

CAT 2024 Slot - III

SECTION: VERBAL ABILITY AND READING COMPREHENSION

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

Lyric poetry is a genre of private meditation rather than public commitment. The impulse in Marxism toward changing a society deemed unacceptable in its basic design would seem to place demands on lyric poetry that such poetry, with its tendency toward the personal, the small scale, and the idiosyncratic, could never answer. There is within Marxism, however, also a strand of thought that would locate in lyric poetry alternative modes of perception and description that call forth a vision of worlds at odds with a repressive reality or that draw attention to the workings of ideology within the hegemonic culture. The poetic imagination may indeed deflect larger social concerns, but it may also be implicitly critical and utopian.

Q.1)

1. Marxism has internal contradictions due to which one strand of Marxism sees no merit in lyric poetry while another appreciates the alternative modes of perception in poetry.
2. The focus of lyric poetry is largely personal while that of Marxism is bringing change in society. Unless the difference is resolved, poetry will remain largely utopian.
3. Marxism makes unreasonable demands on lyric poetry. However, lyric poetry has its own merits that are largely ignored by Marxism due to its personal nature.
4. The focus of lyric poetry as personal may not seem compatible with Marxism. However, it is possible to envisage lyric poetry as a symbol of resistance against an oppressive culture.

Correct Answer: 4

Explanation:

The main idea of the paragraph is that lyric poetry, with its tendency towards the personal and idiosyncratic, seems at odds with Marxism, which has an impulse to address larger social concerns and change societies. However, within Marxism, there is a strand of thought that believes lyric poetry may be implicitly critical and utopian. Option 4 is a good summary.

The paragraph does not say Marxism has "internal contradictions" due to which there are differences in how lyric poetry is perceived. It only says that one strand of Marxism believes lyric poetry can bring to light how envisioned worlds do not match the repressive reality. Option 1 is hence incorrect.

The first part of option 2 is correct: the focus of lyric poetry is largely personal while that of Marxism is bringing change in society. But the paragraph does not say that unless the difference is resolved, poetry will remain largely utopian. So, option 2 is ruled out.

Option 3 is easily ruled out. The paragraph does not say Marxism makes "unreasonable" demands on lyric poetry or that the merits of lyric poetry are "largely ignored" by Marxism.

Directions for the question. There is a sentence that is missing in the paragraph below. Look at the paragraph and decide where (option 1, 2, 3, or 4) the following sentence would best fit.

Q.2)

Sentence: Taken outside the village of Trang Bang on June 8, 1972, the picture captured the trauma and indiscriminate violence of a conflict that claimed, by some estimates, a million or more civilian lives.

Paragraph: The horrifying photograph of children fleeing a deadly napalm attack has become a defining image not only of the Vietnam War but the 20th century. (1). Dark smoke billowing behind them, the young subjects' faces are painted with a mixture of terror, pain and confusion. (2). Soldiers from the South Vietnamese army's 25th Division follow helplessly behind. (3). The picture was officially titled "The Terror of War," but the photo is better known by the nickname given to naked 9-year-old at its centre "Napalm Girl". (4).

1. Option 4
2. Option 3
3. Option 1
4. Option 2

Correct Answer: Option 3

Explanation:

The missing sentence states when and where 'the picture' was taken and details of the violent conflict it captures. At first glance, it looks as if this sentence can fit in any of the given blanks.

Consider blank 1. The sentence before it says the horrifying photograph is a defining image not only of the Vietnam War but the 20th century. The sentence that follows the blank details the scene the photograph captures. If the missing sentence were to be placed in blank 1, while it would continue from the first line very logically, it would not transition very well into the second line describing the scene. The missing sentence talks of the million civilian lives lost in the conflict. This idea is not followed up in the description of the photo. So, blank 1 is not a very good fit.

Blank 2 is the easiest one to rule out, as both the sentence before and after it describe the scene captured in the photo. The missing sentence would break the flow of ideas if it is placed here.

Blank 3 seems a good place to plug the missing sentence in as the line that follows this blank is a description of the picture as "The Terror of War" and this description fits the idea in the missing sentence that it was a traumatic and violent conflict that claimed a million civilian lives.

Now, the sentence before blank 4 says the picture was officially titled "The Terror of War" but it is better known as "Napalm Girl". If the missing sentence were to be placed in blank 4, the paragraph would pivot from the Napalm girl to when and where the picture was taken. This is hence not a good choice.

Blank 3 is the correct choice.

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

Humans have managed to tweak the underlying biology of various plants and animals to produce high-tech crops and microbes. But regulating these entities is complicated, as the framework of policies and procedures are outdated and not flexible enough to adapt to emerging technology. The question is whether regulation will ever be able to keep up with human innovation, to regulate living things, which are apt to be unpredictable and unique; to capture all the potential risks when new biological entities are introduced, or when they pass on variations of their genes?

Q.3)

1. A new framework of rules and procedures for regulating the most recent research emerging from biotechnology is urgently needed, to keep up with this rapidly changing discipline.
2. Current regulation of biotechnology is outdated, but it is debatable if we can create a framework, imaginative and flexible, to cover all contingencies in this fast-changing area.
3. The problem with formulating regulation for innovation in the scientific arena is that it is impossible to imagine the outcomes or risks related to the outcomes of all the research.
4. The mercurial nature of biological entities calls for scientists to shape the regulations governing emerging technology, with regular calibration to handle variations in the field.

Correct Answer: 2

Explanation:

The paragraph observes that regulating innovations that tweak the underlying biology of various plants and animals is complicated, as policies and procedures become outdated and are not flexible enough to adapt to emerging technology. It questions whether regulation can keep up with human innovation and capture all potential risks. Option 2 is a good summary.

Note that the paragraph only questions whether it is possible to have proper regulation of the emergent technology. It does not say that such regulation is urgently needed to regulate the most recent research in the field (as option 1 says) or declare that it is impossible to imagine the outcomes or risks related to the research (as option 3 says). So, both these options are incorrect.

While the paragraph does say that living things are apt to be unpredictable and unique, it does not say that this mercurial nature of biological entities is why the regulations governing emerging technology have to be put in place. Option 4 is hence incorrect.

Directions for the questions. The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

The biggest challenge The Nutmeg's Curse throws down is to the prevailing understanding of when the climate crisis started. Most of us have accepted . . . that it started with the widespread use of coal at the beginning of the Industrial Age in the 18th century and worsened with the mass adoption of oil and natural gas in the 20th. Amitav Ghosh takes this history at least three centuries back, to the start of European colonialism in the 15th century. He [starts] the book with a 1621 massacre by Dutch invaders determined to impose a monopoly on nutmeg cultivation and trade in the Banda islands in today's Indonesia. Not only do the Dutch

systematically depopulate the islands through genocide, they also try their best to bring nutmeg cultivation into plantation mode. These are the two points to which Ghosh returns through examples from around the world. One, how European colonialists decimated not only indigenous populations but also indigenous understanding of the relationship between humans and Earth. Two, how this was an invasion not only of humans but of the Earth itself, and how this continues to the present day by looking at nature as a 'resource' to exploit. . . . We know we are facing more frequent and more severe heatwaves, storms, floods, droughts and wildfires due to climate change. We know our expansion through deforestation, dam building, canal cutting - in short, terraforming, the word Ghosh uses - has brought us repeated disasters . . . Are these the responses of an angry Gaia who has finally had enough? By using the word 'curse' in the title, the author makes it clear that he thinks so. I use the pronoun 'who' knowingly, because Ghosh has quoted many non-European sources to enquire into the relationship between humans and the world around them so that he can question the prevalent way of looking at Earth as an inert object to be exploited to the maximum. As Ghosh's text, notes and bibliography show once more, none of this is new. There have always been challenges to the way European colonialists looked at other civilisations and at Earth. It is just that the invaders and their myriad backers in the fields of economics, politics, anthropology, philosophy, literature, technology, physics, chemistry, biology have dominated global intellectual discourse.... There are other points of view that we can hear today if we listen hard enough. Those observing global climate negotiations know about the Latin American way of looking at Earth as Pachamama (Earth Mother). They also know how such a framing is just provided lip service and is ignored in the substantive portions of the negotiations. In *The Nutmeg's Curse*, Ghosh explains why. He shows the extent of the vested interest in the oil economy - not only for oil-exporting countries, but also for a superpower like the United States that controls oil drilling, oil prices and oil movement around the world. Many of us know power utilities are sabotaging decentralised solar power generation today because it hits their revenues and control. And how the other points of view are so often drowned out.

Q.4) The author mentions all of the following reasons to dismiss concerns about contaminating Mars EXCEPT:

- a. the lack of evidence of living organisms on Mars makes possible contamination from earthly microbes a moot point.
- b. the use of similar probes on astronomical bodies like the moon have had little effect on the environment.
- c. efforts to contain contamination on Mars are likely to be derailed as competitor countries may not follow similar restrictions.
- d. earlier explorations have already contaminated pristine space environments.

Correct Answer: b

Explanation:

With regard to the moon and asteroids, the author only argues that these are "desiccated, radiation-soaked" realms of "hard vacuum and extreme temperature variations that would kill nearly anything" and that China recently sent a terrarium to the moon and germinated a plant seed. The author does not say that similar probes on the moon have had "little effect" on the environment. So, option b does not relate to what the author argues.

On the other hand, all other options relate to the contents of the passage. In the second paragraph, the author argues that life on Mars has been "very hard to find with robots" and that the "upsides from human exploration and development of Mars clearly outweigh the welfare of purely speculative Martian fungi". So, option a relates to what is stated in the passage.

The author gives the example of China to drive home the point that many international competitors will ignore the demands of protection extremists in any case. Option c also relates to the contents of the passage.

The author also argues in the fourth paragraph that NASA's previous human exploration efforts made no serious attempt at sterility, with little notice. So, option d is ruled out.

Q.5) The author's overall tone in the first paragraph can be described as

- a. approving of the amount of money NASA spends to restrict the spread of contamination in space.
- b. sceptical about the excessive efforts to sanitise planets where life has not yet been proven to exist.
- c. indifferent to the elitism of a few scientists aiming to corner space exploration.
- d. equivocal about the reasons extended by the group of scientists seeking to limit space exploration.

Correct Answer: b

Explanation:

The author's tone in the first paragraph is clearly sceptical. Note the use of "harmful contamination" in quotes. Further, the author's description of those who call for planetary protection indicates that this is not the author's position ("There is a group...", "these planetary protection advocates...",

"under this regime..."). So, option b is the correct choice.

Q.6) The author is unlikely to disagree with any of the following EXCEPT:

- a. the proposal for a zonal segregation of the Martian landscape into regions for different purposes.
- b. that while NASA's earlier missions were not ideal in their approach to space contamination, they likely did no grave damage.
- c. space contamination should be minimised until the possibility of life on the astronomical body being explored is ruled out.
- d. the exorbitant costs of continuing to keep the space environment pristine may be unsustainable.

Correct Answer: c

Explanation:

The choice the author is NOT unlikely to disagree with = the choice the author is NOT likely to agree with.

Option c is the exact opposite of the author's argument. So, this is the correct answer choice. All other options relate to points mentioned in the passage, as seen from the lines given below: Option a - "A reasonable compromise is to continue on the course laid out by the U.S. government and the National Research Council, which proposed a system of zones on Mars, some for science only, some for habitation, and some for resource exploitation."

Option b - "NASA's previous human exploration efforts made no serious attempt at sterility, with little notice."

Option d - "Forcing NASA's proposed Mars exploration to do better, scrubbing everything and hauling out all the trash, would destroy NASA's human exploration budget and encroach on the agency's other directorates, too. Getting future astronauts off Mars is enough of a challenge, without

trying to tote weeks of waste along as well."

