Umeza	5/5/2	5/5/2	5/5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2/5	2/5	3	5	NP	NP	15
Zeneca	-	-	-	5	5	NP	-

From 5, Tanzi and Zeneca had the same score in Round 1 but different scores in Round 3.

Zeneca score Bull's eye 2 times in round 1 to 3. If Tanzi scored 1 in round 1, then Zeneca also has to score 1 in round 1, which means both Tanzi and Zeneca scores in round 3 will be 5, which violates 5. Hence Tanzi scored 5 in round 1 and Zeneca also scored the same in round 1.So the new table is:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	5/5/2	5/5/2	5/5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2/5	2/5	3	5	NP	NP	15
Zeneca	5	5/(2/3/4)	5/(2/3/4)	5	5	NP	-

From 4, the number of players hitting bull's eye in Round 2 was double of that in Round 3.

So, in round 3 either 1 or 2 Bull's eye can be scored and in round 2, 2 or 4 Bull's eye can be scored.

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Case 1: If only 1 Bull's eye is scored in the round 3, then in round 3 Umeza will score 2 and Zeneca will score 2/3/4 in round 3, which means both will score 5 in round 2. So minimum Bull's eye in round 2 will be 3. (Umeza, Zeneca and Xyla)

Hence this case is rejected.

Case 2: 2 Bull's eye were scored in round 3 and 4 Bull's eye were scored in round 2. So in round 2 Umeza, Yonita and Zeneca scored 5. This can be tabulated as:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	5/2	5	5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	(2/3/4)	5	5	NP	-

In round 3, 2 Bull's eye can only be scored by Xyla and Umeza.

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	2	5	5	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	(2/3/4)	5	5	NP	22-24

The highest scorer can be either Xyla or Zeneca. The lowest scorer will be Wangdu.

1.Consider Zeneca is the highest scorer.

From 3, the highest total score was one more than double of the lowest total score. So the only possible score for Zeneca is 23 and that for Wangdu is 11. (11*2+1=23)

But this will violate condition 2, since both Zeneca and Wangdu do not have their scores as multiples of three in this case.

Hence, Xyla will be the highest scorer. The only possible total score for Xyla will be 25, and that for Wangdu is 12(4+4+4). (12*2+1=25)

Since Xyla already has non-multiple of 3 as total score. Zeneca will have 24 as the total score. The complete table is:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	2	5	5	1	2	NP	15
Wangdu	4	4	4	NP	NP	NP	12
Xyla	5	5	5	1	5	4	25
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	4	5	5	NP	24

The highest score is 25.

Question 40

What was Zeneca's total score?

A 21

B 22

C 23

D 24

Answer: D

Explanation:

	Round-1	Round-2	Round-3	Round-4	Round-5	Round-6
Tanzi	-	4	-	5	NP	NP
Umeza	-	-	-	1	2	NP
Wangdu	-	4	-	NP	NP	NP
Xyla	-	-	-	1	5	-
Yonita	-	-	3	5	NP	NP
Zeneca	-	-	-	5	5	NP

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It is given that every bull's eye score in the first three rounds gave a player one additional chance to shoot in the bonus rounds, Rounds 4 to 6, which means Tanzi scored Bull's eye only once in the first 3 rounds because she participated only once in round 4 to 6.
Similarly, Umeza scored Bull's eye exactly 2 times in the first 3 rounds. Wangdu did not score Bull's eye in the first three rounds and so on.

Now from 1, Tanzi, Umeza and Yonita had the same total score.

So, Total score of Tanzi will be 4+5+5+a=14+a, (She scored Bull's eye(a score of 5) in exactly one round and a is the unknown score)

Total score of Umeza = 1+2+5+5+b = 13+b (She scored Bull's eye(a score of 5) in exactly 2 rounds and b is the unknown score)

Total score of Yonita = 3+5+5+c=13+c (She scored Bull's eye(a score of 5) in exactly one round and c is the unknown score)

Now 14+a=13+b=13+c,

Also it is given that total scores for all players, except one, were in multiples of three, so these three will have to be a multiple of 3.

So, (a,b,c) can be either (1,2,2) or (4,5,5) in the same order. But the value (5,5) for b and c is not possible. (Umeza scored Bull's eye in exactly 2 rounds and Yonita in exactly 1 round)

Hence, a=1,b=2 and c=2. So each of Tanzi, Umeza and Yonita had total score of 15.

Tabulating the data, we have

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	1/5	4	1/5	5	NP	NP	15
Umeza	5/5/2	5/5/2	5/5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2/5	2/5	3	5	NP	NP	15
Zeneca	-	-	-	5	5	NP	-

From 5, Tanzi and Zeneca had the same score in Round 1 but different scores in Round 3.

Zeneca score Bull's eye 2 times in round 1 to 3. If Tanzi scored 1 in round 1, then Zeneca also has to score 1 in round 1, which means both Tanzi and Zeneca scores in round 3 will be 5, which violates 5. Hence Tanzi scored 5 in round 1 and Zeneca also scored the same in round 1.So the new table is:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	5/5/2	5/5/2	5/5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2/5	2/5	3	5	NP	NP	15
Zeneca	5	5/(2/3/4)	5/(2/3/4)	5	5	NP	-

From 4, the number of players hitting bull's eye in Round 2 was double of that in Round 3.

So, in round 3 either 1 or 2 Bull's eye can be scored and in round 2, 2 or 4 Bull's eye can be scored.

Case 1: If only 1 Bull's eye is scored in the round 3, then in round 3 Umeza will score 2 and Zeneca will score 2/3/4 in round 3, which means both will score 5 in round 2. So minimum Bull's eye in round 2 will be 3. (Umeza, Zeneca and Xyla)

Hence this case is rejected.

Case 2: 2 Bull's eye were scored in round 3 and 4 Bull's eye were scored in round 2. So in round 2 Umeza, Yonita and Zeneca scored 5. This can be tabulated as:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	5/2	5	5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	(2/3/4)	5	5	NP	-

In round 3, 2 Bull's eye can only be scored by Xyla and Umeza.

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	2	5	5	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	(2/3/4)	5	5	NP	22-24

The highest scorer can be either Xyla or Zeneca. The lowest scorer will be Wangdu.

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1.Consider Zeneca is the highest scorer.

From 3, the highest total score was one more than double of the lowest total score. So the only possible score for Zeneca is 23 and that for Wangdu is 11. (11*2+1=23)

But this will violate condition 2, since both Zeneca and Wangdu do not have their scores as multiples of three in this case.

Hence, Xyla will be the highest scorer. The only possible total score for Xyla will be 25, and that for Wangdu is 12(4+4+4). (12*2+1=25)

Since Xyla already has non-multiple of 3 as total score. Zeneca will have 24 as the total score. The complete table is:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	2	5	5	1	2	NP	15
Wangdu	4	4	4	NP	NP	NP	12
Xyla	5	5	5	1	5	4	25
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	4	5	5	NP	24

Zeneca total score is 24.

Question 41

Which of the following statements is true?

A Xyla's score was 23.

B Zeneca's score was 23.

C Zeneca was the highest scorer.

D Xyla was the highest scorer.

Answer: D

Explanation:

	Round-1	Round-2	Round-3	Round-4	Round-5	Round-6
Tanzi	-	4	-	5	NP	NP
Umeza	-	-	-	1	2	NP
Wangdu	-	4	-	NP	NP	NP
Xyla	-	-	-	1	5	-
Yonita	-	-	3	5	NP	NP
Zeneca	-	-	-	5	5	NP

It is given that every bull's eye score in the first three rounds gave a player one additional chance to shoot in the bonus rounds, Rounds 4 to 6, which means Tanzi scored Bull's eye only once in the first 3 rounds because she participated only once in round 4 to 6.
Similarly, Umeza scored Bull's eye exactly 2 times in the first 3 rounds. Wangdu did not score Bull's eye in the first three rounds and so on.

Now from 1, Tanzi, Umeza and Yonita had the same total score.

So, Total score of Tanzi will be 4+5+5+a=14+a, (She scored Bull's eye(a score of 5) in exactly one round and a is the unknown score)

Total score of Umeza = 1+2+5+5+b = 13+b (She scored Bull's eye(a score of 5) in exactly 2 rounds and b is the unknown score)

Total score of Yonita = 3+5+5+c=13+c (She scored Bull's eye(a score of 5) in exactly one round and c is the unknown score)

Now 14+a=13+b=13+c,

Also it is given that total scores for all players, except one, were in multiples of three, so these three will have to be a multiple of 3.

So, (a,b,c) can be either (1,2,2) or (4,5,5) in the same order. But the value (5,5) for b and c is not possible. (Umeza scored Bull's eye in exactly 2 rounds and Yonita in exactly 1 round)

Hence, a=1,b=2 and c=2. So each of Tanzi, Umeza and Yonita had total score of 15.

Tabulating the data, we have

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	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	1/5	4	1/5	5	NP	NP	15
Umeza	5/5/2	5/5/2	5/5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2/5	2/5	3	5	NP	NP	15
Zeneca	-	-	-	5	5	NP	-

From 5, Tanzi and Zeneca had the same score in Round 1 but different scores in Round 3.

Zeneca score Bull's eye 2 times in round 1 to 3. If Tanzi scored 1 in round 1, then Zeneca also has to score 1 in round 1, which means both Tanzi and Zeneca scores in round 3 will be 5, which violates 5. Hence Tanzi scored 5 in round 1 and Zeneca also scored the same in round 1.So the new table is:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	5/5/2	5/5/2	5/5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2/5	2/5	3	5	NP	NP	15
Zeneca	5	5/(2/3/4)	5/(2/3/4)	5	5	NP	-

From 4, the number of players hitting bull's eye in Round 2 was double of that in Round 3.

So, in round 3 either 1 or 2 Bull's eye can be scored and in round 2, 2 or 4 Bull's eye can be scored.

Case 1: If only 1 Bull's eye is scored in the round 3, then in round 3 Umeza will score 2 and Zeneca will score 2/3/4 in round 3, which means both will score 5 in round 2. So minimum Bull's eye in round 2 will be 3. (Umeza, Zeneca and Xyla)

Hence this case is rejected.

Case 2: 2 Bull's eye were scored in round 3 and 4 Bull's eye were scored in round 2. So in round 2 Umeza, Yonita and Zeneca scored 5. This can be tabulated as:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	5/2	5	5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	(2/3/4)	5	5	NP	-

In round 3, 2 Bull's eye can only be scored by Xyla and Umeza.

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	2	5	5	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	(2/3/4)	5	5	NP	22-24

The highest scorer can be either Xyla or Zeneca. The lowest scorer will be Wangdu.

1.Consider Zeneca is the highest scorer.

From 3, the highest total score was one more than double of the lowest total score. So the only possible score for Zeneca is 23 and that for Wangdu is 11. (11*2+1=23)

But this will violate condition 2, since both Zeneca and Wangdu do not have their scores as multiples of three in this case.

Hence, Xyla will be the highest scorer. The only possible total score for Xyla will be 25, and that for Wangdu is 12(4+4+4). (12*2+1=25)

Since Xyla already has non-multiple of 3 as total score. Zeneca will have 24 as the total score. The complete table is:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	2	5	5	1	2	NP	15
Wangdu	4	4	4	NP	NP	NP	12
Xyla	5	5	5	1	5	4	25
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	4	5	5	NP	24

Xyla was the highest scorer.

About CAT exam

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Question 42

What was Tanzi's score in Round 3?

A 4

B 5

C 3

D 1

Answer: D

Explanation:

	Round-1	Round-2	Round-3	Round-4	Round-5	Round-6
Tanzi	-	4	-	5	NP	NP
Umeza	-	-	-	1	2	NP
Wangdu	-	4	-	NP	NP	NP
Xyla	-	-	-	1	5	-
Yonita	-	-	3	5	NP	NP
Zeneca	-	-	-	5	5	NP

It is given that every bull's eye score in the first three rounds gave a player one additional chance to shoot in the bonus rounds, Rounds 4 to 6, which means Tanzi scored Bull's eye only once in the first 3 rounds because she participated only once in round 4 to 6.
Similarly, Umeza scored Bull's eye exactly 2 times in the first 3 rounds. Wangdu did not score Bull's eye in the first three rounds and so on.

Now from 1, Tanzi, Umeza and Yonita had the same total score.

So, Total score of Tanzi will be 4+5+5+a=14+a, (She scored Bull's eye(a score of 5) in exactly one round and a is the unknown score)

Total score of Umeza = 1+2+5+5+b = 13+b (She scored Bull's eye(a score of 5) in exactly 2 rounds and b is the unknown score)

Total score of Yonita = 3+5+5+c=13+c (She scored Bull's eye(a score of 5) in exactly one round and c is the unknown score)

Now 14+a=13+b=13+c,

Also it is given that total scores for all players, except one, were in multiples of three, so these three will have to be a multiple of 3.

So, (a,b,c) can be either (1,2,2) or (4,5,5) in the same order. But the value (5,5) for b and c is not possible. (Umeza scored Bull's eye in exactly 2 rounds and Yonita in exactly 1 round)

Hence, a=1,b=2 and c=2. So each of Tanzi, Umeza and Yonita had total score of 15.

Tabulating the data, we have

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	1/5	4	1/5	5	NP	NP	15
Umeza	5/5/2	5/5/2	5/5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2/5	2/5	3	5	NP	NP	15
Zeneca	-	-	-	5	5	NP	-

From 5, Tanzi and Zeneca had the same score in Round 1 but different scores in Round 3.

Zeneca score Bull's eye 2 times in round 1 to 3. If Tanzi scored 1 in round 1, then Zeneca also has to score 1 in round 1, which means both Tanzi and Zeneca scores in round 3 will be 5, which violates 5. Hence Tanzi scored 5 in round 1 and Zeneca also scored the same in round 1.So the new table is:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	5/5/2	5/5/2	5/5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2/5	2/5	3	5	NP	NP	15
Zeneca	5	5/(2/3/4)	5/(2/3/4)	5	5	NP	-

From 4, the number of players hitting bull's eye in Round 2 was double of that in Round 3.

