CAT 2020 Slot 3

VARC

Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Mode of transportation affects the travel experience and thus can produce new types of travel writing and perhaps even new "identities." Modes of transportation determine the types and duration of social encounters; affect the organization and passage of space and time; . . . and also affect perception and knowledge—how and what the traveler comes to know and write about. The completion of the first U.S. transcontinental highway during the 1920s . . . for example, inaugurated a new genre of travel literature about the United States—the automotive or road narrative. Such narratives highlight the experiences of mostly male protagonists "discovering themselves" on their journeys, emphasizing the independence of road travel and the value of rural folk traditions.

Travel writing's relationship to empire building— as a type of "colonialist discourse"—has drawn the most attention from academicians. Close connections have been observed between European (and American) political, economic, and administrative goals for the colonies and their manifestations in the cultural practice of writing travel books. Travel writers' descriptions of foreign places have been analyzed as attempts to validate, promote, or challenge the ideologies and practices of colonial or imperial domination and expansion. Mary Louise Pratt's study of the genres and conventions of 18th- and 19th-century exploration narratives about South America and Africa (e.g., the "monarch of all I survey" trope) offered ways of thinking about travel writing as embedded within relations of power between metropole and periphery, as did Edward Said's theories of representation and cultural imperialism. Particularly Said's book, Orientalism, helped scholars understand ways in which representations of people in travel texts were intimately bound up with notions of self, in this case, that the Occident defined itself through essentialist, ethnocentric, and racist representations of the Orient. Said's work became a model for demonstrating cultural forms of imperialism in travel texts, showing how the political, economic, or administrative fact of dominance relies on legitimating discourses such as those articulated through travel writing. . . .

Feminist geographers' studies of travel writing challenge the masculinist history of geography by questioning who and what are relevant subjects of geographic study and, indeed, what counts as geographic knowledge itself. Such questions are worked through ideological constructs that posit men as explorers and women as travelers—or, conversely, men as travelers and women as tied to the home. Studies of Victorian women who were professional travel writers, tourists, wives of colonial administrators, and other (mostly) elite women who wrote narratives about their experiences abroad during the 19th century have been particularly revealing. From a "liberal" feminist perspective, travel presented one means toward female liberation for middle- and upper-class Victorian women. Many studies from the 1970s onward demonstrated the ways in which women's gendered identities were negotiated differently "at home" than they were "away," thereby showing women's self-development through travel. The more recent post structural turn in studies of Victorian travel writing has focused attention on women's diverse and fragmented identities as they narrated their travel experiences, emphasizing women's sense of themselves as women in new locations, but only as they worked through their ties to nation, class, whiteness, and colonial and imperial power structures

Question 1

From the passage, we can infer that feminist scholars' understanding of the experiences of Victorian women travellers is influenced by all of the following EXCEPT scholars':

A awareness of gender issues in Victorian society

B knowledge of class tensions in Victorian society

C perspective that they bring to their research

D awareness of the ways in which identity is formed

Answer: B

Explanation:
The aspects that guided/influenced the understanding of feminist scholars who examined Victorian women's travelling experiences need to be found out. We understand that the attempt made by feminist scholars was to "challenge the masculinist history of geography by (1) questioning who and what are relevant subjects of geographic study, and (2) what counts as geographic knowledge itself." And considering the role of women in travel writing during the Victorian era enabled these scholars to inspect new perspectives and achieve the aforementioned objectives {"...*such questions are worked through ideological constructs that posit men as explorers and women as travelers—or, conversely, men as travelers and women as tied to the home*..."}[Option C]. The varied viewpoints offered by women during this period originated from the difference in the gendered identities, implicitly indicating that the presence of an inequality/ineuity in the gender roles [Option A]. Additionally, studies concerning the manner in which travel altered a woman's gendered identities were also available; this further shaped the feminist scholars' understanding of the travelling experiences of Victorian women [Option D]. It has not been presented or implied that the knowledge of "class" tensions, as stated in Option B, was an imperative element that influenced scholars' understanding. Hence, Option B is the correct answer.

Question 2

American travel literature of the 1920s:

A showed participation in local traditions.

B developed the male protagonists' desire for independence

C presented travellers' discovery of their identity as different from others.

D celebrated the freedom that travel gives.

Answer: D

Explanation:
We can zero-in on the answer based on the following excerpt: {*...The completion of the first U.S. transcontinental highway during the 1920s . . . for example, inaugurated a new genre of travel literature about the United States—the automotive or road narrative. Such narratives highlight the experiences of mostly male protagonists "discovering themselves" on their journeys, emphasizing the independence of road travel and the value of rural folk traditions...*}

Option A: talks about participation in local traditions which is not mentioned or implied.

Option B: is a distorted comment that does not align with the idea discussed. The author states that road journeys enabled the male protagonist's experience of "discovering themselves"; the phrase "desire for independence" would be incorrect in this regard.

Option C: is not even remotely discussed/implied.

Option D: It is mentioned that the inauguration of a transcontinental highway during the 1920s paved the way for a new genre that emphasised the freedom attached to such road travelling enterprises. Hence, it implicitly depicted travel as an experience celebrating an individual's independence {...*emphasizing the independence*...}.

Hence, of the given options, Option D aptly captures the characteristics of American travel literature of the 1920s.

Question 3

From the passage, it can be inferred that scholars argue that Victorian women experienced self-development through their travels because:

A they developed a feminist perspective of the world.

B they were from the progressive middle- and upper-classes of society.

C they were on a quest to discover their diverse identities.

D their identity was redefined when they were away from home.

Answer: D

Explanation:
The question requires us to probe the reason behind why the scholars argue that Victorian women experienced self-development through their travels. Let us pay heed to the following segment from the passage: {...*Many studies from the 1970s onward demonstrated the ways in which women's gendered identities were negotiated differently "at home" than they were "away," thereby showing women's self-development through travel...*}. It is highlighted that travelling {being "away"} enabled women's identities to be " *negotiated differently*" {highlighting transformation/reconfiguration}, which in turn was the cause of their self-development. Option D is closest to this understanding. Options A, B and C fail to present the reason and are invalid statements/inferences.

Question 4

According to the passage, Said's book, "Orientalism":

A argued that cultural imperialism was more significant than colonial domination.

B explained the difference between the representation of people and the actual fact

C illustrated how narrow minded and racist westerners were

D demonstrated how cultural imperialism was used to justify colonial domination.

Answer: D

Explanation:
A direct inference from the excerpt: {.. .*Said's work became a model for demonstrating cultural forms of imperialism in travel texts, showing how the political, economic, or administrative fact of dominance relies on legitimating discourses such as those articulated through travel writing.* . .}. It is stated that Said's work rendered scholars with an understanding of "cultural imperialism" and the manner in which it was used to justify colonial domination {or similar pursuits thereof}. Option B aptly captures this aspect. Options A, B and C either diverge from the discussion or are distorted comments.

Question 5

From the passage, we can infer that travel writing is most similar to:

A political journalism

B feminist writing

C autobiographical writing.

D historical fiction.

Answer: C

Explanation:
Since travel writing involves the presentation and recounting of personal travel experiences and/or perspective of the world, the closest category to this would be autobiographical writing [Option C]. Political journalism and feminist writing can be hurled out the window. Associating travel literature to historical fiction would be inappropriate as well. Hence, of the given choices, Option C is the correct answer.

Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Although one of the most contested concepts in political philosophy, human nature is something on which most people seem to agree. By and large, according to Rutger Bregman in his new book Humankind, we have a rather pessimistic view - not of ourselves exactly, but of everyone else. We see other people as selfish, untrustworthy and dangerous and therefore we behave towards them with defensiveness and suspicion. This was how the 17th-century philosopher Thomas Hobbes conceived our natural state to be, believing that all that stood between us and violent anarchy was a strong state and firm leadership. But in following Hobbes, argues Bregman, we ensure that the negative view we have of human nature is reflected back at us. He instead puts his faith in Jean-Jacques Rousseau, the 18th-century French thinker, who famously declared that man was born free and it was civilisation - with its coercive powers, social classes and restrictive laws - that put him in chains.

Hobbes and Rousseau are seen as the two poles of the human nature argument and it's no surprise that Bregman strongly sides with the Frenchman. He takes Rousseau's intuition and paints a picture of a prelapsarian idyll in which, for the better part of 300,000 years, Homo sapiens lived a fulfilling life in harmony with nature . . . Then we discovered agriculture and for the next 10,000 years it was all property, war, greed and injustice. . . .

It was abandoning our nomadic lifestyle and then domesticating animals, says Bregman, that brought about infectious diseases such as measles, smallpox, tuberculosis, syphilis, malaria, cholera and plague. This may be true, but what Bregman never really seems to get to grips with is that pathogens were not the only things that grew with agriculture - so did the number of humans. It's one thing to maintain friendly relations and a property-less mode of living when you're 30 or 40 hunter-gatherers following the food. But life becomes a great deal more complex and knowledge far more extensive when there are settlements of many thousands. "Civilisation has become synonymous with peace and progress and wilderness with war and decline," writes Bregman. "In reality, for most of human existence, it was the other way around." Whereas traditional history depicts the collapse of civilisations as "dark ages" in which everything gets worse, modern scholars, he claims, see them more as a reprieve, in which the enslaved gain their freedom and culture flourishes. Like much else in this book, the truth is probably somewhere between the two stated positions.

In any case, the fear of civilisational collapse, Bregman believes, is unfounded. It's the result of what the Dutch biologist Frans de Waal calls "veneer theory" - the idea that just below the surface, our bestial nature is waiting to break out. . . . There's a great deal of reassuring human decency to be taken from this bold and thought-provoking book and a wealth of evidence in support of the contention

that the sense of who we are as a species has been deleteriously distorted. But it seems equally misleading to offer the false choice of Rousseau and Hobbes when, clearly, humanity encompasses both.

Question 6

None of the following views is expressed in the passage EXCEPT that:

A most people agree with Hobbes' pessimistic view of human nature as being intrinsically untrustworthy and selfish.

B Hobbes and Rousseau disagreed on the fundamental nature of humans, but both believed in the need for a strong state.

C Bregman agrees with Hobbes that firm leadership is needed to ensure property rights and regulate strife.

D the author of the review believes in the veneer theory of human nature.

Answer: A

Explanation:
We need to find a viewpoint that is presented in the passage. Let us inspect the individual options:

Option A: The introductory lines of the passage helps us infer this: {... *Although one of the most contested concepts in political philosophy, human nature is something on which most people seem to agree. By and large, according to Rutger Bregman in his new book Humankind, we have a rather pessimistic view - not of ourselves exactly, but of everyone else. We see other people as selfish, untrustworthy and dangerous and therefore we behave towards them with defensiveness and suspicion*...}

Option B: The author calls the viewpoints of Hobbes and Rousseau as polar opposites {" *Hobbes and Rousseau are seen as the two poles of the human nature argument*"} and does not present a similarity, especially any comment of the form: " *both believed in the need for a strong state.*" Thus, we can eliminate this option.

Option C: No such view has been presented.

Option D: The author's opinion of Frans de Waal's "veneer theory" is not evident/not highlighted. Hence, we can eliminate this option.

Thus, of the given statements, Option A is the correct answer.

Question 7

According to the passage, the "collapse of civilisations" is viewed by Bregman as:

A a time that enables changes in societies and cultures.

B a sign of regression in society's trajectory.

C resulting from a breakdown in the veneer of human nature.

D a temporary phase which can be rectified by social action.

Answer: A

Explanation:
Bregman considers the aftermath of civilizational collapse as a period that allows for certain changes or alterations in the society {..."*Civilisation has become synonymous with peace and progress and wilderness with war and decline," writes Bregman. "In reality, for most of human existence, it was the other way around." Whereas traditional history depicts the collapse of civilisations as "dark ages" in which everything gets worse, modern scholars, he claims, see them more as a reprieve, in which the enslaved gain their freedom and culture flourishes*... }. Option A correctly captures this point. Options B, C and D are either not stated or distorted interpretations.

Question 8

According to the author, the main reason why Bregman contrasts life in pre-agricultural societies with agricultural societies is to:

A advocate the promotion of less complex societies as a basis for greater security and prosperity

B highlight the enormous impact that settled farming had on population growth

C make the argument that an environmentally conscious lifestyle is a more harmonious way of living.

D bolster his argument that people are basically decent, but progress as we know it can make them selfish.

Answer: D

Explanation:
Bregman disagrees with Hobbes' standpoint of humans being inherently selfish or bestial and instead takes Rousseau's side. He asserts that civilizational progress caused by the post-agricultural setup is responsible for the negative/undesired circumstances. In this regard, he presents the contrasting picture of pre and post-agricultural societies {attaches the image of "a prelapsarian idyll" to the nomadic lifestyle, while considers the discovery of agriculture as a misevent}. Thus, this depiction supplements "his argument that people are basically decent, but progress as we know it can make them selfish." Option D is the appropriate answer.

Option A: The aspect of complexity is not the primary focal point. Thus, this option can be eliminated.

Option B: This diverges from the discussion onto a new line of discussion: "impact that settled farming had on population growth". Hence, we can discard this choice as well.

Option C: Again, the focus is not on the environment; hence, we can scrap off this option.

Question 9

The author has differing views from Bregman regarding:

A the role of agriculture in the advancement of knowledge.

B the role of pathogens in the spread of infectious diseases.

C a property-less mode of living being socially harmonious.

D a civilised society being coercive and unjust.

Answer: D

Explanation:
At the end of the passage, the author states the following: {... *There's a great deal of reassuring human decency to be taken from this bold and thought-provoking book and a wealth of evidence in support of the contention that the sense of who we are as a species has been deleteriously distorted. But it seems equally misleading to offer the false choice of Rousseau and Hobbes when, clearly, humanity encompasses both...*} Thus, he does not truly agree with Bregman's portrayal of the civilized society. Option D correctly captures this disagreement.

Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question.