Q.7) The contrasting reactions to the China and Israel "contaminations" of lunar space

- a. are evidence of China's reasonable approach towards space contamination.
- b. are valid as the contamination of the lunar environment from animal sources is far greater than from plants.
- c. reveal global biases prevalent in attitudes towards different countries.
- d. indicate that national scientists may have different sensitivities to issues of biosphere protection.

Correct Answer: d

Explanation:

The author observes that China germinated a plant seed on the moon with "no protest from its own scientific community" whereas the smuggling of tardigrades aboard the Israeli probe unleashed a "firestorm" within the space community. These differing reactions therefore indicate that national scientists may have different sensitivities to issues of biosphere protection. Option d is the correct choice.

Directions for the question. There is a sentence that is missing in the paragraph below. Look at the paragraph and decide where (option 1, 2, 3, or 4) the following sentence would best fit.

Q.8)

Sentence: Many have had to leave their homes behind, with more than 1.3 million people being displaced due to the drought.

Passage: Somalia has been dealing with an enormous humanitarian catastrophe, driven by the longest and most severe drought the country has experienced in at least 40 years. (1). Five consecutive rainy seasons have failed, causing more than 8 million people - almost half of the country's population - to experience acute food insecurity. (2). More than 43,000 people are believed to have lost their lives, with half of the lives lost likely being children under five. The damage the drought has caused is far-reaching. (3). Farmers have lost all their agricultural income, while pastoralists have lost more than 3 million livestock, impoverishing entire communities, and leaving them on the brink of famine. (4). Some, like the pastoralists, may never be able to go back as their livelihoods have been irreversibly wiped out.

- a. Option 4
- b. Option 3

- c. Option 1
- d. Option 2

Correct Answer: a

Explanation:

The missing sentence is about the huge number of people displaced due to the drought. Let us consider each blank in order. Blank 1 is right after the first sentence which talks of the longest and most severe drought in Somalia in 40 years. The sentence that follows blank 1 explains the reason for the drought. The missing sentence, which is about people displaced by the drought, is not a good fit here.

Consider blank 2. The sentence before it is about acute food insecurity experienced in Somalia while the one that follows the blank and explains the scale of the impact of the crisis. These sentences are logically linked, so blank 2 is not a good choice either.

Both blanks 3 and 4 are placed between sentences that describe the damage caused by the drought. Between these, 4 is better than 3. This is because the missing sentence says 'many' have had to leave their homes behind while the sentence following 4 says 'some' may never be able to go back. There is a link between the missing sentence and the sentence following blank 4 both in terms of structure and ideas.

The sentence before 3 is a general one about the damage caused by the drought and the sentence following it describes the damage to specific sections of people- farmers and pastoralists. It seems reasonable that the paragraph first explains the problems of farmers and pastoralists, those first impacted by the drought, and then follows to explain the impact of the drought on people at large.

So, option 4 is the correct choice.

Directions for the question. The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

Languages become endangered and die out for many reasons. Sadly, the physical annihilation of communities of native speakers of a language is all too often the cause of language extinction. In North America, European colonists brought death and destruction to many Native American communities. This was followed by United States federal policies restricting the use of indigenous languages, including the removal of native children from their communities to federal boarding schools where native languages and cultural practices were prohibited. As many as 75 percent of the languages spoken in the territories that became the United States have gone extinct, with slightly better language survival rates in Central America and South America . . .

Even without physical annihilation and prohibitions against language use, the language of the "dominant" cultures may drive other languages into extinction; young people see education, jobs, culture and technology associated with the dominant language and focus their attention on that language. The largest language "killers" are English, Spanish, Portuguese, French, Russian, Hindi, and Chinese, all of which have privileged status as dominant languages threatening minority languages.

When we lose a language, we lose the worldview, culture and knowledge of the people who spoke it, constituting a loss to all humanity. People around the world live in direct contact with their native environment, their habitat. When the language they speak goes extinct, the rest of humanity loses their knowledge of that environment, their wisdom about the relationship between local plants and

illness, their philosophical and religious beliefs as well as their native cultural expression (in music, visual art and poetry) that has enriched both the speakers of that language and others who would have encountered that culture. . . .

As educators deeply immersed in the liberal arts, we believe that educating students broadly in all facets of language and culture . . . yields immense rewards. Some individuals educated in the liberal arts tradition will pursue advanced study in linguistics and become actively engaged in language preservation, setting out for the Amazon, for example, with video recording equipment to interview the last surviving elders in a community to record and document a language spoken by no children.

Certainly, though, the vast majority of students will not pursue this kind of activity. For these students, a liberal arts education is absolutely critical from the twin perspectives of language extinction and global citizenship. When students study languages other than their own, they are sensitized to the existence of different cultural perspectives and practices. With such an education, students are more likely to be able to articulate insights into their own cultural biases, be more empathetic to individuals of other cultures, communicate successfully across linguistic and cultural differences, consider and resolve questions in a way that reflects multiple cultural perspectives, and, ultimately extend support to people, programs, practices, and policies that support the preservation of endangered languages.

There is ample evidence that such preservation can work in languages spiraling toward extinction. For example, Navajo, Cree and Inuit communities have established schools in which these languages are the language of instruction and the number of speakers of each has increased.

Q.9) The author believes that a liberal arts education combined with participation in language preservation empower students in all of the following ways EXCEPT that they will

- a. develop a better understanding of their own culture.
- b. learn different languages.
- c. establish schools to preserve languages spiralling towards extinction.
- d. overcome cultural barriers to communication.

Correct Answer: c

Explanation:

Refer to the lines, "When students study languages other than their own, they are sensitized to the existence of different cultural perspectives and practices. With such an education, students are more likely to be able to articulate insights into their own cultural biases, be more empathetic to individuals of other cultures, communicate successfully across linguistic and cultural differences, consider and resolve questions in a way that reflects multiple cultural perspectives, and, ultimately extend support to people, programs, practices, and policies that support the preservation of endangered languages".

The author believes that a liberal arts education combined with participation in language preservation empower students to learn different languages, gain a better understanding of their own culture and overcome cultural barriers to communication.

The author does not say liberal arts students are likely to establish schools to preserve endangered

languages. So, option c is the correct answer choice.

Q.10) The author believes that a liberal arts education combined with participation in language preservation empower students in all of the following ways EXCEPT that they will

- a. develop a better understanding of their own culture.
- b. learn different languages.
- c. establish schools to preserve languages spiralling towards extinction.
- d. overcome cultural barriers to communication.

Correct Answer: c

Explanation:

Refer to the lines, "When students study languages other than their own, they are sensitized to the existence of different cultural perspectives and practices. With such an education, students are more likely to be able to articulate insights into their own cultural biases, be more empathetic to individuals of other cultures, communicate successfully across linguistic and cultural differences, consider and resolve questions in a way that reflects multiple cultural perspectives, and, ultimately extend support to people, programs, practices, and policies that support the preservation of endangered languages".

The author believes that a liberal arts education combined with participation in language preservation empower students to learn different languages, gain a better understanding of their own culture and overcome cultural barriers to communication.

The author does not say liberal arts students are likely to establish schools to preserve endangered languages. So, option c is the correct answer choice.

Q.11) Which one of the following hypothetical scenarios, if true, would most strongly undermine the central ideas of the passage?

- a. A liberal arts education requires that, in addition to being fluent in English, students gain fluency in two of the top five most spoken languages globally.
- b. Schools that teach endangered languages can preserve the language only for a generation.
- c. Recording a dying language that has only a few remaining speakers freezes it in time: it stops evolving further.
- d. Most liberal arts students will pursue jobs in publishing and human resource management rather than doctorates in linguistics.

Correct Answer: a

Explanation:

The author argues that a liberal arts education is absolutely critical from the twin perspectives of language extinction and global citizenship. If a liberal arts education requires that besides English, students only gain fluency in two of the most spoken languages globally, then the author's argument-- that such an education can help preserve languages spiraling toward extinction-- is undermined. So, option a is the correct choice.

Consider option b. Even if schools that teach endangered languages can preserve the language only for a generation, they still manage to keep these languages from going extinct immediately. Even if option b were true, the author's position would not be undermined.

Similarly, even if option c were true and recording a dying language only manages to freeze it in time, it helps keep the language from going extinct. The author's position would not be undermined.

Option d states that most liberal arts students will pursue jobs in publishing and human resource management rather than doctorates in linguistics. This is something the author himself observes: "Some individuals educated in the liberal arts tradition will pursue advanced study in linguistics and become actively engaged in language preservation...Certainly, though, the vast majority of students will not pursue this kind of activity." Option d does not undermine the author's argument.

Q.12) In the context of the passage, which one of the following hypothetical scenarios, if true, is NOT an example of the kind of loss that occurs when a language becomes extinct?

- a. The Inuit of Alaska have 35 different words to describe the texture of snow. When the language becomes extinct, we will lose that understanding of nature.
- b. The Lamkangs of Manipur have only 3 remaining native speakers of the language. When they die, we will lose one more group from the government list of indigenous tribes.
- c. The Andamanese language has a word to describe someone who has lost a step-sister. When the language dies, we will lose the concept of the word and the emotions it evokes.
- d. The Nicobarese language describes 20 different moods of the ocean. By the time the last speaker is educated in a Central Board school, they will have forgotten their language.

Correct Answer: b

Explanation:

The passage is about languages lost and the loss of the worldview, culture and knowledge of the people who spoke the language along with it. Options a, c and d all relate to this kind of loss.

Option b, on the other hand, is about the loss of one more group from the government list of indigenous tribes. This does not relate to the loss described in the passage.

Directions for the question. There is a sentence that is missing in the paragraph below. Look at the paragraph and decide where (option 1, 2, 3, or 4) the following sentence would best fit.

Sentence: This reality is putting stress on employees who have to pay for transport, desk lunches, more childcare, clothing and that after-work socialisation - costs they haven't incurred for nearly two years.

Paragraph: (1). Prices are rising at their fastest rate in 40 years, consequently, return-to-office-related costs have shot up - think petrol and food, for instance. (2). Yet wages haven't kept up with inflation - even despite the salary growth many workers have enjoyed during a favourable pandemic labour market. (3). This is especially jarring for workers who were able to save during remote work, when these expenditures weren't a factor. (4). In April 2022, Umus, a London university lecturer, told BBC Worklife that they were spending nearly a quarter of what they made every day on return-to-work costs.

- a. Option 2
- b. Option 3

- c. Option 1
- d. Option 4

Correct Answer: b

Explanation:

The missing sentence is about the stress brought forth by 'this reality'. This sentence cannot be the opening sentence of a paragraph. So, blank 1 is ruled out.

Blank 2 is also ruled out as both the sentences before and after it relate to the 'reality' mentioned in the missing sentence.

Blank 3 is a good fit, as the missing sentence is about costs incurred by those returning to work. The sentence following blank 3, too, relates to this idea.

Blank 4 is easily ruled out as 'this reality' mentioned in the missing sentence does not relate to the subject of the sentence before blank 4.

Directions for the question. The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

Kweichow Moutai has been the global booze sensation of the decade. A bottle of its Flying Fairy which sold in the 1980s for the equivalent of a dollar now retails for \$400. Moutai's listed shares have soared by almost 600% in the past five years, outpacing the likes of Amazon....

It does this while disregarding every Western marketing mantra. It is not global, has meagre digital sales and does not appeal to millennials. It scores pitifully on environmental, social and governance measures. In the Boy Scout world of Western business it would leave a bad taste, in more ways than one.

