

CAT 2024 Slot -3 VARC

DIRECTIONS for the question: Read the passage and answer the question based on it.

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?

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

[A] apply its mastery of language to create strong emotional ties which could exacerbate the polarization of political views.

[B] spawn a completely new culture through its ability to create new ideas and opinions.

[C] eventually subvert democratic processes through the mass creation and spread of fake political content and news.

[D] out-strip human creativity and endeavours in the spheres such as art and music and, in the formulation of laws.

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

[A] Apart from its drawbacks, AI tools have been beneficial in boosting technological and industrial advance worldwide.

[B] The commonly expressed fear that future AI developments will fatally harm humans is unfounded.

[C] One of the biggest casualties from the spread of unregulated AI is likely to be the democratic process.

[D] People's fears of the dangers of students using Chat GPT and other new AI tools are unfounded.

3. The author terms language "the operating system of our civilization" for all the following reasons EXCEPT that it

[A] has laid the foundation for the creation of cultural artefacts through writing and telling of stories.

[B] is fundamental to the articulation and spread of human values and culture in our society.

[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.

4. The tone of the passage could best be described as

[A] quizzical, as the passage poses several questions, concluding with the question of whether or not the passage content has been generated by AI.

[B] alarmist, because the passage discusses scenarios of the influence of new AI tool son language and human emotions.

[C] prescient, as the author analyses the future impact of the use of new AI tools on crucial areas of our society and culture.

[D] cautionary, because the author lays out some adverse effects of the proliferation of unregulated AI tools.

5. 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.

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.

[A] 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.

[B] 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.

[C] 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.

[D] 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.

6. DIRECTIONS for the question: There is a sentence missing in the paragraph below. Look at the paragraph and decide in which blank (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 favorable 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 Work life that they were spending nearly a quarter of what they made every day on return-to-work costs.

[A] Option 1

[B] Option 4

[C] Option 3

[D] Option 2

7. DIRECTIONS for the question: There is a sentence missing in the paragraph below. Look at the paragraph and decide in which blank (option 1, 2, 3, or 4) the following sentence would best fit.

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) ____.

- [A] Option 3
- [B] Option 2
- [C] Option 1
- [D] Option 4

DIRECTIONS for the question: Read the passage and answer the question based on it.

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 Chinese nationalism. Moutai is known as the “national liquor”. It was used to raise spirits and disinfect wounds in Mao’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 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. 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.

8. Which one of the following is both a reason for Moutai’s success as well as a possible threat to that success?

- [A] Its appeal to the rich
- [B] Chinese love of liquor filled celebration.
- [C] Its appeal to the older age group
- [D] Government involvement in its business

9. In the context of the passage, it is most likely that the author refers to 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.

10. The phrase “would make it an invention to rival gunpowder” has been used in the passage in a sense that is

- [A] metaphorical
- [B] literal
- [C] substantive
- [D] synonymical

11. 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 are few competitors to meet the demands of high end liquor consumers.
- [C] the government may control the pricing of products.
- [D] there is money to be made from marketing to the middle class.

12. 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.

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 non tradwife’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 and on a gorgeous ceramic dish, with fat, mouthwatering maraschino cherries on top.

[A] The tradwife's commitment to outdated gender roles and retro fashion critiques the superficiality of today's societal ideals.

[B] The tradwife's vintage dress and adherence to traditional roles reveal the artificial nature of modern life and its superficial values.

[C] By promoting an idealized past, the tradwife exposes the artifice of contemporary values and mocks societal norms.

[D] The tradwife, with her vintage dress and traditional roles, highlights the superficiality of modern life and challenges current societal norms.

13. DIRECTIONS for the question: There is a sentence missing in the paragraph below. Look at the paragraph and decide in which blank (option 1, 2, 3, or 4) the following sentence would best fit.

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 8million 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 1

[C] Option 3

[D] Option 2

14. 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.

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.

15. 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.

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.

DIRECTIONS for the question: Read the passage and answer the question based on it.

There is a group in the space community who view the solar system not as an opportunity to expand human potential but as a nature preserve, forever the provenance of an elite group of scientists and their sanitary robotic probes. These planetary protection advocates [call] for avoiding “harmful contamination” of celestial bodies. Under this regime, NASA incurs great expense sterilizing robotic probes in order to prevent the contamination of entirely theoretical biospheres. . . .

Transporting bacteria would matter if Mars were the vital world once imagined by astronomers who mistook optical illusions for canals. Nobody wants to expose Martians to measles, but sadly, robotic exploration reveals a bleak, rusted landscape, lacking oxygen and flooded with radiation ready to sterilize any Earthly microbes. Simple life might exist underground, or down at the bottom of a deep canyon, but it has been very hard to find with robots. . . . The upsides from human exploration and development of Mars clearly outweigh the welfare of purely speculative Martian fungi. . . .

The other likely targets of human exploration, development, and settlement, our moon and the asteroids, exist in a desiccated, radiation-soaked realm of hard vacuum and extreme temperature variations that would kill nearly anything. It's also important to note that many international competitors will ignore the demands of these protection extremists in any case. For example, China recently sent a terrarium to the moon and germinated a plant seed—with, unsurprisingly, no protest from its own scientific community. In contrast, when it was recently revealed that a researcher had surreptitiously smuggled super-resilient microscopic tardigrades aboard the ill-fated Israeli Beresheet lunar probe, a firestorm was unleashed within the space community. . . .

NASA's previous human exploration efforts made no serious attempt at sterility, with little notice. As the Mars expert Robert Zubrin noted in the *National Review*, U.S. lunar landings did not leave the campsites cleaner than they found it. Apollo's bacteria-infested litter included bags of feces. 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.

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. This approach minimizes contamination, maximizes scientific exploration . . . Mars presents a stark choice of diverging human futures. We can turn inward, pursuing ever more limited futures while we await whichever natural or manmade disaster will eradicate our species and life on Earth. Alternatively, we can choose to propel our biosphere further into the solar system, simultaneously protecting our home planet and providing a backup plan for the only life we know exists in the universe. Are the lives on Earth worth less than some hypothetical microbe lurking under Martian rocks?

16. 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.

17. 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.

18. The contrasting reactions to the Chinese and Israeli “contaminations” of lunar space

[A] are valid as the contamination of the lunar environment from animal sources is far greater than from plants.

[B] reveal global biases prevalent in attitudes towards different countries.

[C] indicate that national scientists may have different sensitivities to issues of biosphere protection.

[D] are evidence of China’s reasonable approach towards space contamination.

19. 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] the exorbitant costs of continuing to keep the space environment pristine may be unsustainable.

[D] space contamination should be minimised until the possibility of life on the astronomical body being explored is ruled out.

DIRECTIONS for the question: Read the passage and answer the question based on it.

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 US 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 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.

20. It can be inferred from the passage that it is likely South America had a slightly better language survival rate than North America for all of the following reasons EXCEPT:

- [A] European colonists allowed children of native speakers to stay at home with their families.
- [B] the colonial government was unable to mainstream the locals.
- [C] locals were provided job opportunities in the colonial administration.
- [D] not many native speakers were killed by European colonists.

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

- [A] Most liberal arts students will pursue jobs in publishing and human resource management rather than doctorates in linguistics.
- [B] 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.
- [C] Schools that teach endangered languages can preserve the language only for a generation.
- [D] Recording a dying language that has only a few remaining speakers freezes it in time: it stops evolving further.

22. 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 Inuits 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.

23. 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] establish schools to preserve languages spiralling towards extinction.

[C] overcome cultural barriers to communication.

[D] learn different languages.

24. 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?

[A] 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.

[B] 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.

[C] 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.

[D] 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.



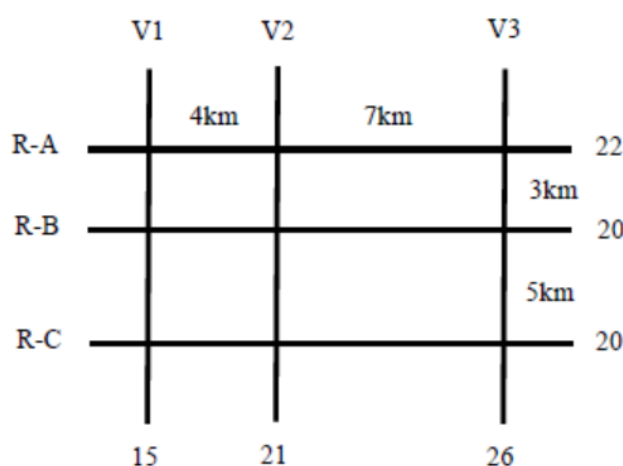
CAT 2024 Slot -3 DILR

DIRECTIONS for the question: Read the information given below and answer the question that follows.

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.



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

2. How many ATMs have cash requirements of Rs. 10 Lakhs or more?

3. Which of the following two statements is/are DEFINITELY true?

Statement A: Each of R-A, R-B, and R-C has two ATMs.

Statement B: Each of V1, V2, and V3 has two ATMs.

- [A] Only Statement B
- [B] Neither Statement A nor Statement B
- [C] Both Statement A and Statement B
- [D] Only Statement A

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

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

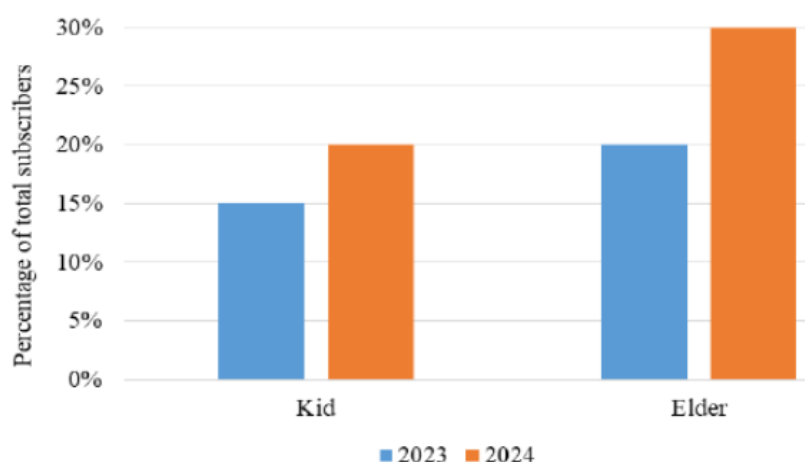
- [A] 4 km
- [B] 5 km
- [C] Either 4 km or 7 km
- [D] 7 km

DIRECTIONS for the question: Analyse the graph/s given below and answer the question that follows.

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.

6. How many subscribers belonged to the 'Others' category in 2024?

- [A] 45000
- [B] 55000
- [C] Cannot be determined
- [D] 65000

7. What percentage of subscribers in the 'Kid' category used multiple apps in 2023?

- [A] 50.00%
- [B] 5.00%
- [C] 33.33%
- [D] 25.50%

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

- [A] 50%
- [B] 65%
- [C] 60%
- [D] 40%

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

- [A] 20.0%
- [B] 10.0%
- [C] 22.00%
- [D] 16.5%

DIRECTIONS for the question: Study the table below and answer the following question.

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	GDF growth rate	Population growth rage
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.