I've been following the economic crisis for more than two years now. I began working on the subject as part of the background to a novel, and soon realized that I had stumbled across the most interesting story I've ever found. While I was beginning to work on it, the British bank Northern Rock blew up, and it became clear that, as I wrote at the time, "If our laws are not extended to control the new kinds of super-powerful, super-complex, and potentially super risky investment vehicles, they will one day cause a financial disaster of global-systemic proportions." . . . I was both right and too late, because all the groundwork for the crisis had already been done—though the sluggishness of the world's governments, in not preparing for the great unraveling of autumn 2008, was then and still is stupefying. But this is the first reason why I wrote this book: because what's happened is extraordinarily interesting. It is an absolutely amazing story, full of human interest and drama, one whose byways of mathematics, economics, and psychology are both central to the story of the last decades and mysteriously unknown to the general public. We have heard a lot about "the two cultures" of science and the arts—we heard a particularly large amount about it in 2009, because it was the fiftieth anniversary of the speech during which C. P. Snow first used the phrase. But I'm not sure the idea of a huge gap between science and the arts is as true as it was half a century ago—it's certainly true, for instance, that a general reader who wants to pick up an education in the fundamentals of science will find it easier than ever before. It seems to me that there is a much bigger gap between the world of finance and that of the general public and that there is a need to narrow that gap, if the financial industry is not to be a kind of priesthood, administering to its own mysteries and feared and resented by the rest of us. Many bright, literate people have no idea about all sorts of economic basics, of a type that financial insiders take as elementary facts of how the world works. I am an outsider to finance and economics, and my hope is that I can talk across that gulf.

My need to understand is the same as yours, whoever you are. That's one of the strangest ironies of this story: after decades in which the ideology of the Western world was personally and economically individualistic, we've suddenly been hit by a crisis which shows in the starkest terms that whether we like it or not—and there are large parts of it that you would have to be crazy to like—we're all in this together. The aftermath of the crisis is going to dominate the economics and politics of our societies for at least a decade to come and perhaps longer.

Question 10

Which one of the following, if true, would be an accurate inference from the first sentence of the passage?

A The author's preoccupation with the economic crisis is not less than two years old.

B The author is preoccupied with the economic crisis because he is being followed.

C The economic crisis outlasted the author's preoccupation with it.

D The author has witnessed many economic crises by travelling a lot for two years

Answer: A

Explanation:
This is a direct inference question that requires minimal effort and can be accurately answered using the option-elimination mechanism. The first sentence of the passage is as follows: " ...*I've been following the economic crisis for more than two years now.* ..". It is evident that the author has been following {events/information associated with} the economic crisis for at least two years if not more. Thus, Option A is a sensible inference to draw from this statement. Options B, C and D are inane interpretations of the same and can be effortlessly eliminated.

Question 11

Which one of the following best captures the main argument of the last paragraph of the passage?

A The aftermath of the crisis will strengthen the central ideology of individualism in the Western world

B Whoever you are, you would be crazy to think that there is no crisis.

C In the decades to come, other ideologies will emerge in the aftermath of the crisis.

D The ideology of individualism must be set aside in order to deal with the crisis.

Answer: D

Explanation:
In the final paragraph, the author highlights the crisis as an ironical situation: a group of individualistic entities facing an issue with collective impact and thereby, needs to be dealt with "together" or by shifting from the existing self-centred setup {"...*That's one of the strangest ironies of this story: after decades in which the ideology of the Western world was personally and economically individualistic, we've suddenly been hit by a crisis which shows in the starkest terms that whether we like it or not—and there are large parts of it that you would have to be crazy to like—we're all in this together....*"}. Option D is the closest choice that captures this element. Option A is contrary to the point presented in the concluding para. Options B and C are either divergent to the point made or merely distorted comments. Hence, Option D is the correct answer.

Question 12

According to the passage, the author is likely to be supportive of which one of the following programmes?

A Economic policies that are more sensitively calibrated to the fluctuations of the market.

B An educational curriculum that promotes economic research

C An educational curriculum that promotes developing financial literacy in the masses.

D The complete nationalisation of all financial institutions

Answer: C

Explanation:
A predominant idea discussed by the author is regarding the lack of financial literacy that could be truly beneficial to our understanding of the world. This is emphasised via the following excerpt:

{*...It seems to me that there is a much bigger gap between the world of finance and that of the general public and that there is a need to narrow that gap, if the financial industry is not to be a kind of priesthood, administering to its own mysteries and feared and resented by the rest of us. Many bright, literate people have no idea about all sorts of economic basics, of a type that financial insiders take as elementary facts of how the world works. I am an outsider to finance and economics, and my hope is that I can talk across that gulf....*}

Option C aligns with this concern and is, consequently, an idea that the author is bound to support. Option B appears as another likely candidate; however, economic research is not one of the focal points mentioned. Options A and D contain elements that are not discussed or are opposite to the author's ideas. Hence, Option C is a programme that the author is most likely to be supportive of.

Question 13

All of the following, if true, could be seen as supporting the arguments in the passage, EXCEPT:

A The failure of economic systems does not necessarily mean the failure of their ideologies.

B The difficulty with understanding financial matters is that they have become so arcane.

C The story of the economic crisis is also one about international relations, global financial security, and mass psychology.

D Economic crises could be averted by changing prevailing ideologies and beliefs.

Answer: A

Explanation:
Let us inspect the individual options:

Option A: If true, this statement could be antithetical to the point put forth in the concluding paragraph: the author believes that an individualistic ideology isn't the right way forward; instead, we need to deal with such crises collectively. Thus, this is a conflicting viewpoint and thereby, the correct answer.

Option B: If true, aligns with the author's point in the first paragraph: {.. *.It seems to me that there is a much bigger gap between the world of finance and that of the general public and that there is a need to narrow that gap, if the financial industry is not to be a kind of priesthood, administering to its own mysteries and feared and resented by the rest of us...*}

Options C and D: If true, this is in tune with the author's claim {made in the final segment} about dealing with such crises together.

Hence, of the given statements, Options A deviates from the author's argument and thus, is the correct answer.

Question 14

Which one of the following, if false, could be seen as supporting the author's claims?

A The huge gap between science and the arts has steadily narrowed over time.

B The economic crisis was not a failure of collective action to rectify economic problems.

C Most people are yet to gain any real understanding of the workings of the financial world.

D The global economic crisis lasted for more than two years.

Answer: B

Explanation:
On skimming through the statements, it is evident that Options A and D do very little, if at all anything, to support the author's claim. Option C, in its current form, aligns with the author's assertion; however, if false, it is opposite to the author's argument about financial literacy {on negating the statement, it indicates that most people do have an understanding of the workings of the financial world}. Option B, if false, is in line with the assertions made in the concluding paragraph.

Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question.

[There is] a curious new reality: Human contact is becoming a luxury good. As more screens appear in the lives of the poor, screens are disappearing from the lives of the rich. The richer you are, the more you spend to be off-screen. . . .

The joy — at least at first — of the internet revolution was its democratic nature. Facebook is the same Facebook whether you are rich or poor. Gmail is the same Gmail. And it's all free. There is something mass market and unappealing about that. And as studies show that time on these advertisement-support platforms is unhealthy, it all starts to seem déclassé, like drinking soda or smoking cigarettes, which wealthy people do less than poor people. The wealthy can afford to opt out of having their data and their attention sold as a product. The poor and middle class don't have the same kind of resources to make that happen.

Screen exposure starts young. And children who spent more than two hours a day looking at a screen got lower scores on thinking and language tests, according to early results of a landmark study on brain development of more than 11,000 children that the National Institutes of Health is supporting. Most disturbingly, the study is finding that the brains of children who spend a lot of time on screens are different. For some kids, there is premature thinning of their cerebral cortex. In adults, one study found an association between screen time and depression. . . .

Tech companies worked hard to get public schools to buy into programs that required schools to have one laptop per student, arguing that it would better prepare children for their screen-based future. But this idea isn't how the people who actually build the screen-based future raise their own children. In Silicon Valley, time on screens is increasingly seen as unhealthy. Here, the popular elementary school is the local Waldorf School, which promises a back-to-nature, nearly screen-free education. So as wealthy kids are growing up with less screen time, poor kids are growing up with more. How comfortable someone is with human engagement could become a new class marker.

Human contact is, of course, not exactly like organic food . . . . But with screen time, there has been a concerted effort on the part of Silicon Valley behemoths to confuse the public. The poor and the middle class are told that screens are good and important for them and their children. There are fleets of psychologists and neuroscientists on staff at big tech companies working to hook eyes and minds to the screen as fast as possible and for as long as possible. And so human contact is rare. . . .

There is a small movement to pass a "right to disconnect" bill, which would allow workers to turn their phones off, but for now, a worker can be punished for going offline and not being available. There is also the reality that in our culture of increasing isolation, in which so many of the traditional gathering places and social structures have disappeared, screens are filling a crucial void.

Question 15

Which of the following statements about the negative effects of screen time is the author least likely to endorse?

A It is shown to have adverse effects on young children's learning

B It increases human contact as it fills an isolation void.

C It can cause depression in viewers.

D It is designed to be addictive.

Answer: B

Explanation:
Option A: This author will agree with this assertion. It has been mentioned in the third para: {.. . *For some kids, there is premature thinning of their cerebral cortex...*}.

Option B: Reduction in human contact or social engagement is one of the negative impacts of screen time that the author highlights in the passage. Option B is antithetical to this presentation and is, hence, not a claim that the author is likely to endorse.

Option C: The author states this element in the third para: {.. . *In adults, one study found an association between screen time and depression...*}

Option D: A point along similar lines has been presented in the fifth para: {.. . *There are fleets of psychologists and neuroscientists on staff at big tech companies working to hook eyes and minds to the screen as fast as possible and for as long as possible. And so human contact is rare...*}

Hence, Option B is the correct answer.

Question 16

The statement "The richer you are, the more you spend to be off-screen" is supported by which other line from the passage?

A "Gmail is the same Gmail. And it's all free."

B "How comfortable someone is with human engagement could become a new class marker."

C ". . . screens are filling a crucial void."

D ". . . studies show that time on these advertisement-support platforms is unhealthy .

Answer: B

Explanation:
At the very beginning, the author highlights the disparity in the screen time with regard to the wealthy and the common masses: {.. *.As more screens appear in the lives of the poor, screens are disappearing from the lives of the rich. The richer you are, the more you spend to be off-screen...*}. The statement in Option B supplements this assertion by further highlighting this observed difference in activity between the rich and the common: {*...As more screens appear in the lives of the poor, screens are disappearing from the lives of the rich. The richer you are, the more you spend to be off-screen...*}. None of the other options can be attached to the given statements. Hence, Option B is the correct answer.

Question 17

The author claims that Silicon Valley tech companies have tried to "confuse the public" by:

A pushing for greater privacy while working with advertisement-support platforms to mine data.

B concealing the findings of psychologists and neuroscientists on screen-time use from the public.

C developing new work-efficiency programmes while lobbying for the "right to disconnect" bill.

D promoting screen time in public schools while opting for a screen-free education for their own children.

Answer: D

Explanation:
The following excerpt from the fourth paragraph throws light into this matter: {.. *.Tech companies worked hard to get public schools to buy into programs that required schools to have one laptop per student, arguing that it would better prepare children for their screen-based future. But this idea isn't how the people who actually build the screen-based future raise their own children...*}. It is understood that though tech companies manipulate public schools into engaging in a process involving more screen time, they avoid a similar course of activity when it comes to their own children {whom they subject to a screen-free education and upbringing}. Option D aptly captures this two-facedness. Option B is a distorted interpretation, while Options A and C cannot be inferred from the passage.

Hence, Option D is the correct answer.

Question 18

The author is least likely to agree with the view that the increase in screen-time is fuelled by the fact that:

A screens provide social contact in an increasingly isolating world

B there is a growth in computer-based teaching in public schools

C some workers face punitive action if they are not online

D with falling costs, people are streaming more content on their devices

Answer: D

Explanation:
Option A: The author has already discussed a point along similar lines towards the end of the passage: {. *..There is also the reality that in our culture of increasing isolation, in which so many of the traditional gathering places and social structures have disappeared, screens are filling a crucial void...*}. Hence, the author definitely considers this as one of the causes behind the increase in screen time.

Option B: The discussion in passage 4 and 5 highlights how the tech companies have {perhaps successfully} convinced schools to integrate a screen-based educational culture to prepare students for a "screen-based future". Thus, this is another factor that the author attributes to the rise in screen time.

Option C: This aspect has been discussed towards the end of the passage: {... *There is a small movement to pass a "right to disconnect" bill, which would allow workers to turn their phones off, but for now, a worker can be punished for going offline and not being available...*}. Hence, the author considers this as another factor contributing to the increase in screen time.

Option D: There is no discussion mentioning or detailing the elements presented in D. Thus, we cannot conclusively comment on whether the author is likely to agree with this point.

Hence, Option D is the correct answer.

Instructions
For the following questions answer them individually

Question 19

The four sentences (labelled 1, 2, 3, 4) below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequencing of the order of the sentences and key in the sequence of the four numbers as your answer:
1. Complex computational elements of the CNS are organized according to a "nested" hierarchic criterion; the organization is not permanent and can change dynamically from moment to moment as they carry out a computational task.
2. Echolocation in bats exemplifies adaptation produced by natural selection; a function not produced by natural selection for its current use is exaptation -- feathers might have originally arisen in the context of selection for insulation.
3. From a structural standpoint, consistent with exaptation, the living organism is organized as a complex of "Russian Matryoshka Dolls" -- smaller structures are contained within larger ones in multiple layers.
4. The exaptation concept, and the Russian-doll organization concept of living beings deduced from studies on evolution of the various apparatuses in mammals, can be applied for the most complex human organ: the central nervous system (CNS).

Answer:2431

Explanation:
Statement (2) introduces us to certain evolutionary influences in the bodily mechanisms of animals, especially mammals (bats). Statement (4) continues on the observed influence on the various apparatuses in mammals, specifically in the case of the most complex human organ: the central nervous system (CNS). The author mentions that the example of exaptation and Russian dolls serve to assist in our understanding of this complex organ (CNS). The significance of the Russian dolls is elaborated in Statement (3), specifically with regard to its structural implications: " *smaller structures are contained within larger ones in multiple layers* "—this portryas the presence of some structural hierarchy that can be observed in such complex apparatuses. Statement (1) highlights how the complex elements in the CNS are organised in a "nested hierarchic criterion", thereby, serving as a continuation to (3). Therefore, (2)-(4)-(3)-(1) forms a coherent paragraph.