Moutai owes its intoxicating success to three factors-not all of them easy to emulate. First, it profits from Chinan nationalism. Moutai is known as the "national liquor". It was used to raise spirits and disinfect wounds in Mao Zedong's Long March. It was Premier Zhou Enlai's favourite tippie, shared with Richard Nixon in 1972. Its centuries-old craftsmanship-it is distilled eight times and stored for years in earthenware jars-is a source of national pride. It also claims to be hangover-proof, which would make it an invention to rival gunpowder....

Second, it chose to serve China's super-rich rather than its middle class. Markets are littered with the corpses of firms that could not compete in the cut-throat battle for Chinese middle-class wallets. And the country's premium market is massive-at 73 m-strong, bigger than the population of France, notes Euan McLeish of Bernstein, an investment firm, and still less crowded with prestige brands than advanced economies. Moutai is to these well-heeled drinkers what vintage champagne is to the rest of the world....

Third, Moutai looks beyond affluent millennials and digital natives. The elderly and the middle-aged, it found, can be just as lucrative. Its biggest market now is (male) drinkers in their mid-30s. Many have no siblings, thanks to four decades of China's one-child policy-which also means their elderly parents can splash out on weddings and banquets. Moutai is often a guest of honour.

Moutai has succeeded thanks to nationalism, elitism and ageism, in other words-not in spite of this unholy trinity. But it faces risks. The government is its largest shareholder-and a meddlesome one. It appears to want prices to remain stable. Exorbitantly priced booze is at odds with its professed

socialist ideals. Yet minority investors-including many foreign funds-lament that Moutai's wholesale price is a third of what it sells for in shops. Raising it could boost the company's profits further. Instead, in what some see as a travesty of corporate governance, its majority owner has plans to set up its own sales channel.....

In the long run, its biggest risk may be millennials. As they grow older, health concerns, work-life balance and the desire for more wholesome pursuits than binge-drinking may curb the "Ganbei!" toasting culture [heavy drinking] on which so much of the demand for Moutai rests. For the time being, though, the party goes on.

Q.14) Which one of the following is both a reason for Kweichow Moutai's success as well as a possible threat to that success?

- a. Its appeal to the rich.
- b. Government involvement in its business.
- c. Its appeal to the older age group.
- d. Chinese love of liquor filled celebration.

Correct Answer: c

Explanation:

According to the passage, Moutai has succeeded thanks to nationalism, elitism and ageism. It faces risks due to government meddling, lack of corporate governance and aging millennials being prompted to put an end to the heavy drinking culture due to various factors.

The passage identifies ageism as both a reason for Moutai's success ("The elderly and the middle-aged, it found, can be just as lucrative") as well as a threat ("In the long run, its biggest risk may be millennials. As they grow older, health concerns, work-life balance and the desire for more wholesome pursuits than binge-drinking may curb the "Ganbei!" toasting culture [heavy drinking] on which so much of the demand for Moutai rests"). So, option c is the correct choice.

Note that Moutai's appeal to the rich is not identified as a threat to its success. Government involvement in the business is only identified as a threat, not reason for success.

Chinese love of liquor-filled celebration is a reason for and not a threat to Moutai's success. As millennials grow older, they may put an end to the heavy drinking culture and it is that which poses a threat to Moutai.

Q.15) In the context of the passage we can infer that to succeed in the liquor industry in China, a marketing firm must consider all of the following factors affecting the Chinese liquor market EXCEPT that

- a. the competition for winning over the middle class is very stiff.
- b. there is money to be made from marketing to the middle class.
- c. the government may control the pricing of products.
- d. there are few competitors to meet the demands of high end liquor consumers.

Correct Answer: b

Explanation:

Let us consider each option in order.

Both options a and b relate to the middle class market for liquor in China. Regarding this, the passage says, "Markets are littered with the corpses of firms that could not compete in the cut-throat battle for Chinese middle-class wallets." In other words, the competition for winning over the middle class is very stiff and cut-throat. Many firms tried their hand in competing in this market and failed. So, option a is true while b is false.

Option c is true, based on the penultimate paragraph.

Option d is true as well: "And the country's premium market is massive-at 73m-strong, bigger than the population of France, notes Euan McLeish of Bernstein, an investment firm, and still less crowded with prestige brands than advanced economies."

So, option b is the correct answer choice.

Q.16) In the context of the passage, it is most likely that the author refers to Kweichow Moutai's marketing strategy as "the unholy trinity" because

- a. it profits from Chinese nationalist feelings.
- b. it exposes the firm to long term risks.
- c. it contradicts the Western strategy of marketing.
- d. there is nothing holy about marketing techniques for liquor.

Correct Answer: c

Explanation:

Right at the beginning of the passage, the author observes that Moutai has succeeded "while disregarding every Western marketing mantra. It is not global, has meagre digital sales and does not appeal to millennials." It is this that he refers to while stating that Moutai has succeeded thanks to nationalism, elitism and ageism and not in spite of this "unholy" trinity. So, option c is the correct choice.

Option a only relates to nationalism and does not explain the reference to "the unholy trinity".

Option d is irrelevant and easily ruled out.

Only option b is close, as it seems reasonable at first to think that it is because of the risks that the reliance on nationalism, elitism and ageism exposes Moutai to that the author calls it "the unholy trinity". But this option is incorrect as neither nationalism nor elitism are identified as threats to Moutai's success by the author.

Q.17) The phrase "would make it an invention to rival gunpowder" has been used in the passage in a sense that is

- a. substantive.
- b. metaphorical.

- c. literal.
- d. synonymical.

Correct Answer: b

Explanation:

The author draws parallels between Kweichow Moutai and gunpowder in terms of the potency of the invention. The usage is metaphorical.

Anything that is substantive has a firm basis in reality. The comparison here is not substantive or literal. Nor is it synonymical, that is, having the same meaning.

Directions for the questions. Five jumbled up sentences (labelled 1, 2, 3, 4 and 5), related to a topic, are given below. Four of them can be put together to form a coherent paragraph. Identify the odd sentence and key in the number of that sentence as your answer.

Q.18)

1. To create a synapse, the neuron has specialized structures, often seen as tiny swellings, at its terminal end of the axon where it stores the chemicals that are emitted to transmit a signal to the next neuron.
2. This fetal warm-up act-the soldering of neural connections before the eyes actually function-is crucial to the performance of the visual system.
3. The reasons for this paring back of synapses is a mystery, but synaptic pruning is thought to sharpen and reinforce the "correct" synapses, while removing the weak and unnecessary ones.
4. Neural connections between the eyes and the brain are formed long before birth, establishing the wiring and the circuitry that allow a child to begin visualizing the world the minute she emerges from the womb.
5. During this rehearsal period, synapses-points of chemical connection-between nerve cells are generated in great excess, only to be pruned back during later development.

Correct Answer: 1

Explanation:

All sentences except 1 relate to the soldering of neural connections before birth in the fetus. Sentence 1, which is about how a neuron creates a synapse, is the odd one out.

Ordering the sentences, we see that 4 is the best opening sentence. Sentence 4 says neural connections between the eyes and the brain are formed long before birth. Sentence 5 adds to 4, stating that a great excess of neural connections are established in this "rehearsal period" and pruned back during later development. Sentence 3 continues the idea in 5, stating that the reason for this paring back of synapses is a mystery. Sentence 2 concludes the paragraph observing that this fetal "warm-up act" is crucial to the performance of the visual system.

4532 makes a cogent paragraph; 1 is the odd one out.

Directions for the question. Five jumbled up sentences (labelled 1, 2, 3, 4 and 5), related to a topic, are given below. Four of them can be put together to form a coherent paragraph. Identify the odd sentence and key in the number of that sentence as your answer.

Q.19)

1. Part of the appeal of forecasting is not just that it seems to work, but that you don't seem to need specialized expertise to succeed at it.
2. The tight connection between forecasting and building a model of the world helps explain why so much of the early interest in the idea came from the intelligence community.
3. This was true even though the latter had access to classified intelligence.
4. One frequently cited study found that accurate forecasters' predictions of geopolitical events, when aggregated using standard scientific methods, were more accurate than the forecasts of members of the US intelligence community who answered the same questions in a confidential prediction market.
5. The aggregated opinions of non-experts doing forecasting have proven to be a better guide to the future than the aggregated opinions of experts.

Correct Answer: 2

Explanation:

All sentences except 2 relate to the idea of forecasting by non-experts versus that by experts.

If the sentences were to be arranged in a paragraph, 1 would be the opening sentence. 4 and 3 form a strong link; the 'latter' referred to in 3 is the US intelligence community that 4 mentions. Sentence 5 offers a good conclusion to the paragraph based on the preceding sentences.

1435 is a cogent paragraph. Sentence 2, which is about the connection between forecasting and building a model of the world, is not related to the contents of the paragraph.

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

Q.20)

When the tradwife puts on that georgic, pinstriped dress, she is not just admiring the visual cues of a fantastical past. She takes these dreams of storybook bliss literally, tracing them backward in time until she reaches a logical conclusion that satisfies her. And by doing so, she ends up delivering an unhappy reminder of just how much our lives consist of artifice and playacting. The tradwife outrages people because of her deliberately regressive ideals. And yet her behaviour is, on some level, indistinguishable from the nontradwife's. The tradwife's trollish genius is to beat us at our own dress-up game. By insisting that the idyllic cottage daydream should be real, right down to the primitive gender roles, she leaves others feeling hollow, cheated. The hullabaloo and headaches she causes may be the price we pay for taking too many things at face value: our just deserts, served Instagram-perfect by a manicured hand on a gorgeous ceramic dish, with fat, mouthwatering

maraschino cherries on top.

- a. The tradwife, with her vintage dress and traditional roles, highlights the superficiality of modern life and challenges current societal norms.
- b. The tradwife's commitment to outdated gender roles and retro fashion critiques the superficiality of today's societal ideals.
- c. By promoting an idealized past, the tradwife exposes the artifice of contemporary values and mocks societal norms.
- d. The tradwife's vintage dress and adherence to traditional roles reveal the artificial nature of modern life and its superficial values.

Correct Answer: a

Explanation:

The paragraph says that when the tradwife (traditional housewife) puts on her pinstriped dress, displays her deliberately regressive ideals and re-creates the past, she ends up reminding us of just how much our lives consist of artifice and playacting and just how much we take too many things at face value. For, the tradwife's behaviour is not, at some level, different from the nontradwife's. By insisting that the idyllic cottage daydream she presents is real and her open display of primitive gender roles, the tradwife beats us at our own game of Instagrammed reality, thereby challenging us to face up to what we are.

Option a, which states that the tradwife highlights the superficiality of modern life and challenges current societal norms, is a good summary.

Option b is easily eliminated. The paragraph does not say the tradwife critiques-- that is, that she critically examines -- the superficiality of today's societal ideals.

Option c is also out because the paragraph does not say the tradwife mocks societal norms by promoting an idealized past.

Option d seems close, though. But this option implies that (a) the tradwife's vintage dress and (b) adherence to traditional roles reveal the artificial nature of modern life. But it is not the dress as such or the role adhered to that reveals the superficiality of modern life, it is the tradwife's insistence on the reality of the idyllic cottage daydream that prompts us to see how we too take too many things at face value and how our current societal norms are not so ideal too. Option d is not as good a summary as a.

Directions for the question. The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

Fears of artificial intelligence (AI) have haunted humanity since the very beginning of the computer age. Hitherto these fears focused on machines using physical means to kill, enslave or replace people. But over the past couple of years new AI tools have emerged that threaten the survival of human civilisation from an unexpected direction. AI has gained some remarkable abilities to manipulate and generate language, whether with words, sounds or images. AI has thereby hacked the operating system of our civilisation.