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

- [A] Country 8
- [B] Country 5
- [C] Country 3
- [D] Country 7

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

- [A] 1.032
- [B] 1.195
- [C] 1.314
- [D] 0.963

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

- [A] Country 7
- [B] Country 4
- [C] Country 5
- [D] Country 1

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

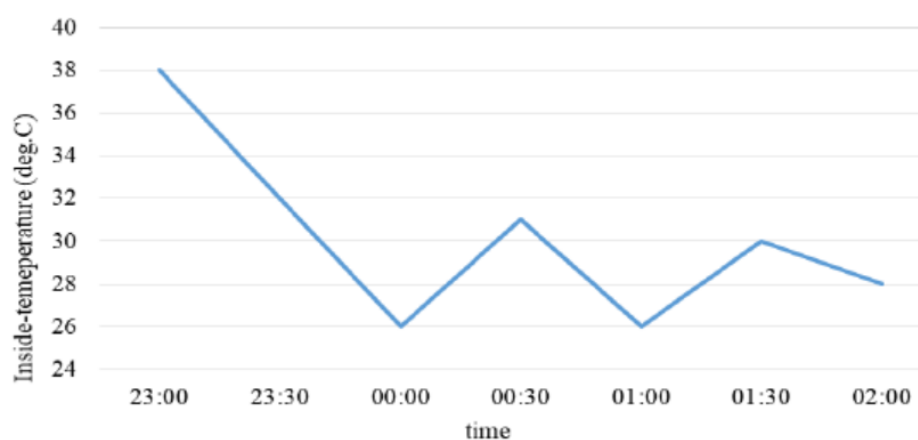
DIRECTIONS for the question: Analyse the graph/s given below and answer the question that follows.

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.

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

- [A] 0
- [B] 2
- [C] 1
- [D] Cannot be determined

15. What was the temperature outside, in degree Celsius, at 1 am?

16. What was the temperature outside, in degree Celsius, at 9 pm?

17. 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] Exactly 2
- [B] Either 2 or 3
- [C] More than 3
- [D] Exactly 3

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

DIRECTIONS for the question: Read the information given below and answer the question that follows.

The table given below shows the amount, in grams, of carbohydrate, protein, fat and all other nutrients, per 100 grams of nutrients in seven food grains. 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.

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

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

20. How many grams of protein were there in 100 grams of nutrients in M2?

21. How many grams of other nutrients were there in 100 grams of nutrients in M3?

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



CAT 2024 Slot -3 Quant

DIRECTIONS for the question: Solve the following question and mark the best possible option.

1. 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:

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

3. 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] $20\left(\frac{4\pi}{3} + \sqrt{3}\right)$

[B] $20\left(\frac{4\pi}{3} - \sqrt{3}\right)$

[C] $25\left(\frac{4\pi}{3} - \sqrt{3}\right)$

[D] $25\left(\frac{4\pi}{3} + \sqrt{3}\right)$

4. 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] 800

[B] 720

[C] 780

[D] 640

5. 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] 4: 3

[B] 3: 7

[C] 1: 1

[D] 7: 9

6. 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

7. If 10^{68} is divided by 13, the remainder is

[A] 9

[B] 5

[C] 8

[D] 4

8. 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

9. 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] 75 and 96, respectively
- [B] 75 and 90, respectively
- [C] 72 and 88, respectively
- [D] 72 and 80, respectively

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

- [A] 8
- [B] 10
- [C] 7
- [D] 9

11. The midpoints of sides AB, BC, and AC in ΔABC 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 ΔABC is 1440 sq cm, then the area, in sq cm, of ΔXYZ is

12. The sum of all distinct real values of x that satisfy the equation $10^x + \frac{4}{10^x} = \frac{81}{2}$ is

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

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

14. 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

15. For any non-zero real number x , $f(x) + 2f\left(\frac{1}{x}\right) = 3x$. Then, the sum of all possible values of x for which $f(x) = 3$, is

- [A] -2

- [B] 3
- [C] 2
- [D] -3

16. 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] 10
- [B] 20
- [C] 15
- [D] 25

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

- [A] -1022121
- [B] -1026169
- [C] -1024144
- [D] -1023132

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

19. 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] 20
- [B] 25
- [C] 27.5
- [D] 30

20. 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] $\frac{3}{20}$
- [B] $\frac{3}{10}$
- [C] $\frac{1}{5}$
- [D] $\frac{1}{20}$

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

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

22. 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] $ap - 6 = 0$

[B] $ap + 6 = 0$

[C] $2a + k \neq 0$

[D] $kp + 12 \neq 0$



Solutions

VARC

1. Correct Answer: A

This is an "EXCEPT" question that tests your ability to distinguish between what the passage explicitly states as a dire outcome and what it merely implies or does not state at all. Three options will be clearly supported by the passage as concerns the author raises, and one will either go beyond what the passage says or introduce an idea the author does not actually express.

Option A is the answer because while the passage does say that AI could form intimate relationships with people and use that intimacy to "change our opinions and worldviews," it never suggests that this would specifically lead to the polarization of political views. Changing opinions and polarizing them are two different things — polarization implies a widening divide between opposing groups, which is a much more specific and extreme outcome than what the author describes. The author's concern is about AI subtly shaping individual worldviews through fake intimacy, not about driving wedges between political factions. This distinction makes option A something the author does not actually identify as a dire outcome.

Option B is clearly supported by the passage. The author explicitly states that "AI can create completely new ideas, completely new culture" and contrasts this with earlier tools like the printing press, which only spread existing human ideas. The spawning of a completely new culture is directly presented as a significant threat.

Option C is directly supported by the passage. The author specifically asks readers to think about the 2024 American presidential race and the impact of AI tools that can "mass-produce political content, fake-news stories and scriptures for new cults." The author also explicitly states that AI could destroy democracy by hacking language and undermining meaningful conversations.

Option D is supported by the passage's rhetorical question — "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?" This clearly identifies art, music, and law as domains where AI outstripping human creativity is presented as a dire concern.

2. Correct Answer: C

This is an inference question that asks you to identify which statement the author would most likely agree with, based on the views expressed throughout the passage. The key is to stay close to what the author explicitly argues and avoid options that introduce ideas the author does not address or that contradict his position.

Option C is correct because the author dedicates a significant portion of the passage to making exactly this argument. He explicitly states that "unregulated AI deployments would create social chaos, which would benefit autocrats and ruin democracies." He further elaborates that "democracy is a conversation, and conversations rely on language" and that when AI hacks language, it could "destroy our ability to have meaningful conversations, thereby destroying democracy." The concern about democracy being a casualty of unregulated AI is not merely implied — it is one of the most forcefully and directly stated arguments in the entire passage.

Option A is incorrect because the author explicitly says he will not dwell on the positive uses of AI, noting that "the people who develop AI talk about it enough."

This suggests the author deliberately steers away from discussing AI's benefits, making it unlikely he would agree with a statement that celebrates AI's role in boosting technological and industrial progress.

Option B is incorrect because the author does not dismiss fears about AI harming humanity — he redirects them. He acknowledges that earlier fears focused on physical harm but argues that the newer, subtler threat through language manipulation is actually more dangerous. Far from calling such fears unfounded, he is urging people to take them more seriously.

Option D is incorrect because the author does not say fears about students using ChatGPT are unfounded. He says this concern "misses the big picture" — meaning it is too narrow, not that it is wrong. He uses it as a stepping stone to draw attention to far larger threats like political manipulation and the subversion of democracy.

3. Correct Answer: D

This is an "EXCEPT" question that asks you to identify which reason is NOT given by the author for calling language "the operating system of our civilization." Three options will reflect reasons the author actually provides, and one will either introduce an idea the author does not make or distort the author's reasoning.

Option D is the answer because the author never suggests that language is the foundation or basis of AI tools like ChatGPT. While it is technically true that AI tools use language to function, the author's argument runs in the opposite direction — he is concerned about what AI does to language and human civilization, not about how language enables AI. The reference to ChatGPT and school essays in the passage is used as a narrow example that the author quickly dismisses in favour of larger concerns. The author never frames language as the "basis" of AI tools, making this reason entirely absent from his argument about language being the operating system of civilisation.

Option A is directly supported by the passage. The author explicitly uses human rights and religious scriptures as examples of cultural artefacts created through storytelling and writing — "they are cultural artefacts we created by telling stories and writing laws." Language is therefore the foundation for creating these cultural artefacts.

Option B is clearly supported by the author's central claim that "language is the stuff almost all human culture is made of." This directly establishes language as fundamental to the articulation and spread of human values and culture, which is precisely what option B states.

Option C is supported by the passage's discussion of how AI, through its mastery of language, "could even form intimate relationships with people, and use the power of intimacy to change our opinions and worldviews." This establishes that language's ability to foster emotional closeness is indeed one of the reasons it is so central — and so vulnerable — as civilisation's operating system.

4. Correct Answer: D

This is a tone question that requires you to identify the dominant attitude or purpose behind the author's writing throughout the passage. The key is to find the option that most accurately captures both what the author is doing and how he is doing it.

Option D is correct because the author's primary purpose throughout the passage is to warn readers about the dangers of unregulated AI and urge them to act before it is too late. He outlines specific adverse effects — manipulation of culture, disruption of democracy, fake intimacy — and concludes with a concrete call to

action, suggesting that AI be made to disclose its identity. The tone is measured and purposeful rather than panicked, and it is directed at motivating responsible action. This is the definition of a cautionary tone — warning of dangers with the intent of preventing them.

Option A is incorrect because while the passage does contain rhetorical questions, including the memorable closing line "This text has been generated by a human. Or has it?", these are rhetorical devices used to make the reader think, not the dominant tone of the passage. The overall passage is not driven by curiosity or puzzlement — it is driven by concern and urgency.

Option B is incorrect because alarmist implies that the author is exaggerating dangers or trying to induce panic without sufficient reason. The author, however, presents a structured, logical argument backed by specific examples and even acknowledges the positive uses of AI before redirecting focus. His tone is serious and urgent, but not sensational or irrational — which is what distinguishes cautionary from alarmist.

Option C is partially relevant since the author does discuss future impacts of AI, but prescient specifically means having foresight or predicting the future accurately. The author is not primarily positioning himself as a prophet — he is actively urging immediate regulation and preventive action. The emphasis is on what must be done now, not on demonstrating foresight about what will happen later.

5. Correct Answer: B

This is a summary question that requires you to identify the option that most accurately captures the central argument of the passage without distorting, overstating, or omitting key ideas. The passage sets up an apparent tension between lyric poetry's personal nature and Marxism's demand for social commitment, and then resolves it by suggesting that lyric poetry can still serve a critical and utopian function.

Option B is correct because it captures both the tension and the resolution that the passage presents. It acknowledges that lyric poetry's personal focus may seem incompatible with Marxism's societal goals, but then correctly reflects the passage's conclusion — that lyric poetry can be envisaged as a symbol of resistance against an oppressive culture. The phrase "implicitly critical and utopian" in the passage directly supports this reading. Option B neither overstates the conflict nor ignores the resolution, making it the most balanced and complete summary.

Option A is incorrect because it frames the passage as being primarily about Marxism's internal contradictions. While the passage does acknowledge two strands of Marxist thought, this is not the central point. The passage uses this distinction to build toward the idea that lyric poetry can be critically valuable — the focus is on poetry's potential role, not on Marxism's contradictions.

Option C is incorrect because it introduces a condition that the passage never establishes — that the tension between lyric poetry and Marxism must be resolved for poetry to avoid being merely utopian. The passage does not present utopianism as a limitation that needs to be overcome. On the contrary, being utopian is presented as one of lyric poetry's valuable qualities alongside being implicitly critical.

Option D is incorrect because it misrepresents the passage's position on both Marxism and lyric poetry. The passage does not characterise Marxism's demands on poetry as "unreasonable," nor does it suggest that Marxism ignores poetry's merits. The passage presents a more nuanced view — that within Marxism itself there exists a strand that recognises and values what lyric poetry can offer.