Question 20

The four sentences (labelled 1, 2, 3, 4) below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequencing of the order of the sentences and key in the sequence of the four numbers as your answer:
1. It advocated a conservative approach to antitrust enforcement that espouses faith in efficient markets and voiced suspicion regarding the merits of judicial intervention to correct anticompetitive practices.
2. Many industries have consistently gained market share, the lion's share - without any official concern; the most successful technology companies have grown into veritable titans, on the premise that they advance 'public interest'.
3. That the new anticompetitive risks posed by tech giants like Google, Facebook, and Amazon, necessitate new legal solutions could be attributed to the dearth of enforcement actions against monopolies and the few cases challenging mergers in the USA.
4. The criterion of 'consumer welfare standard' and the principle that antitrust law should serve consumer interests and that it should protect competition rather than individual competitors was an antitrust law introduced by, and named after, the 'Chicago school'.

Answer:4123

Explanation:
Statement (4) opens the discussion by mentioning an "antitrust law" and a few essential features attached to it. Statement (1) further describes this provision {"*...It advocated...*" }: the move to support an efficient market and curb anti-competitive practises. Statement (2) then elaborates on the latter point of anticompetitive practices and subsequently, highlights the relevance of this provision. Statement (3) further emphasises the necessity of "new legal solutions" to deal with the elements discussed earlier {in (2) and (3)}. Hence, (4)-(1)-(2)-(3) forms a logical arrangement.

Question 21

Five jumbled up sentences, related to a topic, are given below. Four of them can be put together to form a coherent paragraph. Identify the odd one out and key in the number of the sentence as your answer:
1. Machine learning models are prone to learning human-like biases from the training data that feeds these algorithms.
2. Hate speech detection is part of the on-going effort against oppressive and abusive language on social media.
3. The current automatic detection models miss out on something vital: context.
4. It uses complex algorithms to flag racist or violent speech faster and better than human beings alone.
5. For instance, algorithms struggle to determine if group identifiers like "gay" or "black" are used in offensive or prejudiced ways because they're trained on imbalanced datasets with unusually high rates of hate speech.

Answer:3

Explanation:
On reading the statements, the arrangement (2)-(4)-(1)-(5) can be linked to form a paragraph, while Statement (3) stands out. Statements (2) and (4) talk about hate speech detection and the algorithms involved, while Statements (1) and (5) indicate the issue associated with the aforementioned algorithms. Hence, (3) is the odd one out.

Question 22

Five jumbled up sentences, related to a topic, are given below. Four of them can be put together to form a coherent paragraph. Identify the odd one out and key in the number of the sentence as your answer:
1. The logic of displaying one's inner qualities through outward appearance was based on a distinction between being a woman and being feminine.
2. 'Appearance' became a signifier of conduct - to look was to be and conformity to the feminine ideal was measured by how well women could use the tools of the fashion and beauty industries.
3. The makeover-centric media sets out subtly and not-so-subtly, 'good' and 'bad' ways to be a woman, layering these over inequalities of race and class.
4. The denigration of working-class women and women of colour often centres on their perceived failure to embody feminine beauty.
5. 'Woman' was considered a biological category, but femininity was a 'process' by which women became specific kinds of women.

Answer:3

Explanation:
Statement (1) talks about how the "logic" of determining a woman's inner quality boiled down to the distinction between the perception of "being a woman and being feminine". Statement (5) highlights the difference in this understanding: the former being a 'biological category' and latter being a 'process'. Statement (2) continues on the manner in which the measure of "feminine ideal" was dependent on a woman's appearance. Statement (4) continues on this line by presenting how the incapacity to meet up to this ideal led to the denigration of working-class women and women of colour. We notice that Statement (3) is the odd one out here.

Question 23

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

The dominant hypotheses in modern science believe that language evolved to allow humans to exchange factual information about the physical world. But an alternative view is that language evolved, in modern humans at least, to facilitate social bonding. It increased our ancestors' chances of survival by enabling them to hunt more successfully or to cooperate more extensively. Language meant that things could be explained and that plans and past experiences could be shared efficiently.

A Since its origin, language has been continuously evolving to higher forms, from being used to identify objects to ensuring human survival by enabling our ancestors to bond and cooperate.

B From the belief that humans invented language to process factual information, scholars now think that language was the outcome of the need to ensure social cohesion and thus human survival.

C Most believe that language originated from a need to articulate facts, but others think it emerged from the need to promote social cohesion and cooperation, thus enabling human survival.

D Experts are challenging the narrow view of the origin of language, as being merely used to describe facts and label objects, to being necessary to promote more complex interactions among humans

Answer: C

Explanation:
One predominant viewpoint: language originated to exchange factual information

An alternative viewpoint: language originated to facilitate social bonding and consequently, to ensure human survival.

The summary needs to highlight these two core viewpoints. Option C does this without deviating from the discussion.

Option A: The evolution of language is not the focal point here; the views held in this regard are. {"language has been continuously evolving to higher forms"} Thus, we can eliminate this option since it comes across as a misrepresentation.

Option B: This is a trap wherein the statement captures both the core viewpoints but there is a distortion involved: "...From the belief ..." to "...scholars now..." indicates a shift in the viewpoint. However, this is not the case - the author simply states two prevalent perspectives on the subject.

Option D: is again a distortion since experts are not "challenging any views; the author simply highlights the presence of two viewpoints {no conflict presented}

Hence, Option C is the correct answer.

Question 24

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

Aesthetic political representation urges us to realize that 'the representative has autonomy with regard to the people represented' but autonomy then is not an excuse to abandon one's responsibility. Aesthetic autonomy requires cultivation of 'disinterestedness' on the part of actors which is not indifference. To have disinterestedness, that is, to have comportment towards the beautiful that is devoid of all ulterior references to use - requires a kind of aesthetic commitment; it is the liberation of ourselves for the release of what has proper worth only in itself.

A Aesthetic political representation advocates autonomy for the representatives manifested through disinterestedness which itself is different from indifference.

B Aesthetic political representation advocates autonomy for the representatives drawing from disinterestedness, which itself is different from indifference.

C Disinterestedness is different from indifference as the former means a non-subjective evaluation of things which is what constitutes aesthetic political representation

D Disinterestedness, as distinct from indifference, is the basis of political representation.

Answer: B

Explanation:
The paragraph discusses two essential elements: it begins by presenting the facet of autonomy enjoyed by the representative in Aesthetic political representation and then highlights the cultivation of "disinterestedness" in this regard. Additionally, the author distinctly identifies the aforementioned concept as being not the same as that of "indifference". Post this, towards the end. The author presents the reason behind this assertion. Option B correctly captures these two aspects without distorting the overall meaning.

Option A: The author does not claim that the autonomy "manifested" through disinterestedness.

Option C: The statement here contains added elements which cannot be inferred from the passage.

Option D: This alternative fails to capture the essence of the discussion and describes a single component. {'political representation' might again be incorrect}

Hence, of the given summaries, Option B aptly captures the substance of the passage.

Question 25

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

Brown et al. (2001) suggest that 'metabolic theory may provide a conceptual foundation for much of ecology just as genetic theory provides a foundation for much of evolutionary biology'. One of the successes of genetic theory is the diversity of theoretical approaches and models that have been developed and applied. A Web of Science (v. 5.9. Thomson Reuters) search on genetic* + theor* + evol* identifies more than 12000 publications between 2005 and 2012. Considering only the 10 most-cited papers within this 12000 publication set, genetic theory can be seen to focus on genome dynamics, phylogenetic inference, game theory and the regulation of gene expression. There is no one fundamental genetic equation, but rather a wide array of genetic models, ranging from simple to complex, with differing inputs and outputs, and divergent areas of application, loosely connected to each other through the shared conceptual foundation of heritable variation.

A Genetic theory has evolved to spawn a wide range of theoretical models and applications but Metabolic theory need not evolve in a similar manner in the field of ecology

B Genetic theory has a wide range of theoretical approaches and application and is foundational to evolutionary biology and Metabolic theory has the potential to do the same for ecology

C Genetic theory has a wide range of theoretical approaches and applications and Metabolic theory must have the same in the field of ecology

D Genetic theory provides an example of how a range of theoretical approaches and applications can make a theory successful.

Answer: B

Explanation:
There are two key points discussed in the passage:

1. The prospect of "metabolic theory" being foundational to the field of ecology; the same as is the case in (2)

2. Genetic theory being the conceptual basis of evolutionary biology {given the diverse and extensive theoretical approaches and models available}.

Thus, the summary needs to capture both these points. Option B fulfils this requirement.

Option A: is a distorted claim since it is not implied in the passage; the author does not assert that "metabolic theory need not evolve in a similar manner".

Option C: is again a misinterpretation because the author does not claim that metabolic theory "must" contribute in a similar fashion. Instead, the focus is on the "potential" of this theory.

Option D: is divergent since the author does not discuss the "success" of a theory.

Hence, Option B is the correct answer.

Question 26

The four sentences (labelled 1, 2, 3, 4) below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequencing of the order of the sentences and key in the sequence of the four numbers as your answer:
1. Each one personified a different aspect of good fortune.
2. The others were versions of popular Buddhist gods, Hindu gods and Daoist gods.
3. Seven popular Japanese deities, the Shichi Fukujin, were considered to bring good luck and happiness.
4. Although they were included in the Shinto pantheon, only two of them, Daikoku and Ebisu, were indigenous Japanese gods.

Answer:3142

Explanation:
Statement (3) opens the paragraph by introducing the subject: seven popular Japanese deities who bring good luck. Statement (1) then comments on the aspect of good fortune followed by statements (4) and (2). Statement (4) clarifies how only two of these seven entities qualify as indigenous Japanese gods while Statement (2) comments on the origin/background of the rest. Hence, (3)-(1)-(4)-(2) forms a coherent arrangement.

LRDI

Instructions

Sixteen patients in a hospital must undergo a blood test for a disease. It is known that exactly one of them has the disease. The hospital has only eight testing kits and has decided to pool blood samples of patients into eight vials for the tests. The patients are numbered 1 through 16, and the vials are labelled A, B, C, D, E, F, G, and H. The following table shows the vials into which each patient's blood sample is distributed.

Patient	Vials	Patient	Vials
1	B,D,F,H	9	A,D,F,H
2	B,D,F,G	10	A,D,F,G
3	B,D,E,H	11	A,D,E,H
4	B,D,E,G	12	A,D,E,G
5	B,C,F,H	13	A,C,F,H
6	B,C,F,G	14	A,C,F,G
7	B,C,E,H	15	A,C,E,H
8	B,C,E,G	16	A,C,E,G

If a patient has the disease, then each vial containing his/her blood sample will test positive. If a vial tests positive, one of the patients whose blood samples were mixed in the vial has the disease. If a vial tests negative, then none of the patients whose blood samples were mixed in the vial has the disease.

Question 27

Suppose vial C tests positive and vials A, E and H test negative. Which patient has the disease?

A Patient 14

B Patient 8

C Patient 6

D Patient 2

Answer: C

Explanation:
The patients in

Vial A: 9, 10, 11, 12, 13, 14, 15, 16

Vial B: 1, 2, 3, 4, 5, 6, 7, 8.

Vial C: 5,6,7,8,13,14,15,16

Vial D:1,2,3,4,9,10,11,12

Vial E:3,4,7,8,11,12,15,16

Vial F:1,2,5,6,9,10,13,14

Vial G:2,4,6,8,10,12,14,16

Vial H:1,3,5,7,9,11,13,15

If vial C tests positive and vials A, E and H test negative then Patient 6 must have disease as all other patients in Vial C expect patient 6 are present in at least one of A, E, H.

Question 28

Suppose vial A tests positive and vials D and G test negative. Which of the following vials should we test next to identify the patient with the disease?

A Vial B

B Vial E

C Vial C

D Vial H

Answer: B

Explanation:

The patients in

Vial A: 9, 10, 11, 12, 13, 14, 15, 16

Vial B: 1, 2, 3, 4, 5, 6, 7, 8.

Vial C: 5,6,7,8,13,14,15,16

Vial D:1,2,3,4,9,10,11,12

Vial E:3,4,7,8,11,12,15,16

Vial F:1,2,5,6,9,10,13,14

Vial G:2,4,6,8,10,12,14,16

Vial H:1,3,5,7,9,11,13,15

Suppose vial A tests positive and vials D and G test negative then the patient who tested positive must be one of patient 13 or 15.

Patient 13 or 15 are not present in vial B. So, A is not the answer.

Both patients present in vial C. Even if tested positive or negative we can't know who has got the disease. So, C is not the answer.

Both patients present in vial H. Even if tested positive or negative we can't know who has got the disease. So, H is not the answer.

only patient 15 is present in vial E, if tested positive then patient 15 has the disease else patient 13 as disease.

Hence Option 2 is correct.

Question 29

Which of the following combinations of test results is NOT possible?

A Vials A and E positive, vials C and D negative

B Vial B positive, vials C, F and H negative

C Vials A and G positive, vials D and E negative

D Vials B and D positive, vials F and H negative

Answer: A

Explanation:

The patients in

Vial A: 9, 10, 11, 12, 13, 14, 15, 16

Vial B: 1, 2, 3, 4, 5, 6, 7, 8.

Vial C: 5,6,7,8,13,14,15,16

Vial D:1,2,3,4,9,10,11,12

Vial E:3,4,7,8,11,12,15,16

Vial F:1,2,5,6,9,10,13,14

Vial G:2,4,6,8,10,12,14,16

Vial H:1,3,5,7,9,11,13,15

If vials C and D negative then no patient could test negative. Hence A is correct answer.

Question 30

Suppose one of the lab assistants accidentally mixed two patients' blood samples before they were distributed to the vials. Which of the following correctly represents the set of all possible numbers of positive test results out of the eight vials?

A {5,6,7,8}

B {4,5,6,7}

C {4,5,6,7,8}

D {4,5}

Answer: C

Explanation:
Let one of the patients, patient 1 or patient 16 has the disease and his blood is mixed with other them all 8 vials will tests positive. ⇒

8 has to be one of the answers.

If patient 2 and patients 16's blood is mixed of one of them has the disease then 7 of the 8 vials will test positive. So 7 has to be there in the option.

If 1 has the disease and 1, 7 are mixed then 6 out the 8 vials tests positive.

IF 1 has the disease and 1,9 are mixed then 5 of the 8 vials tests positive,

Now, let us assume that patient 1 has the disease if his blood is not mixed, then 4 vials will definitely show positive.