Language is the stuff almost all human culture is made of. Human rights, for example, aren't inscribed in our DNA. Rather, they are cultural artefacts we created by telling stories and writing laws. Gods aren't physical realities. Rather, they are cultural artefacts we created by inventing myths and writing scriptures....What would happen once a non-human intelligence becomes better than the average human at telling stories, composing melodies, drawing images, and writing laws and scriptures? When people think about Chatgpt and other new AI tools, they are often drawn to

examples like school children using AI to write their essays. What will happen to the school system when kids do that? But this kind of question misses the big picture. Forget about school essays. Think of the next American presidential race in 2024, and try to imagine the impact of AI tools that can be made to mass-produce political content, fake-news stories and scriptures for new cults...

Through its mastery of language, AI could even form intimate relationships with people, and use the power of intimacy to change our opinions and worldviews. Although there is no indication that AI has any consciousness or feelings of its own, to foster fake intimacy with humans it is enough if the AI can make them feel emotionally attached to it....

What will happen to the course of history when AI takes over culture, and begins producing stories, melodies, laws and religions? Previous tools like the printing press and radio helped spread the cultural ideas of humans, but they never created new cultural ideas of their own. AI is fundamentally different. AI can create completely new ideas, completely new culture.... Of course, the new power of AI could be used for good purposes as well. I won't dwell on this, because the people who develop AI talk about it enough....

We can still regulate the new AI tools, but we must act quickly. Whereas nukes cannot invent more powerful nukes, AI can make exponentially more powerful AI.... Unregulated AI deployments would create social chaos, which would benefit autocrats and ruin democracies. Democracy is a conversation, and conversations rely on language. When AI hacks language, it could destroy our ability to have meaningful conversations, thereby destroying democracy.... And the first regulation I would suggest is to make it mandatory for AI to disclose that it is an AI. If I am having a conversation with someone, and I cannot tell whether it is a human or an AI-that's the end of democracy. This text has been generated by a human. Or has it?

Q.21) The author identifies all of the following as dire outcomes of the capture of language by AI EXCEPT that it could

- a. out-strip human creativity and endeavours in the spheres such as art and music and, in the formulation of laws.
- b. apply its mastery of language to create strong emotional ties which could exacerbate the polarization of political views.
- c. spawn a completely new culture through its ability to create new ideas and opinions.
- d. eventually subvert democratic processes through the mass creation and spread of fake political content and news.

Correct Answer: b

Explanation:

Tricky question as all options seem apt at first glance. Refer to the lines, "What will happen to the course of history when AI takes over culture, and begins producing stories, melodies, laws and religions? Previous tools like the printing press and radio helped spread the cultural ideas of humans, but they never created new cultural ideas of their own. AI is fundamentally different. AI can create completely new ideas, completely new culture." Based on these lines, we know options a and c are mentioned in the passage.

Option d, too, relates to concerns raised by the author: "Think of the next American presidential race in 2024, and try to imagine the impact of AI tools that can be made to mass-produce political content, fake-news stories and scriptures for new cults..."

Though the passage says AI could "form intimate relationships with people, and use the power of intimacy to change our opinions and worldviews", it does not specifically say that this could be used to exacerbate the polarization of political views. So, option b is the correct answer choice.

Q.22) The author terms language "the operating system of our civilization" for all the following

reasons EXCEPT that it

- a. is fundamental to the articulation and spread of human values and culture in our society.
- b. has laid the foundation for the creation of cultural artefacts through writing and telling of stories.
- c. can influence political views and opinions as it engenders close emotional ties among people.
- d. is the basis of AI tools like ChatGPT which can be used to generate academic content and opinion.

Correct Answer: d

Explanation:

The author says language is "stuff almost all human culture is made of", for it is using language that we create cultural artefacts like stories, art, laws and scripture. Options a and b are ruled out.

Further, the author remarks that with its mastery of language, "AI could even form intimate relationships with people, and use the power of intimacy to change our opinions and worldviews." So, option c is also ruled out.

Consider option d. AI tools have mastery of language but this does not mean language is the basis of AI tools like ChatGPT. This is hence the correct answer choice.

Q.23) The tone of the passage could best be described as

- a. cautionary, because the author lays out some adverse effects of the proliferation of unregulated AI tools.
- b. alarmist, because the passage discusses scenarios of the influence of new AI tools on language and human emotions.
- c. quizzical, as the passage poses several questions, concluding with the question of whether or not the passage content has been generated by AI.
- d. prescient, as the author analyses the future impact of the use of new AI tools on crucial areas of our society and culture.

Correct Answer: a

Explanation:

The passage discusses some dire outcomes of the proliferation of unregulated AI. The tone is cautionary. Option a is the correct choice.

The author is not being alarmist. He is not trying to raise unnecessary fear on the impact of AI. So, option b is incorrect.

The author is not merely raising questions but also cautioning against unregulated AI. Option c is hence incorrect.

The author is not predicting the future, that is, being prescient, either. So, option d is incorrect.

Q.24) We can infer that the author is most likely to agree with which of the following statements?

- a. People's fears of the dangers of students using ChatGPT and other new AI tools are unfounded.
- b. Apart from its drawbacks, AI tools have been beneficial in boosting technological and industrial advance worldwide.
- c. The commonly expressed fear that future AI developments will fatally harm humans is unfounded.
- d. One of the biggest casualties from the spread of unregulated AI is likely to be the democratic process.

Correct Answer: d

Explanation:

Option d sums up the main idea of the last paragraph: unregulated AI could ruin democracies. So, option d is the correct choice.

The author does not dismiss people's fears of the dangers of students using ChatGPT. He only says this line of thinking misses the big picture. Option a is not a statement the author is likely to agree with.

With regard to the good uses of AI, the author says he would not dwell on it as those who develop AI talk about it enough. It is the drawbacks of unregulated AI that the author focuses on. Option b is not as good a choice as d.

The author is not likely to dismiss any fear of potentially harmful AI developments in future, as he too shares these fears. So, option c is also ruled out.

SECTION: DATA INTERPRETATION & LOGICAL REASONING

Direction for the question.

The table given below shows the amount, in grams, of carbohydrate, protein, fat and all other nutrients, per 100 grams of nutrients in seven foodgrains. The first column shows the foodgrain category and the second column its codename. The table has some missing values.

Food grain Category	Codename of the food grain	Composition per hundred grams of nutrients in the food grains			
		Carbohydrate	Protein	Fat	Other nutrients
Cereal	C1			0	12
	C2			3	10
Millet	M1	62	10		
	M2			7	16
	M3	56		12	
Pseudo-cereal	P1	66			10
	P2		14		8

The following additional facts are known.

1. Both the pseudo-cereals had higher amounts of carbohydrate as well as higher amounts of protein than any millet.
2. Both the cereals had higher amounts of carbohydrate than any pseudo-cereal.
3. All the missing values of carbohydrate amounts (in grams) for all the foodgrains are non-zero multiples of 5.
4. All the missing values of protein, fat and other nutrients amounts (in grams) for all the foodgrains are non-zero multiples of 4.
5. P1 contained double the amount of protein that M3 contains.

Q.25) How many foodgrains had a higher amount of carbohydrate per 100 grams of nutrients than M1?

Correct answer - 12

Explanation -

Food Grain Category	Codename for Foodgrain	Composition per hundred grams of nutrients in the food grains			
		Carbohydrate	Protein	Fat	Other Nutrients
Cereal	C1	80	8	0	12
	C2	75	12	3	10
Millet	M1	62	10	4m	4r
	M2	65	12	7	16
	M3	56	8	12	24
Pseudo-Cereal	P1	66	16	8	10
	P2	70	14	8	8

Q.26) How many grams of protein were there in 100 grams of nutrients in M2?

Correct answer - 12

Explanation -

Food Grain Category	Codename for Foodgrain	Composition per hundred grams of nutrients in the food grains			
		Carbohydrate	Protein	Fat	Other Nutrients
Cereal	C1	80	8	0	12
	C2	75	12	3	10
Millet	M1	62	10	4m	4r
	M2	65	12	7	16
	M3	56	8	12	24
Pseudo-Cereal	P1	66	16	8	10
	P2	70	14	8	8

Q.27) How many grams of other nutrients were there in 100 grams of nutrients in M3?

Correct answer - 24

Explanation -

Food Grain Category	Codename for Foodgrain	Composition per hundred grams of nutrients in the food grains			
		Carbohydrate	Protein	Fat	Other Nutrients
Cereal	C1	80	8	0	12
	C2	75	12	3	10
Millet	M1	62	10	4m	4r
	M2	65	12	7	16
	M3	56	8	12	24
Pseudo-Cereal	P1	66	16	8	10
	P2	70	14	8	8

Q.28) What is the median of the number of grams of protein in 100 grams of nutrients among these food grains?

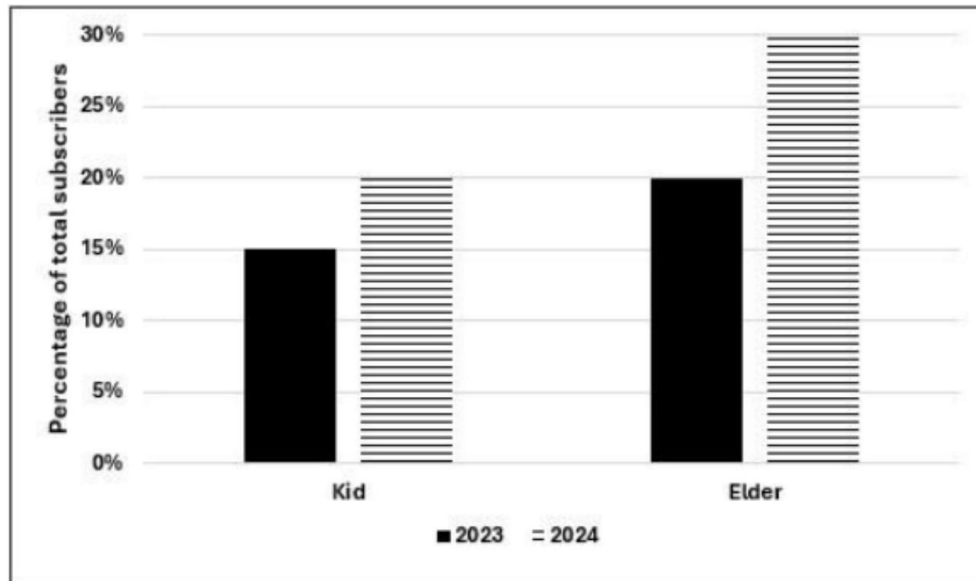
Correct answer – 12

Explanation:

Food Grain Category	Codename for Foodgrain	Composition per hundred grams of nutrients in the food grains			
		Carbohydrate	Protein	Fat	Other Nutrients
Cereal	C1	80	8	0	12
	C2	75	12	3	10
Millet	M1	62	10	4m	4r
	M2	65	12	7	16
	M3	56	8	12	24
Pseudo-Cereal	P1	66	16	8	10
	P2	70	14	8	8

Direction for the question.

Over the top (OTT) subscribers of a platform are segregated into three categories: i) Kid, ii) Elder, and iii) Others. Some of the subscribers used one app and the others used multiple apps to access the platform. The figure below shows the percentage of the total number of subscribers in 2023 and 2024 who belong to the 'Kid' and 'Elder' categories.



The following additional facts are known about the numbers of subscribers. 1. The total number of subscribers increased by 10% from 2023 to 2024.

2. In 2024, $\frac{1}{2}$ of the subscribers from the 'Kid' category and $\frac{2}{3}$ of the subscribers from the 'Elder' category subscribers use one app.