So, in round 3 either 1 or 2 Bull's eye can be scored and in round 2, 2 or 4 Bull's eye can be scored.

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Case 1: If only 1 Bull's eye is scored in the round 3, then in round 3 Umeza will score 2 and Zeneca will score 2/3/4 in round 3, which means both will score 5 in round 2. So minimum Bull's eye in round 2 will be 3. (Umeza, Zeneca and Xyla)

Hence this case is rejected.

Case 2: 2 Bull's eye were scored in round 3 and 4 Bull's eye were scored in round 2. So in round 2 Umeza, Yonita and Zeneca scored 5. This can be tabulated as:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	5/2	5	5/2	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	(2/3/4)	5	5	NP	-

In round 3, 2 Bull's eye can only be scored by Xyla and Umeza.

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	2	5	5	1	2	NP	15
Wangdu	1/2/3/4	4	1/2/3/4	NP	NP	NP	6-12
Xyla	5	5	5	1	5	1/2/3/4/5	22-26
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	(2/3/4)	5	5	NP	22-24

The highest scorer can be either Xyla or Zeneca. The lowest scorer will be Wangdu.

1.Consider Zeneca is the highest scorer.

From 3, the highest total score was one more than double of the lowest total score. So the only possible score for Zeneca is 23 and that for Wangdu is 11. (11*2+1=23)

But this will violate condition 2, since both Zeneca and Wangdu do not have their scores as multiples of three in this case.

Hence, Xyla will be the highest scorer. The only possible total score for Xyla will be 25, and that for Wangdu is 12(4+4+4). (12*2+1=25)

Since Xyla already has non-multiple of 3 as total score. Zeneca will have 24 as the total score. The complete table is:

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Total
Tanzi	5	4	1	5	NP	NP	15
Umeza	2	5	5	1	2	NP	15
Wangdu	4	4	4	NP	NP	NP	12
Xyla	5	5	5	1	5	4	25
Yonita	2	5	3	5	NP	NP	15
Zeneca	5	5	4	5	5	NP	24

Tanzi scored 1 in round 3.

Instructions

The following table represents addition of two six-digit numbers given in the first and the second rows, while the sum is given in the third row. In the representation, each of the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 has been coded with one letter among A, B, C, D, E, F, G, H, J, K, with distinct letters representing distinct digits.

		B	H	A	A	G	F
+		A	H	J	F	K	F
	A	A	F	G	C	A	F

Question 43

Which digit does the letter A represent?

Answer:1

Explanation:

		B	H	A	A	G	F
+		A	H	J	F	K	F
	A	A	F	G	C	A	F

The value of F can only be 0 as F+F=F can only hold if F=0.

Also, A can only be 1(in the second column) because to get a **carry** of more than 1, B has to be a double-digit number which is not possible. (**A carry is a digit that is transferred from one column of digits to another column of more significant digits** .)

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So the data can be tabulated as follows:

		B	H	1	1	G	0
+		1	H	J	0	K	0
	1	1	0	G	C	1	0

Since the last row in the third column is 0, the carry to the second column must have been 1, Hence B+1+1=11 => B=9

In the 4th column, H+H = 10 since a carry 1 has gone to the 3rd column. Hence H=5.

G+K must be 11 and the carry 1 goes to the next column, so C=1+1=2.

Now, G,K can take values (3,8), (4,7) and (5,6) in any order.

From 5th column G=J+1 => J=G-1

Case: G=3 and K=8, here J =2 which is not possible as C =2

Case: G=8 and K=3, J=7, a possible case.

Case: G=4 and K=7, J=3 possible

Case: G=7 and K=4, J=6 possible

Case: G=5 and K=6, J=4 not possible as H =5.

Case: G=6 and K=5, J=5 both J and K are same, not possible.

Hence the cases can be tabulated as follows:

		9	5	1	1	8	0
+		1	5	7	0	3	0
	1	1	0	8	2	1	0

		9	5	1	1	7	0
+		1	5	6	0	4	0
	1	1	0	7	2	1	0

		9	5	1	1	4	0
+		1	5	3	0	7	0
	1	1	0	4	2	1	0

The letter A represents 1.

Question 44

Which digit does the letter B represent?

Answer:9

Explanation:

		B	H	A	A	G	F
+		A	H	J	F	K	F
	A	A	F	G	C	A	F

The value of F can only be 0 as F+F=F can only hold if F=0.

Also, A can only be 1(in the second column) because to get a **carry** of more than 1, B has to be a double-digit number which is not possible. (**A carry is a digit that is transferred from one column of digits to another column of more significant digits** .)

So the data can be tabulated as follows:

		B	H	1	1	G	0
+		1	H	J	0	K	0
	1	1	0	G	C	1	0

Since the last row in the third column is 0, the carry to the second column must have been 1, Hence B+1+1=11 => B=9

In the 4th column, H+H = 10 since a carry 1 has gone to the 3rd column. Hence H=5.

G+K must be 11 and the carry 1 goes to the next column, so C=1+1=2.

Now, G,K can take values (3,8), (4,7) and (5,6) in any order.

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From 5th column G=J+1 => J=G-1

Case: G=3 and K=8, here J =2 which is not possible as C =2

Case: G=8 and K=3, J=7, a possible case.

Case: G=4 and K=7, J=3 possible

Case: G=7 and K=4, J=6 possible

Case: G=5 and K=6, J=4 not possible as H =5.

Case: G=6 and K=5, J=5 both J and K are same, not possible.

Hence the cases can be tabulated as follows:

		9	5	1	1	8	0
+		1	5	7	0	3	0
	1	1	0	8	2	1	0

		9	5	1	1	7	0
+		1	5	6	0	4	0
	1	1	0	7	2	1	0

		9	5	1	1	4	0
+		1	5	3	0	7	0
	1	1	0	4	2	1	0

The letter B represents 9.

Free CAT Doubt Solving Group

Question 45

Which among the digits 3, 4, 6 and 7 cannot be represented by the letter D?

Answer:7

Explanation:

		B	H	A	A	G	F
+		A	H	J	F	K	F
	A	A	F	G	C	A	F

The value of F can only be 0 as F+F=F can only hold if F=0.

Also, A can only be 1(in the second column) because to get a **carry** of more than 1, B has to be a double-digit number which is not possible. (**A carry is a digit that is transferred from one column of digits to another column of more significant digits** .)

So the data can be tabulated as follows:

		B	H	1	1	G	0
+		1	H	J	0	K	0
	1	1	0	G	C	1	0

Since the last row in the third column is 0, the carry to the second column must have been 1, Hence B+1+1=11 => B=9

In the 4th column, H+H = 10 since a carry 1 has gone to the 3rd column. Hence H=5.

G+K must be 11 and the carry 1 goes to the next column, so C=1+1=2.

Now, G,K can take values (3,8), (4,7) and (5,6) in any order.

From 5th column G=J+1 => J=G-1

Case: G=3 and K=8, here J =2 which is not possible as C =2

Case: G=8 and K=3, J=7, a possible case.

Case: G=4 and K=7, J=3 possible

Case: G=7 and K=4, J=6 possible

Case: G=5 and K=6, J=4 not possible as H =5.

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Case: G=6 and K=5, J=5 both J and K are same, not possible.

Hence the cases can be tabulated as follows:

		9	5	1	1	8	0
+		1	5	7	0	3	0
	1	1	0	8	2	1	0

		9	5	1	1	7	0
+		1	5	6	0	4	0
	1	1	0	7	2	1	0

		9	5	1	1	4	0
+		1	5	3	0	7	0
	1	1	0	4	2	1	0

In all possible cases 7 is already represented by a letter other than D. Hence 7 is the answer.

Question 46

Which among the digits 4, 6, 7 and 8 cannot be represented by the letter G?

Answer:6

Explanation:

		B	H	A	A	G	F
+		A	H	J	F	K	F
	A	A	F	G	C	A	F

The value of F can only be 0 as F+F=F can only hold if F=0.

Also, A can only be 1(in the second column) because to get a **carry** of more than 1, B has to be a double-digit number which is not possible. (**A carry is a digit that is transferred from one column of digits to another column of more significant digits** .)

So the data can be tabulated as follows:

		B	H	1	1	G	0
+		1	H	J	0	K	0
	1	1	0	G	C	1	0

Since the last row in the third column is 0, the carry to the second column must have been 1, Hence B+1+1=11 => B=9

In the 4th column, H+H = 10 since a carry 1 has gone to the 3rd column. Hence H=5.

G+K must be 11 and the carry 1 goes to the next column, so C=1+1=2.

Now, G,K can take values (3,8), (4,7) and (5,6) in any order.

From 5th column G=J+1 => J=G-1

Case: G=3 and K=8, here J =2 which is not possible as C =2

Case: G=8 and K=3, J=7, a possible case.

Case: G=4 and K=7, J=3 possible

Case: G=7 and K=4, J=6 possible

Case: G=5 and K=6, J=4 not possible as H =5.

Case: G=6 and K=5, J=5 both J and K are same, not possible.

Hence the cases can be tabulated as follows:

		9	5	1	1	8	0
+		1	5	7	0	3	0
	1	1	0	8	2	1	0

		9	5	1	1	7	0
+		1	5	6	0	4	0
	1	1	0	7	2	1	0

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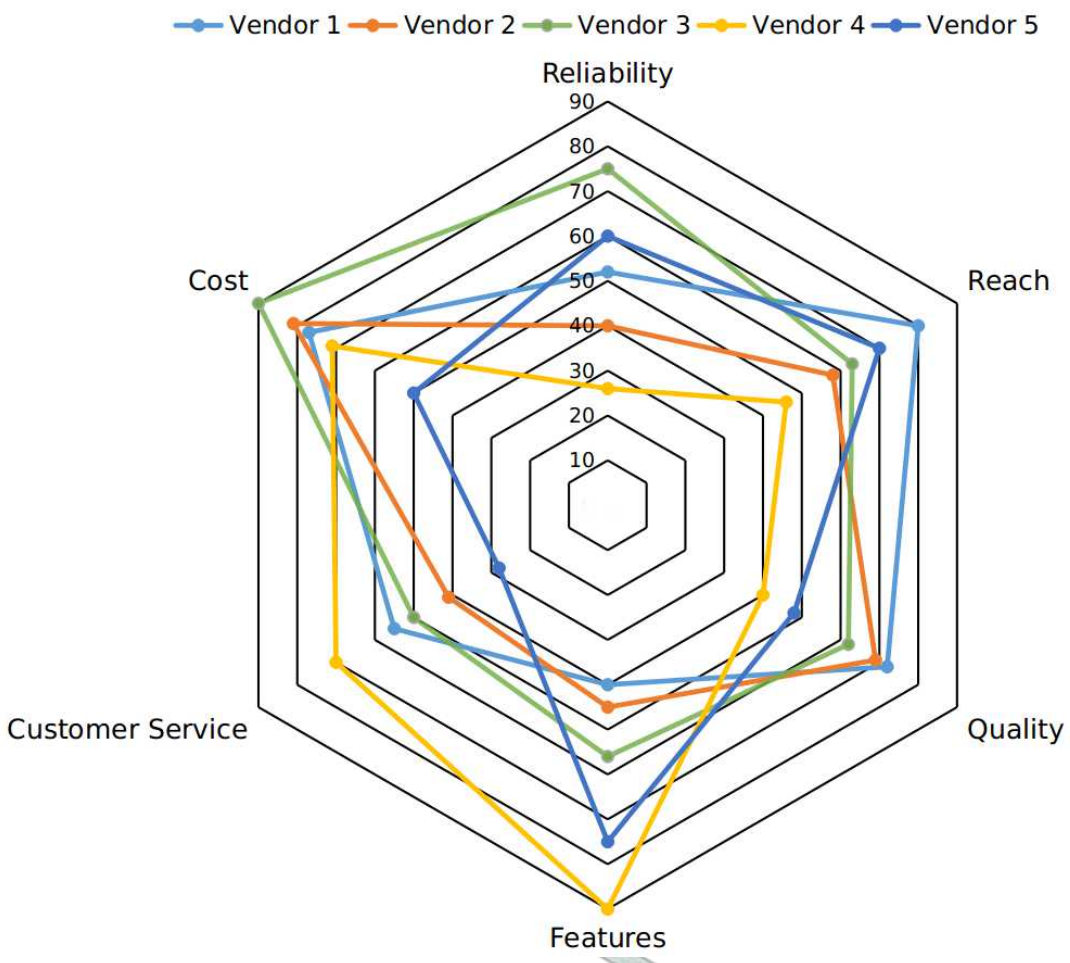
		9	5	1	1	4	0
+		1	5	3	0	7	0
	1	1	0	4	2	1	0

From the table it is clear that 6 cannot be represented by G.

Instructions

Five vendors are being considered for a service. The evaluation committee evaluated each vendor on six aspects - Cost, Customer Service,Features, Quality, Reach, and Reliability. Each of these evaluations are on a scale of 0 (worst) to 100 (perfect). The evaluation scores on these aspects are shown in the radar chart. For example, Vendor 1 obtains a score of 52 on Reliability, Vendor 2 obtains a score of 45 on Features and Vendor 3 obtains a score of 90 on Cost.



Question 47

On which aspect is the median score of the five vendors the least?