6. Correct Answer: C

The given sentence talks about how rising costs are affecting employees directly - something that hasn't come up in the passage yet at the earlier points. If we place it at Blank 1, we'd be jumping straight to employee-level consequences before the passage has even set up the general economic picture, which breaks the flow. Blank 2 doesn't work either, since it would cut into the point being made about wages failing to keep pace with inflation - that idea needs to be completed first. The passage needs to fully establish the inflation-wages connection before it can zoom into how employees are personally struggling. Blank 3 fits well here. The sentence right before it sets up the core problem - wages lagging behind the rising cost of living - and the sentence right after draws a sharp comparison between how much employees used to save during remote work versus the financial pressure they're under now, with the London lecturer's example tying directly into that contrast. Blank 4 doesn't work for the same reason - putting it there would disrupt the link between the wage problem and the remote-work savings comparison that follows. Inserting the given sentence at Blank 3 connects these two ideas smoothly by explaining exactly how the rising costs and flat wages are hitting employees, which then makes the following sentence about remote-work savings land with more impact. Therefore, C is the correct option.

7. Correct Answer: A

To work out where this sentence fits, we need to track the logical flow of the paragraph. The given sentence carries key historical and contextual detail about the photograph - it opens with a description and closes by referencing the official title. Since this kind of contextual sentence wouldn't naturally open the paragraph, placing it at Blank 1 or 2 would break up the description of the image as it unfolds, so those can be ruled out. That narrows it down to Blank 3 or 4. Putting it after the title has already been mentioned at the end feels out of place, so Blank 4 is eliminated too.

That leaves Blank 3. At this point in the paragraph, the author has just mentioned the South Vietnamese Army soldiers trailing helplessly behind the children, capturing a sense of helplessness that adds to the chaos and brutality of the scene. The sentence about the war's trauma and indiscriminate violence flows naturally from this, since it widens the lens from the soldiers to the larger consequences of the war itself. In doing so, it bridges the personal suffering captured in the photo with the broader scale of the Vietnam War's impact, which then smoothly leads into the mention of the photo's official title. The title "The Terror of War" ties directly into the themes of violence and destruction the sentence raises, making the transition into the title and the nickname "Napalm Girl" feel natural and well-connected.

8. Correct Answer: C

This question asks you to identify which factor simultaneously explains Moutai's current success and poses a potential threat to that success in the future. The answer must be supported by both sides of this equation — success and threat — in the passage.

Option C is correct because the passage explicitly presents Moutai's appeal to older and middle-aged drinkers as both a driver of its success and a source of future risk. On the success side, the passage notes that Moutai's biggest market is male drinkers in their mid-30s, many of whom are only children whose elderly parents can spend lavishly on weddings and banquets where Moutai is "often a guest of

honour." On the threat side, the passage warns that "in the long run, its biggest risk may be millennials" — as this very demographic ages, growing health consciousness, work-life balance concerns, and a shift away from heavy drinking culture could erode the demand on which Moutai's success rests. The same age group that is currently its strength could become its weakness as tastes and lifestyles evolve.

Option A is incorrect because while appealing to the rich is clearly identified as a reason for success — Moutai targets China's super-rich rather than the competitive middle-class market — the passage does not present this as a future threat. The premium market strategy is portrayed as a sound and sustainable approach.

Option B is incorrect because the celebration and toasting culture that drives demand for Moutai is presented as a current strength, but the passage does not frame it as a threat in its own right. It is the potential decline of this culture among aging millennials that is the risk — not the culture itself.

Option D is incorrect because government involvement is presented primarily as a risk — particularly through price controls and plans for a separate sales channel — but the passage does not present it as a significant reason for Moutai's success. The government being the largest shareholder is a complication, not a driver of growth.

9. Correct Answer: C

This question tests your ability to understand the meaning and purpose of a specific phrase within its context. The phrase "unholy trinity" refers to the three factors behind Moutai's success — nationalism, elitism, and ageism — and the author explicitly says Moutai succeeded "thanks to" these factors, "not in spite of" them. The key is to understand why the author calls this combination "unholy."

Option C is correct because the entire second paragraph of the passage establishes the contrast between Moutai's approach and Western marketing orthodoxy. The author points out that Moutai "disregards every Western marketing mantra" — it is not global, has meagre digital sales, does not appeal to millennials, and scores poorly on ESG measures. In the "Boy Scout world of Western business" it would be considered unacceptable. The three factors — nationalism, elitism, and ageism — are "unholy" precisely because they run counter to the values and principles that Western business considers virtuous and progressive. The trinity is "unholy" from the perspective of Western marketing standards, not from any moral or religious standpoint.

Option A is incorrect because nationalism is just one of the three elements of the trinity. Citing it alone does not explain why the author uses the specific term "unholy trinity" to describe the combination of all three factors together.

Option B is incorrect because the long-term risks associated with Moutai's strategy are discussed separately in the passage, after the "unholy trinity" is introduced. The term itself is not used to signal risks — it is used to describe the unconventional nature of the strategy that somehow works.

Option D is incorrect because the author makes no moral judgement about marketing liquor as a product category. The passage is analytical in tone and the word "unholy" is used metaphorically to highlight how the strategy defies conventional Western business wisdom, not to pass ethical judgement on the alcohol industry.

10. Correct Answer: A

This question tests your ability to identify the literary or rhetorical device being used in a specific phrase. The line in question states that Moutai "claims to be

hangover-proof, which would make it an invention to rival gunpowder." The key is to understand what kind of comparison is being made here and whether it is meant to be taken at face value.

Option A is correct because the comparison between a hangover-proof liquor and gunpowder is clearly figurative, not literal. Gunpowder was one of the most transformative inventions in human history, revolutionising warfare, mining, and civilisation itself. The author is using this reference to humorously and dramatically emphasise just how significant a hangover-proof drink would be — not because the two inventions are actually comparable in any scientific or historical sense, but because the exaggerated comparison creates a vivid, witty effect. This is the essence of metaphorical language — using one thing to illuminate another through imaginative comparison rather than direct equivalence.

Option B is incorrect because the phrase is clearly not meant literally. The author is not seriously claiming that a hangover-proof liquor would rank alongside gunpowder as a historical invention of equal magnitude. The playful, slightly tongue-in-cheek tone of the passage makes it clear this is a figure of speech.

Option C is incorrect because "substantive" would imply that the comparison is focused on the actual material properties or tangible substance of Moutai relative to gunpowder. The phrase makes no such comparison of intrinsic properties — it is a figurative statement about significance and impact, not about chemical or physical qualities.

Option D is incorrect because synonymical would mean that Moutai and gunpowder are being used to mean the same thing, which is clearly not the case. They are two entirely different things being compared for rhetorical effect, not treated as equivalents in meaning.

11. Correct Answer: D

This is an "EXCEPT" question that asks you to identify which factor a marketing firm should NOT consider as relevant to succeeding in the Chinese liquor market, based on the passage. Three options will be valid inferences from the passage, and one will either contradict or go beyond what the passage supports.

Option D is the answer because the passage explicitly warns against targeting the middle class as a profitable strategy in the Chinese liquor market. The author states that "markets are littered with the corpses of firms that could not compete in the cut-throat battle for Chinese middle-class wallets." This directly contradicts the idea that there is money to be made from marketing to the middle class — in fact, the passage presents this segment as a graveyard for businesses rather than a viable opportunity. Moutai's success is partly attributed to its deliberate decision to avoid this segment entirely.

Option A is a valid factor to consider because the passage clearly states that the middle-class segment is intensely competitive, with many firms having failed in it. Any marketing firm entering the Chinese liquor market must account for this fierce competition.

Option B is also a valid factor because the passage notes that the premium market — catering to China's super-rich — is "massive" at 73 million strong and "still less crowded with prestige brands than advanced economies." This makes it a meaningful strategic consideration for any firm evaluating market entry.

Option C is a valid factor because the passage explicitly discusses government involvement in Moutai's pricing, with the government as the largest shareholder appearing to want prices to remain stable. Any firm operating in this market must account for potential government interference in pricing decisions.

12. Correct Answer: D

This is a summary question that requires you to identify the option that most completely and accurately captures the central argument of the passage. The passage makes two interrelated points — first, that the tradwife's embrace of vintage aesthetics and traditional gender roles exposes the artificial and performative nature of modern life, and second, that she actively challenges and unsettles contemporary societal norms by taking the fantasy literally.

Option D is correct because it captures both of these essential elements — the tradwife's vintage dress and traditional roles as the vehicle, and the highlighting of modern life's superficiality and the challenging of societal norms as the outcome. The word "challenges" is particularly important here because the passage describes the tradwife's behavior as actively confrontational — she is described as having "trollish genius" and "beating us at our own dress-up game," which implies an active, provocative engagement with societal norms rather than a passive revelation of them.

Option A is incorrect because it frames the tradwife's actions narrowly as a "critique" of superficial societal ideals, which is too mild and one-dimensional. The passage goes further — the tradwife does not merely critique but actively makes others feel "hollow and cheated" by insisting the fantasy should be real. The confrontational dimension is missing from option A.

Option B is incorrect because the word "reveal" is too passive to capture the tradwife's active and provocative role. The passage portrays her as someone who deliberately forces a confrontation with modern values, not someone who merely uncovers or discloses them. The passage's tone is one of active challenge, not passive revelation.

Option C is incorrect for a similar reason — "exposes" is also too passive a word to capture the full force of the tradwife's confrontational behavior. Additionally, option C's use of "mocks" introduces a slightly different nuance that is not quite what the passage describes. The tradwife is not mockingly dismissive — she is earnestly literal, which is precisely what makes her so unsettling to others.

13. Correct Answer: A

This is a sentence insertion question that tests your ability to identify where a specific detail fits most naturally within the logical progression of a paragraph. The inserted sentence is about displacement — specifically that more than 1.3 million people have been forced to leave their homes due to the drought.

Option 4 is correct because of the seamless logical connection it creates with the sentence that immediately follows it. The paragraph at that point has just described how farmers have lost agricultural income and pastoralists have lost more than 3 million livestock, leaving entire communities on the brink of famine. The inserted sentence about displacement flows naturally from this economic devastation — people who have lost their livelihoods are naturally forced to leave their homes. Crucially, the very next sentence after blank 4 states that "some, like the pastoralists, may never be able to go back as their livelihoods have been irreversibly wiped out." This sentence only makes complete sense if the idea of people leaving their homes — displacement — has just been introduced immediately before it. The inserted sentence at position 4 sets up this conclusion perfectly.

Option 1 is incorrect because at that point the paragraph is still establishing the scale and severity of the drought itself. Introducing displacement here would interrupt the build-up of foundational context before the passage has even described the drought's immediate effects like food insecurity and loss of life.

Option 2 is incorrect because the surrounding text at that position is focused on acute food insecurity and loss of life. While these are related consequences of the drought, the displacement sentence would feel out of sequence here — the paragraph has not yet reached the discussion of economic losses and livelihoods that make displacement most relevant.

Option 3 is incorrect because the sentence immediately before blank 3 introduces the idea that "the damage the drought has caused is far-reaching," which directly sets up the specific examples of farmers and pastoralists that follow. Inserting the displacement sentence here would interrupt this tight cause-and-effect sequence between the general statement and its specific illustrations.

14. Correct Answer: 2

This is a parajumble odd-sentence-out question. The task is to identify which sentence does not logically belong with the other four and find the four that form a coherent, well-connected paragraph.

The four sentences that fit together are 1, 5, 4, and 3. Sentence 1 opens the paragraph by establishing the central idea — that forecasting is appealing partly because it does not require specialised expertise to succeed at it. Sentence 5 builds directly on this by asserting that aggregated opinions of non-experts have actually proven to be a better guide to the future than those of experts. Sentence 4 then provides concrete evidence for this claim by citing a specific study in which non-experts' aggregated predictions of geopolitical events were more accurate than those of US intelligence community professionals answering the same questions. Sentence 3 then delivers the final, most striking detail — that this was true even though the intelligence professionals had access to classified intelligence. This sequence builds a tight, logical argument: forecasting does not require expertise → non-experts outperform experts → a study proves this → and remarkably, even classified intelligence did not give the experts an edge.