Hence 3 is the correct answer.

Instructions

XYZ organization got into the business of delivering groceries to home at the beginning of the last month. They have a two-day delivery promise. However, their deliveries are unreliable. An order booked on a particular day may be delivered the next day or the day after. If the order is not delivered at the end of two days, then the order is declared as lost at the end of the second day. XYZ then does not deliver the order, but informs the customer, marks the order as lost, returns the payment and pays a penalty for non-delivery. The following table provides details about the operations of XYZ for a week of the last month. The first column gives the date, the second gives the cumulative number of orders that were booked up to and including that day. The third column represents the number of orders delivered on that day. The last column gives the cumulative number of orders that were lost up to and including that day. It is known that the numbers of orders that were booked on the 11th, 12th, and 13th of the last month that took two days to deliver were 4, 6, and 8 respectively

Day	Cumilative orders booked	Orders delivered on day	Cumilative orders lost
13th	219	11	91
14th	249	27	92
15th	277	23	94
16th	302	11	106
17th	327	21	118
18th	332	13	120
19th	337	14	129

Question 31

Among the following days, the largest fraction of orders booked on which day was lost?

A 15th

B 16th

C 13th

D 14th

Answer: A

Explanation:
The cumulative orders booked by 19th are 337 and that of 18th are 332=> No. orders booked on 19th are 5

Similarly we can find the orders booked on that day till 14th.

Number of orders lost that were booked on 12th = Cumulative orders lost till 14th-Cumulative orders lost till 13th =92-91=1

Similarly, the number of orders lost till 17th can be found out.

Number of orders delivered on 13th are 11 out of which 4 are orders which were booked in 11th so, 7 must be the orders which were booked on 12th.

Similarly, we can find the orders which took 1day and 2 days to get delivered till 17th.

Date	Order Placed	1-day Delivery	2-day Delivery	Lost	Delivery done on the date
11			4		
12	14	7	6	1	
13	31	21	8	2	11
14	30	15	3	12	27
15	28	8	8	12	23
16	25	13	10	2	11
17	25	3	13	9	21
18	5	1			13
19	5				14

Now, total number of orders booked on 12th will be 7+6=1=14.

Fraction of orders booked on 15th that were lost = 12/28

Fraction of orders booked on 16th that were lost = 2/25

Fraction of orders booked on 13th that were lost =2/31

Fraction of orders booked on 14th that were lost = 8/30.

.'. Option A is correct answer.

Question 32

On which of the following days was the number of orders booked the highest?

A 12th

B 15th

C 13th

D 14th

Answer: C

Explanation:
The cumulative orders booked by 19th are 337 and that of 18th are 332=> No. orders booked on 19th are 5

Similarly we can find the orders booked on that day till 14th.

Number of orders lost that were booked on 12th = Cumulative orders lost till 14th-Cumulative orders lost till 13th =92-91=1

Similarly, the number of orders lost till 17th can be found out.

Number of orders delivered on 13th are 11 out of which 4 are orders which were booked in 11th so, 7 must be the orders which were booked on 12th.

Similarly, we can find the orders which took 1day and 2 days to get delivered till 17th.

Date	Order Placed	1-day Delivery	2-day Delivery	Lost	Delivery done on the date
11			4		
12	14	7	6	1	
13	31	21	8	2	11
14	30	15	3	12	27
15	28	8	8	12	23
16	25	13	10	2	11
17	25	3	13	9	21
18	5	1			13
19	5				14

Now, total number of orders booked on 12th will be 7+6+1=14.

The total number of orders placed on 13th = 21+8+2 = 31

FRom the table we can determine that among options, number of orders booked on 13th are maximum.

Question 33

The delivery ratio for a given day is defined as the ratio of the number of orders booked on that day which are delivered on the next day to the number of orders booked on that day which are delivered on the second day after booking. On which of the following days, was the delivery ratio the highest?

A 15th

B 16th

C 13th

D 14th

Answer: D

Explanation:

The cumulative orders booked by 19th are 337 and that of 18th are 332=> No. orders booked on 19th are 5

Similarly we can find the orders booked on that day till 14th.

Number of orders lost that were booked on 12th = Cumulative orders lost till 14th-Cumulative orders lost till 13th =92-91=1

Similarly, the number of orders lost till 17th can be found out.

Number of orders delivered on 13th are 11 out of which 4 are orders which were booked in 11th so, 7 must be the orders which were booked on 12th.

Similarly, we can find the orders which took 1day and 2 days to get delivered till 17th.

Date	Order Placed	1-day Delivery	2-day Delivery	Lost	Delivery done on the date
11			4		
12	14	7	6	1	
13	31	21	8	2	11
14	30	15	3	12	27
15	28	8	8	12	23
16	25	13	10	2	11
17	25	3	13	9	21
18	5	1			13
19	5				14

Now, total number of orders booked on 12th will be 7+6+1=14.

From the table we can determine that among options, number of orders booked on 13th are maximum.

For 15 the delivery ratio = 8/8 = 1

For 16 the delivery ratio = 13/10 = 1.3

For 13 the delivery ratio = 21/8 = 2.625

For 14 the delivery ratio = 15/3 = 5

Hence Option D

Question 34

The average time taken to deliver orders booked on a particular day is computed as follows. Let the number of orders delivered the next day be x and the number of orders delivered the day after be y. Then the average time to deliver order is $\frac{(x+2y)}{(x+y)}$. On which of the following days was the average time taken to deliver orders booked the least?

A 15th

B 13th

C 14th

D 16th

Answer: C

Explanation:
The cumulative orders booked by 19th are 337 and that of 18th are 332=> No. orders booked on 19th are 5

Similarly we can find the orders booked on that day till 14th.

Number of orders lost that were booked on 12th = Cumulative orders lost till 14th-Cumulative orders lost till 13th =92-91=1

Similarly, the number of orders lost till 17th can be found out.

Number of orders delivered on 13th are 11 out of which 4 are orders which were booked in 11th so, 7 must be the orders which were booked on 12th.

Similarly, we can find the orders which took 1day and 2 days to get delivered till 17th.

Date	Order Placed	1-day Delivery	2-day Delivery	Lost	Delivery done on the date
11			4		
12	14	7	6	1	
13	31	21	8	2	11
14	30	15	3	12	27
15	28	8	8	12	23
16	25	13	10	2	11
17	25	3	13	9	21
18	5	1			13
19	5				14

Now, total number of orders booked on 12th will be 7+6+1=14.

FRom the table we can determine that among options, number of orders booked on 13th are maximum.

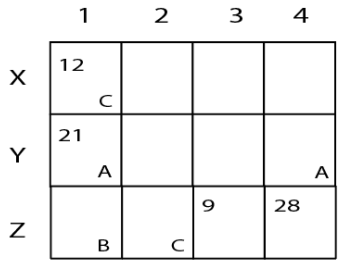
Average time can be calculated as follows

	x	y	x+2y	x+y	(x+2y)/(x+y)
13	21	8	37	29	1.275862069
14	15	3	21	18	1.166666667
15	8	8	24	16	1.5
16	13	10	33	23	1.434782609

14 is the least

Instructions

A farmer had a rectangular land containing 205 trees. He distributed that land among his four daughters - Abha, Bina, Chitra and Dipti by dividing the land into twelve plots along three rows (X,Y,Z) and four Columns (1,2,3,4) as shown in the figure below:



The plots in rows X, Y, Z contained mango, teak and pine trees respectively. Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees. Each daughter got an even number of plots. In the figure, the number mentioned in top left corner of a plot is the number of trees in that plot, while the letter in the bottom right corner is the first letter of the name of the daughter who got that plot (For example, Abha got the plot in row Y and column 1 containing 21 trees). Some information in the figure got erased, but the following is known:

1. Abha got 20 trees more than Chitra but 6 trees less than Dipti.

2. The largest number of trees in a plot was 32, but it was not with Abha.
3. The number of teak trees in Column 3 was double of that in Column 2 but was half of that in Column 4.
4. Both Abha and Bina got a higher number of plots than Dipti.
5. Only Bina, Chitra and Dipti got corner plots.
6. Dipti got two adjoining plots in the same row.
7. Bina was the only one who got a plot in each row and each column.
8. Chitra and Dipti did not get plots which were adjacent to each other (either in row / column / diagonal).
9. The number of mango trees was double the number of teak trees.

Question 35

How many mango trees were there in total?

A 49

B 84

C 98

D 126

Answer: C

Explanation:

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C,D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are nit adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in Third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be 4x from 3, number of trees in Y3, Y2 will be 2x, x respectively.

The number of teak trees=7x+21

.'. Number of mango trees=14x+42

The table now looks like:

	1	2	3	4	
X	12 C	 B	 D	 D	14x+42
Y	21 A	x A	2x B	4x A	7x+21
Z	 B	 C	9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot => x<8.

x can't be 7,5,3,2,1 as for these cases at least one of x,2x,4x is neither multiple of 3 or 4.

x can be 6 or 4.

If x=6, number of Teak trees will be 63 and Mango trees will be 126 => Number of Pine trees= 205-126-63=16 but number of trees in Z3+Z4>16 so, $x \neq 6$.

If x=4, Number of Teak trees=49 and Mango trees=98 => Number of Pine trees=58. Valid case.

Number of trees with A= 30+5x=50.

From 1, number of trees with C, D= 30, 56 respectively.

So, number of trees in Z2= 18.

.'. Number of trees with B= 205-50-30-56=69.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from X2 but in that case number of trees in Z1=1 which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 -=> number of trees in X3, X4 are 32, 24 in any order.

So, number of trees in X2= 98-56-12=30

.'. Number of trees in Z1=69-30-28-8=3.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

.'. Number of Mango trees=98.

Question 36

Which of the following is the correct sequence of trees received by Abha, Bina, Chitra and Dipti in that order?

A 50, 69, 30, 56

B 54, 57, 34, 60

C 44, 87, 24, 50

D 60, 39, 40, 66

Answer: A

Explanation:
There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C,D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are nit adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in Third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be 4x from 3, number of trees in Y3, Y2 will be 2x, x respectively.

The number of teak trees=7x+21

.'. Number of mango trees=14x+42

The table now looks like:

	1	2	3	4	
X	12 C	 B	 D	 D	14x+42
Y	21 A	x A	2x B	4x A	7x+21
Z	 B	 C	9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot => x<8.

x can't be 7,5,3,2,1 as for these cases at least one of x,2x,4x is neither multiple of 3 or 4.

x can be 6 or 4.

If x=6, number of Teak trees will be 63 and Mango trees will be 126 => Number of Pine trees= 205-126-63=16 but number of trees in Z3+Z4>16 so, $x \neq 6$.

If x=4, Number of Teak trees=49 and Mango trees=98 => Number of Pine trees=58. Valid case.

Number of trees with A= 30+5x=50.

From 1, number of trees with C, D= 30, 56 respectively.

So, number of trees in Z2= 18.

.'. Number of trees with B= 205-50-30-56=69.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from X2 but in that case number of trees in Z1=1 which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 -=> number of trees in X3, X4 are 32, 24 in any order.

So, number of trees in X2= 98-56-12=30

.'. Number of trees in Z1=69-30-28-8=3.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

Sequence of trees received by Abha, Bina, Chitra and Dipti is 50,69,30,56.

Important Verbal Ability Questions for CAT (Download PDF)

Question 37

How many pine trees did Chitra receive?

A 18

B 30

C 21

D 15

Answer: A

Explanation:

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C,D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are nit adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in Third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be 4x from 3, number of trees in Y3, Y2 will be 2x, x respectively.

The number of teak trees=7x+21

.'. Number of mango trees=14x+42

The table now looks like:

	1	2	3	4	
X	12 C	 B	 D	 D	14x+42
Y	21 A	x A	2x B	4x A	7x+21
Z	 B	 C	9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot => x<8.

x can't be 7,5,3,2,1 as for these cases at least one of x,2x,4x is neither multiple of 3 or 4.

x can be 6 or 4.

If x=6, number of Teak trees will be 63 and Mango trees will be 126 => Number of Pine trees= 205-126-63=16 but number of trees in Z3+Z4>16 so, $x \neq 6$.

If x=4, Number of Teak trees=49 and Mango trees=98 => Number of Pine trees=58. Valid case.

Number of trees with A= 30+5x=50.

From 1, number of trees with C, D= 30, 56 respectively.

So, number of trees in Z2= 18.

.'. Number of trees with B= 205-50-30-56=69.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from X2 but in that case number of trees in Z1=1 which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 -=> number of trees in X3, X4 are 32, 24 in any order.

So, number of trees in X2= 98-56-12=30

.'. Number of trees in Z1=69-30-28-8=3.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

Number of PIne trees received by Chitra = 18.

Question 38

Who got the plot with the smallest number of trees and how many trees did that plot have?

A Dipti, 6 trees

B Bina, 3 trees

C Bina, 4 trees

D Abha, 4 trees

Answer: B

Explanation:

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C,D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are nit adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in Third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be 4x from 3, number of trees in Y3, Y2 will be 2x, x respectively.

The number of teak trees=7x+21

.'. Number of mango trees=14x+42

The table now looks like:

	1	2	3	4	
X	12 C	B	D	D	14x+42
Y	21 A	x A	2x B	4x A	7x+21
Z	B	C	9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot => x<8.

x can't be 7,5,3,2,1 as for these cases at least one of x,2x,4x is neither multiple of 3 or 4.

x can be 6 or 4.

If x=6, number of Teak trees will be 63 and Mango trees will be 126 => Number of Pine trees= 205-126-63=16 but number of trees in Z3+Z4>16 so, $x \neq 6$.

If x=4, Number of Teak trees=49 and Mango trees=98 => Number of Pine trees=58. Valid case.

Number of trees with A= 30+5x=50.

From 1, number of trees with C, D= 30, 56 respectively.

So, number of trees in Z2= 18.

.'. Number of trees with B= 205-50-30-56=69.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from X2 but in that case number of trees in Z1=1 which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 -=> number of trees in X3, X4 are 32, 24 in any order.

So, number of trees in X2= 98-56-12=30

.'. Number of trees in Z1=69-30-28-8=3.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

.'. Number of trees per plot is least for Benna=3.

Question 39

Which of the following statements is NOT true?