A Customer Service

B Cost

C Reliability

D Quality

Answer: A

Explanation:
The data can be tabulated as follows(approximately):

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Parameters	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5
Reliability	52	40	75	26	60
Reach	80	58	63	46	70
Quality	72	69	62	40	48
Features	40	45	56	90	75
Customer Serivces	55	41	50	70	28
Cost	77	81	90	71	50

Customer Services: 28,41,50,55,70 (The median is 50)

Cost: 50,71,77,81,90 (The median is 77)

Reliability: 26, 40, 52, 60, 75 (The median is 52)

Quality: 40, 48, 62, 69, 72 (The median is 62)

Features: 40, 45, 56, 75, 90 (The median is 56)

Reach: 46, 58, 63, 70, 80 (The median is 63)

Hence the customer services has the lowest median.

Know the CAT Percentile Required for IIM Calls

Question 48

A vendor's final score is the average of their scores on all six aspects. Which vendor has the highest final score?

A Vendor 4

B Vendor 2

C Vendor 1

D Vendor 3

Answer: D

Explanation:
The data can be tabulated as follows(approximately):

Parameters	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5
Reliability	52	40	75	26	60
Reach	80	58	63	46	70
Quality	72	69	62	40	48
Features	40	45	56	90	75
Customer Serivces	55	41	50	70	28
Cost	77	81	90	71	50
Total	376	334	396	343	321

The average of the vendor will be highest which has highest total score. Hence vendor 3 has the highest average.

Question 49

List of all the vendors who are among the top two scorers on the maximum number of aspects is:

A Vendor 2, Vendor 3 and Vendor 4

B Vendor 1 and Vendor 5

C Vendor 2 and Vendor 5

D Vendor 1 and Vendor 2

Answer: B

Explanation:
The data can be tabulated as follows(approximately):

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Parameters	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5
Reliability	52	40	75	26	60
Reach	80	58	63	46	70
Quality	72	69	62	40	48
Features	40	45	56	90	75
Customer Serivces	55	41	50	70	28
Cost	77	81	90	71	50

Top 3 on Reliability: Vendor 3, Vendor 5

Top 3 on Reach: Vendor 1, Vendor 5

Top 3 on Quality: Vendor 1, Vendor 2

Top 3 on Features: Vendor 4, Vendor 5

Top 3 on Customer Services: Vendor 4, Vendor 1

Top 3 on Cost: Vendor 3, Vendor 2

Vendor 1: 3 times Vendor 2: Only once Vendor 3: 2 times Vendor 4: 2 times Vendor 5: 3 times

Here 1 and 5 comes 3 times. Hence B is the answer.

Question 50

List of all the vendors who are among the top three vendors on all six aspects is:

A Vendor 1 and Vendor 3

B None of the Vendors

C Vendor 3

D Vendor 1

Answer: C

Explanation:
The data can be tabulated as follows(approximately):

Parameters	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5
Reliability	52	40	75	26	60
Reach	80	58	63	46	70
Quality	72	69	62	40	48
Features	40	45	56	90	75
Customer Serivces	55	41	50	70	28
Cost	77	81	90	71	50

Top 3 on Reliability: Vendor 3, Vendor 5, Vendor 1

Top 3 on Reach: Vendor 1, Vendor 5, Vendor 3

Top 3 on Quality: Vendor 1, Vendor 2, Vendor 3

Top 3 on Features: Vendor 4, Vendor 5, Vendor 3

Top 3 on Customer Services: Vendor 4, Vendor 1, Vendor 3

Top 3 on Cost: Vendor 3, Vendor 2, Vendor 1

Only Vendor 3 ranks among top 3 in all the six parameters.

How to prepare for Verbal Ability for CAT

Instructions

The Ministry of Home Affairs is analysing crimes committed by foreigners in different states and union territories (UT) of India. All cases refer to the ones registered against foreigners in 2016.

The number of cases - classified into three categories: IPC crimes, SLL crimes and other crimes - for nine states/UTs are shown in the figure below. These nine belong to the top ten states/UTs in terms of the total number of cases registered. The remaining state (among top ten) is West Bengal, where all the 520 cases registered were SLL crimes.

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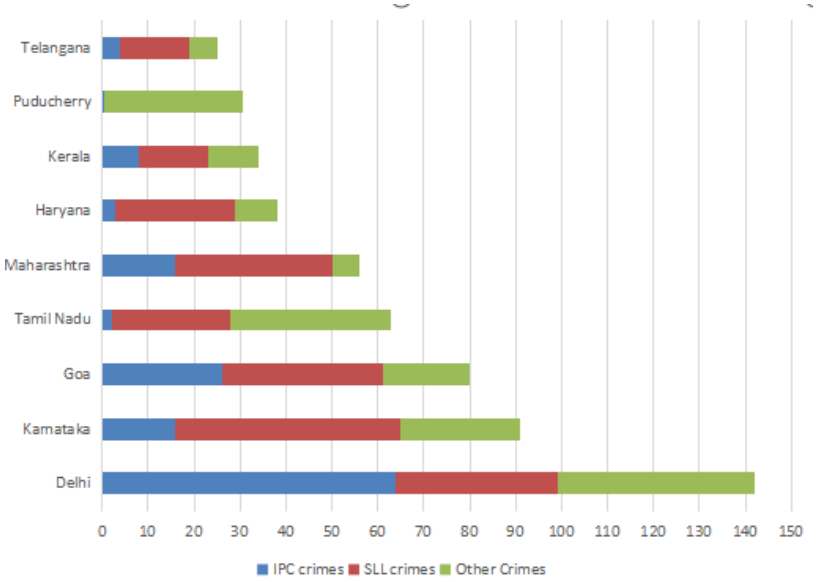

The table below shows the ranks of the ten states/UTs mentioned above among ALL states/UTs of India in terms of the number of cases registered in each of the three category of crimes. A state/UT is given rank r for a category of crimes if there are (r-1) states/UTs having a larger number of cases registered in that category of crimes. For example, if two states have the same number of cases in a category, and exactly three other states/UTs have larger numbers of cases registered in the same category, then both the states are given rank 4 in that category. Missing ranks in the table are denoted by *.

	IPC crimes	SLL crimes	OtherCrimes
Delhi	*	*	*
Goa	*	4	*
Haryana	8	6	*
Karnataka	3	2	*
Kerala	*	9	*
Maharashtra	3	4	8
Puducherry	13	29	*
Tamil Nadu	11	7	*
Telangana	6	9	8
WestBengal	17	*	16

Question 51

What is the rank of Kerala in the 'IPC crimes' category?

Answer:5

Explanation:
The data can be tabulated as follows(approximately):

States	IPC Crimes	SLL Crimes	Other Crimes	Total Crimes
Telangana	3-4	14-15	6-7	24-25
Puducherry	1	0	30	31
Kerala	7-8	15-16	10-11	33-34
Haryana	3-4	25-26	9-10	37-38
Maharashtra	15-16	35-36	5-6	55-56
Tamilnadu	2-3	25-26	35-36	62-64
Goa	25-26	35-36	18-19	80
Karnataka	15-16	48-49	25-26	91
Delhi	63-64	35-36	42-43	142-143
West Bengal	0	520	0	520

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	IPC crimes	SLL crimes	OtherCrimes
Delhi	*	*	*
Goa	*	4	*
Haryana	8	6	*
Karnataka	3	2	*
Kerala	*	9	*
Maharashtra	3	4	8
Puducherry	13	29	*
Tamil Nadu	11	7	*
Telangana	6	9	8
WestBengal	17	*	16

Rank of Delhi in IPC crimes category = 1, The rank of Karnataka and Maharashtra is 3(from table), then the rank of Goa can only be 2.

The rank of Telangana is 6 which has less |IPC crimes than Kerala, which means the rank of Kerala can be less than or equal to 5.

Now, there are two states with 3 ranks, so there will be no rank 4, there can only be rank 5 which is Kerala.

Question 52

In the two states where the highest total number of cases are registered, the ratio of the total number of cases in IPC crimes to the total number in SLL crimes is closest to

A 3 : 2

B 19 : 20

C 11 : 10

D 1 : 9

Answer: D

Explanation:

The data can be tabulated as follows(approximately):

States	IPC Crimes	SLL Crimes	Other Crimes	Total Crimes
Telangana	3-4	14-15	6-7	24-25
Puducherry	1	0	30	31
Kerala	7-8	15-16	10-11	33-34
Haryana	3-4	25-26	9-10	37-38
Maharashtra	15-16	35-36	5-6	55-56
Tamilnadu	2-3	25-26	35-36	62-64
Goa	25-26	35-36	18-19	80
Karnataka	15-16	48-49	25-26	91
Delhi	63-64	35-36	42-43	142-143
West Bengal	0	520	0	520

	IPC crimes	SLL crimes	OtherCrimes
Delhi	*	*	*
Goa	*	4	*
Haryana	8	6	*
Karnataka	3	2	*
Kerala	*	9	*
Maharashtra	3	4	8
Puducherry	13	29	*
Tamil Nadu	11	7	*
Telangana	6	9	8
WestBengal	17	*	16

The highest cases are registered in West Bengal and Delhi.

The total number of IPC crimes = 63-64

The total number of SLL crimes = 520+35-36 = 555-556

Hence the ratio = (63-64)/(555-556) = 0.11 (Approximately) = 1:9

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Question 53

Which of the following is DEFINITELY true about the ranks of states/UT in the 'other crimes' category?
i) Tamil Nadu: 2
ii) Puducherry: 3

A both i) and ii)

B only ii)

C neither i) , nor ii)

D only i)

Answer: A

Explanation:
The data can be tabulated as follows(approximately):

States	IPC Crimes	SLL Crimes	Other Crimes	Total Crimes
Telangana	3-4	14-15	6-7	24-25
Puducherry	1	0	30	31
Kerala	7-8	15-16	10-11	33-34
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Tamilnadu	2-3	25-26	35-36	62-64
Goa	25-26	35-36	18-19	80
Karnataka	15-16	48-49	25-26	91
Delhi	63-64	35-36	42-43	142-143
West Bengal	0	520	0	520

	IPC crimes	SLL crimes	OtherCrimes
Delhi	*	*	*
Goa	*	4	*
Haryana	8	6	*
Karnataka	3	2	*
Kerala	*	9	*
Maharashtra	3	4	8
Puducherry	13	29	*
Tamil Nadu	11	7	*
Telangana	6	9	8
WestBengal	17	*	16

From the table, the rank of Tamilnadu in other crimes is 2. The states which are not in the table will have crimes less than Telangana(i.e 24-25)

From the table the rank of Pudducherry in other crimes is 3.

How to prepare for Data Interpretation for CAT

Question 54

What is the sum of the ranks of Delhi in the three categories of crimes?

Answer:5

Explanation:
The data can be tabulated as follows(approximately):

The data can be tabulated as follows(approximately):

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States	IPC Crimes	SLL Crimes	Other Crimes	Total Crimes
Telangana	3-4	14-15	6-7	24-25
Puducherry	1	0	30	31
Kerala	7-8	15-16	10-11	33-34
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	IPC crimes	SLL crimes	OtherCrimes
Delhi	*	*	*
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Karnataka	3	2	*
Kerala	*	9	*
Maharashtra	3	4	8
Puducherry	13	29	*
Tamil Nadu	11	7	*
Telangana	6	9	8
WestBengal	17	*	16

The rank of Delhi in IPC crimes should be 1 because the states which are not in table cannot crime more than that of Telangana which is 24-25.

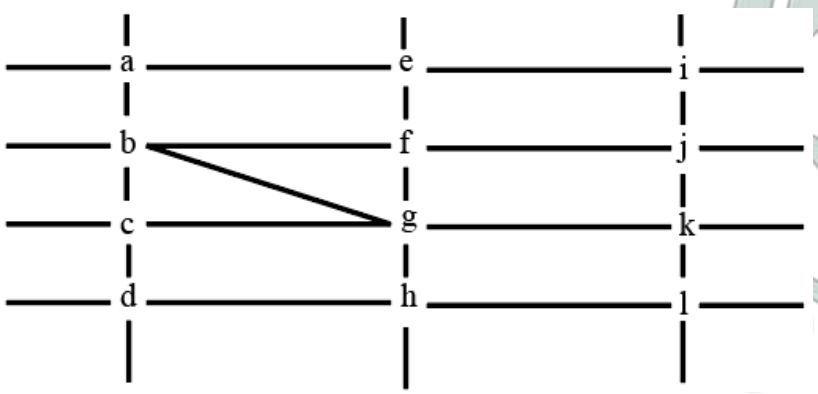
Similarly Delhi Rank in Other crimes will be 1.

Now in SLL crimes clearly West Bengal has rank 1. It is given that Karnataka has rank 2. The rank 3 can go to either Goa, Delhi and Maharashtra but Goa and Maharashtra already have rank 4. So Delhi will have rank 3. Also no state outside of the table can be ranked 3 in SLL crimes as maximum number of crime should be less than that of Telangana(24-25). Here the number of SLL crimes is 35-36.

Hence the sum of the ranks = 1+3+1=5

Instructions

The figure below shows the street map for a certain region with the street intersections marked from a through l. A person standing at an intersection can see along straight lines to other intersections that are in her line of sight and all other people standing at these intersections. For example, a person standing at intersection g can see all people standing at intersections b, c, e, f, h, and k. In particular, the person standing at intersection g can see the person standing at intersection e irrespective of whether there is a person standing at intersection f.



Six people U, V, W, X, Y, and Z, are standing at different intersections. No two people are standing at the same intersection.
The following additional facts are known.
1. X, U, and Z are standing at the three corners of a triangle formed by three street segments.
2. X can see only U and Z.
3. Y can see only U and W.
4. U sees V standing in the next intersection behind Z.
5. W cannot see V or Z.
6. No one among the six is standing at intersection d.

Question 55

Who is standing at intersection a?