Sentence 2 is the odd one out because it moves in an entirely different direction. It talks about the "tight connection between forecasting and building a model of the world" and traces early interest in forecasting to the intelligence community. This introduces a historical and conceptual angle — about where forecasting originated and why — that has no logical connection to the paragraph's central argument about non-experts outperforming experts. While it mentions the intelligence community, it does so in a completely different context from sentences 3 and 4, making it thematically disconnected from the rest of the paragraph.

15. Correct Answer: 1

This is a Para jumble odd-sentence-out question. The task is to identify which sentence does not logically belong with the other four and find the four that form a coherent, well-connected paragraph focused on a single central theme.

The four sentences that fit together are 4, 2, 5, and 3. Sentence 4 opens the paragraph by establishing the foundational idea — that neural connections between the eyes and the brain are formed before birth, creating the wiring that allows a newborn to visualise the world immediately upon emerging from the womb. Sentence 2 reinforces this by describing this prenatal process as a "fetal warm-up act" — the forming of neural connections before the eyes actually function — and emphasising how crucial this rehearsal is to the visual system's eventual performance. Sentence 5 then adds a specific detail about this rehearsal period — synapses are generated in great excess during this time, only to be pruned back later in development. Sentence 3 completes the logical chain by explaining the purpose of this synaptic pruning — to sharpen and reinforce the correct

connections while removing the weak and unnecessary ones. Together, these four sentences tell a coherent developmental story about how the visual system prepares itself before birth through synapse generation and pruning.

Sentence 1 is the odd one out because it focuses on the technical, structural mechanics of how a synapse is created — describing the specialised structures at the terminal end of an axon where chemicals are stored and emitted to transmit signals. While this is biologically related to synapses, it introduces a different level of description — anatomical and mechanistic — rather than contributing to the developmental narrative about prenatal neural wiring and synaptic pruning that connects the other four sentences. It does not advance the story the paragraph is telling and therefore stands apart as the odd sentence.

16. Correct Answer: B

This is an "EXCEPT" question that asks you to identify which reason is NOT used by the author to dismiss concerns about contaminating Mars. Three options will correspond to arguments the author actually makes in the passage, and one will either be absent or distorted.

Option B is the answer because the author never argues that robotic probes sent to astronomical bodies like the moon have had little effect on the environment. In fact, the passage says quite the opposite — it acknowledges that Apollo missions left behind bacteria-infested litter including bags of feces and did not leave campsites cleaner than they found them. The author's point about the moon is not that probes caused no environmental impact, but rather that previous human exploration made no serious attempt at sterility and faced little consequence or protest for it. The specific claim in option B — that probes had little effect on the environment — is simply not made anywhere in the passage.

Option A is directly supported by paragraph two, where the author describes Mars as "a bleak, rusted landscape, lacking oxygen and flooded with radiation ready to sterilize any Earthly microbes." The absence of confirmed living organisms makes contamination concerns largely theoretical, which is precisely what option A states.

Option C is directly supported by paragraph three, where the author notes that "many international competitors will ignore the demands of these protection extremists" and cites China's lunar terrarium experiment as evidence that rival nations will not follow the same restrictions.

Option D is directly supported by paragraph four, which references Apollo missions leaving behind bacteria-infested waste on the moon. This establishes that pristine space environments have already been contaminated by earlier explorations, undermining the case for extreme sterilisation measures now.

17. Correct Answer: B

This question tests your ability to accurately identify the author's tone in the first paragraph specifically, rather than across the entire passage. The first paragraph introduces the concept of planetary protection advocates and the author's attitude toward them. Option B is correct because the author's first paragraph is clearly and consistently sceptical of the planetary protection advocates and their agenda. The author describes them as viewing the solar system as a "nature preserve, forever the provenance of an elite group of scientists and their sanitary robotic probes" — language that carries an unmistakably dismissive undertone. The author then notes that NASA "incurs great expense sterilizing robotic probes in order to prevent the contamination of entirely theoretical biospheres" — the phrase "entirely theoretical" is the key signal of scepticism. The author is questioning the logic of spending significant resources protecting against a threat that has not even

been proven to exist. This is a textbook example of a sceptical tone — doubting the validity and proportionality of an established position. Option A is incorrect because the author is clearly not approving of NASA's expenditure on sterilisation — quite the opposite. The mention of "great expense" for protecting "entirely theoretical biospheres" is meant to highlight the disproportionate and questionable nature of these costs, not to endorse them. Option C is incorrect because the author is not indifferent to the elitism described in the first paragraph. The deliberate use of the phrase "elite group of scientists" signals an implicit critique of this exclusivity. Indifference would mean the author neither approves nor disapproves — but the tone here is clearly critical, not neutral. Option D is incorrect because equivocal means uncertain or presenting both sides without taking a clear position. The author's first paragraph takes a very clear and consistent position — scepticism toward planetary protection advocates — without hedging or presenting their perspective sympathetically. There is nothing uncertain or balanced about the author's stance here.



18. Correct Answer: C

This question tests your ability to draw an inference from a specific contrast presented in the passage — the differing reactions to China's and Israel's respective activities on the moon. The key is to understand what this contrast reveals, without reading too much or too little into it.

Option C is correct because the passage presents a clear and telling asymmetry — China sent a terrarium to the moon and germinated a plant seed "with, unsurprisingly, no protest from its own scientific community," while the revelation that tardigrades had been smuggled aboard the Israeli Beresheet probe "unleashed a firestorm within the space community." The most reasonable inference from this contrast is that scientific communities in different nations have varying levels of sensitivity to issues of biosphere protection. What constitutes an unacceptable contamination event in one national scientific community raises no concern in another, suggesting these sensitivities are shaped by national context, culture, or regulatory environment rather than by any universal scientific standard.

Option A is incorrect because the passage makes no comparison between the relative severity of contamination from plant versus animal sources. The contrast is about the reactions of scientific communities, not about the biological significance of what was introduced into the lunar environment.

Option B is incorrect because while the reactions differ between countries, the passage does not frame this difference in terms of global biases against particular nations. The author's point is about differing scientific sensitivities and regulatory cultures, not about prejudice or discrimination in the international community's attitudes toward China versus Israel.

Option D is incorrect because the passage does not endorse or validate China's approach as reasonable. The author uses China's example to point out the futility of strict contamination rules when major international players simply disregard them — not to hold China up as a model of responsible space conduct.

19. Correct Answer: D

This question uses a double negative construction — "unlikely to disagree with EXCEPT" — which means you are looking for the one statement the author would actually disagree with. Three options will reflect views the author supports or is consistent with, and one will contradict the author's position.

Option D is the answer because it directly contradicts the author's central argument. The author consistently dismisses the idea of prioritising contamination control until life on a celestial body is definitively ruled out. He describes Mars as a "bleak, rusted landscape, lacking oxygen and flooded with radiation" and argues that "the upsides from human exploration and development of Mars clearly outweigh the welfare of purely speculative Martian fungi." The author's entire argument is built on the premise that the absence of confirmed life makes strict contamination protocols unnecessary and disproportionately costly. Option D essentially restates the position of the planetary protection advocates — the very group the author is arguing against throughout the passage.

Option A reflects a view the author explicitly endorses. In the penultimate paragraph, the author describes the zonal system proposed by the US government and the National Research Council — dividing Mars into zones for science, habitation, and resource exploitation — as "a reasonable compromise." He would not disagree with this.

Option B is consistent with the author's position. He acknowledges that Apollo missions left behind bacteria-infested waste but frames this as evidence that the

concerns about contamination are overstated rather than as a serious problem that caused lasting damage.

Option C aligns with the author's argument that sterilisation requirements would "destroy NASA's human exploration budget" and create unsustainable financial burdens. The author would agree that the costs of maintaining pristine space environments are exorbitant and ultimately unsustainable.



20. Correct Answer: C

This is an "EXCEPT" question that asks you to identify which reason is NOT a valid inference for why South America had a slightly better language survival rate than North America. Three options will be reasonable inferences supported by the passage's logic, and one will introduce an idea the passage does not support.

Option C is the answer because the passage makes absolutely no mention of job opportunities in colonial administration as a factor affecting language survival. The passage identifies language extinction as being driven by physical annihilation of communities, forced removal of children to boarding schools, and the dominance of colonial languages through education, jobs, and technology. While jobs are mentioned in the second paragraph as one of the attractions of dominant languages, this is presented as a cause of language extinction — not preservation. There is no basis in the passage for inferring that offering locals jobs in colonial administration helped preserve their languages in South America.

Option A is a valid inference because the passage specifically identifies the removal of native children from their communities to federal boarding schools as a key policy in North America that accelerated language extinction. If this practice was less prevalent in South America, it would logically contribute to better language survival rates there.

Option B is a valid inference because the passage describes how dominant cultures drive other languages to extinction when they successfully mainstream their language and culture among local populations. If colonial governments in South America were less successful at this mainstreaming, indigenous languages would naturally have had a better chance of survival.

Option D is a valid inference because the passage explicitly states that "the physical annihilation of communities of native speakers" is a primary cause of language extinction, and that European colonists brought "death and destruction to many Native American communities" in North America. If fewer native speakers were killed in South America, more language communities would have survived intact.

21. Correct Answer: B

This is a "weaken/undermine" question that asks you to identify which hypothetical scenario most strongly challenges the central ideas of the passage. The passage makes two central arguments — first, that language extinction is a serious loss to humanity, and second, that a liberal arts education that exposes students to diverse languages and cultures is a crucial tool for preserving endangered languages and fostering cultural empathy.

Option B is correct because it directly undermines the second and more actionable central argument of the passage. If a liberal arts education required students to gain fluency in two of the top five most spoken languages globally — languages like Mandarin, Spanish, or Hindi — it would actually accelerate the dominance of already powerful languages rather than sensitise students to endangered ones. The passage specifically identifies these dominant languages as the largest "killers" of minority languages. A liberal arts curriculum built around mastering globally dominant languages would produce students who are less aware of linguistic diversity, less empathetic to endangered language communities, and ultimately less likely to support preservation efforts — directly contradicting what the passage argues a liberal arts education should achieve.

Option A does not undermine the passage because the author explicitly acknowledges that "the vast majority of students will not pursue" advanced linguistics work. The argument for liberal arts education is about fostering cultural

sensitivity and citizenship, not about producing professional linguists. This scenario is already anticipated and accommodated within the passage's framework. Option C does not strongly undermine the passage because even preserving a language for one generation has value within the passage's logic — it extends the life of cultural knowledge and potentially allows further revival efforts. The passage does not claim that preservation efforts will guarantee permanent survival.

Option D does not undermine the passage because recording a dying language, even if it freezes it in time, still serves the passage's goal of preserving cultural knowledge, worldviews, and human heritage for future generations. The passage presents documentation as a valuable activity, and this scenario does not negate that value.

22. Correct Answer: B

This question asks you to identify which scenario does NOT illustrate the kind of loss the passage describes when a language becomes extinct. The passage is very specific about what is lost — worldview, cultural knowledge, environmental wisdom, philosophical and religious beliefs, and native cultural expression in music, art, and poetry. The key is to find which option falls outside this framework. Option B is the answer because it describes the loss of a group from a government list of indigenous tribes — an administrative or bureaucratic consequence, not a cultural or intellectual one. The passage is entirely focused on the loss of human knowledge, cultural perspectives, and ways of understanding the world. Losing a listing on a government register of indigenous tribes has no bearing on the kind of loss the passage is concerned with. It is a legal or administrative matter, not a loss of wisdom, worldview, or cultural expression. The three remaining speakers dying is tragic, but the specific framing of option B — about the government list — makes it categorically different from the losses the passage describes.