3. In 2023, the number of subscribers from the 'Kid' category who used multiple apps was the same as the number of subscribers from the 'Elder' category who used one app.

4. 10,000 subscribers from the 'Kid' category used one app and 15,000 subscribers from the 'Elder' category used multiple apps in 2023.

Q.29) How many subscribers belonged to the 'Others' category in 2024?

- A. Cannot be determined
- B. 65000
- C. 45000
- D. 55000

Correct answer - D

Explanation -

	2023	2024
KID	15000	22000
ELDER	20000	33000
OTHERS	65000	55000
TOTAL	100000	110000

	2023 (One app)	2023 (Multiple apps)	2024 (One app)	2024 (Multiple apps)
KID	10000	5000	11000	11000
ELDER	5000	15000	22000	11000
OTHERS				
TOTAL				

Q.30) What percentage of subscribers in the 'Kid' category used multiple apps in 2023?

- A. 33.33%
- B. 25.50%
- C. 50.00%
- D. 5.00%

Correct answer - Option A

Explanation -

	2023	2024
KID	15000	22000
ELDER	20000	33000
OTHERS	65000	55000
TOTAL	100000	110000

	2023 (One app)	2023 (Multiple apps)	2024 (One app)	2024 (Multiple apps)
KID	10000	5000	11000	11000
ELDER	5000	15000	22000	11000
OTHERS				

TOTAL	
-------	--

Q.31) What was the percentage increase in the number of subscribers in the 'Elder' category from 2023 to 2024?

- A. 60%
- B. 65%
- C. 40%
- D. 50%

Correct answer - Option B

Explanation -

	2023	2024
KID	15000	22000
ELDER	20000	33000
OTHERS	65000	55000
TOTAL	100000	110000

	2023 (One app)	2023 (Multiple apps)	2024 (One app)	2024 (Multiple apps)
KID	10000	5000	11000	11000
ELDER	5000	15000	22000	11000
OTHERS				
TOTAL				

Q.32) What could be the minimum percentage of subscribers who used multiple apps in 2024?

- A. 16.5%
- B. 20.0%
- C. 10.0%
- D. 22.00%

Correct answer - Option B

Explanation -

	2023	2024
KID	15000	22000
ELDER	20000	33000
OTHERS	65000	55000
TOTAL	100000	110000

	2023 (One app)	2023 (Multiple apps)	2024 (One app)	2024 (Multiple apps)
KID	10000	5000	11000	11000
ELDER	5000	15000	22000	11000
OTHERS				
TOTAL				

Directions for the question.

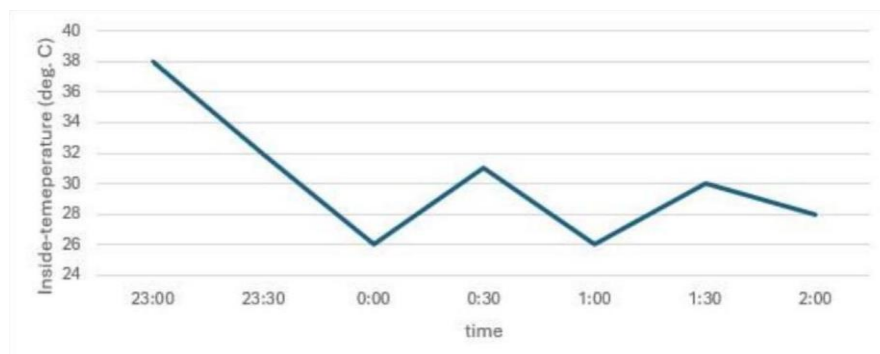
The air-conditioner (AC) in a large room can be operated either in REGULAR mode or in POWER mode to reduce the temperature.

If the AC operates in REGULAR mode, then it brings down the temperature inside the room (called inside temperature) at a constant rate to the set temperature in 1 hour. If it operates in POWER mode, then this is achieved in 30 minutes.

If the AC is switched off, then the inside temperature rises at a constant rate so as to reach the temperature outside at the time of switching off in 1 hour.

The temperature outside has been falling at a constant rate from 7 pm onward until 3 am on a particular night. The following graph shows the inside temperature between 11 pm (23:00) and 2 am (2:00) that night.

The following facts are known about the AC operation that night.



- The AC was turned on for the first time that night at 11 pm (23:00).
- The AC setting was changed (including turning it on/off, and/or setting different temperatures) only at the beginning of the hour or at 30 minutes after the hour.
- The AC was used in POWER mode for longer duration than in REGULAR mode during this 3-hour period.

Q.33) How many times the AC must have been turned off between 11:01 pm and 1:59 am?

- A. 1
- B. 2
- C. cannot be determined
- D. 0

Correct answer - Option B

Explanation -

Following data was captured from the question:

TIME	TEMPERATURE	AC - ON/OFF	MODE	OUTSIDE TEMP
23:00	38	ON		
23:30	32	ON		
00:00	26	OFF		
00:30	31	ON		
01:00	26	OFF		
01:30	30	ON		
02:00	28			

Since AC is turned OFF at 12:00, it must reach the outside temperature at 12:00 in 1 hour. It rises from 26 degrees to 31 degrees at 12:30 AM (an increase of 5 degrees in 30 minutes). It clearly states that the outside temperature will be $31 + 5 = 36$ degree Celsius at 12:00 AM.

Similarly, AC is turned OFF at 1:00 AM, it must reach the outside temperature at 1:00 AM in 1 hour. It rises from 26 degrees to 30 degrees at 1:30 AM (an increase of 4 degrees in 30 minutes). It clearly states that the outside temperature will be $30 + 4 = 34$ degree Celsius at 1:00 AM.

Also, temperature outside has been falling at a constant rate from 7 PM onward until 3 AM on a particular night.

TIME	TEMPERATURE	AC - ON/OFF	MODE	OUTSIDE TEMP
23:00	38	ON		38
23:30	32	ON		37
00:00	26	OFF	NA	36

00:30	31	ON		35
01:00	26	OFF	NA	34
01:30	30	ON		33
02:00	28			32

Q.34) What was the temperature outside, in degree Celsius, at 1 am?

Correct answer - 34

Explanation -

TIME	TEMPERATURE	AC - ON/OFF	MODE	OUTSIDE TEMP
23:00	38	ON		38
23:30	32	ON		37
00:00	26	OFF	NA	36
00:30	31	ON		35
01:00	26	OFF	NA	34
01:30	30	ON		33
02:00	28			32

Q.35) What was the temperature outside, in degree Celsius, at 9 pm?

- A. Both I and II
- B. Only I
- C. Only II
- D. Neither I nor II

Correct answer – 42

Explanation:

TIME	TEMPERATURE	AC - ON/OFF	MODE	OUTSIDE TEMP
23:00	38	ON		38
23:30	32	ON		37
00:00	26	OFF	NA	36
00:30	31	ON		35
01:00	26	OFF	NA	34

01:30	30	ON		33
02:00	28			32

Q.36) What best can be concluded about the number of times the AC must have either been turned on or the AC temperature setting been altered between 11:01 pm and 1:59 am?

- A. More than 3
- B. Exactly 2
- C. Either 2 or 3
- D. Exactly 3

TIME	TEMPERATURE	AC - ON/OFF	MODE	OUTSIDE TEMP
23:00	38	ON		38
23:30	32	ON		37
00:00	26	OFF	NA	36
00:30	31	ON		35
01:00	26	OFF	NA	34
01:30	30	ON		33
02:00	28			32

Q.37) What was the maximum difference between temperature outside and inside temperature, in degree Celsius, between 11:01 pm and 1:59 am?

Correct answer - 10

Explanation -

TIME	TEMPERATURE	AC - ON/OFF	MODE	OUTSIDE TEMP
23:00	38	ON		38
23:30	32	ON		37
00:00	26	OFF	NA	36
00:30	31	ON		35
01:00	26	OFF	NA	34
01:30	30	ON		33
02:00	28			32

Directions for the questions.

Out of 10 countries -- Country 1 through Country 10 -- Country 9 has the highest gross domestic product (GDP), and Country 10 has the highest GDP per capita. GDP per capita is the GDP of a country divided by its population. The table below provides the following data about Country 1 through Country 8 for the year 2024.

- Column 1 gives the country's identity.
- Column 2 gives the country's GDP as a fraction of the GDP of Country 9.
- Column 3 gives the country's GDP per capita as a fraction of the GDP per capita of Country 10.
- Column 4 gives the country's annual GDP growth rate.
- Column 5 gives the country's annual population growth rate.

Country	GDP	GDP per capita	GDP growth rate	Population growth rate
Country 1	0.15	0.41	0.2%	-0.12%
Country 2	0.14	0.25	0.9%	-0.41%
Country 3	0.13	0.02	6.5%	0.70%
Country 4	0.12	0.38	0.5%	0.49%
Country 5	0.10	0.36	0.7%	0.31%
Country 6	0.08	0.08	3.2%	0.61%
Country 7	0.08	0.30	0.7%	-0.11%
Country 8	0.07	0.41	1.2%	0.71%

Assume that the GDP growth rates and population growth rates of the countries will remain constant for the next three years.

Q.38) Which one among the countries 1 through 8, has the smallest population in 2024?

- A. Country 3
- B. Country 5
- C. Country 8
- D. Country 7

Correct answer - Option C

Explanation -

Country	GDP	GDP per capita	GDP growth rate	Population growth rate
Country 1	0.15x	0.41y	0.20%	-0.12%
Country 2	0.14x	0.25y	0.90%	-0.41%

Country 3	0.13x	0.02y	6.50%	0.70%
Country 4	0.12x	0.38y	0.50%	0.49%
Country 5	0.10x	0.36y	0.70%	0.31%
Country 6	0.08x	0.08y	3.20%	0.61%
Country 7	0.08x	0.30y	0.70%	-0.11%
Country 8	0.07x	0.41y	1.20%	0.71%
Country 9	x			
Country 10		y		

Q.39) The ratio of Country 4's GDP to Country 5's GDP in 2026 will be closest to

- A. 1.032
- B. 1.314
- C. 0.963
- D. 1.195

Correct answer - option D

Explanation:

Country	GDP	GDP per capita	GDP growth rate	Population growth rate
Country 1	0.15x	0.41y	0.20%	-0.12%
Country 2	0.14x	0.25y	0.90%	-0.41%
Country 3	0.13x	0.02y	6.50%	0.70%
Country 4	0.12x	0.38y	0.50%	0.49%
Country 5	0.10x	0.36y	0.70%	0.31%
Country 6	0.08x	0.08y	3.20%	0.61%
Country 7	0.08x	0.30y	0.70%	-0.11%
Country 8	0.07x	0.41y	1.20%	0.71%
Country 9	x			
Country 10		y		

Q.40) Which one among the countries 1, 4, 5, and 7 will have the largest population in 2027?

- A. Country 4

B. Country 7

C. Country 1

D. Country 5

Correct answer - Option C

Explanation -

Country	GDP	GDP per capita	GDP growth rate	Population growth rate
Country 1	0.15x	0.41y	0.20%	-0.12%
Country 2	0.14x	0.25y	0.90%	-0.41%
Country 3	0.13x	0.02y	6.50%	0.70%
Country 4	0.12x	0.38y	0.50%	0.49%
Country 5	0.10x	0.36y	0.70%	0.31%
Country 6	0.08x	0.08y	3.20%	0.61%
Country 7	0.08x	0.30y	0.70%	-0.11%
Country 8	0.07x	0.41y	1.20%	0.71%
Country 9	x			
Country 10		y		

Q.41) For how many countries among Country 1 through Country 8 will the GDP per capita in 2027 be lower than that in 2024?