A W

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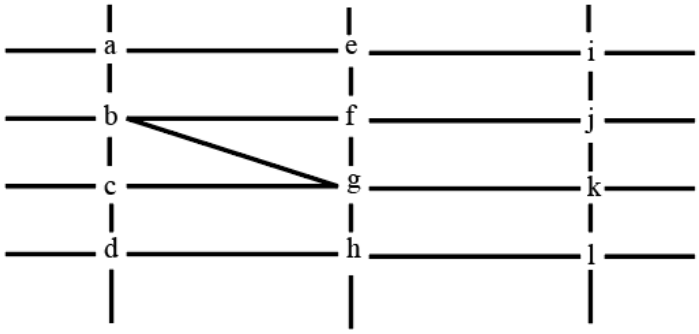
B Y

C No one

D V

Answer: C

Explanation:



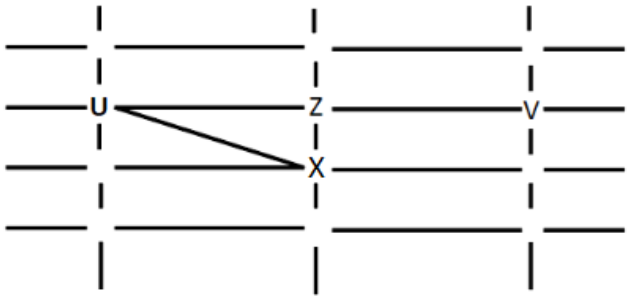
From 1, X, U, and Z are standing at the three corners of a triangle formed by three street segments.

From 2, X can see only U and Z.

From 4, U sees V standing in the next intersection behind Z. Also, no one among the six is standing at intersection d.

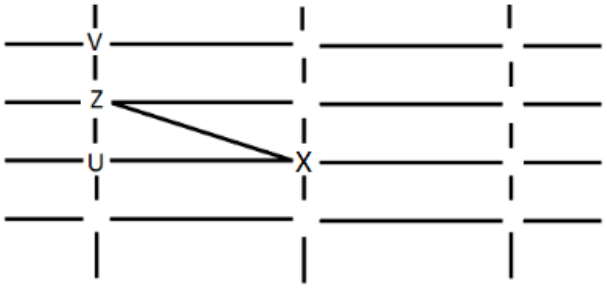
Only cases possible are:

1.



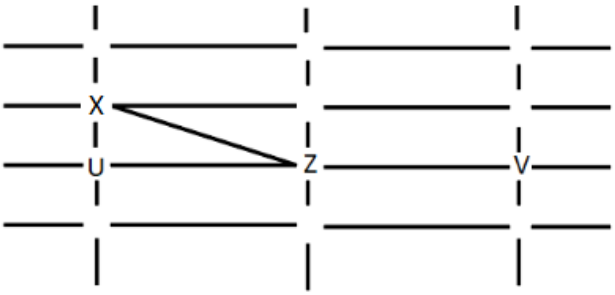
W cannot see V or Z. So W can only be at the intersection a. Since Y can see only U and W, Y can only be at c where X can see him. Hence this case is rejected.

2.



Y can only see U and W. Y cannot be placed anywhere. Hence this case is also rejected.

3.



Y can only see U and W. Y cannot be placed anywhere. Hence this case is also rejected.

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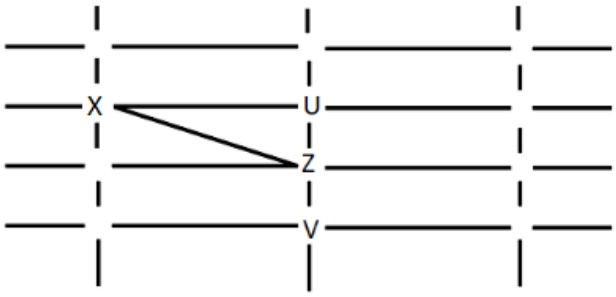
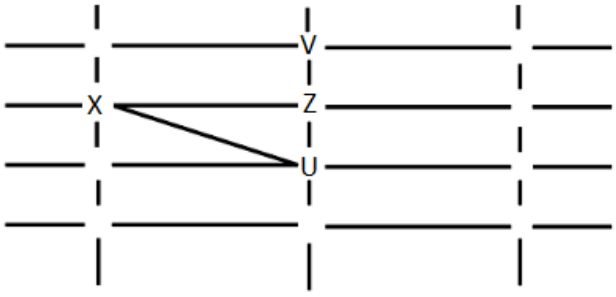
4.

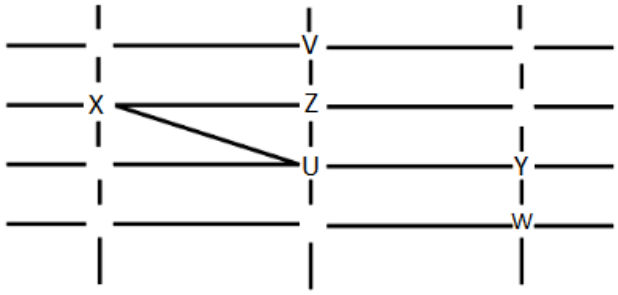


W cannot see V or Z. W can only be placed at i. Y can see only U and W. Y can only be placed at j or e, where he can see more people than U and W. Hence this case is also rejected.

5.



W cannot see V or Z. Y can only see U and W. Hence W and Y can only be placed as shown:



No one is standing at the intersection A. Hence C is the answer.

Question 56

Who can V see?

A Z only

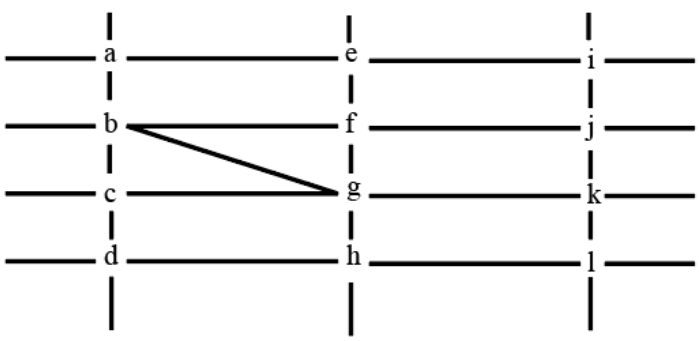
B U, W and Z only

C U and Z only

D U only

Answer: C

Explanation:



From 1, X, U, and Z are standing at the three corners of a triangle formed by three street segments.

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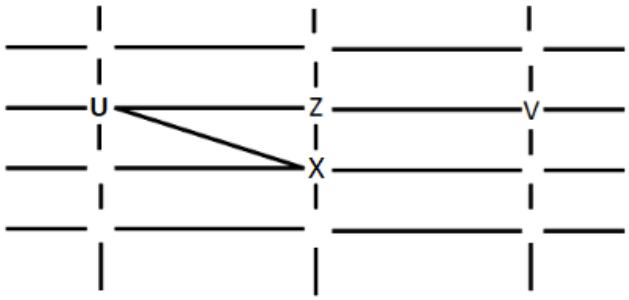
From 2, X can see only U and Z.

From 4, U sees V standing in the next intersection behind Z. Also, no one among the six is standing at intersection d.

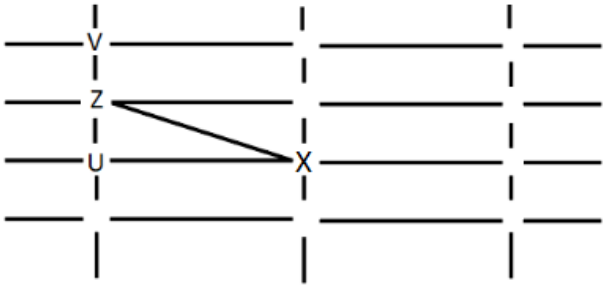
Only cases possible are:

1.



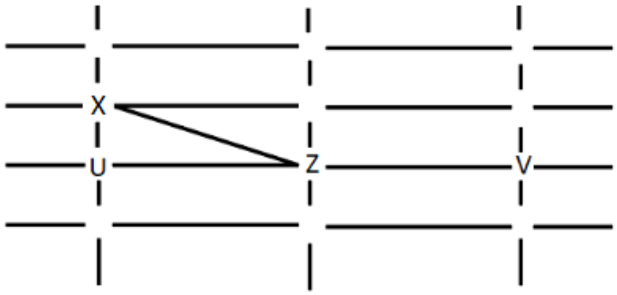
W cannot see V or Z. So W can only be at the intersection a. Since Y can see only U and W, Y can only be at c where X can see him. Hence this case is rejected.

2.



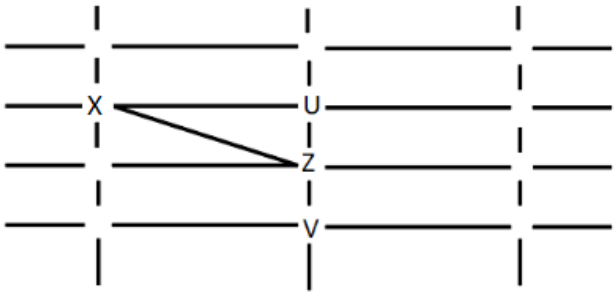
Y can only see U and W. Y cannot be placed anywhere. Hence this case is also rejected.

3.



Y can only see U and W. Y cannot be placed anywhere. Hence this case is also rejected.

4.



W cannot see V or Z. W can only be placed at i. Y can see only U and W. Y can only be placed at j or e, where he can see more people than U and W. Hence this case is also rejected.

5.

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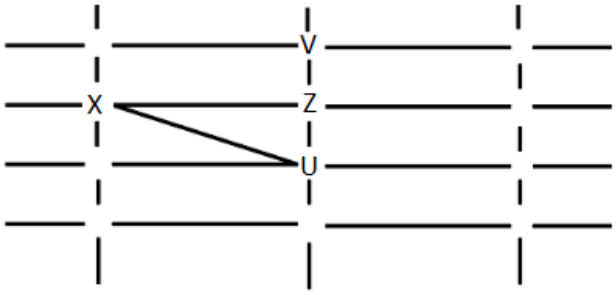
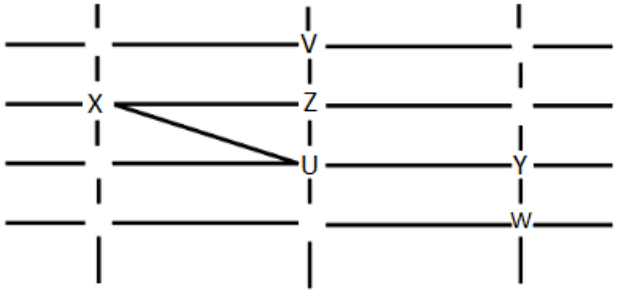


W cannot see V or Z. Y can only see U and W. Hence W and Y can only be placed as shown:



V can see U and Z only. Hence C is the answer.

How to prepare for Logical Reasoning for CAT

Question 57

What is the minimum number of street segments that X must cross to reach Y?

A 1

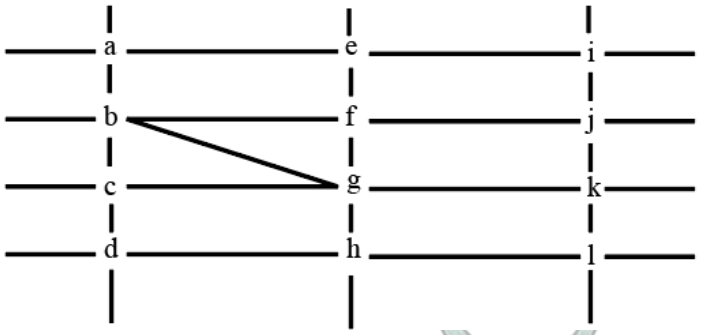
B 4

C 2

D 3

Answer: C

Explanation:



From 1, X, U, and Z are standing at the three corners of a triangle formed by three street segments.

From 2, X can see only U and Z.

From 4, U sees V standing in the next intersection behind Z. Also, no one among the six is standing at intersection d.

Only cases possible are:

1.

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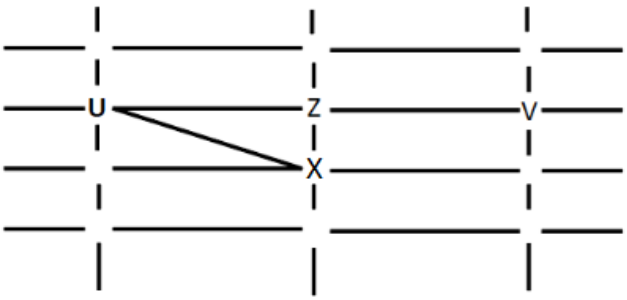

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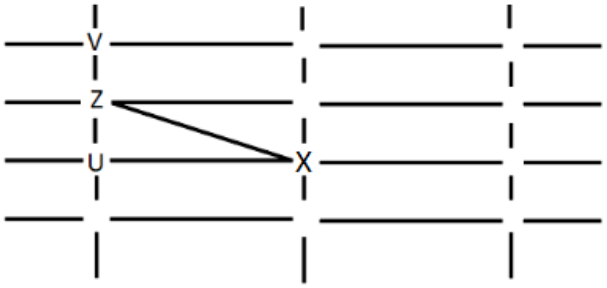
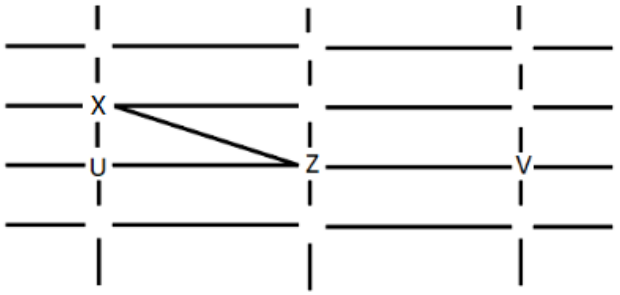
2.