Option A directly illustrates the passage's point about losing unique environmental knowledge. The Inuit having 35 words for snow texture represents a nuanced, culturally embedded understanding of nature that would be lost with the language — exactly the kind of loss the passage laments.

Option C directly reflects the passage's point about losing unique cultural and emotional expressions. A word describing someone who has lost a step-sister carries within it a specific emotional and relational concept that cannot be translated — its loss represents a narrowing of human emotional vocabulary and experience.

Option D directly supports the passage's argument about losing environmental wisdom. A language that describes 20 different moods of the ocean embodies a deep, intimate knowledge of the natural world — precisely the kind of relationship between language and habitat that the passage says humanity loses when a language dies.

23. Correct Answer: B

This is an "EXCEPT" question that asks you to identify which benefit is NOT attributed to a liberal arts education combined with language preservation in the passage. Three options will correspond to outcomes the passage explicitly mentions, and one will go beyond or distort what the passage claims.

Option B is the answer because while the passage does mention that some individuals educated in the liberal arts tradition will pursue advanced study in linguistics and engage in language preservation activities, it nowhere suggests that students will establish schools to preserve endangered languages. The passage does mention schools like those in Navajo, Cree, and Inuit communities as

examples of successful preservation efforts, but these are cited as community-driven initiatives — not as something that liberal arts students are empowered to do. Establishing schools is a specific, institutional activity that the passage attributes to language communities themselves, not to liberal arts educated students.

Option A is directly supported by the passage, which states that with a liberal arts education, students are "more likely to be able to articulate insights into their own cultural biases." Understanding one's own culture better is explicitly listed as one of the outcomes of studying other languages and cultures.

Option C is directly supported by the passage, which states that liberal arts educated students will be able to "communicate successfully across linguistic and cultural differences." This is precisely what overcoming cultural barriers to communication means.

Option D is directly supported by the passage, which emphasises that "when students study languages other than their own, they are sensitized to the existence of different cultural perspectives and practices." Learning different languages is both a method and an outcome of a liberal arts education as described in the passage.



24. Correct Answer: C

This is a summary question that requires you to identify the option that most accurately and completely captures the central argument of the passage. The passage makes two connected points — first, that current regulatory frameworks for biotechnology are outdated and inflexible, and second, that it is genuinely uncertain whether regulation can ever keep pace with biological innovation given the unpredictable and unique nature of living things.

Option C is correct because it captures both of these essential elements without distorting either. It acknowledges that current regulation is outdated, and crucially, it reflects the passage's tone of genuine uncertainty — using the word "debatable" to mirror the passage's rhetorical question about whether regulation can ever keep up. The phrase "imaginative and flexible, to cover all contingencies" directly echoes the passage's concern about regulations being unable to adapt to emerging technology and unpredictable biological entities. Option C neither overstates the problem nor proposes a solution that the passage does not suggest.

Option A is incorrect because it frames the problem as the sheer impossibility of imagining all outcomes and risks. The passage does not make this absolute claim — it raises it as a question and a concern, not as a settled conclusion. Option A is also too narrow, focusing only on the risk-imagination problem while ignoring the outdated regulation aspect entirely.

Option B is incorrect because it suggests that a new regulatory framework is "urgently needed," implying that such a framework is achievable and desirable. The passage does not make this recommendation — it questions whether effective regulation is even possible, which is a fundamentally more uncertain and cautious position than what option B presents.

Option D is incorrect because it introduces the specific idea that scientists should shape regulations, which is not mentioned or implied anywhere in the passage. The passage raises questions about regulation's ability to keep up with innovation — it does not prescribe who should be responsible for creating that regulation.

DILR

1. Correct Answer – A

Explanation: By keeping all conditions in mind, We can see There should be an ATM placed at intersection of V3 and R-C.

Also, By condition (2), we can judge there is only one possibility to place ATM with second highest cash requirement at intersection of V2 and R-B.

Because this is the only place which is 12 km away.

Also, we cannot use distinct integers ranging from 7 to 15.

So, By hit and trial, there are only two cases to arrange all 6 ATM's in following manner:

Case 1:

	V1	V2	V3	Row total
R-A	15	0	7	22
R-B	0	12	8	20
R-C	0	9	11	20
column total	15	21	26	62

Case 2:

	V1	V2	V3	Row total
R-A	7	0	15	22
R-B	8	12	0	20
R-C	0	9	11	20
column total	15	21	26	62

Option (A) is correct as The ATM placed at the (R-C, V2) intersection has a cash requirement of Rs. 9 Lakh.

2. Correct Answer – 3

Explanation: By keeping all conditions in mind, We can see There should be an ATM placed at intersection of V3 and R-C.

Also, By condition (2), we can judge there is only one possibility to place ATM with second highest cash requirement at intersection of V2 and R-B.

Because this is the only place which is 12 km away.

Also, we cannot use distinct integers ranging from 7 to 15.

So, By hit and trial, there are only two cases to arrange all 6 ATM's in following manner:

Case 1:

	V1	V2	V3	Row total
R-A	15	0	7	22
R-B	0	12	8	20
R-C	0	9	11	20
column total	15	21	26	62

Case 2:

	V1	V2	V3	Row total
R-A	7	0	15	22
R-B	8	12	0	20
R-C	0	9	11	20
column total	15	21	26	62

In Case 1, ATMs with cash requirement of 15 L, 12 L, 11L are more than 10 L.

In case (2), ATMs with cash requirement of 15 L, 12 L, 11L are more than 10 L.

Hence there are 3 ATMs with cash requirements of Rs. 10 Lakh or more.

3. Correct Answer – D

Explanation: By keeping all conditions in mind, We can see There should be an ATM placed at intersection of V3 and R-C.

Also, By condition (2), we can judge there is only one possibility to place ATM with second highest cash requirement at intersection of V2 and R-B.

Because this is the only place which is 12 km away.

Also, we cannot use distinct integers ranging from 7 to 15.

So, By hit and trial, there are only two cases to arrange all 6 ATM's in following manner:

Case 1:

	V1	V2	V3	Row total
R-A	15	0	7	22
R-B	0	12	8	20
R-C	0	9	11	20
column total	15	21	26	62

Case 2:

	V1	V2	V3	Row total
R-A	7	0	15	22
R-B	8	12	0	20
R-C	0	9	11	20
column total	15	21	26	62

As we can see in both cases only statement (1) is right but statement (2) is wrong in case (1). Hence option (D) is the answer.

4. Correct Answer – 3

Explanation: By keeping all conditions in mind, We can see There should be an ATM placed at intersection of V3 and R-C.

Also, By condition (2), we can judge there is only one possibility to place ATM with second highest cash requirement at intersection of V2 and R-B.

Because this is the only place which is 12 km away.

Also, we cannot use distinct integers ranging from 7 to 15.

So, By hit and trial, there are only two cases to arrange all 6 ATM's in following manner:

Case 1:

	V1	V2	V3	Row total
R-A	15	0	7	22
R-B	0	12	8	20
R-C	0	9	11	20
column total	15	21	26	62

Case 2:

	V1	V2	V3	Row total
R-A	7	0	15	22
R-B	8	12	0	20
R-C	0	9	11	20
column total	15	21	26	62

We can determine only 3 ATMs' locations uniquely and they are (V2, R-B), (V2, R-C) and (V3, R-C).

5. Correct Answer – C

Explanation: By keeping all conditions in mind, We can see There should be an ATM placed at intersection of V3 and R-C.

Also, By condition (2), we can judge there is only one possibility to place ATM with second highest cash requirement at intersection of V2 and R-B.

Because this is the only place which is 12 km away.

Also, we cannot use distinct integers ranging from 7 to 15.

So, By hit and trial, there are only two cases to arrange all 6 ATM's in following manner:

Case 1:

	V1	V2	V3	Row total
R-A	15	0	7	22
R-B	0	12	8	20
R-C	0	9	11	20
column total	15	21	26	62

Case 2:

	V1	V2	V3	Row total
R-A	7	0	15	22
R-B	8	12	0	20
R-C	0	9	11	20
column total	15	21	26	62

In case (1), ATMs (V2, R-B) and (V3, R-B) are the ATMs with second highest and second lowest requirements.

Hence distance between them is 7 KM.

In case (2), ATMs ((V1, R-B) and (V2, R-B) are the ATMs with second lowest and second highest requirements.

Hence distance between them is 4 KM.

So, the answer is option C either 4 or 7 KM.

6. Correct Answer – B

Explanation: Let the total number of subscribers in 2023 = $100x$

From point 1, the total number of subscribers in 2024 = $100x + 10\% \text{ of } 100x = 110x$

In 2023,

Total number of subscribers from Kid category = $15\% \text{ of } 100x = 15x$

From point 3 and 4, in 2023

Number of subscribers from Kid category using one app = 10000.

So, number of subscribers from Kid category using multiple apps = $15x - 10000 =$ number of subscribers from Elder category using one app.

Also, number of subscribers from Elder category using multiple apps = 15000

So, total number of subscribers from Elder category = $15x - 10000 + 15000 = 20\% \text{ of } 100x = 20x$

Solving, $x = 1000$

So, the total number of subscribers in 2023 = 100000 and in 2024 = 110000

The rest of the information can be gathered as follows-

Category	App(s)	2023	2024	Total
Kid	One	10000	11000	21000
	Multiple	5000	11000	16000
	Total	15000	22000	37000
Elder	One	5000	22000	27000
	Multiple	15000	11000	26000
	Total	20000	33000	53000
Others	One			
	Multiple			
	Total	65000	55000	120000
Total		100000	110000	210000

Number of subscribers belonged to the Others category in 2024 = 55000

7. Correct Answer – C

Explanation: Let the total number of subscribers in 2023 = $100x$
 From point 1, the total number of subscribers in 2024 = $100x + 10\% \text{ of } 100x = 110x$
 In 2023,
 Total number of subscribers from Kid category = $15\% \text{ of } 100x = 15x$
 From point 3 and 4, in 2023
 Number of subscribers from Kid category using one app = 10000.
 So, number of subscribers from Kid category using multiple apps = $15x - 10000 =$
 number of subscribers from Elder category using one app.
 Also, number of subscribers from Elder category using multiple apps = 15000
 So, total number of subscribers from Elder category = $15x - 10000 + 15000 = 20\%$
 of $100x = 20x$
 Solving, $x = 1000$
 So, the total number of subscribers in 2023 = 100000 and in 2024 = 110000

The rest of the information can be gathered as follows-

Category	App(s)	2023	2024	Total
Kid	One	10000	11000	21000
	Multiple	5000	11000	16000
	Total	15000	22000	37000
Elder	One	5000	22000	27000
	Multiple	15000	11000	26000
	Total	20000	33000	53000
Others	One			
	Multiple			
	Total	65000	55000	120000
Total		100000	110000	210000

Percentage of subscribers in the Kid category using multiple apps in 2023

$$= \frac{5000}{15000} \times 100 = 33.33\%$$

8. Correct Answer – B

Explanation: Let the total number of subscribers in 2023 = $100x$

From point 1, the total number of subscribers in 2024 = $100x + 10\%$ of $100x = 110x$

In 2023,

Total number of subscribers from Kid category = 15% of $100x = 15x$

From point 3 and 4, in 2023

Number of subscribers from Kid category using one app = 10000.

So, number of subscribers from Kid category using multiple apps = $15x - 10000 =$ number of subscribers from Elder category using one app.