A Chitra got 12 mango trees

B Bina got 32 pine trees.

C Abha got 41 teak trees.

D Dipti got 56 mango trees

Answer: B

Explanation:
There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C,D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are nit adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in Third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be 4x from 3, number of trees in Y3, Y2 will be 2x, x respectively.

The number of teak trees=7x+21

.'. Number of mango trees=14x+42

The table now looks like:

	1	2	3	4	
X	12 C	 B	 D	 D	14x+42
Y	21 A	x A	2x B	4x A	7x+21
Z	 B	 C	9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot => x<8.

x can't be 7,5,3,2,1 as for these cases at least one of x,2x,4x is neither multiple of 3 or 4.

x can be 6 or 4.

If x=6, number of Teak trees will be 63 and Mango trees will be 126 => Number of Pine trees= 205-126-63=16 but number of trees in Z3+Z4>16 so, $x \neq 6$.

If x=4, Number of Teak trees=49 and Mango trees=98 => Number of Pine trees=58. Valid case.

Number of trees with A= 30+5x=50.

From 1, number of trees with C, D= 30, 56 respectively.

So, number of trees in Z2= 18.

.'. Number of trees with B= 205-50-30-56=69.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from X2 but in that case number of trees in Z1=1 which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 -=> number of trees in X3, X4 are 32, 24 in any order.

So, number of trees in X2= 98-56-12=30

.'. Number of trees in Z1=69-30-28-8=3.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

Bina got 28 pine trees, Option B is correct answer.

Question 40

Which column had the highest number of trees?

A 4

B 3

C Cannot be determined

D 2

Answer: A

Explanation:

There are 12 plots and each of them got even number of plots. So, possible cases are 4,4,2,2 or 6,2,2,2.

From 4, A and B got more plots than D. So, the only possible case is A, B each got 4 and C,D each got 2.

From 6, D has to get two adjacent plots and From 8, plots of C, D are nit adjacent to each other => D must have got plots in X3, X4.

C already has two plots in X1, Z2. So, the corner plot Z4 should belong to B.

From 7, B has a plot in each row and each column. So, X2 should belong to B.

Now, out of the remaining Y2, Y3, Y4 and Z3 three plots belong to A and one belongs to B.

Till now B hasn't got any plot in Third column and 2nd row.

So, Y3 belongs to B and Y2, Y4, Z3 belongs to A.

Let the number of trees in Y4 be 4x from 3, number of trees in Y3, Y2 will be 2x, x respectively.

The number of teak trees=7x+21

.'. Number of mango trees=14x+42

The table now looks like:

	1	2	3	4	
X	12 C	B	D	D	14x+42
Y	21 A	x A	2x B	4x A	7x+21
Z	B	C	9 A	28 B	

Each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees and from 2, B didn't have the largest number of trees in a plot => x<8.

x can't be 7,5,3,2,1 as for these cases at least one of x,2x,4x is neither multiple of 3 or 4.

x can be 6 or 4.

If x=6, number of Teak trees will be 63 and Mango trees will be 126 => Number of Pine trees= 205-126-63=16 but number of trees in

Z3+Z4>16 so, x≠ 6.

If x=4, Number of Teak trees=49 and Mango trees=98 => Number of Pine trees=58. Valid case.

Number of trees with A= 30+5x=50.

From 1, number of trees with C, D= 30, 56 respectively.

So, number of trees in Z2= 18.

.'. Number of trees with B= 205-50-30-56=69.

From 2, largest number of trees in a plot is 32. They can be in the plot of either B or D. If they are from B, they have to be from X2 but in that case number of trees in Z1=1 which is neither a multiple of 3 or 4.

So, highest number of trees in a plot are with D and it is 32 -=> number of trees in X3, X4 are 32, 24 in any order.

So, number of trees in X2= 98-56-12=30

.'. Number of trees in Z1=69-30-28-8=3.

The final table will look like:

	1	2	3	4	
X	12 C	30 B	32/24 D	24/32 D	98
Y	21 A	4 A	8 B	16 A	49
Z	3 B	18 C	9 A	28 B	58

Column 1,2,3,4 have 36, 52, 49, 68 trees respectively.

Hence A is correct answer.

Instructions

The Hi-Lo game is a four-player game played in six rounds. In every round, each player chooses to bid Hi or Lo. The bids are made simultaneously. If all four bid Hi, then all four lose 1 point each. If three players bid Hi and one bids Lo, then the players bidding Hi gain 1 point each and the player bidding Lo loses 3 points. If two players bid Hi and two bid Lo, then the players bidding Hi gain 2 points each and the players bidding Lo lose 2 points each. If one player bids Hi and three bid Lo, then the player bidding Hi gains 3 points and the players bidding Lo lose 1 point each. If all four bid Lo, then all four gain 1 point each. Four players Arun, Bankim, Charu, and Dipak played the Hi-Lo game. The following facts are known about their game:

1. At the end of three rounds, Arun had scored 6 points, Dipak had scored 2 points, Bankim and Charu had scored -2 points each.
2. At the end of six rounds, Arun had scored 7 points, Bankim and Dipak had scored -1 point each, and Charu had scored -5 points.
3. Dipak's score in the third round was less than his score in the first round but was more than his score in the second round.
4. In exactly two out of the six rounds, Arun was the only player who bid Hi.

Question 41

What were the bids by Arun, Bankim, Charu and Dipak, respectively in the first round?

A Hi, Lo, Lo, Hi

B Hi, Lo, Lo, Lo

C Hi, Hi, Lo, Lo

D Lo, Lo, Lo, Hi

Answer: A

Explanation:
Let 'H' represents Hi and 'L' represents Lo.

Given if they bid

Case 1: HHHH then all players gets -1 points.

Case 2: HHHL => H gets +1 and L gets -3.

Case 3: HHLL => H gets +2 and L gets -2.

Case 4: HLLL => H gets +3 and L gets -1.

Case 5: LLLL => every player gets +1.

From the given information we can draw the following table:

	R1	R2	R3	T1	R4	R5	R6	T2
A				6				7
B				-2				-1
C				-2				-5
D	D1	D3	D2	2				-1

**T1 is the cumulative of points till Round 3 and T2 is sum of points till round 6.

**Arun, Bankim, Charu, and Dipak are represented by A, B, C, D respectively.

From point 3, D1>D2>D3

D scored 2 points till round R3 and D1>D3>D2 the possible scenarios are :

Case D1: 3,2,-3

In this case the points of A in R1, R3, R2 will be -1,2/-2, 1 in any possible combination the sum will not be 6. So, this case is invalid.

Case D2: 2,1,-1

In this case the points of A in R1, R3, R2 will be 2/-2, 1/-3, -1/3 so, if the points in R1, R3, R2 are 2,1,3 the case is valid and no other cases are possible.

Case D3: 3,1,-2

In this case the points of A in R1, R3, R2 will be -1, 1/-3/1, 2/-2 in any possible combination the sum will not be 6. So, this case is invalid.

.'. Points of A,D in (R1,R2,R3) are (2,3,1) and (2,-1,1) respectively.

Since A got +3 in R2, he is only the one to bid h in R2 and points of B and C in round 2 are -1,-1 i.e they bid L, L.

Since A and D got 2 points each in R1, C and B must have got -2, -2 i.e they bid L, L.

Since A and D got 1 point in R3, C and B must also have got 1 in R3 i.e they bid L, L.

With this data, the table now looks like:

	R1	R2	R3	T1	R4	R5	R6	T2
A	2 H	3 H	1 L	6				7
B	-2 L	-1 L	1 L	-2				-1
C	-2 L	-1 L	1 L	-2				-5
D	2 H	-1 L	1 L	2				-1

No information is given about the individual scores in R4, R5, R6.

Given In exactly two out of the six rounds, Arun was the only player who bid Hi.

Let R.x, R.y, R.z represent R4, R5, R6 in any order.

Let A bid H in R.x=> B,C,D bid L.

The table now looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H			7
B	-2 L	-1 L	1 L	-2	-1 L			-1
C	-2 L	-1 L	1 L	-2	-1 L			-5
D	2 H	-1 L	1 L	2	-1 L			-1

For A, R.x+R.y+R.z=1 => R.y+R.z=-2

For B, R.x+R.y+R.z=1 => R.y+R.z=2

For C, R.x+R.y+R.z=-3 => R.y+R.z=-2

For D, R.x+R.y+R.z=-3.=> R.y+R.z=-2

(R.y, R.z) for A can be (-3,1) or (-1,-1)

Case A1:

If for A, (R.y, R.z)=(-3,1)

Since for both C,D: R.y+R.z=-2

We can't get any combination such that the total points of B,C,D are obtained.

Case A2:

If for A, (R.y, R.z)=(-1,-1).the (R.y, R.z) of B,C,D can be (3,-1), (-1,-1), (-1,-1) and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L, H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

The bids by Arun, Bankim, Charu and Dipak, respectively in the first round are HLLH.

Hence Option A is correct.

Question 42

In how many rounds did Arun bid Hi?

Answer:4

Explanation:
Let 'H' represents Hi and 'L' represents Lo.

Given if they bid

Case 1: HHHH then all players gets -1 points.

Case 2: HHHL => H gets +1 and L gets -3.

Case 3: HHLL => H gets +2 and L gets -2.

Case 4: HLLL => H gets +3 and L gets -1.

Case 5: LLLL => every player gets +1.

From the given information we can draw the following table:

	R1	R2	R3	T1	R4	R5	R6	T2
A				6				7
B				-2				-1
C				-2				-5
D	D1	D3	D2	2				-1

**T1 is the cumulative of points till Round 3 and T2 is sum of points till round 6.

**Arun, Bankim, Charu, and Dipak are represented by A, B, C, D respectively.

From point 3, D1>D2>D3

D scored 2 points till round R3 and D1>D3>D2 the possible scenarios are :

Case D1: 3,2,-3

In this case the points of A in R1, R3, R2 will be -1,2/-2, 1 in any possible combination the sum will not be 6. So, this case is invalid.

Case D2: 2,1,-1

In this case the points of A in R1, R3, R2 will be 2/-2, 1/-3, -1/3 so, if the points in R1, R3, R2 are 2,1,3 the case is valid and no other cases are possible.

Case D3: 3,1,-2

In this case the points of A in R1, R3, R2 will be -1, 1/-3/1, 2/-2 in any possible combination the sum will not be 6. So, this case is invalid.

.'. Points of A,D in (R1,R2,R3) are (2,3,1) and (2,-1,1) respectively.

Since A got +3 in R2, he is only the one to bid h in R2 and points of B and C in round 2 are -1,-1 i.e they bid L, L.

Since A and D got 2 points each in R1, C and B must have got -2, -2 i.e they bid L, L.

Since A and D got 1 point in R3, C and B must also have got 1 in R3 i.e they bid L, L.

With this data, the table now looks like:

	R1	R2	R3	T1	R4	R5	R6	T2
A	2 H	3 H	1 L	6				7
B	-2 L	-1 L	1 L	-2				-1
C	-2 L	-1 L	1 L	-2				-5
D	2 H	-1 L	1 L	2				-1

No information is given about the individual scores in R4, R5, R6.

Given In exactly two out of the six rounds, Arun was the only player who bid Hi.

Let R.x, R.y, R.z represent R4, R5, R6 in any order.

Let A bid H in R.x=> B,C,D bid L.

The table now looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H			7
B	-2 L	-1 L	1 L	-2	-1 L			-1
C	-2 L	-1 L	1 L	-2	-1 L			-5
D	2 H	-1 L	1 L	2	-1 L			-1

For A, R.x+R.y+R.z=1 => R.y+R.z=-2

For B, R.x+R.y+R.z=1 => R.y+R.z=2

For C, R.x+R.y+R.z=-3 => R.y+R.z=-2

For D, R.x+R.y+R.z=-3.=> R.y+R.z=-2

(R.y, R.z) for A can be (-3,1) or (-1,-1)

Case A1:

If for A, (R.y, R.z)=(-3,1)

Since for both C,D: R.y+R.z=-2

We can't get any combination such that the total points of B,C,D are obtained.

Case A2:

If for A, (R.y, R.z)=(-1,-1).the (R.y, R.z) of B,C,D can be (3,-1), (-1,-1), (-1,-1) and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L, H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

Arun bid high in R1,R2, R.x, R.z hence, 4 is correct answer.

About CAT exam

Question 43

In how many rounds did Bankim bid Lo?

Answer:4

Explanation:
Let 'H' represents Hi and 'L' represents Lo.

Given if they bid

Case 1: HHHH then all players gets -1 points.

Case 2: HHHL => H gets +1 and L gets -3.

Case 3: HHLL => H gets +2 and L gets -2.

Case 4: HLLL => H gets +3 and L gets -1.

Case 5: LLLL => every player gets +1.

From the given information we can draw the following table:

	R1	R2	R3	T1	R4	R5	R6	T2
A				6				7
B				-2				-1
C				-2				-5
D	D1	D3	D2	2				-1

**T1 is the cumulative of points till Round 3 and T2 is sum of points till round 6.

**Arun, Bankim, Charu, and Dipak are represented by A, B, C, D respectively.

From point 3, D1>D2>D3

D scored 2 points till round R3 and D1>D3>D2 the possible scenarios are :

Case D1: 3,2,-3

In this case the points of A in R1, R3, R2 will be -1,2/-2, 1 in any possible combination the sum will not be 6. So, this case is invalid.

Case D2: 2,1,-1

In this case the points of A in R1, R3, R2 will be 2/-2, 1/-3, -1/3 so, if the points in R1, R3, R2 are 2,1,3 the case is valid and no other cases are possible.

Case D3: 3,1,-2

In this case the points of A in R1, R3, R2 will be -1, 1/-3/1, 2/-2 in any possible combination the sum will not be 6. So, this case is invalid.

.'. Points of A,D in (R1,R2,R3) are (2,3,1) and (2,-1,1) respectively.

Since A got +3 in R2, he is only the one to bid h in R2 and points of B and C in round 2 are -1,-1 i.e they bid L, L.

Since A and D got 2 points each in R1, C and B must have got -2, -2 i.e they bid L, L.

Since A and D got 1 point in R3, C and B must also have got 1 in R3 i.e they bid L, L.