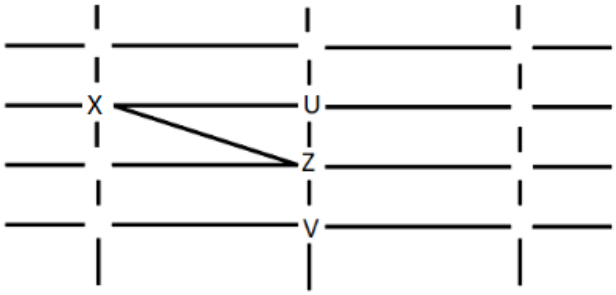
Y can only see U and W. Y cannot be placed anywhere. Hence this case is also rejected.

3.



Y can only see U and W. Y cannot be placed anywhere. Hence this case is also rejected.

4.



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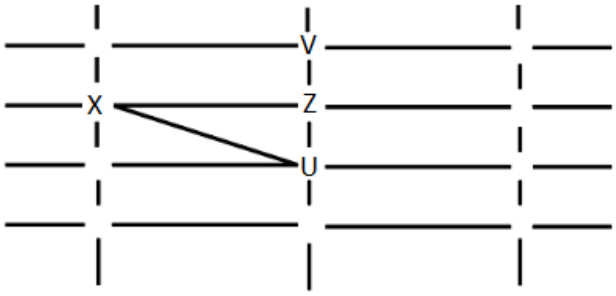

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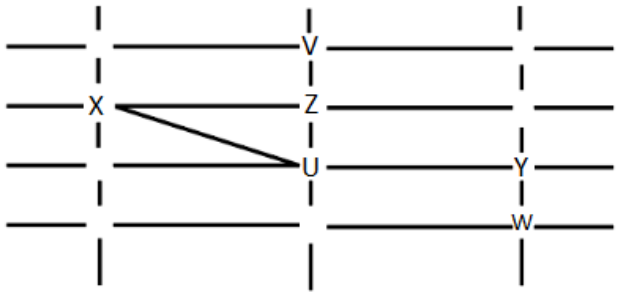


To reach Y, X has to go from b to g and g to k, i.e. 2 streets.

Question 58

Should a new person stand at intersection d, who among the six would she see?

A W and X only

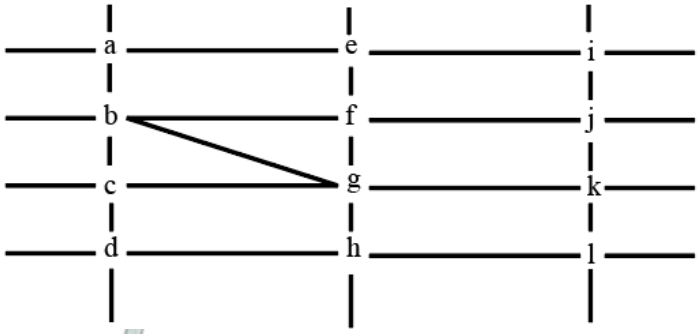
B U and W only

C U and Z only

D V and X only

Answer: A

Explanation:



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From 2, X can see only U and Z.

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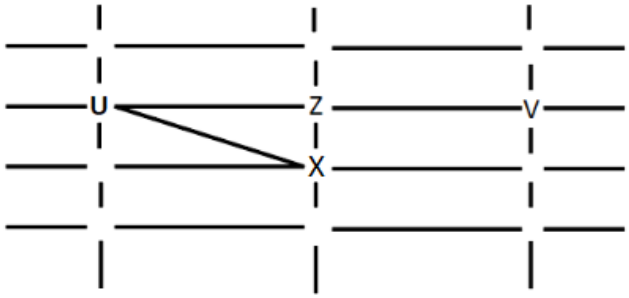
Only cases possible are:

1.



W cannot see V or Z. So W can only be at the intersection a. Since Y can see only U and W, Y can only be at c where X can see him. Hence this case is rejected.

2.

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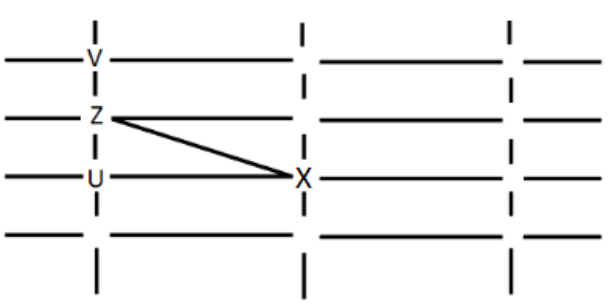
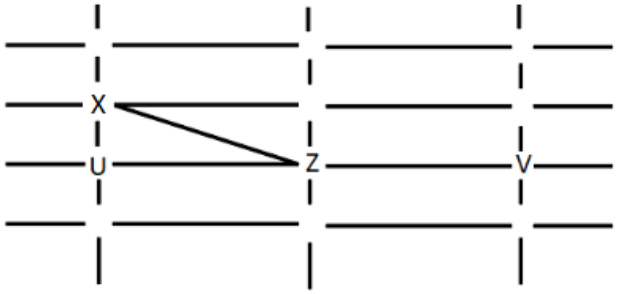


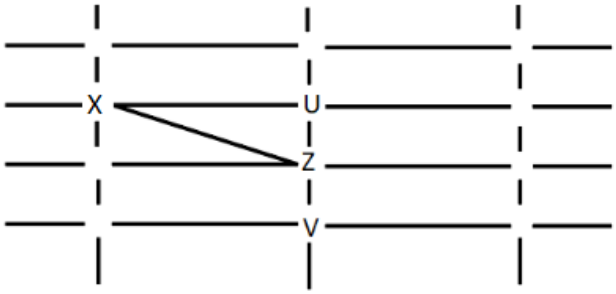
Y can only see U and W. Y cannot be placed anywhere. Hence this case is also rejected.

3.



Y can only see U and W. Y cannot be placed anywhere. Hence this case is also rejected.

4.



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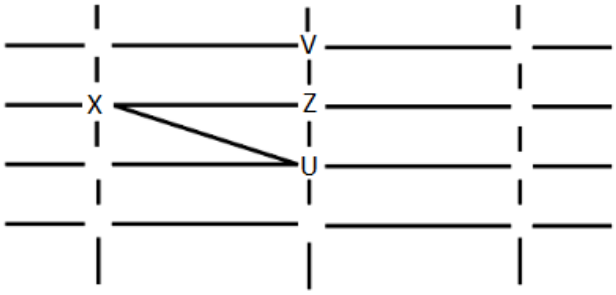
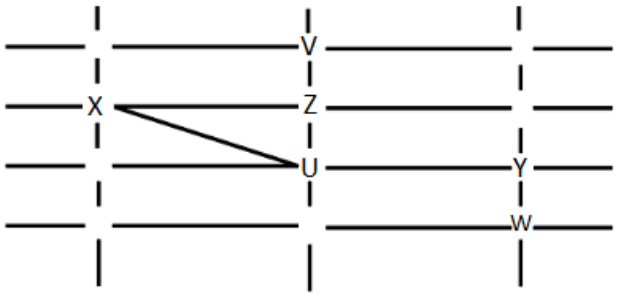
5.



W cannot see V or Z. Y can only see U and W. Hence W and Y can only be placed as shown:



If a new person stands at d(left down corner), they can see W and X only. Hence A is the answer.

Instructions

Princess, Queen, Rani and Samragni were the four finalists in a dance competition. Ashman, Badal, Gagan and Dyu were the four music

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composers who individually assigned items to the dancers. Each dancer had to individually perform in two dance items assigned by the different composers. The first items performed by the four dancers were all assigned by different music composers. No dancer performed her second item before the performance of the first item by any other dancers. The dancers performed their second items in the same sequence of their performance of their first items.

The following additional facts are known.
i) No composer who assigned item to Princess, assigned any item to Queen.
ii) No composer who assigned item to Rani, assigned any item to Samragni.
iii) The first performance was by Princess; this item was assigned by Badal.
iv) The last performance was by Rani; this item was assigned by Gagan.
v) The items assigned by Ashman were performed consecutively. The number of performances between items assigned by each of the remaining composers was the same.

Question 59

Which of the following is true?

A The second performance was composed by Dyu.

B The third performance was composed by Dyu.

C The third performance was composed by Ashman.

D The second performance was composed by Gagan.

Answer: A

Explanation:

	1st Performance				2nd Performance			
Finalists	Princess							Rani
Composers	Badal							Gagan

Since the dancers performed their second items in the same sequence of their performance of their first items. The table will be as follows:

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal							Gagan

The items assigned by Ashman were performed consecutively. The number of performances between items assigned by each of the remaining composers was the same.

Also, the first items performed by the four dancers were all assigned by different music composers. Badal can come only at the place as shown in the table.

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal		Gagan			Badal		Gagan

Then Ashman can only compose for the following performances.

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal		Gagan	Ashman	Ashman	Badal		Gagan

Hence Dyu will compose for the following performances:

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal	Dyu	Gagan	Ashman	Ashman	Badal	Dyu	Gagan

From (i) No composer who assigned item to Princess, assigned any item to Queen.
From (ii) No composer who assigned item to Rani, assigned any item to Samragni.

Hence Dyu will compose for Samragni 1st Performance and Gagan will compose for Queen 1st Performance. Also, Badal will compose for Samragni 2nd Performance and Dyu will compose for Queens 2nd Performance.

Hence, the complete table is as follows:

	1st Performance				2nd Performance			
Finalists	Princess	Samragni	Queen	Rani	Princess	Samragni	Queen	Rani
Composers	Badal	Dyu	Gagan	Ashman	Ashman	Badal	Dyu	Gagan

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The second performance was composed by Dyu. Hence A is the answer.

How to prepare for Quantitative aptitude for CAT

Question 60

Which of the following is FALSE?

A Samragni did not perform in any item composed by Ashman.

B Princess did not perform in any item composed by Dyu.

C Rani did not perform in any item composed by Badal.

D Queen did not perform in any item composed by Gagan.

Answer: D

Explanation:

	1st Performance				2nd Performance			
Finalists	Princess							Rani
Composers	Badal							Gagan

Since the dancers performed their second items in the same sequence of their performance of their first items. The table will be as follows:

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal							Gagan

The items assigned by Ashman were performed consecutively. The number of performances between items assigned by each of the remaining composers was the same.

Also, the first items performed by the four dancers were all assigned by different music composers. Badal can come only at the place as shown in the table.

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal		Gagan			Badal		Gagan

Then Ashman can only compose for the following performances.

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal		Gagan	Ashman	Ashman	Badal		Gagan

Hence Dyu will compose for the following performances:

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal	Dyu	Gagan	Ashman	Ashman	Badal	Dyu	Gagan

From (i) No composer who assigned item to Princess, assigned any item to Queen.
From (ii) No composer who assigned item to Rani, assigned any item to Samragni.

Hence Dyu will compose for Samragni 1st Performance and Gagan will compose for Queen 1st Performance. Also, Badal will compose for Samragni 2nd Performance and Dyu will compose for Queens 2nd Performance.

Hence, the complete table is as follows:

	1st Performance				2nd Performance			
Finalists	Princess	Samragni	Queen	Rani	Princess	Samragni	Queen	Rani
Composers	Badal	Dyu	Gagan	Ashman	Ashman	Badal	Dyu	Gagan

Option A: Samragni did not perform in any item composed by Ashman. This statement is true.

Option B: Princess did not perform in any item composed by Dyu. This is also true.

Option C: Rani did not perform in any item composed by Badal. This statement is true.

Option D: Queen did not perform in any item composed by Gagan. This statement is false.

Hence D is the answer.

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Question 61

The sixth performance was composed by:

A Badal

B Dyu

C Ashman

D Gagan

Answer: A

Explanation:

	1st Performance				2nd Performance			
Finalists	Princess							Rani
Composers	Badal							Gagan

Since the dancers performed their second items in the same sequence of their performance of their first items. The table will be as follows:

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal							Gagan

The items assigned by Ashman were performed consecutively. The number of performances between items assigned by each of the remaining composers was the same.

Also, the first items performed by the four dancers were all assigned by different music composers. Badal can come only at the place as shown in the table.

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal		Gagan			Badal		Gagan

Then Ashman can only compose for the following performances.

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal		Gagan	Ashman	Ashman	Badal		Gagan

Hence Dyu will compose for the following performances:

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal	Dyu	Gagan	Ashman	Ashman	Badal	Dyu	Gagan

From (i) No composer who assigned item to Princess, assigned any item to Queen.
From (ii) No composer who assigned item to Rani, assigned any item to Samragni.

Hence Dyu will compose for Samragni 1st Performance and Gagan will compose for Queen 1st Performance. Also, Badal will compose for Samragni 2nd Performance and Dyu will compose for Queens 2nd Performance.

Hence, the complete table is as follows:

	1st Performance				2nd Performance			
Finalists	Princess	Samragni	Queen	Rani	Princess	Samragni	Queen	Rani
Composers	Badal	Dyu	Gagan	Ashman	Ashman	Badal	Dyu	Gagan

The sixth performance was composed by Badal. Hence C is the answer.

Question 62

Which pair of performances were composed by the same composer?

A The first and the seventh

B The third and the seventh

C The second and the sixth

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D The first and the sixth

Answer: D

Explanation:

	1st Performance				2nd Performance			
Finalists	Princess							Rani
Composers	Badal							Gagan

Since the dancers performed their second items in the same sequence of their performance of their first items. The table will be as follows:

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal							Gagan

The items assigned by Ashman were performed consecutively. The number of performances between items assigned by each of the remaining composers was the same.

Also, the first items performed by the four dancers were all assigned by different music composers. Badal can come only at the place as shown in the table.

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal		Gagan			Badal		Gagan

Then Ashman can only compose for the following performances.

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal		Gagan	Ashman	Ashman	Badal		Gagan

Hence Dyu will compose for the following performances:

	1st Performance				2nd Performance			
Finalists	Princess			Rani	Princess			Rani
Composers	Badal	Dyu	Gagan	Ashman	Ashman	Badal	Dyu	Gagan

From (i) No composer who assigned item to Princess, assigned any item to Queen.
From (ii) No composer who assigned item to Rani, assigned any item to Samragni.