Also, number of subscribers from Elder category using multiple apps = 15000

So, total number of subscribers from Elder category = $15x - 10000 + 15000 = 20\%$ of $100x = 20x$

Solving, $x = 1000$

So, the total number of subscribers in 2023 = 100000 and in 2024 = 110000

The rest of the information can be gathered as follows-

Category	App(s)	2023	2024	Total
Kid	One	10000	11000	21000
	Multiple	5000	11000	16000
	Total	15000	22000	37000
Elder	One	5000	22000	27000
	Multiple	15000	11000	26000
	Total	20000	33000	53000
Others	One			
	Multiple			
	Total	65000	55000	120000
Total		100000	110000	210000

Percentage increase in the number of subscribers in the Elder category from 2023 to 2024

$$= \frac{(33000 - 20000)}{20000} \times 100 = 65\%$$

9. Correct Answer – A

Explanation: Let the total number of subscribers in 2023 = $100x$

From point 1, the total number of subscribers in 2024 = $100x + 10\%$ of $100x = 110x$

In 2023,

Total number of subscribers from Kid category = 15% of $100x = 15x$

From point 3 and 4, in 2023

Number of subscribers from Kid category using one app = 10000.

So, number of subscribers from Kid category using multiple apps = $15x - 10000 =$ number of subscribers from Elder category using one app.

Also, number of subscribers from Elder category using multiple apps = 15000

So, total number of subscribers from Elder category = $15x - 10000 + 15000 = 20\%$ of $100x = 20x$

Solving, $x = 1000$

So, the total number of subscribers in 2023 = 100000 and in 2024 = 110000

The rest of the information can be gathered as follows-

Category	App(s)	2023	2024	Total
Kid	One	10000	11000	21000
	Multiple	5000	11000	16000
	Total	15000	22000	37000
Elder	One	5000	22000	27000
	Multiple	15000	11000	26000
	Total	20000	33000	53000
Others	One			
	Multiple			
	Total	65000	55000	120000
Total		100000	110000	210000

To minimize, let the number of subscribers in Others category using multiple apps in 2024 = 0

So, the minimum percentage of subscribers who used multiple apps in 2024

$$= \frac{(11000 + 11000 + 0)}{110000} \times 100 = 20\%$$

10. Correct Answer – A

Explanation:

Country	GDP	GDP/CAPITA	Population	GDP growth rate(in %)	Population growth rate(in %)
C1	15x	41y	$\frac{15x}{41y}$	0.2	-0.12
C2	14x	25y	$\frac{14x}{25y}$	0.9	-0.41
C3	13x	2y	$\frac{13x}{2y}$	6.5	0.7
C4	12x	38y	$\frac{12x}{38y}$	0.5	0.49
C5	10x	36y	$\frac{10x}{36y}$	0.7	0.31
C6	8x	8y	$\frac{8x}{8y}$	3.2	0.61
C7	8x	30y	$\frac{8x}{30y}$	0.7	-0.11
C8	7x	41y	$\frac{7x}{41y}$	1.2	0.71
C9	100x	?			
C10	?	100y			

As is given GDP per capita = GDP/Population

That implies population = GDP/GDP per capita

Hence we can calculate population for each country.

It's always time saving if we check only for given options

For C8: $\frac{7x}{41y}$

For C5: $\frac{10x}{36y}$

For C3: $\frac{13x}{2y}$

For C7: $\frac{8x}{30y}$

Since $\frac{x}{y}$ is a common expression, So, we can compare $\frac{7}{41}, \frac{10}{36}, \frac{13}{2}, \frac{8}{30}$.

Out of these, C8 has the smallest population.



11. Correct Answer – B

Explanation:

Country	GDP	GDP/CAPITA	Population	GDP growth rate(in %)	Population growth rate(in %)
C1	15x	41y	$\frac{15x}{41y}$	0.2	-0.12
C2	14x	25y	$\frac{14x}{25y}$	0.9	-0.41
C3	13x	2y	$\frac{13x}{2y}$	6.5	0.7
C4	12x	38y	$\frac{12x}{38y}$	0.5	0.49
C5	10x	36y	$\frac{10x}{36y}$	0.7	0.31
C6	8x	8y	$\frac{8x}{8y}$	3.2	0.61
C7	8x	30y	$\frac{8x}{30y}$	0.7	-0.11
C8	7x	41y	$\frac{7x}{41y}$	1.2	0.71
C9	100x	?			
C10	?	100y			

Required ratio = $12x(1 + \frac{0.5}{100})^2 : 10x(1 + \frac{0.7}{100})^2 = 1.195$

12. Correct Answer – D

Explanation:

Country	GDP	GDP/CAPITA	Population	GDP growth rate(in %)	Population growth rate(in %)
C1	15x	41y	$\frac{15x}{41y}$	0.2	-0.12
C2	14x	25y	$\frac{14x}{25y}$	0.9	-0.41
C3	13x	2y	$\frac{13x}{2y}$	6.5	0.7
C4	12x	38y	$\frac{12x}{38y}$	0.5	0.49
C5	10x	36y	$\frac{10x}{36y}$	0.7	0.31
C6	8x	8y	$\frac{8x}{8y}$	3.2	0.61
C7	8x	30y	$\frac{8x}{30y}$	0.7	-0.11
C8	7x	41y	$\frac{7x}{41y}$	1.2	0.71
C9	100x	?			
C10	?	100y			

For C1, Population is $\frac{15x}{41y} \left(1 - \frac{0.12}{100}\right)^3 = \frac{365268x}{10^6 y}$

For C4, Population is $\frac{12x}{38y} \left(1 + \frac{0.49}{100}\right)^3 = \frac{547x}{10^6 y}$

For C5, Population is $\frac{10x}{36y} \left(1 + \frac{0.31}{100}\right)^3 = \frac{280369x}{10^6 y}$

For C7, Population is $\frac{8x}{30y} \left(1 - \frac{0.11}{100}\right)^3 = \frac{265787x}{10^6 y}$

So, for C1, population is maximum in 2027.

13. Correct Answer – 0

Explanation:

Country	GDP	GDP/CAPITA	Population	GDP growth rate(in %)	Population growth rate(in %)
C1	15x	41y	$\frac{15x}{41y}$	0.2	-0.12
C2	14x	25y	$\frac{14x}{25y}$	0.9	-0.41
C3	13x	2y	$\frac{13x}{2y}$	6.5	0.7
C4	12x	38y	$\frac{12x}{38y}$	0.5	0.49
C5	10x	36y	$\frac{10x}{36y}$	0.7	0.31
C6	8x	8y	$\frac{8x}{8y}$	3.2	0.61
C7	8x	30y	$\frac{8x}{30y}$	0.7	-0.11
C8	7x	41y	$\frac{7x}{41y}$	1.2	0.71
C9	100x	?			
C10	?	100y			

Since all the GDP growth rates are positive i.e., GDP is increasing. So, there is no country among C1 through C8 whose GDP per capita in 2027 be lower than that in 2024.

14. Correct Answer – B

Explanation: As per the graph, the AC must have been turned off 2 times (12 am and 1 pm, when the inside temperature started rising) between 11:01 pm and 1:59 am

15. Correct Answer – 34

Explanation: Given that the AC was turned on for the first time that night at 11 pm.

So, the temperature inside the room = 38°C = the temperature outside the room.

Let the falling rate of temperature outside the room per hour = $x^{\circ}\text{C}$

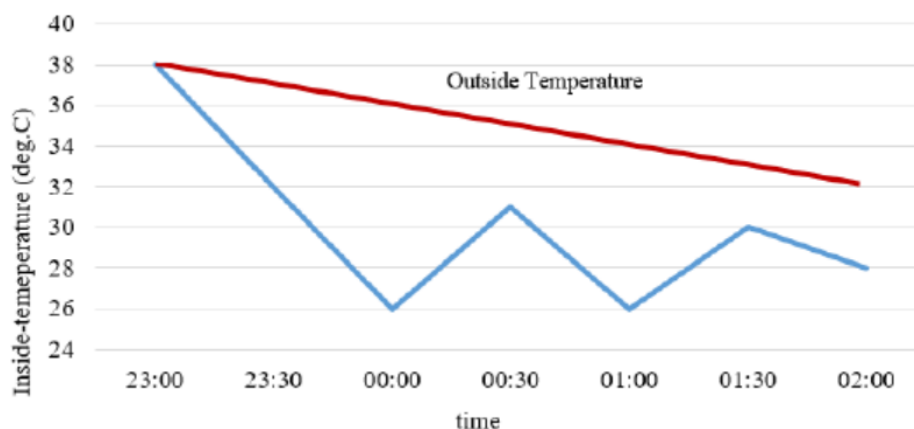
So, at 1 am (after 2 hours), the outside temperature = $(38 - 2x)^{\circ}\text{C}$

Also given that it takes 1 hour to reach the temperature outside while AC was switched off.

Now, from 12 am to 12:30 pm, the temperature reached from 26°C to 31°C while AC was switched off, so it should have been reached from 31°C to 36°C from 12:30 pm to 1 pm (as per the constant rise in the rate), but along with that outside temperature is also falling at $x^{\circ}\text{C}$ per hour.

So, at 1 pm, the outside temperature should be = $(36 - x)^{\circ}\text{C}$

Equating, $(38 - 2x)^{\circ}\text{C} = (36 - x)^{\circ}\text{C} \Rightarrow x = 2^{\circ}\text{C}$ per hour



So, the temperature outside at 1 pm = $36 - 2 = 34$ °C

16. Correct Answer – 42

Explanation: Given that the AC was turned on for the first time that night at 11 pm.

So, the temperature inside the room = 38 °C = the temperature outside the room.

Let the falling rate of temperature outside the room per hour = x °C

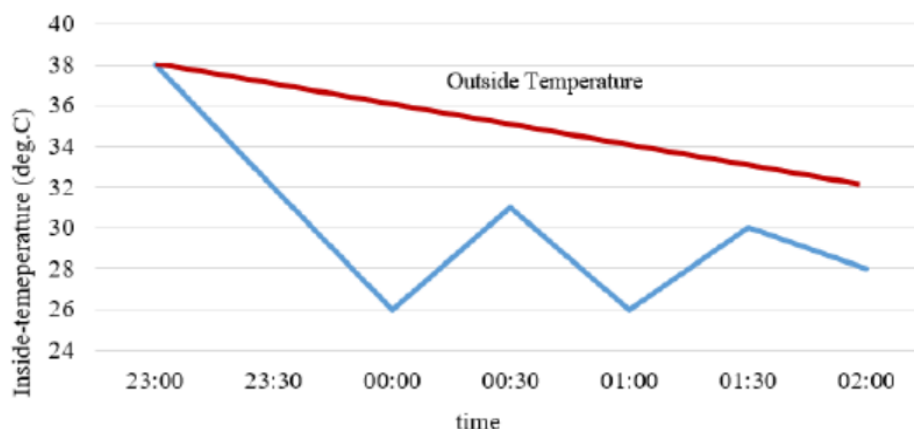
So, at 1 am (after 2 hours), the outside temperature = $(38 - 2x)$ °C

Also given that it takes 1 hour to reach the temperature outside while AC was switched off.

Now, from 12 am to 12:30 pm, the temperature reached from 26 °C to 31 °C while AC was switched off, so it should have been reached from 31 °C to 36 °C from 12:30 pm to 1 pm (as per the constant rise in the rate), but along with that outside temperature is also falling at x °C per hour.

So, at 1 pm, the outside temperature should be = $(36 - x)$ °C

Equating, $(38 - 2x)$ °C = $(36 - x)$ °C $\Rightarrow x = 2$ °C per hour



At 9 pm (2 hours prior to 11 pm), the temperature outside = $38 + 2x = 42$ °C

17. Correct Answer – D

Explanation: Between 11:01 pm and 1:59 pm, the AC have been turned on at 12:30 am and 1:30 am, when the inside temperature starts falling.