Correct answer – 0

Explanation:

Country	GDP	GDP per capita	GDP growth rate	Population growth rate
Country 1	0.15x	0.41y	0.20%	-0.12%
Country 2	0.14x	0.25y	0.90%	-0.41%
Country 3	0.13x	0.02y	6.50%	0.70%
Country 4	0.12x	0.38y	0.50%	0.49%
Country 5	0.10x	0.36y	0.70%	0.31%
Country 6	0.08x	0.08y	3.20%	0.61%
Country 7	0.08x	0.30y	0.70%	-0.11%
Country 8	0.07x	0.41y	1.20%	0.71%

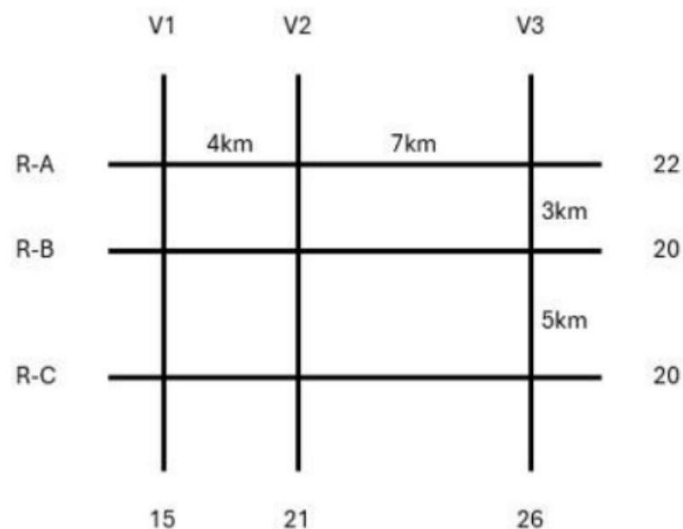
Country 9	x			
Country 10		y		

Directions for the questions.

The figure below shows a network with three parallel roads represented by horizontal lines R-A, R-B, and R-C and another three parallel roads represented by vertical lines V1, V2, and V3. The figure also shows the distance (in km) between two adjacent intersections. Six ATMs are placed at six of the nine road intersections. Each ATM has a distinct integer cash requirement (in Rs. Lakhs), and the numbers at the end of each line in the figure indicate the total cash requirements of all ATMs placed on the corresponding road. For example, the total cash requirement of the ATM(s) placed on road R-A is Rs. 22 Lakhs.

The following additional information is known.

1. The ATMs with the minimum and maximum cash requirements of Rs. 7 Lakhs and Rs. 15 Lakhs are placed on the same road.
2. The road distance between the ATM with the second highest cash requirement and the ATM located at the intersection of R-C and V3 is 12 km.



Q.42) Which of the following statements is correct?

- A. The ATM placed at the (R-C, V2) intersection has a cash requirement of Rs. 9 Lakhs.
- B. There is no ATM placed at the (R-C, V2) intersection.
- C. The ATM placed at the (R-C, V2) intersection has a cash requirement of Rs. 8 Lakhs.
- D. The cash requirement of the ATM placed at the (R-C, V2) intersection cannot be uniquely determined.

Correct answer - Option A

Explanation -

Two possible cases -

	V1		V2		V3	
R-A	7	4km	x	7km	15	22
R-B	8		12		x	20
R-C	x		9		11	20
	15		21		26	

	V1		V2		V3	
R-A	15	4km	x	7km	7	22
R-B	x		12		8	20
R-C	x		9		11	20
	15		21		26	

Q.43) How many ATMs have cash requirements of Rs. 10 Lakhs or more?

Correct answer - 3

Explanation:

Two possible cases -

	V1	V2	V3	
R-A	7	x	15	22
R-B	8	12	x	20
R-C	x	9	11	20
	15	21	26	

	V1	V2	V3	
R-A	15	x	7	22
R-B	x	12	8	20
R-C	x	9	11	20
	15	21	26	

Q.44) Which of the following two statements is/are DEFINITELY true?

- A) Statement A: Each of R-A, R-B, and R-C has two ATMs.
- B) Statement B: Each of V1, V2, and V3 has two ATMs.
- A. Both Statement A and Statement B
- B. Neither Statement A nor Statement B
- C. Only Statement A
- D. Only Statement B

Correct answer - Option C

Explanation:

Two possible cases -

	V1	V2	V3	
R-A	7	4km	x	7km
R-B	8		12	x
R-C	x		9	11
	15	21	26	

	V1	V2	V3	
R-A	15	4km	x	7km
R-B	x		12	8
R-C	x		9	11
	15	21	26	

Q.45) What best can be said about the road distance (in km) between the ATMs having the second highest and the second lowest cash requirements?

- A. 7 km
- B. 5 km
- C. 4 km
- D. Either 4 km or 7 km

Correct answer - Option D

Explanation -

Two possible cases -

	V1	V2	V3	
R-A	7	x	15	22
R-B	8	12	x	20
R-C	x	9	11	20
	15	21	26	

	V1	V2	V3	
R-A	15	x	7	22
R-B	x	12	8	20
R-C	x	9	11	20
	15	21	26	

Q.46) What is the number of ATMs whose locations and cash requirements can both be uniquely determined?

Correct answer - 3

Explanation -

Two possible cases -

	V1		V2		V3	
R-A	7	4km	x	7km	15	22
R-B	8		12		x	3 km
R-C	x		9		11	5 km
	15		21		26	

	V1		V2		V3	
R-A	15	4km	x	7km	7	22
R-B	x		12		8	3 km
R-C	x		9		11	5 km
	15		21		26	

SECTION: QUANTITATIVE ABILITY

Q.47) The number of distinct integer solutions (x, y) of the equation $|x + y| + |x - y| = 2$, is

Correct Answer - 8

Explanation -

We are thinking about two scenarios where $x \geq y$ and $x \geq -y$. When $x \geq y$,

$$x + y + x - y = 2$$

$$2x = 2$$

$$x = 1$$

So, the possibilities are $(1, 1)$, $(1, 0)$ and $(1, -1)$

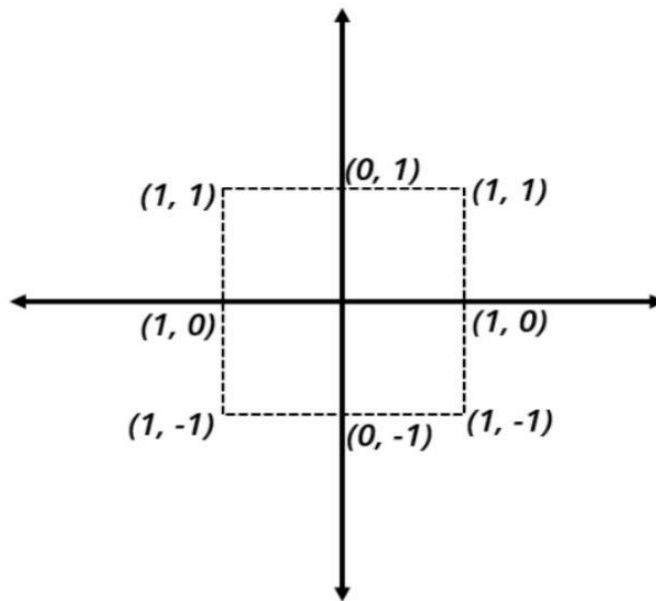
When $x = 0$,

The possibilities are $(0, 1)$ and $(0, -1)$

When $x = -1$

The possibilities are $(-1, 1)$, $(-1, 0)$ and $(-1, -1)$

So, the number of distinct integer solutions = 8



Q.48) For some constant real numbers p, k and a , consider the following system of linear equations in x and y :

$$px - 4y = 2$$

$$3x + ky = a$$

A necessary condition for the system to have no solution for (x, y) , is

A. $2a + k \neq 0$

B. $ap - 6 = 0$

C. $ap + 6 = 0$

D. $kp + 12 \neq 0$

Correct Answer - A. $2a + k \neq 0$

Explanation -

A necessary condition for the system to have no solution for (x,y) , is

The condition is $a_1/a_2 = b_1/b_2 \neq c_1/c_2$

i.e., $p/3 = -4/k \neq 2/a$

For $p/3 = -4/k$; $pk + 12 = 0$

For $-4/k \neq 2/a$; $-4a \neq 2k \Rightarrow 2a + k \neq 0$

For $p/3 \neq 2/a$; $pa - 6 \neq 0$

Q.49) If $(a + b\sqrt{3})^2 = 52 + 30\sqrt{3}$, where a and b are natural numbers, then $a + b$ equals

A. 7

B. 10

C. 8

D. 9

Correct Answer - C. 8

Explanation -

$$(a + b\sqrt{3})^2 = 52 + 30\sqrt{3}$$

$$a^2 + 3b^2 + 2ab\sqrt{3} = 52 + 30\sqrt{3}$$

Comparing the terms, we get:

$$a^2 + 3b^2 = 52$$

$$ab = 15$$

So, $(a, b) = (1, 15), (15, 1), (3, 5)$ and $(5, 3)$

The only possibility for the above system of equations is, $a = 5, b = 3$

Hence, $a + b = 5 + 3 = 8$

Q.50) A circular plot of land is divided into two regions by a chord of length $10\sqrt{3}$ meters such that the chord subtends an angle of 120° at the center. Then, the area, in square meters, of the smaller region is

A. $25(4\pi/3 + \sqrt{3})$

B. $20(4\pi/3 - \sqrt{3})$

C. $25(4\pi/3 - \sqrt{3})$

D. $20(4\pi/3 + \sqrt{3})$

Correct Answer - C. $25(4\pi/3 - \sqrt{3})$

Explanation -

$$OA = OB = \text{Radii} ; \angle AOB = 120^\circ$$

So,

$$\angle OAB = \angle OBA = 30^\circ$$

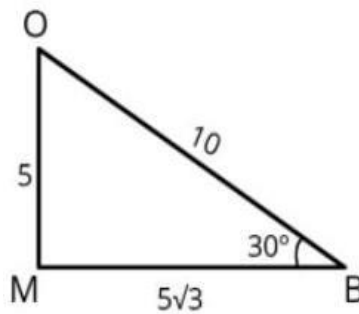
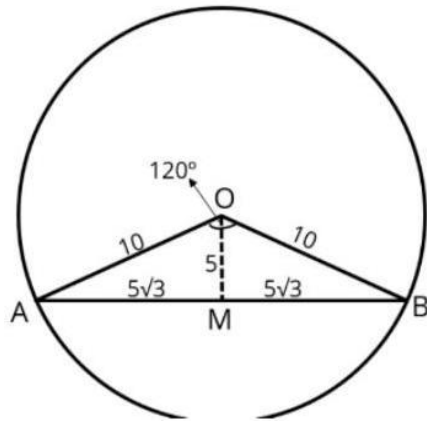
Consider $OM \perp AB$;

In right triangle $\triangle OMB$,

$$\cos 30^\circ = MB/OB$$

$$\sqrt{3}/2 = 5\sqrt{3}/OB$$

$$\Rightarrow OB = 10$$



$$\sin 30^\circ = OM/OB$$

$$1/2 = OM/10$$

$$\Rightarrow OM = 5$$

Area of the smaller region = Area of sector - Area of $\triangle OMB$

$$= 120/360 \times \pi \times 10^2 - 1/2 \times 10\sqrt{3} \times 5$$

$$= 25(4\pi/3 - \sqrt{3})$$

Q.51) In a group of 250 students, the percentage of girls was at least 44% and at most 60%. The rest of the students were boys. Each student opted for either swimming or running or both. If 50% of the boys and 80% of the girls opted for swimming while 70% of the boys and 60% of the girls

opted for running, then the minimum and maximum possible number of students who opted for both swimming and running, are