Hence Dyu will compose for Samragni 1st Performance and Gagan will compose for Queen 1st Performance. Also, Badal will compose for Samragni 2nd Performance and Dyu will compose for Queens 2nd Performance.

Hence, the complete table is as follows:

	1st Performance				2nd Performance			
Finalists	Princess	Samragni	Queen	Rani	Princess	Samragni	Queen	Rani
Composers	Badal	Dyu	Gagan	Ashman	Ashman	Badal	Dyu	Gagan

The first and the sixth items were composed by Badal. Hence D is the answer.

How to prepare for Logical Reasoning for CAT

Instructions

A new game show on TV has 100 boxes numbered 1, 2, . . . , 100 in a row, each containing a mystery prize. The prizes are items of different types, a, b, c, . . . , in decreasing order of value. The most expensive item is of type a, a diamond ring, and there is exactly one of these. You are told that the number of items at least doubles as you move to the next type. For example, there would be at least twice as many items of type b as of type a, at least twice as many items of type c as of type b and so on. There is no particular order in which the prizes are placed in the boxes.

Question 63

What is the minimum possible number of different types of prizes?

Answer:2

Explanation:
It is given that the most expensive item is a diamond ring of type a and there is exactly one of these. Since the item b should be at least twice. The minimum number of items will be obtained when a=1 and b=99, which means there are only two different types of items.

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Question 64

What is the maximum possible number of different types of prizes?

Answer:6

Explanation:
It is given that the most expensive item is a diamond ring of type a and there is exactly one of these. Since the number of items of type b should be at least twice of that of a and the number of items of type c should be at least twice of that of b and so on. So the maximum number of different types of items of a, b and c will be obtained when a=1, b=2, c=4, d=8, e=16, f=69. Hence the maximum number of different types of items will be 6.

If the number of items is 7, then the minimum number of prizes should be 1+2+4+8+16+32+64=127 which is more than 100.

Hence 6 is the answer.

Question 65

Which of the following is not possible?

A There are exactly 75 items of type e.

B There are exactly 30 items of type b.

C There are exactly 45 items of type c.

D There are exactly 60 items of type d.

Answer: C

Explanation:
Option A: There are exactly 75 items of type e.

a=1,b=2,c=4,d=8, e=85. Here the maximum value of e= 85. Hence it can take the value 75.

An example of such case is a=1,b=2,c=4,d=18, e=75

Option B: There are exactly 30 items of type b.

a=1 b=30 and c=69. Hence this case is also possible.

Option C: There are exactly 45 items of type c.

Since the value of d should be at least 90, it means that d is not present because 45+90 will be more than 100(maximum number of items). Only a,b and c are present.

The maximum value of b = 22 and a =1, but 45+22+1=68, which is less than 100. So this case is not possible.

Option D: There are exactly 60 items of type d.

d=60, c=30, b=9 and a=1. a+b+c+d=100. Hence this case is possible.

C is the answer.

Data Interpretation for CAT Questions (download pdf)

Question 66

You ask for the type of item in box 45. Instead of being given a direct answer, you are told that there are 31 items of the same type as box 45 in boxes 1 to 44 and 43 items of the same type as box 45 in boxes 46 to 100.
What is the maximum possible number of different types of items?

A 5

B 6

C 4

D 3

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Answer: A

Explanation:
The total number of items from 1 to 100, which are of same type as in box 45 = 31+1+43=75

Now to maximize the number of items, a=1, b=2, c=4, d=18 and e=75(given)

There can be maximum 5 types of items.

If we consider number of items to be 6, then minimum number of items of 5th type will be 16, 1+2+4+8+16+75=106 which is more than 100.

Logical Reasoning for CAT Questions (download pdf)

Quantitative Aptitude

Instructions
For the following questions answer them individually

Question 67

Two cars travel the same distance starting at 10:00 am and 11:00 am, respectively, on the same day. They reach their common destination at the same point of time. If the first car travelled for at least 6 hours, then the highest possible value of the percentage by which the speed of the second car could exceed that of the first car is

A 20

B 30

C 25

D 10

Answer: A

Explanation:
Let the speed of cars be a and b and the distance =d

Minimum time taken by 1st car = 6 hours,

For maximum difference in time taken by both of them, car 1 has to start at 10:00 AM and car 2 has to start at 11:00 AM.

Hence, car 2 will take 5 hours.

Hence a= $\frac{d}{6}$ and b = $\frac{d}{5}$

Hence the speed of car 2 will exceed the speed of car 1 by $\frac{\frac{d}{5}-\frac{d}{6}}{\frac{d}{6}} \times 100 = \frac{\frac{d}{30}}{\frac{d}{6}} \times 100 = 20$

Quantitative Aptitude for CAT Questions (download pdf)

Question 68

If $a_1, a_2, \ldots\ldots$ are in A.P., then, $\frac{1}{\sqrt{a_1}+\sqrt{a_2}} + \frac{1}{\sqrt{a_2}+\sqrt{a_3}} + \ldots\ldots + \frac{1}{\sqrt{a_n}+\sqrt{a_{n+1}}}$ is equal to

A $\frac{n}{\sqrt{a_1}+\sqrt{a_{n+1}}}$

B $\frac{n-1}{\sqrt{a_1}+\sqrt{a_{n-1}}}$

C $\frac{n-1}{\sqrt{a_1}+\sqrt{a_n}}$

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D $\frac{n}{\sqrt{a_1}-\sqrt{a_{n+1}}}$

Answer: A

Explanation:

We have, $\frac{1}{\sqrt{a_1}+\sqrt{a_2}} + \frac{1}{\sqrt{a_2}+\sqrt{a_3}} + ... + \frac{1}{\sqrt{a_n}+\sqrt{a_{n+1}}}$

Now, $\frac{1}{\sqrt{a_1}+\sqrt{a_2}} = \frac{\sqrt{a_2}-\sqrt{a_1}}{(\sqrt{a_2}+\sqrt{a_1})(\sqrt{a_2}-\sqrt{a_1})}$ (Multiplying numerator and denominator by $\sqrt{a_2}-\sqrt{a_1}$)

$= \frac{\sqrt{a_2}-\sqrt{a_1}}{(a_2-a_1}$

$= \frac{\sqrt{a_2}-\sqrt{a_1}}{d}$ (where d is the common difference)

Similarly, $\frac{1}{\sqrt{a_2}+\sqrt{a_3}} = \frac{\sqrt{a_3}-\sqrt{a_2}}{d}$ and so on.

Then the expression $\frac{1}{\sqrt{a_1}+\sqrt{a_2}} + \frac{1}{\sqrt{a_2}+\sqrt{a_3}} + ... + \frac{1}{\sqrt{a_n}+\sqrt{a_{n+1}}}$

can be written as $\frac{1}{d}(\sqrt{a_2}-\sqrt{a_1}+\sqrt{a_3}-\sqrt{a_3}+.....\sqrt{a_{n+1}}-\sqrt{a_n}$

$= \frac{n}{nd}(\sqrt{a_{n+1}}-\sqrt{a_1})$ (Multiplying both numerator and denominator by n)

$= \frac{n(\sqrt{a_{n+1}}-\sqrt{a_1})}{a_{n+1}-a_1}$ $(a_{n+1}-a_1=nd)$

$= \frac{n}{\sqrt{a_1}+\sqrt{a_{n+1}}}$

Question 69

AB is a diameter of a circle of radius 5 cm. Let P and Q be two points on the circle so that the length of PB is 6 cm, and the length of AP is twice that of AQ. Then the length, in cm, of QB is nearest to

A 9.3

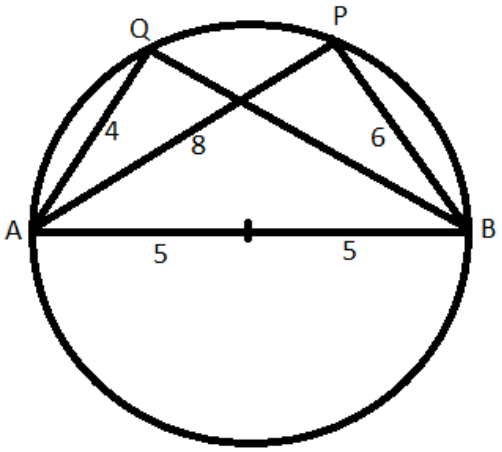
B 7.8

C 9.1

D 8.5

Answer: C

Explanation:



Since AB is a diameter, AQB and APB will right angles.

In right triangle APB, AP = $\sqrt{10^2-6^2}=8$

Now, 2AQ=AP => AQ= 8/2=4

In right triangle AQB, AP = $\sqrt{10^2-4^2}=9.165$ =9.1 (Approx)

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Question 70

If $(5.55)^x = (0.555)^y = 1000$, then the value of $\frac{1}{x} - \frac{1}{y}$ is

A $\frac{1}{3}$

B 3

C 1

D $\frac{2}{3}$

Answer: A

Explanation:

We have, $(5.55)^x = (0.555)^y = 1000$

Taking log in base 10 on both sides,

x($\log_{10} 555$-2) = y($\log_{10} 555$-3) = 3

Then, x($\log_{10} 555$-2) = 3.....(1)

y($\log_{10} 555$-3) = 3 .....(2)

From (1) and (2)

=> $\log_{10} 555 = \frac{3}{x} + 2 = \frac{3}{y} + 3$

=> $\frac{1}{x} - \frac{1}{y} = \frac{1}{3}$

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Question 71

The income of Amala is 20% more than that of Bimala and 20% less than that of Kamala. If Kamala's income goes down by 4% and Bimala's goes up by 10%, then the percentage by which Kamala's income would exceed Bimala's is nearest to

A 31

B 29

C 28

D 32

Answer: A

Explanation:

Assuming the income of Bimla = 100a, then the income of Amala will be 120a.

And the income of Kamala will be 120a*100/80=150a

If Kamala's income goes down by 4%, then new income of Kamala = 150a-150a(4/100) = 150a-6a=144a

If Bimla's income goes up by 10 percent, her new income will be 100a+100a(10/100)=110a

=> Hence the Kamala income will exceed Bimla income by (144a-110a)*100/110a=31

Question 72

The wheels of bicycles A and B have radii 30 cm and 40 cm, respectively. While traveling a certain distance, each wheel of A required 5000 more revolutions than each wheel of B. If bicycle B traveled this distance in 45 minutes, then its speed, in km per hour, was

A 18π

B 14π

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C 16π

D 12π

Answer: C

Explanation:

Distance covered by A in 1 revolution = 2π *30 = 60π

Distance covered by B in 1 revolution = 2π *40 = 80π

Now, (5000+n)60π = 80π n

=> 15000= 4n-3n =>n=15000

Then distance travelled by B = 15000*80π cm = 12π km

Hence, the speed = $\frac{12\pi \times 60}{45}$ = 16π

Question 73

The product of the distinct roots of $| x^2 - x - 6 | = x + 2$ **is**

A −16

B -4

C -24

D -8

Answer: A

Explanation:

We have, $| x^2 - x - 6 | = x + 2$

=> |(x-3)(x+2)|=x+2

For x<-2, (3-x)(-x-2)=x+2

=> x-3=1 =>x=4 (Rejected as x<-2)

For -2$\leq$ x<3, (3-x)(x+2)=x+2 =>x=2,-2

For x$\geq$ 3, (x-3)(x+2)=x+2 =>x=4

Hence the product =4*-2*2=-16

IIFT previous papers (download pdf)

Question 74

In a race of three horses, the first beat the second by 11 metres and the third by 90 metres. If the second beat the third by 80 metres, what was the length, in metres, of the racecourse?

Answer:880

Explanation:

Assuming the length of race course = x and the speed of three horses be a,b and c respectively.

Hence, $\frac{x}{a} = \frac{x-11}{b}$ .....(1)

and $\frac{x}{a} = \frac{x-90}{c}$ .....(2)

Also, $\frac{x}{b} = \frac{x-80}{c}$ .....(3)

From 1 and 2, we get, $\frac{x-11}{b} = \frac{x-90}{c}$ .....(4)

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Dividing (3) by (4), we get, $\frac{x-11}{x} = \frac{x-90}{x-80}$

=> (x-11)(x-80)=x(x-90)

=> 91x-90x=880 => x=880

Question 75

If the population of a town is p in the beginning of any year then it becomes 3 + 2p in the beginning of the next year. If the population in the beginning of 2019 is 1000, then the population in the beginning of 2034 will be

A $(1003)^{15}+6$

B $(997)^{15}-3$

C $(997)2^{14}+3$

D $(1003)2^{15}-3$

Answer: D

Explanation:
The population of town at the beginning of 1st year = p

The population of town at the beginning of 2nd year = 3+2p

The population of town at the beginning of 3rd year = 2(3+2p)+3 = 2*2p+2*3+3 =4p+3(1+2)

The population of town at the beginning of 4th year = 2(2*2p+2*3+3)+3 = 8p+3(1+2+4)

Similarly population at the beginning of the nth year = 2^{n-1}p+3($2^{n-1}-1$) = $2^{n-1}(p+3)$-3

The population in the beginning of 2019 is 1000, then the population in the beginning of 2034 will be $(2^{2034-2019})(1000+3)$-3 = $2^{15}(1003)$-3

Question 76

Consider a function f satisfying f (x + y) = f (x) f (y) where x,y are positive integers, and f(1) = 2. If f(a + 1) +f (a + 2) + ... + f(a + n) = 16 (2 ^{n} - 1) then a is equal to

Answer:3

Explanation:
f (x + y) = f (x) f (y)

Hence, f(2)=f(1+1)=f(1)*f(1)=2*2=4

f(3)=f(2+1)=f(2)*f(1)=4*2=8

f(4)=f(3+1)=f(3)*f(1)=8*2=16

.....=> f(x)=2^{x}

Now, f(a + 1) +f (a + 2) + ... + f(a + n) = 16 (2 ^{n} - 1)

On putting n=1 in the equation we get, f(a+1)=16 => f(a)*f(1)=16 (It is given that f (x + y) = f (x) f (y))

=> 2^{a}*2=16

=> a=3

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Question 77

Amala, Bina, and Gouri invest money in the ratio 3 : 4 : 5 in fixed deposits having respective annual interest rates in the ratio 6 : 5 : 4. What is their total interest income (in Rs) after a year, if Bina's interest income exceeds Amala's by Rs 250?