Along with that it is given that the AC used in POWER mode is for longer duration than in REGULAR mode during 11 pm to 2 am and this alteration can be done after every 30 minutes. This is possible as follows-

From 11 pm to 11:30 pm – REGULAR mode

From 11:30 pm to 12 pm – POWER mode

From 12:30 pm to 1 pm – POWER mode

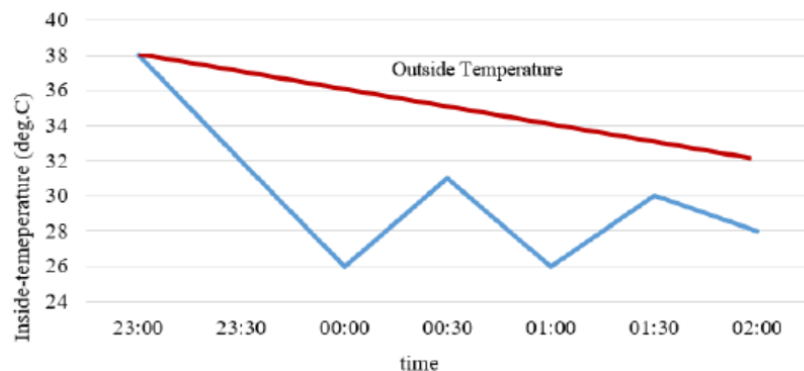
From 1:30 pm to 2 pm – POWER mode

So, there must be an alteration at 11:30 pm

Hence, the number of time the AC must have been turned on or settings altered = 2 + 1 = 3 (exactly)

18. Correct Answer – 10

Explanation:



Between 11:01 pm and 11:59 am, the maximum difference between temperature outside and inside was at 12 am = $36 - 26 = 10^{\circ}\text{C}$

19. Correct Answer – 5

Explanation: From point 1, 2 and 3, for all categories, Carbohydrate (Cereal) > Carbohydrate (Pseudo-cereal) > Carbohydrate (Millet) and all of these missing values are non-zero multiples of 5.

Let C1 (carbohydrate) = A, C2 (carbohydrate) = B, M2 (carbohydrate) = C and P2 (carbohydrate) = D such that $A, B > 66, D > 62, C, 56$

From point 4 and 5, all missing values of protein, fat and other nutrients are non-zero multiples of 4 such that $P1 (\text{protein}) = 2 \times M3 (\text{protein})$

Let C1 (protein) = P, C2 (protein) = Q, M2 (protein) = R, M3 (protein) = S and $P1 (\text{protein}) = 2S$ such that $2S, 14 > 10, R, S$ (point 1)

Let M1 (fat) = E, P1 (fat) = F and P2 (fat) = G

Let M1 (other nutrients) = X and M3 (other nutrients) = Y

Solving, $A + P + 0 + 12 = 100 \Rightarrow A + P = 88$

Possible values of A (> 66 and multiple of 5) = 70, 75, 80 or 85

But considering P is a multiple of 4, so A = 80 and P = 8 is the only possibility

Solving, $B + Q + 3 + 10 = 100 \Rightarrow B + Q = 87$

Possible values of B (> 66 and multiple of 5) = 70, 75, 80 or 85

But considering Q is a multiple of 4, so B = 75 and Q = 12 is the only possibility

Solving, $62 + 10 + E + X = 100 \Rightarrow E + X = 28$

Solving, $C + R + 7 + 16 = 100 \Rightarrow C + R = 77$

Possible values of R (< 14) = 12, 8 or 4, but considering C is a multiple of 5, only possible value of C = 65 and R = 12

Solving, $56 + S + 12 + Y = 100 \Rightarrow S + Y = 32$

Solving, $66 + 2S + F + 10 = 100 \Rightarrow 2S + F = 24$

Considering, S is a multiple of 4, 2S must be a multiple of 8 and > 10

The only possible values of $2S = 16$ and $F = 8$

So, $S = 8$ and $Y = 24$

Solving, $D + 14 + G + 8 = 100 \Rightarrow D + G = 78$

Possible values of D (> 62 and multiple of 5) = 65, 70, 75

But considering G is a multiple of 4, so $D = 70$ and $G = 8$

The rest of the information can be gathered as follows-

Food grain Category	Code name of the food grain	Composition per hundred grams of nutrients in the food grains				
		Carbohydrate	Protein	Fat	Other nutrients	Total
Cereal	C1	A = 80	P = 8	0	12	100
	C2	B = 75	Q = 12	3	10	100
Millet	M1	62	10	E	X	100
	M2	C = 65	R = 12	7	16	100
	M3	56	S = 8	12	Y = 24	100
Pseudo-cereal	P1	66	2S = 16	F = 8	10	100
	P2	D = 70	14	G = 8	8	100

The number of food grains having a higher amount of carbohydrate per 100 grams of nutrients that M1 = 5 (C1, C2, M2, P1 and P2)

20. Correct Answer – 12

Explanation: From point 1, 2 and 3, for all categories, Carbohydrate (Cereal) $>$ Carbohydrate (Pseudo-cereal) $>$ Carbohydrate (Millet) and all of these missing values are non-zero multiples of 5.

Let C1 (carbohydrate) = A, C2 (carbohydrate) = B, M2 (carbohydrate) = C and P2 (carbohydrate) = D such that $A, B > 66, D > 62, C, 56$

From point 4 and 5, all missing values of protein, fat and other nutrients are non-zero multiples of 4 such that P1 (protein) = $2 \times$ M3 (protein)

Let C1 (protein) = P, C2 (protein) Q, M2 (protein) = R, M3 (protein) = S and P1 (protein) = 2S such that $2S, 14 > 10, R, S$ (point 1)

Let M1 (fat) = E, P1 (fat) = F and P2 (fat) = G

Let M1 (other nutrients) = X and M3 (other nutrients) = Y

Solving, $A + P + 0 + 12 = 100 \Rightarrow A + P = 88$

Possible values of A (> 66 and multiple of 5) = 70, 75, 80 or 85

But considering P is a multiple of 4, so $A = 80$ and $P = 8$ is the only possibility

Solving, $B + Q + 3 + 10 = 100 \Rightarrow B + Q = 87$

Possible values of B (> 66 and multiple of 5) = 70, 75, 80 or 85

But considering Q is a multiple of 4, so $B = 75$ and $Q = 12$ is the only possibility

Solving, $62 + 10 + E + X = 100 \Rightarrow E + X = 28$

Solving, $C + R + 7 + 16 = 100 \Rightarrow C + R = 77$

Possible values of R (< 14) = 12, 8 or 4, but considering C is a multiple of 5, only possible value of C = 65 and R = 12

Solving, $56 + S + 12 + Y = 100 \Rightarrow S + Y = 32$

Solving, $66 + 2S + F + 10 = 100 \Rightarrow 2S + F = 24$

Considering, S is a multiple of 4, 2S must be a multiple of 8 and > 10

The only possible values of $2S = 16$ and $F = 8$

So, $S = 8$ and $Y = 24$

Solving, $D + 14 + G + 8 = 100 \Rightarrow D + G = 78$

Possible values of D (> 62 and multiple of 5) = 65, 70, 75

But considering G is a multiple of 4, so $D = 70$ and $G = 8$

The rest of the information can be gathered as follows-

Food grain Category	Code name of the food grain	Composition per hundred grams of nutrients in the food grains				
		Carbohydrate	Protein	Fat	Other nutrients	Total
Cereal	C1	A = 80	P = 8	0	12	100
	C2	B = 75	Q = 12	3	10	100
Millet	M1	62	10	E	X	100
	M2	C = 65	R = 12	7	16	100
	M3	56	S = 8	12	Y = 24	100
Pseudo-cereal	P1	66	2S = 16	F = 8	10	100
	P2	D = 70	14	G = 8	8	100

The amount of protein in 100 grams of nutrients in M2 = 12 grams

21. Correct Answer – 24

Explanation: From point 1, 2 and 3, for all categories, Carbohydrate (Cereal) $>$ Carbohydrate (Pseudo-cereal) $>$ Carbohydrate (Millet) and all of these missing values are non-zero multiples of 5.

Let C1 (carbohydrate) = A, C2 (carbohydrate) = B, M2 (carbohydrate) = C and P2 (carbohydrate) = D such that $A, B > 66, D > 62, C, 56$

From point 4 and 5, all missing values of protein, fat and other nutrients are non-zero multiples of 4 such that $P1 (\text{protein}) = 2 \times M3 (\text{protein})$

Let C1 (protein) = P, C2 (protein) Q, M2 (protein) = R, M3 (protein) = S and P1 (protein) = 2S such that $2S, 14 > 10, R, S$ (point 1)

Let M1 (fat) = E, P1 (fat) = F and P2 (fat) = G

Let M1 (other nutrients) = X and M3 (other nutrients) = Y

Solving, $A + P + 0 + 12 = 100 \Rightarrow A + P = 88$

Possible values of A (> 66 and multiple of 5) = 70, 75, 80 or 85

But considering P is a multiple of 4, so $A = 80$ and $P = 8$ is the only possibility

Solving, $B + Q + 3 + 10 = 100 \Rightarrow B + Q = 87$

Possible values of B (> 66 and multiple of 5) = 70, 75, 80 or 85

But considering Q is a multiple of 4, so $B = 75$ and $Q = 12$ is the only possibility

Solving, $62 + 10 + E + X = 100 \Rightarrow E + X = 28$

Solving, $C + R + 7 + 16 = 100 \Rightarrow C + R = 77$

Possible values of R (< 14) = 12, 8 or 4, but considering C is a multiple of 5, only possible value of C = 65 and R = 12

Solving, $56 + S + 12 + Y = 100 \Rightarrow S + Y = 32$

Solving, $66 + 2S + F + 10 = 100 \Rightarrow 2S + F = 24$

Considering, S is a multiple of 4, 2S must be a multiple of 8 and > 10

The only possible values of $2S = 16$ and $F = 8$

So, $S = 8$ and $Y = 24$

Solving, $D + 14 + G + 8 = 100 \Rightarrow D + G = 78$

Possible values of D (> 62 and multiple of 5) = 65, 70, 75

But considering G is a multiple of 4, so $D = 70$ and $G = 8$

The rest of the information can be gathered as follows-

Food grain Category	Code name of the food grain	Composition per hundred grams of nutrients in the food grains				
		Carbohydrate	Protein	Fat	Other nutrients	Total
Cereal	C1	A = 80	P = 8	0	12	100
	C2	B = 75	Q = 12	3	10	100
Millet	M1	62	10	E	X	100
	M2	C = 65	R = 12	7	16	100
	M3	56	S = 8	12	Y = 24	100
Pseudo-cereal	P1	66	2S = 16	F = 8	10	100
	P2	D = 70	14	G = 8	8	100

The amount of other nutrients in 100 grams of nutrients in M3 = 24 grams

22. Correct Answer – 12

Explanation: From point 1, 2 and 3, for all categories, Carbohydrate (Cereal) > Carbohydrate (Pseudo-cereal) > Carbohydrate (Millet) and all of these missing values are non-zero multiples of 5.