- A. 72 and 80 , respectively
- B. 75 and 90, respectively
- C. 72 and 88, respectively
- D. 75 and 96, respectively

Correct answer - A

Explanation -

	At least 44%	At most 60%
Girls	110	150
Boys	140	100

Here, with respect to boys

Swimming + Running = 50% + 70% = 120%

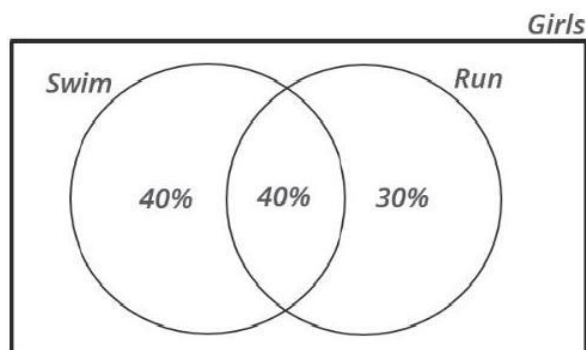
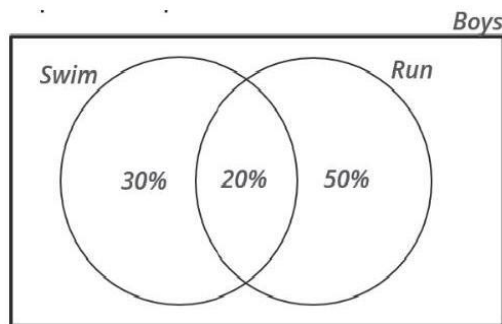
The extra 20% is meant for the boys who opted both swimming and running.

Similarly, with respect to girls

Swimming + Running = 80% + 60% = 140%

The extra 40% is meant for the boys who opted both swimming and running.

In pictorial representation:



So, percentage of people who opted for both swimming and running = 20% boys + 40% girls

Number of students who opted for both swimming and running		
Girls	$110 \times 40\% = 44$	$150 \times 40\% = 60$
Boys	$140 \times 20\% = 28$	$100 \times 20\% = 20$
Total	72 (Minimum)	80 (Maximum)

Hence, the answer is ' 72 and 80 , respectively'

Choice A is the correct answer.

Q.52) If 10^{68} is divided by 13 , the remainder is

- A. 8
- B. 9
- C. 4
- D. 5

Correct Answer - B. 9

Explanation -

$$\text{Re}[10^1/13] = 10;$$

$$\text{Re}[10^2/13] = 9;$$

$$\text{Re}[10^3/13] = 12;$$

$$\text{Re}[10^4/13] = 3;$$

$$\text{Re}[10^5/13] = 4;$$

$$\text{Re}[10^6/13] = 1$$

So, after every power of 6, the remainder repeats its patterns.

Hence,

$$\text{Re}[10^{66}/13] = 1$$

$$\text{Re}[10^{67}/13] = 10$$

$$\text{Re}[10^{68}/13] = 9$$

Q.53) The midpoints of sides AB, BC , and AC in $\triangle ABC$ are M, N , and P , respectively. The medians drawn from A, B, and C intersect the line segments MP, MN and NP at X, Y, and Z, respectively. If the area of $\triangle ABC$ is 1440 sq cm, then the area, in sq cm, of $\triangle XYZ$ is

Correct Answer - 90

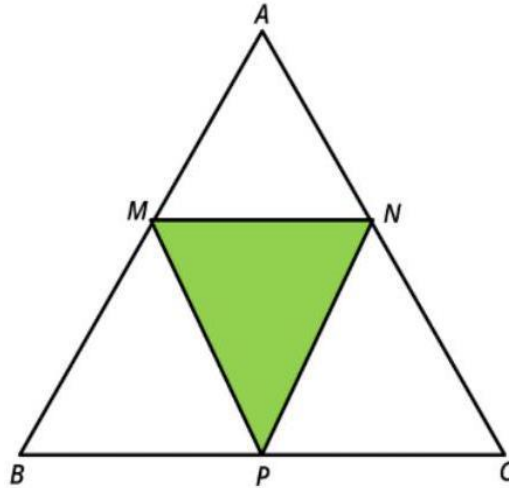
Explanation -

Comparing $\triangle ABC$ and $\triangle MNP$

$$AM = MB; AN = NC$$

So, $MN \parallel BC$. By midpoint theorem, $\text{ar}(\triangle ABC) = 4\text{ar}(\triangle MNP)$

$$\text{So, ar}(\triangle MNP) = 1440/4 = 360$$



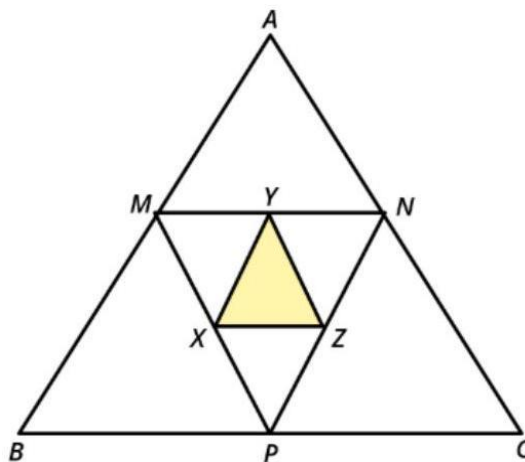
Similarly, Comparing $\triangle XYZ$ and $\triangle MNP$

$$PX = XM; PZ = ZN$$

So, $XZ \parallel MN$.

By midpoint theorem,

$$\text{ar}(\triangle MNP) = 4 \times \text{ar}(\triangle XYZ)$$



$$\text{So, } \text{ar}(\triangle XYZ) = 360/4 = 90$$

Q.54) After two successive increments, Gopal's salary became 187.5% of his initial salary. If the percentage of salary increase in the second increment was twice of that in the first increment, then the percentage of salary increase in the first increment was

- A. 27.5
- B. 30
- C. 25
- D. 20

Correct Answer - C. 25

Explanation -

Initial salary = 100

After two successive increments, final salary = 187.5

First increment = $x\%$

Second increment = $2x\%$

$$\Rightarrow 100(1 + x\%)(1 + 2x\%) = 187.5$$

Going from the options, $x = 25\%$

Q.55) Sam can complete a job in 20 days when working alone. Mohit is twice as fast as Sam and thrice as fast as Ayna in the same job. They undertake a job with an arrangement where

Sam and Mohit work together on the first day, Sam and Ayna on the second day, Mohit and Ayna on the third day, and this three-day pattern is repeated till the work gets completed. Then, the fraction of total work done by Sam is

- A. $3/20$
- B. $3/10$
- C. $1/20$
- D. $1/5$

Correct Answer - B. 3/10

Explanation -

We are looking for a number which can be a multiple of 2 and 3. It is 6.

Let us imagine:

In one day, the part of work done by

Mohit = $6k$; Sam = $3k$; Ayna = $2k$.

Then,

Day 1 $\Rightarrow$ Sam & Mohit = $9k$

Day 2 $\Rightarrow$ Sam & Ayna = $5k$

Day 3 $\Rightarrow$ Mohit & Ayna = $8k$

[$22k$ work done in 1 cycle]

In 2 cycles, (i.e., in 6 days) $44k$ work would be done. And the cycle repeats.

Then,

Day 7 $\Rightarrow$ Sam & Mohit = $9k$

Day 8 $\Rightarrow$ Sam & Ayna = $5k$

Day 9 $\Rightarrow$ Mohit & Ayna = $2k$

[Remaining $2k$ work to be done]

So, technically Sam worked for 6 days. [i.e., first 2 days in each cycle]

Then, the part of work done by Sam = $18k$

Fraction of total work done by Sam = $18k/60k = 3/10$

Q.56) A certain amount of water was poured into a 300 litre container and the remaining portion of the container was filled with milk. Then an amount of this solution was taken out from the container which was twice the volume of water that was earlier poured into it, and water was poured to refill the container again. If the resulting solution contains 72% milk, then the amount of water, in litres, that was initially poured into the container was

Correct Answer - 30 litres

Explanation -

Initial quantity of water in the container = x

So, initial quantity of milk in the container = $300 - x$

Part of mixture taken out = $2x/300$

Part of mixture that is retained = $1 - 2x/300$

So, part of milk that is retained = $(300 - x)(1 - 2x/300)$

Also, quantity of milk that is retained after the iteration = 72% of 300 = 216

Then,

$$\begin{aligned}(300 - x)(1 - 2x/300) &= 216 \\ 90000 - 300x - 600x + 2x^2 &= 216 \times 300 \\ 2x^2 - 900x + 25200 &= 0 \\ x^2 - 450x + 12600 &= 0 \\ (x - 420)(x - 30) &= 0 \\ x &= 420 \text{ (or) } x = 30\end{aligned}$$

The total content itself 300 litre. So, $x = 420$ is inadmissible.

Thus, amount of water that was initially poured = 30 litre

Q.57) Aman invests Rs 4000 in a bank at a certain rate of interest, compounded annually. If the ratio of the value of the investment after 3 years to the value of the investment after 5 years is 25 : 36, then the minimum number of years required for the value of the investment to exceed Rs 20000 is

Correct Answer - 9 years

Explanation -

$$4000 \times [1 + r/100]^3 / 4000 \times [1 + r/100]^5 = 25/36$$

Solving this, we get:

$$\begin{aligned}1 + r/100 &= 6/5 \\ r &= 20\%\end{aligned}$$

Now,

$$\begin{aligned}4000 \times [1 + 20/100]^n &> 20000 \\ \text{i.e., } 1.2^n &> 5\end{aligned}$$

$$\Rightarrow n = 9$$

Q.58) Gopi marks a price on a product in order to make 20% profit. Ravi gets 10% discount on this marked price, and thus saves Rs 15. Then, the profit, in rupees, made by Gopi by selling the product to Ravi, is

- A. 25
- B. 10
- C. 15

D. 20

Correct Answer - B. 10

Explanation -

Let, $CP = x$

Then, $MP = 1.2x$;

$SP = MP - 10\%MP = 90\%MP$

Also,

Savings = Rs. 15

Savings with respect to percentage = 10% of $MP = 0.12x$

Thus, $0.12x = 15$

$\Rightarrow x = 125$

Hence,

$CP = 125$; $MP = 150$; $SP = 135$.

$\Rightarrow \text{Profit} = 135 - 125 = 10$.

Q.59) The average of three distinct real numbers is 28. If the smallest number is increased by 7 and the largest number is reduced by 10, the order of the numbers remains unchanged, and the new arithmetic mean becomes 2 more than the middle number, while the difference between the largest and the smallest numbers becomes 64. Then, the largest number in the original set of three numbers is

Correct Answer - 70

Explanation -

Let the three distinct real numbers be x, y, z such that $x < y < z$.