With this data, the table now looks like:

	R1	R2	R3	T1	R4	R5	R6	T2
A	2 H	3 H	1 L	6				7
B	-2 L	-1 L	1 L	-2				-1
C	-2 L	-1 L	1 L	-2				-5
D	2 H	-1 L	1 L	2				-1

No information is given about the individual scores in R4, R5, R6.

Given In exactly two out of the six rounds, Arun was the only player who bid Hi.

Let R.x, R.y, R.z represent R4, R5, R6 in any order.

Let A bid H in R.x=> B,C,D bid L.

The table now looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H			7
B	-2 L	-1 L	1 L	-2	-1 L			-1
C	-2 L	-1 L	1 L	-2	-1 L			-5
D	2 H	-1 L	1 L	2	-1 L			-1

For A, R.x+R.y+R.z=1 => R.y+R.z=-2

For B, R.x+R.y+R.z=1 => R.y+R.z=2

For C, R.x+R.y+R.z=-3 => R.y+R.z=-2

For D, R.x+R.y+R.z=-3.=> R.y+R.z=-2

(R.y, R.z) for A can be (-3,1) or (-1,-1)

Case A1:

If for A, (R.y, R.z)=(-3,1)

Since for both C,D: R.y+R.z=-2

We can't get any combination such that the total points of B,C,D are obtained.

Case A2:

If for A, (R.y, R.z)=(-1,-1).the (R.y, R.z) of B,C,D can be (3,-1), (-1,-1), (-1,-1) and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L, H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

Bikram bid Lo in R1,R2,R3,R.x. Hence 4 is correct answer.

Question 44

In how many rounds did all four players make identical bids?

Answer:2

Explanation:
Let 'H' represents Hi and 'L' represents Lo.

Given if they bid

Case 1: HHHH then all players gets -1 points.

Case 2: HHHL => H gets +1 and L gets -3.

Case 3: HHLL => H gets +2 and L gets -2.

Case 4: HLLL => H gets +3 and L gets -1.

Case 5: LLLL => every player gets +1.

From the given information we can draw the following table:

	R1	R2	R3	T1	R4	R5	R6	T2
A				6				7
B				-2				-1
C				-2				-5
D	D1	D3	D2	2				-1

**T1 is the cumulative of points till Round 3 and T2 is sum of points till round 6.

**Arun, Bankim, Charu, and Dipak are represented by A, B, C, D respectively.

From point 3, D1>D2>D3

D scored 2 points till round R3 and D1>D3>D2 the possible scenarios are :

Case D1: 3,2,-3

In this case the points of A in R1, R3, R2 will be -1,2/-2, 1 in any possible combination the sum will not be 6. So, this case is invalid.

Case D2: 2,1,-1

In this case the points of A in R1, R3, R2 will be 2/-2, 1/-3, -1/3 so, if the points in R1, R3, R2 are 2,1,3 the case is valid and no other cases are possible.

Case D3: 3,1,-2

In this case the points of A in R1, R3, R2 will be -1, 1/-3/1, 2/-2 in any possible combination the sum will not be 6. So, this case is invalid.

.'. Points of A,D in (R1,R2,R3) are (2,3,1) and (2,-1,1) respectively.

Since A got +3 in R2, he is only the one to bid h in R2 and points of B and C in round 2 are -1,-1 i.e they bid L, L.

Since A and D got 2 points each in R1, C and B must have got -2, -2 i.e they bid L, L.

Since A and D got 1 point in R3, C and B must also have got 1 in R3 i.e they bid L, L.

With this data, the table now looks like:

	R1	R2	R3	T1	R4	R5	R6	T2
A	2 H	3 H	1 L	6				7
B	-2 L	-1 L	1 L	-2				-1
C	-2 L	-1 L	1 L	-2				-5
D	2 H	-1 L	1 L	2				-1

No information is given about the individual scores in R4, R5, R6.

Given In exactly two out of the six rounds, Arun was the only player who bid Hi.

Let R.x, R.y, R.z represent R4, R5, R6 in any order.

Let A bid H in R.x=> B,C,D bid L.

The table now looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H			7
B	-2 L	-1 L	1 L	-2	-1 L			-1
C	-2 L	-1 L	1 L	-2	-1 L			-5
D	2 H	-1 L	1 L	2	-1 L			-1

For A, R.x+R.y+R.z=1 => R.y+R.z=-2

For B, R.x+R.y+R.z=1 => R.y+R.z=2

For C, R.x+R.y+R.z=-3 => R.y+R.z=-2

For D, R.x+R.y+R.z=-3.=> R.y+R.z=-2

(R.y, R.z) for A can be (-3,1) or (-1,-1)

Case A1:

If for A, (R.y, R.z)=(-3,1)

Since for both C,D: R.y+R.z=-2

We can't get any combination such that the total points of B,C,D are obtained.

Case A2:

If for A, (R.y, R.z)=(-1,-1).the (R.y, R.z) of B,C,D can be (3,-1), (-1,-1), (-1,-1) and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L, H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

All the players made identical bids in R3 and R.z

Question 45

In how many rounds did Dipak gain exactly 1 point?

Answer:1

Explanation:
Let 'H' represents Hi and 'L' represents Lo.

Given if they bid

Case 1: HHHH then all players gets -1 points.

Case 2: HHHL => H gets +1 and L gets -3.

Case 3: HHLL => H gets +2 and L gets -2.

Case 4: HLLL => H gets +3 and L gets -1.

Case 5: LLLL => every player gets +1.

From the given information we can draw the following table:

	R1	R2	R3	T1	R4	R5	R6	T2
A				6				7
B				-2				-1
C				-2				-5
D	D1	D3	D2	2				-1

**T1 is the cumulative of points till Round 3 and T2 is sum of points till round 6.

**Arun, Bankim, Charu, and Dipak are represented by A, B, C, D respectively.

From point 3, D1>D2>D3

D scored 2 points till round R3 and D1>D3>D2 the possible scenarios are :

Case D1: 3,2,-3

In this case the points of A in R1, R3, R2 will be -1,2/-2, 1 in any possible combination the sum will not be 6. So, this case is invalid.

Case D2: 2,1,-1

In this case the points of A in R1, R3, R2 will be 2/-2, 1/-3, -1/3 so, if the points in R1, R3, R2 are 2,1,3 the case is valid and no other cases are possible.

Case D3: 3,1,-2

In this case the points of A in R1, R3, R2 will be -1, 1/-3/1, 2/-2 in any possible combination the sum will not be 6. So, this case is invalid.

.'. Points of A,D in (R1,R2,R3) are (2,3,1) and (2,-1,1) respectively.

Since A got +3 in R2, he is only the one to bid h in R2 and points of B and C in round 2 are -1,-1 i.e they bid L, L.

Since A and D got 2 points each in R1, C and B must have got -2, -2 i.e they bid L, L.

Since A and D got 1 point in R3, C and B must also have got 1 in R3 i.e they bid L, L.

With this data, the table now looks like:

	R1	R2	R3	T1	R4	R5	R6	T2
A	2 H	3 H	1 L	6				7
B	-2 L	-1 L	1 L	-2				-1
C	-2 L	-1 L	1 L	-2				-5
D	2 H	-1 L	1 L	2				-1

No information is given about the individual scores in R4, R5, R6.

Given In exactly two out of the six rounds, Arun was the only player who bid Hi.

Let R.x, R.y, R.z represent R4, R5, R6 in any order.

Let A bid H in R.x=> B,C,D bid L.

The table now looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H			7
B	-2 L	-1 L	1 L	-2	-1 L			-1
C	-2 L	-1 L	1 L	-2	-1 L			-5
D	2 H	-1 L	1 L	2	-1 L			-1

For A, R.x+R.y+R.z=1 => R.y+R.z=-2

For B, R.x+R.y+R.z=1 => R.y+R.z=2

For C, R.x+R.y+R.z=-3 => R.y+R.z=-2

For D, R.x+R.y+R.z=-3.=> R.y+R.z=-2

(R.y, R.z) for A can be (-3,1) or (-1,-1)

Case A1:

If for A, (R.y, R.z)=(-3,1)

Since for both C,D: R.y+R.z=-2

We can't get any combination such that the total points of B,C,D are obtained.

Case A2:

If for A, (R.y, R.z)=(-1,-1).the (R.y, R.z) of B,C,D can be (3,-1), (-1,-1), (-1,-1) and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L, H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

Deepak got exactly one point in only R3.

Hence 1 is correct answer.

Question 46

In which of the following rounds, was Arun DEFINITELY the only player to bid Hi?

A Second

B Third

C Fourth

D First

Answer: A

Explanation:

Let 'H' represents Hi and 'L' represents Lo.

Given if they bid

Case 1: HHHH then all players gets -1 points.

Case 2: HHHL => H gets +1 and L gets -3.

Case 3: HHLL => H gets +2 and L gets -2.

Case 4: HLLL => H gets +3 and L gets -1.

Case 5: LLLL => every player gets +1.

From the given information we can draw the following table:

	R1	R2	R3	T1	R4	R5	R6	T2
A				6				7
B				-2				-1
C				-2				-5
D	D1	D3	D2	2				-1

**T1 is the cumulative of points till Round 3 and T2 is sum of points till round 6.

**Arun, Bankim, Charu, and Dipak are represented by A, B, C, D respectively.

From point 3, D1>D2>D3

D scored 2 points till round R3 and D1>D3>D2 the possible scenarios are :

Case D1: 3,2,-3

In this case the points of A in R1, R3, R2 will be -1,2/-2, 1 in any possible combination the sum will not be 6. So, this case is invalid.

Case D2: 2,1,-1

In this case the points of A in R1, R3, R2 will be 2/-2, 1/-3, -1/3 so, if the points in R1, R3, R2 are 2,1,3 the case is valid and no other cases are possible.

Case D3: 3,1,-2

In this case the points of A in R1, R3, R2 will be -1, 1/-3/1, 2/-2 in any possible combination the sum will not be 6. So, this case is invalid.

.'. Points of A,D in (R1,R2,R3) are (2,3,1) and (2,-1,1) respectively.

Since A got +3 in R2, he is only the one to bid h in R2 and points of B and C in round 2 are -1,-1 i.e they bid L, L.

Since A and D got 2 points each in R1, C and B must have got -2, -2 i.e they bid L, L.

Since A and D got 1 point in R3, C and B must also have got 1 in R3 i.e they bid L, L.

With this data, the table now looks like:

	R1	R2	R3	T1	R4	R5	R6	T2
A	2 H	3 H	1 L	6				7
B	-2 L	-1 L	1 L	-2				-1
C	-2 L	-1 L	1 L	-2				-5
D	2 H	-1 L	1 L	2				-1

No information is given about the individual scores in R4, R5, R6.

Given In exactly two out of the six rounds, Arun was the only player who bid Hi.

Let R.x, R.y, R.z represent R4, R5, R6 in any order.

Let A bid H in R.x=> B,C,D bid L.

The table now looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H			7
B	-2 L	-1 L	1 L	-2	-1 L			-1
C	-2 L	-1 L	1 L	-2	-1 L			-5
D	2 H	-1 L	1 L	2	-1 L			-1

For A, R.x+R.y+R.z=1 => R.y+R.z=-2

For B, R.x+R.y+R.z=1 => R.y+R.z=2

For C, R.x+R.y+R.z=-3 => R.y+R.z=-2

For D, R.x+R.y+R.z=-3.=> R.y+R.z=-2

(R.y, R.z) for A can be (-3,1) or (-1,-1)

Case A1:

If for A, (R.y, R.z)=(-3,1)

Since for both C,D: R.y+R.z=-2

We can't get any combination such that the total points of B,C,D are obtained.

Case A2:

If for A, (R.y, R.z)=(-1,-1).the (R.y, R.z) of B,C,D can be (3,-1), (-1,-1), (-1,-1) and they must have bid (H,H), (L,H), (L,H) respectively while A must have bid (L, H)

Hence this case is valid.

The final table looks like:

	R1	R2	R3	T1	R.x	R y	R.z	T2
A	2 H	3 H	1 L	6	3 H	-1 L	-1 H	7
B	-2 L	-1 L	1 L	-2	-1 L	3 H	-1 H	-1
C	-2 L	-1 L	1 L	-2	-1 L	-1 L	-1 H	-5
D	2 H	-1 L	1 L	2	-1 L	-1 L	-1 H	-1

R2 is correct answer.

Instructions

A survey of 600 schools in India was conducted to gather information about their online teaching learning processes (OTLP). The following four facilities were studied.

F1: Own software for OTLP
F2: Trained teachers for OTLP
F3: Training materials for OTLP
F4: All students having Laptops

The following observations were summarized from the survey.

1. 80 schools did not have any of the four facilities - F1, F2, F3, F4.
2. 40 schools had all four facilities.
3. The number of schools with only F1, only F2, only F3, and only F4 was 25, 30, 26 and 20 respectively.

4. The number of schools with exactly three of the facilities was the same irrespective of which three were considered.
5. 313 schools had F2.
6. 26 schools had only F2 and F3 (but neither F1 nor F4).
7. Among the schools having F4, 24 had only F3, and 45 had only F2.
8. 162 schools had both F1 and F2.
9. The number of schools having F1 was the same as the number of schools having F4.

Question 47

What was the total number of schools having exactly three of the four facilities?

A 64

B 50

C 200

D 80

Answer: C

Explanation:
Let the number of schools with exactly three of the facilities was the same irrespective of which three were considered be x.

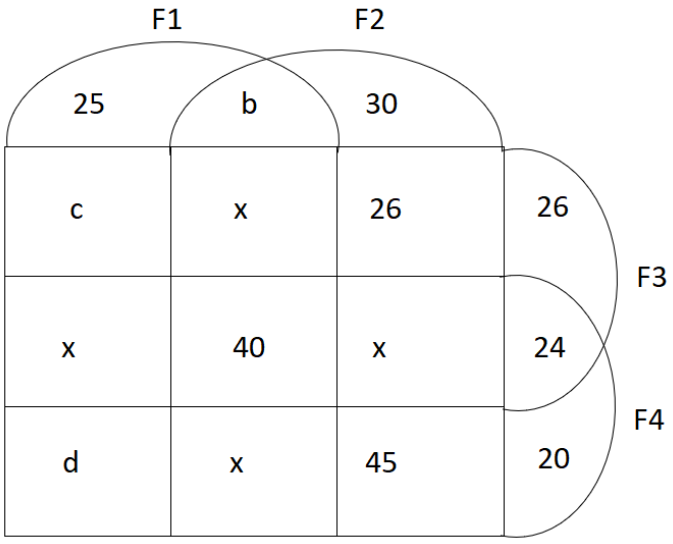
Number of schools with none of the facilities be 'n' from 1, n=80.