A 6350

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B 6000

C 7000

D 7250

Answer: D

Explanation:
Assuming the investment of Amala, Bina, and Gouri be 300x, 400x and 500x, hence the interest incomes will be 300x*6/100=18x, 400x*5/100=20x and 500x*4/100 = 20x

Given, Bina's interest income exceeds Amala by 20x-18x=2x=250 => x=125

Now, total interest income = 18x+20x+20x=58x = 58*125 = 7250

Question 78

For any positive integer n, let f(n) = n(n + 1) if n is even, and f(n) = n + 3 if n is odd. If m is a positive integer such that 8f(m + 1) - f(m) = 2, then m equals

Answer:10

Explanation:
Assuming m is even, then 8f(m+1)-f(m)=2

m+1 will be odd

So, 8(m+1+3)-m(m+1)=2

=> 8m+32-$m^2 - m$=2

=> $m^2 - 7m - 30 = 0$

=> m=10,-3

Rejecting the negative value, we get m=10

Assuming m is odd, m+1 will be even.

then, 8(m+1)(m+2)-m-3=2

=> 8($m^2 + 3m + 2$)-m-3=2

=> $8m^2 + 23m + 11 = 0$

Discriminant for the equation = $23^2 - 4 \cdot 8 \cdot 11$ = 177

Hence, the value of m will not be integral. Hence this case will be rejected.

Question 79

The product of two positive numbers is 616. If the ratio of the difference of their cubes to the cube of their difference is 157:3, then the sum of the two numbers is

A 58

B 85

C 50

D 95

Answer: C

Explanation:
Assume the numbers are a and b, then ab=616

We have, $\frac{a^3-b^3}{(a-b)^3} = \frac{157}{3}$

=> $3\left(a^3 - b^3\right) = 157\left(a^3 - b^3 + 3ab\left(b - a\right)\right)$

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=> $154\left(a^3-b^3\right)+3*157*ab\left(b-a\right)$ = 0

=> $154\left(a^3-b^3\right)+3*616*157\left(b-a\right)$ = 0 (ab=616)

=>$a^3-b^3+\left(3\times\ 4\times\ 157\left(b-a\right)\right)$ (154*4=616)

=> $\left(a-b\right)\left(a^2+b^2+ab\right)\ =\ 3\times\ 4\times\ 157\left(a-b\right)$

=> $a^2+b^2+ab\ =\ 3\times\ 4\times\ 157$

Adding ab=616 on both sides, we get

$a^2+b^2+ab\ +ab=\ 3\times\ 4\times\ 157+616$

=> $\left(a+b\right)^2=\ 3\times\ 4\times\ 157+616$ = 2500

=> a+b=50

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Question 80

One can use three different transports which move at 10, 20, and 30 kmph, respectively to reach from A to B. Amal took each mode of transport for $\frac{1}{3}^{rd}$ of his total journey time, while Bimal took each mode of transport for $\frac{1}{3}^{rd}$ of the total distance. The percentage by which Bimal's travel time exceeds Amal's travel time is nearest to

A 22

B 20

C 19

D 21

Answer: A

Explanation:

Assume the total distance between A and B as d and time taken by Amal = t

Since Amal travelled $\frac{1}{3}^{rd}$ of his total journey time in different speeds

d = $\frac{t}{3}\times\ 10+\ \frac{t}{3}\times\ 20+\frac{t}{3}\times\ 30\ =\ 20t$

$\text{Total time taken by Bimal}=\ \frac{d_1}{s_1}+\frac{d_2}{s_2}+\frac{d_3}{s_3}$

$=\ \frac{20t}{3}\times\ \frac{1}{10}+\ \frac{20t}{3}\times\ \frac{1}{20}+\ \frac{20t}{3}\times\ \frac{1}{30}\ =\ \frac{20t(6+3+2)}{3\times30}\ =\ \frac{11}{9}t$

Hence, the ratio of time taken by Bimal to time taken by Amal = $\frac{\frac{11t}{9}}{t}\ =\ \frac{11}{9}$

Therefore, Bimal will exceed Amal's time by $\frac{\frac{11t}{9}-t}{t}\ \times\ 100=22.22$

Question 81

Meena scores 40% in an examination and after review, even though her score is increased by 50%, she fails by 35 marks. If her post-review score is increased by 20%, she will have 7 marks more than the passing score. The percentage score needed for passing the examination is

A 60

B 80

C 70

D 75

Answer: C

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Explanation:
Assuming the maximum marks =100a, then Meena got 40a

After increasing her score by 50%, she will get 40a(1+50/100)=60a

Passing score = 60a+35

Post review score after 20% increase = 60a*1.2=72a

=>Hence, 60a+35+7=72a

=>12a=42 =>a=3.5

=> maximum marks = 350 and passing marks = 210+35=245

=> Passing percentage = 245*100/350 = 70

Question 82

A person invested a total amount of Rs 15 lakh. A part of it was invested in a fixed deposit earning 6% annual interest, and the remaining amount was invested in two other deposits in the ratio 2 : 1, earning annual interest at the rates of 4% and 3%, respectively. If the total annual interest income is Rs 76000 then the amount (in Rs lakh) invested in the fixed deposit was

Answer:9

Explanation:
Assuming the amount invested in the ratio 2:1 was 200x and 100x, then the fixed deposit investment = 1500000-300x

Hence, the interest = 200x*4/100 = 8x and 100x*3/100=3x

Interest from the fixed deposit = (1500000-300x)*6/100 = 90000-18x

Hence the total interest = 90000-18x+8x+3x=90000-7x =76000

=> 7x=14000 => x=2000

Hence, the fixed deposit investment = 1500000-300*2000 = 900000 = 9 lakhs

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Question 83

A club has 256 members of whom 144 can play football, 123 can play tennis, and 132 can play cricket. Moreover, 58 members can play both football and tennis, 25 can play both cricket and tennis, while 63 can play both football and cricket. If every member can play at least one game, then the number of members who can play only tennis is

A 38

B 32

C 45

D 43

Answer: D

Explanation:
Assume the number of members who can play exactly 1 game = I

The number of members who can play exactly 1 game = II

The number of members who can play exactly 1 game = III

I+2II+3III=144+123+132=399....(1)

I+II+III=256.....(2)

=> II+2III=143.....(3)

Also, II+3III=58+25+63=146 .....(4)

=> III = 3 (From 3 and 4)

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=> II =137

=> I = 116

The members who play only tennis = 123-58-25+3 = 43

Question 84

If $a_1 + a_2 + a_3 + ... + a_n = 3(2^{n+1} - 2)$, for every $n \geq 1$, then a_{11} equals

Answer:6144

Explanation:

11th term of series = a_{11} = Sum of 11 terms - Sum of 10 terms = $3(2^{11+1} - 2)$-$3(2^{10+1} - 2)$

= $3(2^{12} - 2 - 2^{11} + 2)$=$3(2^{11})(2 - 1)$= $3*2^{11}$ = 6144

Question 85

The number of the real roots of the equation $2\cos(x(x+1)) = 2^x + 2^{-x}$ is

A 2

B 1

C infinite

D 0

Answer: B

Explanation:

$2\cos(x(x+1)) = 2^x + 2^{-x}$

The maximum value of LHS is 2 when $\cos(x(x+1))$ is 1 and the minimum value of RHS is 2 using AM $\geq$ GM

Hence LHS and RHS can only be equal when both sides are 2. For LHS, cosx(x+1)=1 => x(x+1)=0 => x=0,-1

For RHS minimum value, x=0

Hence only one solution x=0

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Question 86

At their usual efficiency levels, A and B together finish a task in 12 days. If A had worked half as efficiently as she usually does, and B had worked thrice as efficiently as he usually does, the task would have been completed in 9 days. How many days would A take to finish the task if she works alone at her usual efficiency?

A 36

B 24

C 18

D 12

Answer: C

Explanation:

Assuming A completes a units of work in a day and B completes B units of work in a day and the total work = 1 unit

Hence, 12(a+b)=1.....(1)

Also, 9($\frac{a}{2}$ +3b)=1 .....(2)

Using both equations, we get, 12(a+b)= 9($\frac{a}{2}$ +3b)

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=> 4a+4b= $\frac{3a}{2}$ +9b

=> $\frac{5a}{2}$ =5b

=> a=2b

Substituting the value of b in equation (1),

12($\frac{3a}{2}$)=1

=> a= $\frac{1}{18}$

Hence, the number of days required = 1/($\frac{1}{18}$)=18

Question 87

In a class, 60% of the students are girls and the rest are boys. There are 30 more girls than boys. If 68% of the students, including 30 boys, pass an examination, the percentage of the girls who do not pass is

Answer:20

Explanation:

Assuming the number of students =100x

Hence, the number of girls = 60x and the number of boys = 40x

We have, 60x-40x=30 => x=1.5

The number of girls = 60*1.5=90

Number of girls that pass = 68x-30=68*1.5-30 = 102-30=72

The number of girls who do not pass = 90-72=18

Hence the percentage of girls who do not pass = 1800/90=20

Question 88

In a circle of radius 11 cm, CD is a diameter and AB is a chord of length 20.5 cm. If AB and CD intersect at a point E inside the circle and CE has length 7 cm, then the difference of the lengths of BE and AE, in cm, is

A 2.5

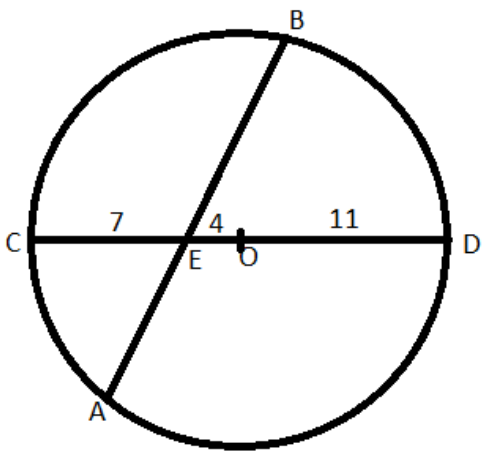
B 1.5

C 3.5

D 0.5

Answer: D

Explanation:



In figure AE*BE=CE*DE (**The intersecting chords theorem**)

=> 7*15= x(20.5-x) (Assuming AE=x)

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=> 210=x(41-2x)

=> $2x^2$-41x+210=0

=> x=10 or x=10.5 => AE=10 or AE=10.5 Hence BE = 20.5-10=10.5 or BE = 20.5-10.5=10

Required difference= 10.5-10=0.5

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Question 89

On selling a pen at 5% loss and a book at 15% gain, Karim gains Rs. 7. If he sells the pen at 5% gain and the book at 10% gain, he gains Rs. 13. What is the cost price of the book in Rupees?

A 95

B 85

C 80

D 100

Answer: C

Explanation:
Assuming the cost price of pen = 100p and the cost price of book = 100b

So, on selling a pen at 5% loss and a book at 15% gain, net gain = -5p+15b = 7 1

On selling the pen at 5% gain and the book at 10% gain, net gain = 5p+10b = 13 2

Adding 1 and 2 we get, 25b=20

Hence 100b= 20*4=80,

C is the answer.

Question 90

A chemist mixes two liquids 1 and 2. One litre of liquid 1 weighs 1 kg and one litre of liquid 2 weighs 800 gm. If half litre of the mixture weighs 480 gm, then the percentage of liquid 1 in the mixture, in terms of volume, is

A 80

B 70

C 85

D 75

Answer: A

Explanation:
The weight/volume(g/L) for liquid 1 = 1000

The weight/volume(g/L) for liquid 2 = 800

The weight/volume(g/L) of the mixture = 480/(1/2) = 960

Using alligation the ratio of liquid 1 and liquid 2 in the mixture = (960-800)/(1000-960) = 160/40 = 4:1

Hence the percentage of liquid 1 in the mixture = 4*100/(4+1)=80

Question 91

Ramesh and Gautam are among 22 students who write an examination. Ramesh scores 82.5. The average score of the 21 students other than Gautam is 62. The average score of all the 22 students is one more than the average score of the 21 students other than Ramesh. The score of Gautam is

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A 53

B 51

C 48

D 49

Answer: B

Explanation:
Assume the average of 21 students other than Ramesh = a

Sum of the scores of 21 students other than Ramesh = 21a

Hence the average of 22 students = a+1

Sum of the scores of all 22 students = 22(a+1)

The score of Ramesh = Sum of scores of all 22 students - Sum of the scores of 21 students other than Ramesh = 22(a+1)-21a=a+22 = 82.5 (Given)

=> a = 60.5

Hence, sum of the scores of all 22 students = 22(a+1) = 22*61.5 = 1353

Now the sum of the scores of students other than Gautam = 21*62 = 1302

Hence the score of Gautam = 1353-1302=51

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Question 92

If m and n are integers such that $(\sqrt{2})^{19}3^4 4^2 9^m 8^n = 3^n 16^m (\sqrt[4]{64})$ then m is

A -20

B -24

C -12

D -16

Answer: C

Explanation:
We have, $(\sqrt{2})^{19}3^4 4^2 9^m 8^n = 3^n 16^m (\sqrt[4]{64})$

Converting both sides in powers of 2 and 3, we get

$2^{\frac{19}{2}} 3^4 2^4 3^{2m} 2^{3n} = 3^n 2^{4m} 2^{\frac{6}{4}}$

Comparing the power of 2 we get, $\frac{19}{2} + 4 + 3n = 4m + \frac{6}{4}$

=> 4m=3n+12 .....(1)

Comparing the power of 3 we get, $4 + 2m = n$

Substituting the value of n in (1), we get

4m=3(4+2m)+12

=> m=-12

Question 93

Three men and eight machines can finish a job in half the time taken by three machines and eight men to finish the same job. If two machines can finish the job in 13 days, then how many men can finish the job in 13 days?