Here,

$$x + y + z = 28 \times 3 = 84$$

Then,

$$(x + 7) + y + (z - 10) = 84 + 7 - 10 = 81$$

New arithmetic mean = $81/3 = 27$

Also,

$$y + 2 = 27 \Rightarrow y = 25$$

(1) becomes, $x + 25 + z = 84$

$$x + z = 59$$

Given that,

$$(z - 10) - (x + 7) = 64$$

$$z - x = 81 \dots (3)(3)$$

(2) + (3) gives

$$2z = 140$$

$$z = 70$$

Q.160) The number of all positive integers up to 500 with non-repeating digits is

Correct answer - 378

Explanation -

Single digit numbers where none of the digits is repeated = 1 to 9

$\Rightarrow n(\text{single digit numbers}) = 9$

Double digit numbers = AB (where A is any number from 1 to 9 and B is any number except A)

$\Rightarrow n(\text{double digit numbers}) = 9 \times 9 = 81$

Triple digit numbers = ABC (where A is any number from 1 to 4, B is anything except A and C is anything except A, B)

$\Rightarrow n(\text{triple digit numbers}) = 4 \times 9 \times 8 = 288$

Total number of numbers = $288 + 81 + 9 = 378$

Q.61) A train travelled a certain distance at a uniform speed. Had the speed been 6 km per hour more, it would have needed 4 hours less. Had the speed been 6 km per hour less, it would have needed 6 hours more. The distance, in km, travelled by the train is

A. 780

B. 720

C. 640

D. 800

Correct Answer - B. 720

Explanation -

	Speed	Time
	X	T
Case 1	$X + 6$	$T - 4$
Case 2	$x - 6$	$T + 6$

Distance = XT

From the table, we have:

$$XT = (X + 6)(T - 4) = (X - 6)(T + 6)$$

$$\Rightarrow XT = XT + 6T - 4X - 24$$

$$6T - 4X = 24$$

$$3T - 2X = 12 \dots \dots \dots (1)(1)$$

Also,

$$XT = XT - 6T + 6X - 36$$

$$6X - 6T = 36$$

$$X - T = 6 \dots (2)(2)$$

Solving (1) & (2),

$$\begin{aligned}(1) &\Rightarrow 3T - 2X = 12 \\ 2 \times (2) &\Rightarrow -2T + 2X = 12\end{aligned}$$

Adding the equations,

$$\begin{aligned}T &= 24 \\ \Rightarrow X &= 30\end{aligned}$$

$$\text{Distance} = XT = 720 \text{ km}$$

Q.62) If $3^a = 4$, $4^b = 5$, $5^c = 6$, $6^d = 7$, $7^e = 8$ and $8^f = 9$, then the value of the product abcdef is

Correct Answer - 2

Explanation -

$$\begin{aligned}3^a &= 4 \Rightarrow \log_3 4 = a \\ \Rightarrow \log 4 / \log 3 &= a\end{aligned}$$

Similarly,

$$\log 5 / \log 4 = b;$$

$$\log 6 / \log 5 = c;$$

$$\log 7 / \log 6 = d;$$

$$\log 8 / \log 7 = e;$$

$$\log 9 / \log 8 = f$$

$$\begin{aligned}\text{abcdef} &= (\log 4 / \log 3) \times (\log 5 / \log 4) \times (\log 6 / \log 5) \times (\log 7 / \log 6) \times (\log 8 / \log 7) \times \\ &(\log 9 / \log 8)\end{aligned}$$

$$\text{abcdef} = \log 9 / \log 3 = 2$$

Q.63) Consider the sequence $t_1 = 1$, $t_2 = -1$ and $t_n = ((n-3)/(n-1))t_{n-2}$ for $n \geq 3$. Then, the value of the sum $1/t_2 + 1/t_4 + 1/t_6 + \dots + 1/t_{2022} + 1/t_{2024}$, is

A. -1023132

B. -1022121

C. -1024144

D. -1026169

Correct Answer - C. -1024144

Explanation -

$$\begin{aligned}
t_2 &= -1 \\
t_4 &= ((4-3)/(4-1)) \times t_{4-2} \\
&= 1/3 \times t_2 = 1/3 \times (-1) = -1/3 \\
t_6 &= ((6-3)/(6-1)) \times t_{6-2} \\
&= 3/5 \times t_4 = 3/5 \times -1/3 = -1/5 \\
t_8 &= ((8-3)/(8-1)) \times t_{8-2} \\
&= 5/7 \times t_6 = 5/7 \times -1/5 = -1/7
\end{aligned}$$

Then,

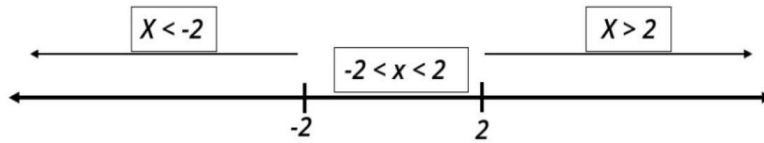
$$\begin{aligned}
&1/t_2 + 1/t_4 + 1/t_6 + 1/t_8 + \dots + 1/t_{2024} \\
&= (-1) + (-3) + (-5) + (-7) + \dots + (2023) \\
&= -(1 + 3 + 5 + 7 + \dots + 2023) \\
&= -(\text{Sum of first 1012 odd numbers}) \\
&= -(1012)^2
\end{aligned}$$

$$= -1024144$$

Q.64) The number of distinct real values of x , satisfying the equation $\max\{x, 2\} - \min\{x, 2\} = |x + 2| - |x - 2|$, is

Correct Answer - 2

Explanation -



LHS:

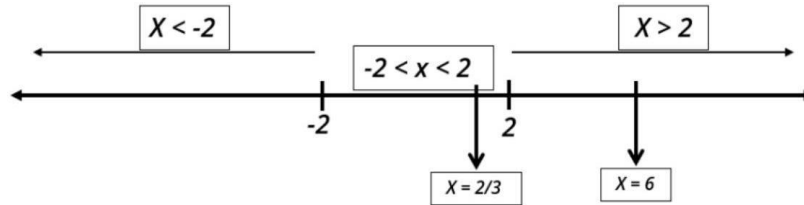
$\max\{x, 2\} - \min\{x, 2\}$ has two segments.

- i. $x > 2 \Rightarrow \max\{x, 2\} - \min\{x, 2\} = x - 2$
- ii. $x < 2 \Rightarrow \max\{x, 2\} - \min\{x, 2\} = 2 - x$

RHS:

$|x + 2| - |x - 2|$ has three segments.

- i. $x > 2$, both $|x + 2|$ & $|x - 2|$ are positive
 $\Rightarrow |x + 2| - |x - 2| = (x + 2) - (x - 2) = 4$
- ii. $x < -2$, both $|x + 2|$ & $|x - 2|$ are negative
 $\Rightarrow |x + 2| - |x - 2| = -(x + 2) - (2 - x) = -4$
- iii. $-2 < x < 2$, $|x + 2|$ is positive & $|x - 2|$ is negative $\Rightarrow |x + 2| - |x - 2| = (x + 2) - (2 - x) = 2x$



Now comparing both the sides,

When $x > 2$,

$$x - 2 = 4$$

$x = 6$ [it lies in the range $x < 2$]

When $x < 2$,

$$2 - x = 2x$$

$$2 = 3x$$

$x = 2/3$ [it lies in the range $x < 2$]

Also, when $x < 2$,

$$2 - x = -4$$

$x = 6$ [it does not lie in the range $x < 2$]

So, only 2 distinct real values of x are possible.

Q.65) Rajesh and Vimal own 20 hectares and 30 hectares of agricultural land, respectively, which are entirely covered by wheat and mustard crops. The cultivation area of wheat and mustard in the land owned by Vimal are in the ratio of 5 : 3. If the total cultivation area of wheat and mustard are in the ratio 11 : 9, then the ratio of cultivation area of wheat and mustard in the land owned by Rajesh is

- A. 1 : 1
- B. 7 : 9
- C. 4 : 3
- D. 3 : 7

Correct Answer - B. 7 : 9

Explanation -

Total land area = 20 + 30 = 50 hectares

In the total land area

$$\text{Wheat part} = 11/20 \times 50 = 55/2$$

$$\text{Mustard part} = 9/20 \times 50 = 45/2$$

In Vimal's land area

$$\text{Wheat part} = 5/8 \times 30 = 75/4$$

$$\text{Mustard part} = 3/8 \times 30 = 45/4$$

So, the land area for Rajesh

$$\text{Wheat part} = 55/2 - 75/4 = 35/4$$

$$\text{Mustard part} = 45/2 - 45/4 = 45/4$$

$$\text{Ratio, Wheat : Mustard} = 35/4 : 45/4 = 7 : 9$$

Q.66) For any non-zero real number x , let $f(x) + 2f(1/x) = 3x$. Then, the sum of all possible values of x for which $f(x) = 3$, is

- A. 2
- B. -3
- C. -2
- D. 3

Correct Answer - B. -3

Explanation -

$$f(x) + 2f(1/x) = 3x$$

$$\text{Put } x = 1/x$$

$$f(1/x) + 2f(x) = 3/x$$

Solving (1) & (2),

$$(1) \Rightarrow f(x) + 2f(1/x) = 3x$$

$$2 \times (2) \Rightarrow 2f(1/x) + 4f(x) = 6/x$$

Subtracting, we get

$$3f(x) = 6/x - 3x$$

So,

$$f(x) = 2/x - x$$

Now,

$$f(x) = 3 \text{ implies, } 2/x - x = 3$$

$$x^2 + 3x - 2 = 0$$

Sum of the roots = $-b/a$

Answer = -3

Q.67) A regular octagon ABCDEFGH has sides of length 6 cm each. Then the area, in sq. cm, of the square ACEG is

- A. $36(1 + \sqrt{2})$
- B. $72(1 + \sqrt{2})$
- C. $36(2 + \sqrt{2})$
- D. $72(2 + \sqrt{2})$

Correct Answer - C. $36(2 + \sqrt{2})$

Explanation -

Interior angle of a regular octagon = $(n - 2)/n \times 180^\circ$

$$= (8 - 2)/8 \times 180^\circ = 135^\circ$$

Area of ACEG = a^2

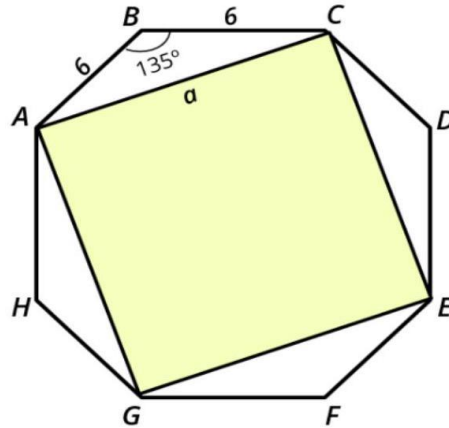
In $\triangle BAC$, using cosine rule:

$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$a^2 = 6^2 + 6^2 - 2(6)(6)\cos 135^\circ$$

$$a^2 = 72 - (72 \times -1/\sqrt{2})$$

$$a^2 = 36(2 + \sqrt{2})$$



Q.68) The sum of all distinct real values of x that satisfy the equation $10^x + 4/10^x = 17/2$, is

- A. $2\log_{10} 2$
- B. $3\log_{10} 2$
- C. $4\log_{10} 2$
- D. $\log_{10} 2$

Correct Answer - A. $2\log_{10} 2$

Explanation -

Let $10^x = y$

Then, $y + 4/y = 17/2$

$$2y^2 - 17y + 8 = 0$$

After factorising the equation we get, $(2y - 1)(y - 8) = 0$

i.e., $y = 8$ or $y = 1/2$

$\Rightarrow 10^x = 8$ or $10^x = 1/2$

Taking log on both sides, we get

$$\log_{10} 8 = x \text{ or } \log_{10} 1/2 = x$$

$$\Rightarrow \log_{10} 2^3 = x \text{ (or) } \log_{10} 2^{-1} = x$$

$$\Rightarrow x = 3\log_{10} 2 \text{ (or) } x = -\log_{10} 2$$

$$\text{Sum of these possible values} = 3\log_{10} 2 + (-\log_{10} 2) = 2\log_{10} 2$$