Number of schools with only F1 and F2 be 'b'

Number of schools with only F1 and F3 be 'c'

Number of schools with only F1 and F4 be 'd'

From the information given in the question we will get the following Venn diagram.



From 5, b+141+3x=313 => b+3x=172....(i)

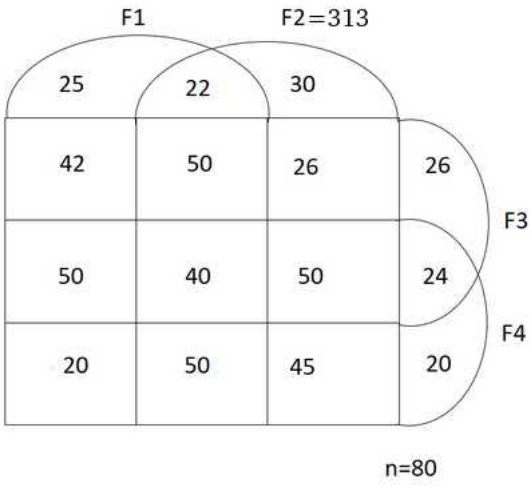
From 8, b+x+40+x=162 => b+2x=122....(ii)

(ii)-(i) gives x=50 => b=22

From 9, 237+3x+c+d=279+3x=d => c=42

Total number of schools =600 => 313+25+c+x+d+26+24+20+80=600 => d=20.

The final table looks like:



The total number of schools with exactly three of the four facilities= 4x=200.

Question 48

What was the number of schools having facilities F2 and F4?

A 185

B 95

C 45

D 85

Answer: A

Explanation:

Let the number of schools with exactly three of the facilities was the same irrespective of which three were considered be x.

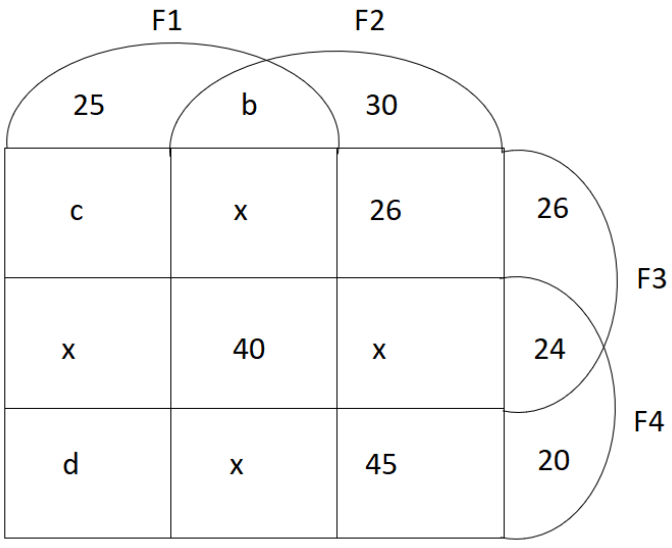
Number of schools with none of the facilities be 'n' from 1, n=80.

Number of schools with only F1 and F2 be 'b'

Number of schools with only F1 and F3 be 'c'

Number of schools with only F1 and F4 be 'd'

From the information given in the question we will get the following Venn diagram.



From 5, b+141+3x=313 => b+3x=172....(i)

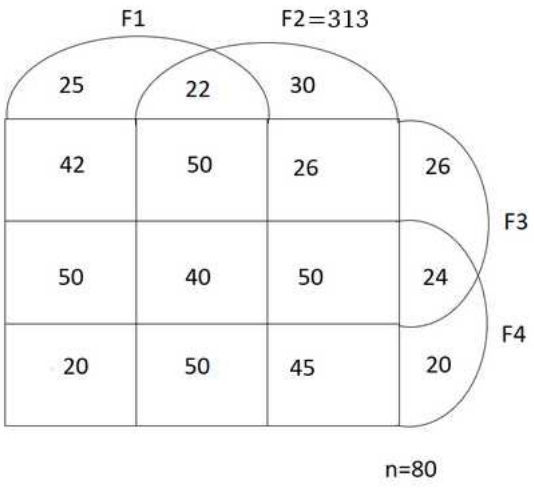
From 8, b+x+40+x=162 => b+2x=122....(ii)

(ii)-(i) gives x=50 => b=22

From 9, 237+3x+c+d=279+3x=d => c=42

Total number of schools =600 => 313+25+c+x+d+26+24+20+80=600 => d=20.

The final table looks like:



The total number of schools having facilities F4 and F2= 45+50+50+40=185.

How to prepare for Logical Reasoning for CAT

Question 49

What was the number of schools having only facilities F1 and F3?

Answer:42

Explanation:

Let the number of schools with exactly three of the facilities was the same irrespective of which three were considered be x.

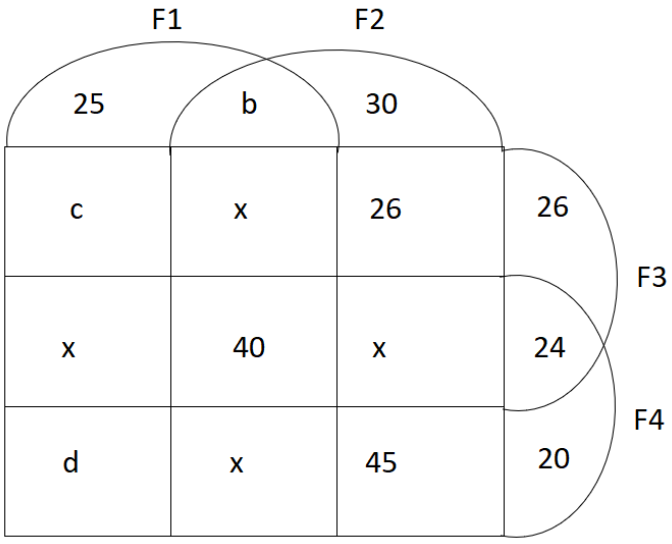
Number of schools with none of the facilities be 'n' from 1, n=80.

Number of schools with only F1 and F2 be 'b'

Number of schools with only F1 and F3 be 'c'

Number of schools with only F1 and F4 be 'd'

From the information given in the question we will get the following Venn diagram.



From 5, b+141+3x=313 => b+3x=172....(i)

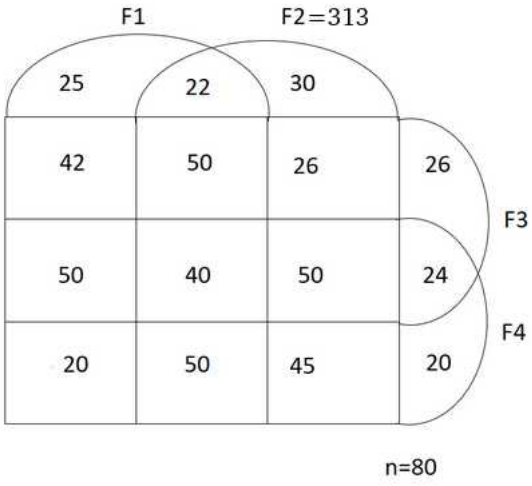
From 8, b+x+40+x=162 => b+2x=122....(ii)

(ii)-(i) gives x=50 => b=22

From 9, 237+3x+c+d=279+3x=d => c=42

Total number of schools =600 => 313+25+c+x+d+26+24+20+80=600 => d=20.

The final table looks like:



The total number of schools having only F1 and F3= c=42

Question 50

What was the number of schools having only facilities F1 and F4?

Answer:20

Explanation:

Let the number of schools with exactly three of the facilities was the same irrespective of which three were considered be x.

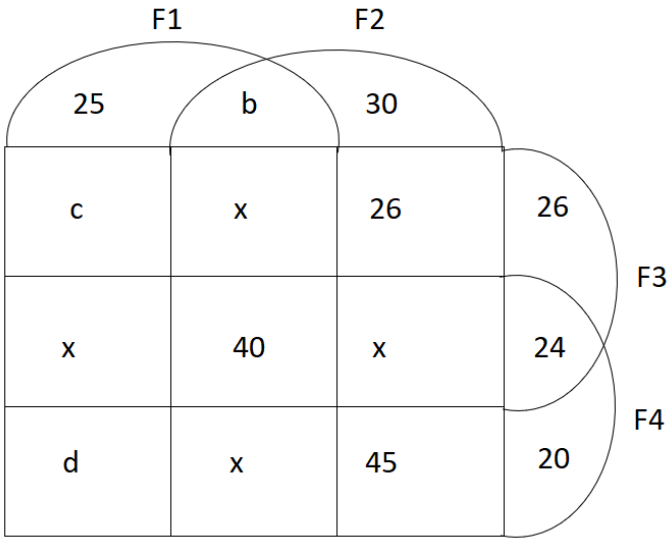
Number of schools with none of the facilities be 'n' from 1, n=80.

Number of schools with only F1 and F2 be 'b'

Number of schools with only F1 and F3 be 'c'

Number of schools with only F1 and F4 be 'd'

From the information given in the question we will get the following Venn diagram.



From 5, b+141+3x=313 => b+3x=172....(i)

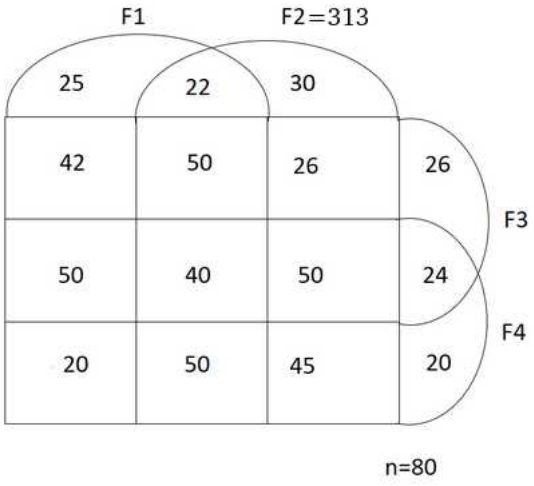
From 8, b+x+40+x=162 => b+2x=122....(ii)

(ii)-(i) gives x=50 => b=22

From 9, 237+3x+c+d=279+3x=d => c=42

Total number of schools =600 => 313+25+c+x+d+26+24+20+80=600 => d=20.

The final table looks like:



The total number of schools having only F1 and F4=20.

Data Interpretation for CAT Questions (download pdf)

Quant

Instructions

For the following questions answer them individually

Question 51

Two alcohol solutions, A and B, are mixed in the proportion 1:3 by volume. The volume of the mixture is then doubled by adding solution A such that the resulting mixture has 72% alcohol. If solution A has 60% alcohol, then the percentage of alcohol in solution B is

A 90%

B 94%

C 92%

D 89%

Answer: C

Explanation:
Initially let's consider A and B as one component

The volume of the mixture is doubled by adding A(60% alcohol) i.e they are mixed in 1:1 ratio and the resultant mixture has 72% alcohol.

Let the percentage of alcohol in component 1 be 'x'.

Using allegations , $\frac{(72-60)}{x-72} = \frac{1}{1}$ => x= 84

Percentage of alcohol in A = 60% => Let's percentage of alcohol in B = x%

The resultant mixture has 84% alcohol. ratio = 1:3

Using allegations , $\frac{(x-84)}{84-60} = \frac{1}{3}$

=> x= 92%

Logical Reasoning for CAT Questions (download pdf)

Question 52

A batsman played n + 2 innings and got out on all occasions. His average score in these n + 2 innings was 29 runs and he scored 38 and 15 runs in the last two innings. The batsman scored less than 38 runs in each of the first n innings. In these n innings, his average score was 30 runs and lowest score was x runs. The smallest possible value of x is

A 4

B 3

C 2

D 1

Answer: C

Explanation:
Given, $\frac{\text{sum of scores in n matches}+38+15}{n+2} = 29$

Given, $\frac{\text{sum of scores in n matches}}{n} = 30$

=> 30n + 53 = 29(n+2) => n=5

Sum of the scores in 5 matches = 29*7 - 38-15 = 150

Since the batsmen scored less than 38, in each of the first 5 innings. The value of x will be minimum when remaining four values are highest

=> 37+37+37+37 + x = 150

=> x = 2

Question 53

Let m and n be positive integers, If $x^2 + mx + 2n = 0$ and $x^2 + 2nx + m = 0$ have real roots, then the smallest possible value of $m + n$ is

A 7

B 6

C 8

D 5

Answer: B

Explanation:
To have real roots the discriminant should be greater than or equal to 0.

So, $m^2 - 8n \geq 0$ & $4n^2 - 4m \geq 0$

=> $m^2 \geq 8n$ & $n^2 \geq m$

Since m,n are positive integers the value of m+n will be minimum when m=4 and n=2.

.'. m+n=6.

Question 54

A contractor agreed to construct a 6 km road in 200 days. He employed 140 persons for the work. After 60 days, he realized that only 1.5 km road has been completed. How many additional people would he need to employ in order to finish the work exactly on time?

Answer:40

Explanation:
Let the desired efficiency of each worker '6x' per day.

140*6x*200= 6 km ...(i)

In 60 days 60/200*6=1.8 km of work is to be done but actually 1.5km is only done.

Actual efficiency 'y'= 1.5/1.8 *6x =5x.

Now, left over work = 4.5km which is to be done in 140 days with 'n' workers whose efficiency is 'y'.

=> n*5x*140=4.5 ...(ii)

(i)/(ii) gives,

$\frac{(140 \cdot 6x \cdot 200)}{(n \cdot 5x \cdot 140)} = \frac{6}{4.5}$

=> n=180.

.'. Extra 180-140 =40 workers are needed.

Quantitative Aptitude for CAT Questions (download pdf)

Question 55

If $x_1 = -1$ and $x_m = x_{m+1} + (m+1)$ for every positive integer m, then X_{100} equals

A -5050

B -5151

C -5051

D -5150

Answer: A

Explanation:
$x_1 = -1$

$x_1 = x_2 + 2$ => $x_2 = x_1 - 2$ = -3

Similarly,

$x_3 = x_1 - 5 = -6$

$x_4 = -10$

.