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Answer:13

Explanation:
Consider the work done by a man in a day = a and that by a machine = b

Since, three men and eight machines can finish a job in half the time taken by three machines and eight men to finish the same job, hence the efficiency will be double.

=> 3a+8b = 2(3b+8a)

=> 13a=2b

Hence work done by 13 men in a day = work done by 2 machines in a day.

=> If two machines can finish the job in 13 days, then same work will be done 13 men in 13 days.

Hence the required number of men = 13

Question 94

Corners are cut off from an equilateral triangle T to produce a regular hexagon H. Then, the ratio of the area of H to the area of T is

A 2 : 3

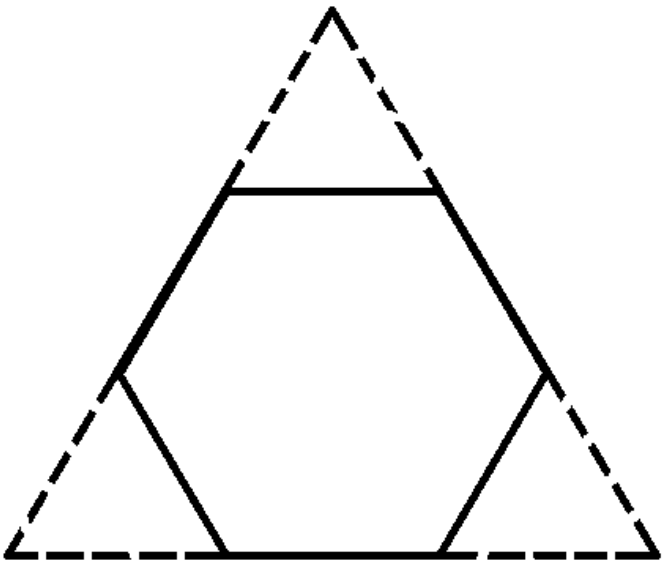
B 4 : 5

C 5 : 6

D 3 : 4

Answer: A

Explanation:



The given figure can be divided into 9 regions or equilateral triangles of equal areas as shown below,

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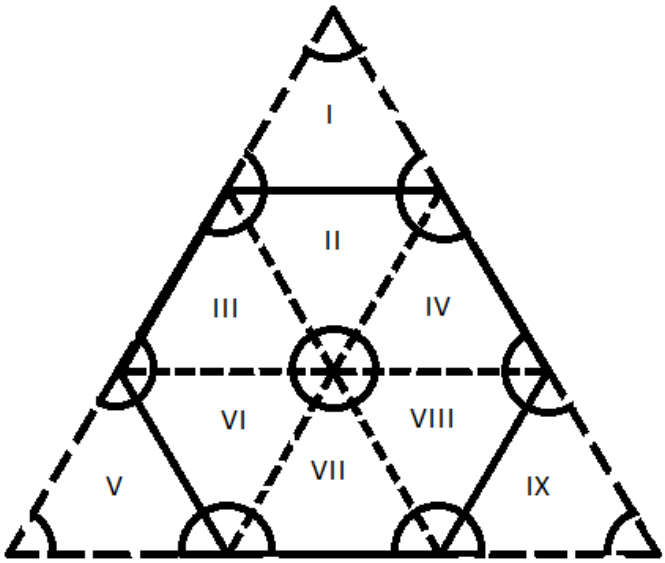

Now the hexagon consists of 6 regions and the triangle consists of 9 regions.

Hence the ratio of areas = 6/9 =2:3

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Question 95

Let x and y be positive real numbers such that $\log_5(x+y)+\log_5(x-y)=3$, **and** $\log_2 y-\log_2 x=1-\log_2 3$. **Then** xy **equals**

A 150

B 25

C 100

D 250

Answer: A

Explanation:

We have, $\log_5(x+y)+\log_5(x-y)=3$

=> $x^2-y^2=125$.....(1)

$\log_2 y-\log_2 x=1-\log_2 3$

=> $\frac{y}{x}=\frac{2}{3}$

=> 2x=3y => x= $\frac{3y}{2}$

On substituting the value of x in 1, we get

$\frac{5x^2}{4}$ =125

=>y=10, x=15

Hence xy=150

Question 96

Let S be the set of all points (x, y) in the x-y plane such that $|x|+|y|\leq 2$ **and** $|x|\geq 1$. **Then, the area, in square units, of the region represented by S equals**

Answer:2

Explanation:

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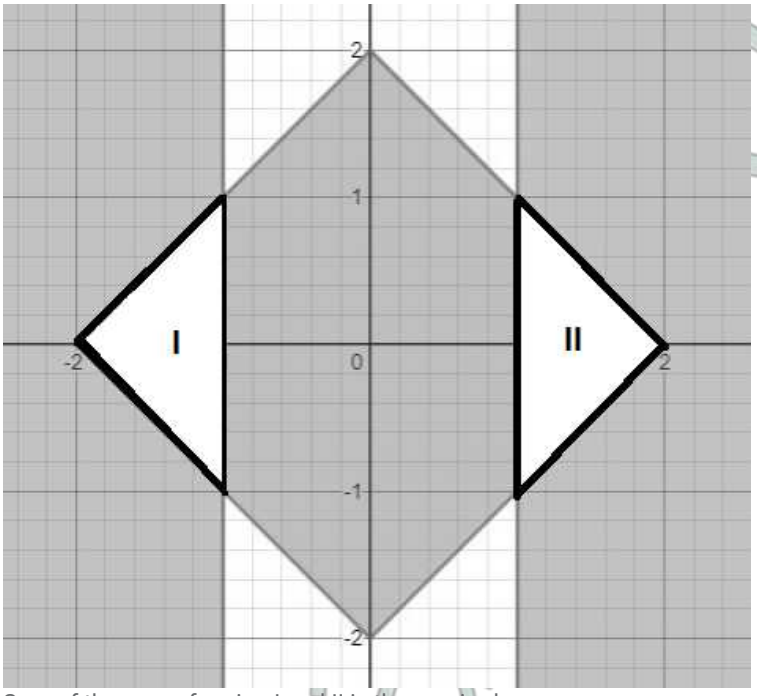
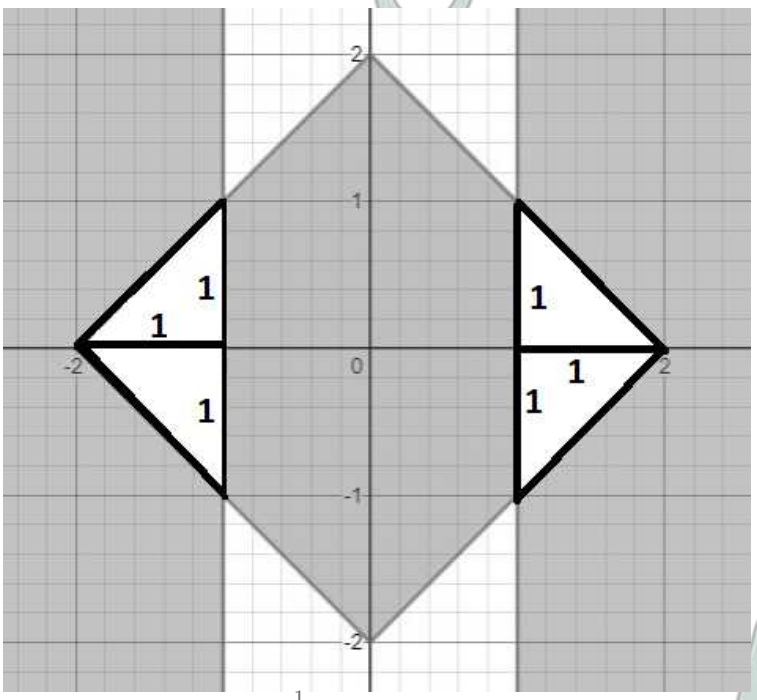


Sum of the area of region I and II is the required area.



Now, required area = $4 \times \frac{1}{2} \times 1 \times 1 = 2$

Question 97

With rectangular axes of coordinates, the number of paths from (1, 1) to (8, 10) via (4, 6), where each step from any point (x, y) is either to (x, y+1) or to (x+1, y), is

Answer:3920

Explanation:

The number of paths from (1, 1) to (8, 10) via (4, 6) = The number of paths from (1,1) to (4,6) * The number of paths from (4,6) to (8,10)

To calculate the number of paths from (1,1) to (4,6), 4-1 =3 steps in x-directions and 6-1=5 steps in y direction

Hence the number of paths from (1,1) to (4,6) = $^{(3+5)}C_3$ = 56

To calculate the number of paths from (4,6) to (8,10), 8-4 =4 steps in x-directions and 10-6=4 steps in y direction

Hence the number of paths from (4,6) to (8,10) = $^{(4+4)}C_4$ = 70

The number of paths from (1, 1) to (8, 10) via (4, 6) = 56*70=3920

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Question 98

If the rectangular faces of a brick have their diagonals in the ratio $3 : 2\sqrt{3} : \sqrt{15}$, then the ratio of the length of the shortest edge of the brick to that of its longest edge is

A $\sqrt{3} : 2$

B $1 : \sqrt{3}$

C $2 : \sqrt{5}$

D $\sqrt{2} : \sqrt{3}$

Answer: B

Explanation:

Assuming the dimensions of the brick are a, b and c and the diagonals are 3, 2 $\sqrt{3}$ and $\sqrt{15}$

Hence, $a^2 + b^2 = 3^2$ .....(1)

$b^2 + c^2 = (2\sqrt{3})^2$ .....(2)

$c^2 + a^2 = (\sqrt{15})^2$ .....(3)

Adding the three equations, $2(a^2 + b^2 + c^2)$ = 9+12+15=36

=>$a^2 + b^2 + c^2$ = 18.....(4)

Subtracting (1) from (4), we get c^2 = 9 =>c=3

Subtracting (2) from (4), we get a^2 = 6 =>a=$\sqrt{6}$

Subtracting (3) from (4), we get b^2 = 3 =>b=$\sqrt{3}$

The ratio of the length of the shortest edge of the brick to that of its longest edge is = $\frac{\sqrt{3}}{3} = 1 : \sqrt{3}$

Question 99

The number of solutions to the equation $|x|(6x^2 + 1) = 5x^2$ is

Answer:5

Explanation:

For x <0, -x$(6x^2 + 1) = 5x^2$

=> $(6x^2 + 1)$ = -5x

=> $(6x^2 + 5x + 1)$ = 0

=>$(6x^2 + 3x + 2x + 1)$ = 0

=> (3x+1)(2x+1)=0 =>x= $-\frac{1}{3}$ or x= $-\frac{1}{2}$

For x=0, LHS=RHS=0 (Hence, 1 solution)

For x >0, x$(6x^2 + 1) = 5x^2$

=> $(6x^2 - 5x + 1)$ = 0

=>(3x-1)(2x-1)=0 =>x= $\frac{1}{3}$ or x= $\frac{1}{2}$

Hence, the total number of solutions = 5

Question 100

Let T be the triangle formed by the straight line 3x + 5y - 45 = 0 and the coordinate axes. Let the circumcircle of T have radius of length L, measured in the same unit as the coordinate axes. Then, the integer closest to L is

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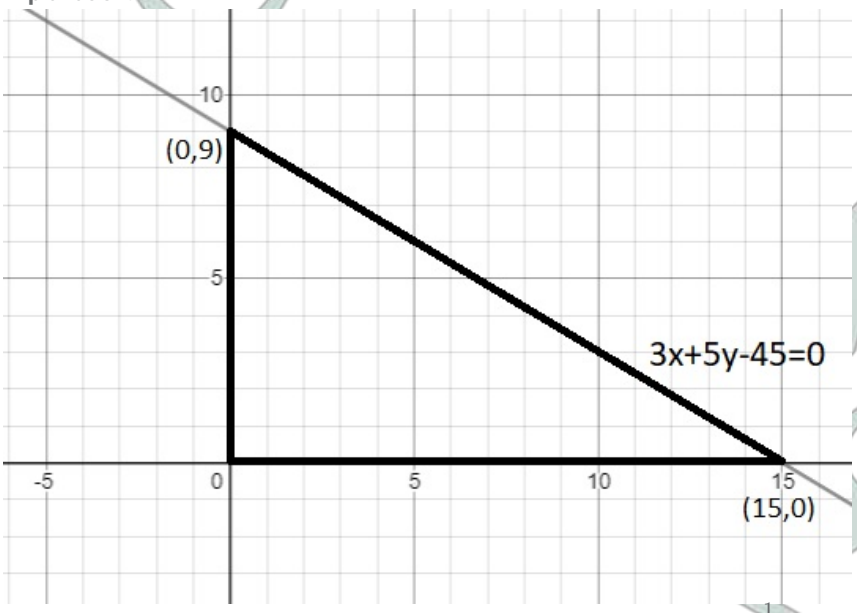
Answer:9

Explanation:



In any right triangle, the circumradius is half of the hypotenuse. Here,L= $\frac{1}{2}$ * the length of the hypotenuse = $\frac{1}{2}(\sqrt{15^2+9^2})$ = $\frac{1}{2}*\sqrt{306}$ = $\frac{1}{2}\times$ 17.49 = 8.74

Hence, the integer close to L = 9

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