.

The series is -1, -3, -6, -10, -15.....

When the differences are in AP, then the nth term is $-\frac{n(n+1)}{2}$

$x_{100} = -\frac{100(100+1)}{2} = -5050$

Question 56

If $\log_a 30 = A, \log_a(\frac{5}{3}) = -B$ and $\log_2 a = \frac{1}{3}$, then $\log_3 a$ equals

A $\frac{2}{A+B-3}$

B $\frac{2}{A+B} - 3$

C $\frac{A+B}{2} - 3$

D $\frac{A+B-3}{2}$

Answer: A

Explanation:

$\log_a 30 = A \; or \; \log_a 5 + \log_a 2 + \log_a 3 = A$.....(1)

$\log_a \left(\frac{5}{3}\right) = -B \; or \; \log_a 3 - \log_a 5 = B$.....(2)

and finally $\log_a 2 = 3$

Substituting this in (1) we get $\log_a 5 + \log_a 3 = A - 3$

Now we have two equations in two variables (1) and (2) . On solving we get

$\log_a 3 = \frac{(A+B-3)}{2} \; or \; \log_3 a = \frac{2}{A+B-3}$

Question 57

Dick is thrice as old as Tom and Harry is twice as old as Dick. If Dick's age is 1 year less than the average age of all three, then Harry's age, in years, is

Answer:18

Explanation:

Let tom's age = x

=> Dick=3x

=>harry = 6x

Given,

3x+1 = (x+3x+6x)/3

=> x= 3

Hence, Harry's age = 18 years

Question 58

Vimla starts for office every day at 9 am and reaches exactly on time if she drives at her usual speed of 40 km/hr. She is late by 6 minutes if she drives at 35 km/hr. One day, she covers two-thirds of her distance to office in one-thirds of her usual total time to reach office, and then stops for 8 minutes. The speed, in km/hr, at which she should drive the remaining distance to reach office exactly on time is

A 29

B 26

C 28

D 27

Answer: C

Explanation:
Let distance = d

Given, $\frac{d}{35} - \frac{d}{40} = \frac{6}{60}$

=> d = 28km

The actual time taken to travel 28km = 28/40 = 7/10 hours = 42 min.

Given time taken to travel 58/3 km = 1/3 *42 = 14 min.

Then a break of 8 min.

To reach on time, he should cover remaining 28/3 km in 20 min => Speed = $\frac{(\frac{28}{3})}{\frac{20}{60}} = 28$ km/hr

Question 59

Let m and n be natural numbers such that n is even and $0.2 < \frac{m}{20}, \frac{n}{m}, \frac{n}{11} < 0.5$. Then $m - 2n$ equals

A 3

B 1

C 2

D 4

Answer: B

Explanation:
$0.2 < \frac{n}{11} < 0.5$

=> 2.2<n<5.5

Since n is an even natural number, the value of n = 4

$0.2 < \frac{m}{20} < 0.5$ => 4< m<10. Possible values of m = 5,6,7,8,9

Since $0.2 < \frac{n}{m} < 0.5$, the only possible value of m is 9

Hence m-2n = 9-8 = 1

Question 60

How many integers in the set {100, 101, 102, ..., 999} have at least one digit repeated?

Answer:252

Explanation:
Total number of numbers from 100 to 999 = 900

The number of three digits numbers with unique digits:

_ _ _

The hundredth's place can be filled in 9 ways (Number 0 cannot be selected)

Ten's place can be filled in 9 ways

One's place can be filled in 8 ways

Total number of numbers = 9*9*8 = 648

Number of integers in the set {100, 101, 102, ..., 999} have at least one digit repeated = 900 - 648 = 252

Question 61

In the final examination, Bishnu scored 52% and Asha scored 64%. The marks obtained by Bishnu is 23 less, and that by Asha is 34 more than the marks obtained by Ramesh. The marks obtained by Geeta, who scored 84%, is

A 357

B 417

C 439

D 399

Answer: D

Explanation:
Let the total marks be 100x

Marks obtained by Bishnu = 52x

Marks obtained by Asha = 64x

Marks obtained by Ramesh = 52x+23

Marks obtained by Ramesh = 64x-34

=> 52x+23 = 64x-34

=> x = $\frac{19}{4}$

Marks obtained by Geeta =84x = 84*19/4 = 399

Question 62

If a,b,c are non-zero and $14^a = 36^b = 84^c$, then $6b(\frac{1}{c} - \frac{1}{a})$ is equal to

Answer:3

Explanation:
Let $14^a = 36^b = 84^c$ = k

=> a = $\log_{14} k$, b = $\log_{36} k$, c=$\log_{84} k$

$6b(\frac{1}{c} - \frac{1}{a})$ = $6 \cdot \frac{1}{2} \log_6 k\,(\log_k 84 - \log_k 14)$ = 3

Question 63

A person invested a certain amount of money at 10% annual interest, compounded half-yearly. After one and a half years, the interest and principal together became Rs.18522. The amount, in rupees, that the person had invested is

Answer:16000

Explanation:
Given,

Rate of interest = 10%

Since it is compounded half-yearly, R=5%

n=3

We know, A = $P\left(1 + \frac{R}{100}\right)^n$

18522 = $P\,(1 + 0.05)^3$

=> P = 16000

Question 64

A man buys 35 kg of sugar and sets a marked price in order to make a 20% profit. He sells 5 kg at this price, and 15 kg at a 10% discount. Accidentally, 3 kg of sugar is wasted. He sells the remaining sugar by raising the marked price by p percent so as to make an overall profit of 15%. Then p is nearest to

A 22

B 35

C 25

D 31

Answer: C

Explanation:

Let the cost price of 1kg of sugar = Rs 100

The total cost price of 35 kg = Rs3500

Marked up price per kg = Rs 120

GIven, the final profit is 15% => Final SP of 35 kg = 3500 *1.15 = Rs 4025

First 5 kg's are sold at 20% marked up price => $SP_1 = 5 \cdot 100 \cdot 1.2$ = Rs 600

Next 15 kgs are sold after giving 10% discount => $SP_2 = 15 \cdot 100 \cdot 1.2 \cdot 0.9 \ = \ 1620$

3kgs of sugar got wasted

=> 23 kg of sugar was sold at Rs (600 +1620) = Rs 2220

Remaining 12kg should be sold at Rs 4025 - 2220 = Rs1805

=> SP of 1kg = 1805/12 $\simeq \ 150$

Hence, the seller should further mark up by $^{(150-120)}_{120} \cdot 100 \ = \ 25\%$

Question 65

The points (2,1) and (-3,-4) are opposite vertices of a parallelogram.If the other two vertices lie on the line $x + 9y + c = 0$, then c is

A 12

B 13

C 15

D 14

Answer: D

Explanation:

The midpoints of two diagonals of a parallelogram are the same

Hence the midpoint of (2,1) and (-3,-4) lie on $x + 9y + c = 0$

midpoint of (2,1) and (-3,-4) = ($^{2-3}_{2}$, $^{1-4}_{2}$) = (-1/2 , -3/2)

Keeping this cordinates in the above line equation, we get c = 14

Question 66

A and B are two railway stations 90 km apart. A train leaves A at 9:00 am, heading towards B at a speed of 40 km/hr. Another train leaves B at 10:30 am, heading towards A at a speed of 20 km/hr. The trains meet each other at

A 11 : 45 am

B 11 : 20 am

C 11 : 00 am

D 10 : 45 am

Answer: C

Explanation:
The distance travelled by A between 9:00 Am and 10:30 Am is 3/2*40 =60 km.

Now they are separated by 30 km

Let the time taken to meet =t

Distance travelled by A in time t + Distance travelled by B in time t = 30

40t + 20t =30 => t=1/2 hour

Hence they meet at 11:00 AM

Question 67

Let N, x and y be positive integers such that $N = x + y, 2 < x < 10$ and $14 < y < 23$. If $N > 25$, then how many distinct values are possible for N?

Answer:6

Explanation:
Possible values of x = 3,4,5,6,7,8,9

When x = 3, there is no possible value of y

When x = 4, the possible values of y = 22

When x = 5, the possible values of y=21,22

When x = 6, the possible values of y = 20.21,22

When x = 7, the possible values of y = 19,20,21,22

When x = 8, the possible values of y=18,19,20,21,22

When x = 9, the possible values of y=17,18,19,20,21,22

The unique values of N = 26,27,28,29,30,31

Question 68

Let k be a constant. The equations $kx + y = 3$ and $4x + ky = 4$ have a unique solution if and only if

A $|k| \neq 2$

B $|k| = 2$

C $k \neq 2$

D $k = 2$

Answer: A

Explanation:
Two linear equations ax+by= c and dx+ ey = f have a unique solution if $\frac{a}{d} \neq \frac{b}{e}$

Therefore, $\frac{k}{4} \neq \frac{1}{k}$ => $k^2 \neq 4$

=> k $\neq$ |2|

Question 69

How many of the integers 1, 2, … , 120, are divisible by none of 2, 5 and 7?

A 42

B 41

C 40

D 43

Answer: B

Explanation:
The number of multiples of 2 between 1 and 120 = 60

The number of multiples of 5 between 1 and 120 which are not multiples of 2 = 12

The number of multiples of 7 between 1 and 120 which are not multiples of 2 and 5 = 7

Hence, number of the integers 1, 2, … , 120, are divisible by none of 2, 5 and 7 = 120 - 60 - 12 - 7 = 41

Question 70

How many pairs(a, b) of positive integers are there such that $a \leq b$ and $ab = 4^{2017}$?

A 2018

B 2019

C 2017

D 2020

Answer: A

Explanation:
$ab = 4^{2017} = 2^{4034}$

The total number of factors = 4035.

out of these 4035 factors, we can choose two numbers a,b such that a<b in [4035/2] = 2017.

And since the given number is a perfect square we have one set of two equal factors.

∴ many pairs(a, b) of positive integers are there such that $a \leq b$ and $ab = 4^{2017}$ = 2018.

Question 71

Anil, Sunil, and Ravi run along a circular path of length 3 km, starting from the same point at the same time, and going in the clockwise direction. If they run at speeds of 15 km/hr, 10 km/hr, and 8 km/hr, respectively, how much distance in km will Ravi have run when Anil and Sunil meet again for the first time at the starting point?

A 4.8

B 4.6

C 5.2

D 4.2

Answer: A

Explanation:

Anil and Sunil will meet at a first point after LCM ($\frac{3}{15}, \frac{3}{10}$) = 3/5 hr

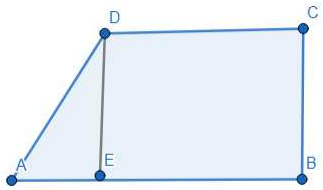
In the mean time, distance travelled by ravi = 8 * 3/5 = 4.8 km

Question 72

In a trapezium $ABCD$, AB is parallel to DC, BC is perpendicular to DC and $\angle BAD = 45^0$. If DC = 5cm, BC = 4 cm,the area of the trapezium in sq cm is

Answer:28

Explanation:



Given, BC = DE = 4

CD = BE = 5

In triangle ADE, EAD=45^{0}$$

$\tan 45 = \frac{DE}{AE}$ => AE = 4

Area of trapezium = Area of rectangle BCDE + Area of triangle AED

= 20 + 8 = 28

Question 73

The area, in sq. units, enclosed by the lines $x = 2, y = \mid x - 2 \mid + 4$, the X-axis and the Y-axis is equal to

A 10

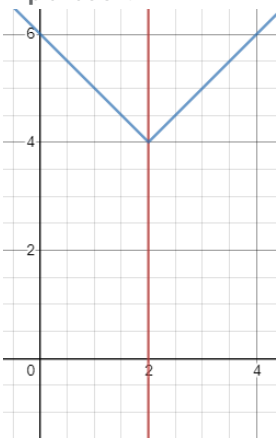
B 6

C 8

D 12

Answer: A

Explanation:



The required figure is a trapezium with vertices A(0,0), B(2,0), C(2,4) and D(0,6)

AB = 2 BC = 4 and AD = 6

Area of trapezium = $\frac{1}{2}(sum\ of\ the\ opposite\ sides) \cdot height = \frac{1}{2}(4+6) \cdot 2 = 10$

Question 74

If $f(x+y) = f(x)f(y)$ and $f(5) = 4$, then $f(10) - f(-10)$ is equal to

A 14.0625

B 0

C 15.9375

D 3

Answer: C

Explanation:

The given function is equivalent to f(x) = a^x

Given, f(5) = 4

=> $a^5 = 4 => a = 4^{\frac{1}{5}}$

=> f(x) = $4^{\frac{x}{5}}$

f(10) - f(-10) = 16 - 1/16 = 15.9375

Question 75

$\frac{2\times4\times8\times16}{(\log_2 4)^2(\log_4 8)^3(\log_8 16)^4}$ **equals**

Answer:24

Explanation:

$\frac{(2\cdot4\cdot8\cdot16)}{(\log_2 2^2)^2\cdot(\log_{2^2} 2^3)^3\cdot(\log_{2^3} 2^4)^4}$.

= $\frac{2^{10}}{4\cdot\left(\frac{3}{2}\right)^3\cdot\left(\frac{4}{3}\right)^4} = 24$

Question 76

The vertices of a triangle are (0,0), (4,0) and (3,9). The area of the circle passing through these three points is

A $\frac{14\pi}{3}$

B $\frac{123\pi}{7}$

C $\frac{12\pi}{5}$

D $\frac{205\pi}{9}$

Answer: D

Explanation:

Equation of circle $x^2 + y^2 + 2gx + 2fy + c = 0$

It passes through (0,0), (4,0) and (3,9). Substitute each point in the above equation:

=> On substituting the value (0,0) in the above equation, we obtain: $c = 0$

=> On substituting the value (4,0) in the above equation, we obtain: $16 + 0 + 8g + 0 = 0\,;\, g = -2$

=> On substituting the value (3,9) in the above equation, we obtain: $9 + 81 - 12 + 18f = 0\,;\, f = -13/3$

Radius of the circle **r** = $\sqrt{g^2 + f^2 - c}$ => $r^2 = \frac{205}{9}$

Therefore, Area = $\pi r^2 = \frac{205\pi}{9}$