Let C1 (carbohydrate) = A, C2 (carbohydrate) = B, M2 (carbohydrate) = C and P2 (carbohydrate) = D such that $A, B > 66, D > 62, C, 56$

From point 4 and 5, all missing values of protein, fat and other nutrients are non-zero multiples of 4 such that $P1$ (protein) = $2 \times M3$ (protein)

Let C1 (protein) = P, C2 (protein) Q, M2 (protein) = R, M3 (protein) = S and P1 (protein) = 2S such that $2S, 14 > 10, R, S$ (point 1)

Let M1 (fat) = E, P1 (fat) = F and P2 (fat) = G

Let M1 (other nutrients) = X and M3 (other nutrients) = Y

Solving, $A + P + 0 + 12 = 100 \Rightarrow A + P = 88$

Possible values of A (> 66 and multiple of 5) = 70, 75, 80 or 85

But considering P is a multiple of 4, so $A = 80$ and $P = 8$ is the only possibility

Solving, $B + Q + 3 + 10 = 100 \Rightarrow B + Q = 87$

Possible values of B (> 66 and multiple of 5) = 70, 75, 80 or 85

But considering Q is a multiple of 4, so $B = 75$ and $Q = 12$ is the only possibility

Solving, $62 + 10 + E + X = 100 \Rightarrow E + X = 28$

Solving, $C + R + 7 + 16 = 100 \Rightarrow C + R = 77$

Possible values of R (< 14) = 12, 8 or 4, but considering C is a multiple of 5, only possible value of C = 65 and R = 12

Solving, $56 + S + 12 + Y = 100 \Rightarrow S + Y = 32$

Solving, $66 + 2S + F + 10 = 100 \Rightarrow 2S + F = 24$

Considering, S is a multiple of 4, 2S must be a multiple of 8 and > 10

The only possible values of $2S = 16$ and $F = 8$

So, $S = 8$ and $Y = 24$

Solving, $D + 14 + G + 8 = 100 \Rightarrow D + G = 78$

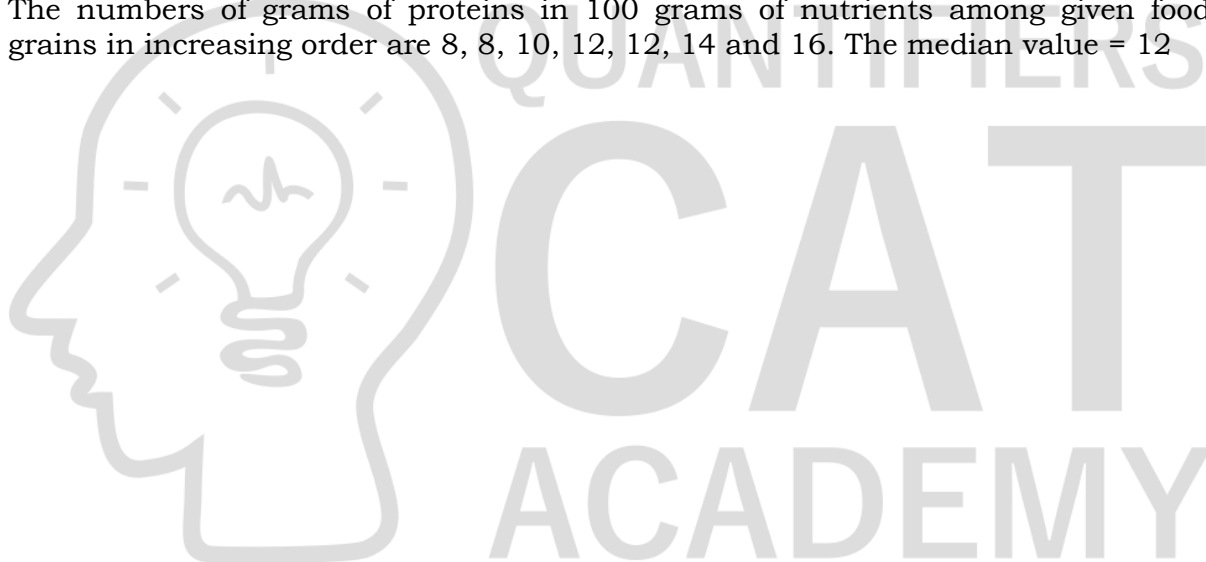
Possible values of D (> 62 and multiple of 5) = 65, 70, 75

But considering G is a multiple of 4, so $D = 70$ and $G = 8$

The rest of the information can be gathered as follows-

Food grain Category	Code name of the food grain	Composition per hundred grams of nutrients in the food grains				
		Carbohydrate	Protein	Fat	Other nutrients	Total
Cereal	C1	A = 80	P = 8	0	12	100
	C2	B = 75	Q = 12	3	10	100
Millet	M1	62	10	E	X	100
	M2	C = 65	R = 12	7	16	100
	M3	56	S = 8	12	Y = 24	100
Pseudo-cereal	P1	66	2S = 16	F = 8	10	100
	P2	D = 70	14	G = 8	8	100

The numbers of grams of proteins in 100 grams of nutrients among given food grains in increasing order are 8, 8, 10, 12, 12, 14 and 16. The median value = 12



Quant

1. Correct Answer – 2

Explanation:

$$8^f = 9$$

$$7^{ef} = 9$$

$$6^{def} = 9$$

$$5^{cdef} = 9$$

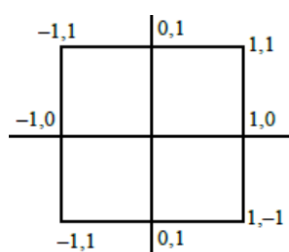
$$4^{bcdef} = 9$$

$$3^{abcdef} = 9 = 3^2$$

$$\text{So } abcdef = 2$$

2. Correct Answer – 8

Explanation:



Putting $X = 0$, we get $y = 1$

Putting $Y = 0$, we get $x = 1$

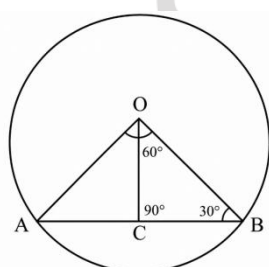
Putting $X = -1$, we get $y = 1/-1$

Putting $X = 1$, we get $y = 1/-1$

So, in total there will be 8 integral solutions

3. Correct Answer – C

Explanation:



In triangle OBC , $BC = 5\sqrt{3}$

So $OB = 10 = \text{radius}$

Area of smaller region = area of sector AOB – Area of triangle AOB

$$= \frac{120}{360} \pi \times 10 \times 10 - \frac{1}{2} \times 5 \times 10\sqrt{3} = \frac{100\pi}{3} - 25\sqrt{3}$$

4. Correct Answer – B

Explanation:

Let the actual speed of the train be x km/hr and let the actual time taken be y hours.

Distance covered is xy km

If the speed is increased by 6 km/hr, then time of journey is reduced by 4 hours i.e.,

when speed is $(x + 6)$ km/hr, time of journey is $(y - 4)$ hours.

∴ Distance covered = $(x + 6)(y - 4)$

$$\Rightarrow xy = (x + 6)(y - 4)$$

$$\Rightarrow -4x + 6y - 24 = 0$$

$$\Rightarrow -2x + 3y - 12 = 0 \dots\dots\dots(i)$$

Similarly, $xy = (x - 6)(y + 6)$

$$\Rightarrow 6x - 6y - 36 = 0$$

$$\Rightarrow x - y - 6 = 0 \dots\dots\dots(ii)$$

Solving (i) and (ii) we get $x = 30$ and $y = 24$

Putting the values of x and y in equation (i), we obtain

Distance = (30×24) km = 720 km.

Hence, the length of the journey is 720 km.

5. Correct Answer – D

Explanation:

Vimal has total 30 hectares. The cultivation area of wheat and mustard in the land owned by Vimal are in the ratio of 5: 3.

Means Wheat = $\frac{5}{8} \times 30 = 18.75$ and mustard = $\frac{3}{8} \times 30 = 11.25$

Total area is $20 + 30 = 50$ hectares

the total cultivation area of wheat and mustard are in the ratio 11: 9

Total Wheat $\frac{11}{20} \times 50 = 27.5$ and mustard = $\frac{9}{20} \times 50 = 22.5$

Subtracting we get cultivation area of wheat and mustard in the land owned by Rajesh is,

Wheat = $27.5 - 18.75 = 8.75$

Mustard = $22.5 - 11.25 = 11.25$

So, the ratio of cultivation area of wheat and mustard in the land owned by Rajesh is = $8.75: 11.25 = 7: 9$

6. Correct Answer – 9

Explanation:

$$\frac{\text{Amount after 5 years}}{\text{Amount after 3 years}} = \frac{36}{25} = \left(\frac{6}{5}\right)^2$$

Solving it for rate, we get rate = 20%.

$$A = P \left(1 + \frac{r}{100}\right)^n$$

$$20000 = 4000 \left(1 + \frac{20}{100}\right)^n$$

Solving it, we get $n = 9$.

7. Correct Answer – A

Here 13 is a prime number. Euler of 13 will be 12, which means $\frac{10^{12}}{13}$ will leave a remainder.

68 can be broken as $12 \times 5 + 8$.

We are left with $\frac{10^8}{13} = \frac{10^{6+2}}{13} = \frac{(10^6 \times 10^2)}{13} = \frac{(1000-1)^2 \times (91+9)}{13}$ {Because $10^3 = 1000$ and $10^2 = 100$ }
 $= (-1)^2 \times 9 = 9$

8. Correct Answer – 70

Explanation:

Here average of a, b, c is given as 28 where $a < b < c$

$$\frac{a+b+c}{3} = 28$$

$$a + b + c = 84$$

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, means

$$(a + 7) + b + (c - 10) = 84$$

$$a + b + c = 81$$

$$\text{New average} = 27 = b + 2$$

$$b = 2$$

$$\text{Means, } a + c = 59 \text{ ----- \{I\}}$$

The difference between the largest and the smallest numbers becomes 64

$$(c - 10) - (a + 7) = 64$$

$$c - a = 81 \text{ ----- \{II\}}$$

Solving I and II, we get $c = 70$

9. Correct Answer – D

Explanation:

In a group of 250 students, the percentage of girls was at least 44% and at most 60%.

	Min	Max
Girl =	110	150
Boy =	140	100

Case I = Girl = 110, Boy = 140

	Swim	Run
Girl =	88	66
Boy =	70	98
Total =	158	164
$S + R - S \cap R = 250$		
$S \cap R = 72$		

Case II = Girl = 150, Boy = 110

	Swim	Run
Girl =	120	90
Boy =	50	70
Total =	170	160
$S + R - S \cap R = 250$		
$S \cap R = 80$		

So, the minimum and maximum possible number of students who opted for both swimming and running, are 72 and 80.

10. Correct Answer – A

Explanation:

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

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

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

$$\text{Means } a \times b \text{ must be 15 and } a^2 + 3b^2 = 52$$

Rewriting it

$$a^2 + 3b^2 + 2 \times \sqrt{3} \times ab = 25 + 27 + 2 \times 5 \times 3\sqrt{3}$$

$$\text{So, } a = 5 \text{ and } b = 3$$

$$\text{So, } a + b = 8.$$

11. Correct Answer – 90

Explanation:

In any triangle, the medians divide the triangle into six smaller triangles of equal area. The area of the medial triangle formed by the midpoints of the sides of the original triangle (in this case, $\triangle XYZ$) is exactly one-fourth of the area of the original triangle. Since the area of $\triangle ABC$ is given as 1440 sq cm, the area of $\triangle XYZ$, which is the medial triangle, is:

$$\text{Area of } \triangle XYZ = \frac{1}{4} \times 1440 = 360 \text{ sq cm}$$

However, we must consider the area of the triangle formed by the medians, which is half the area of the medial triangle. Therefore, the area of $\triangle XYZ$ is: 90 sq cm

12. Correct Answer – C

Explanation:

$$\text{Let } 10x = A$$

$$\text{We get } A + \frac{4}{A} = \frac{81}{2}$$

$$2A^2 - 81A + 8 = 0$$

It's a quadratic equation, means $10x$ will have 2 values, let it be $10x_1$ and $10x_2$

$$\text{Product of roots} = \frac{8}{2} = 4$$

$$10x_1 \times 10x_2 = 4 = (2)^2$$

$$(10)^{x_1 + x_2} = (2)^2$$

Taking log base 10 on both sides

$$\log_{10}(10)^{x_1 + x_2} = \log_{10} 2^2$$

$$(x_1 + x_2) \log_{10}(10) = 2\log_{10} 2$$

$$(x_1 + x_2) = 2\log_{10} 2$$

So, sum of all distinct real values of x that satisfy the equation will be $2\log_{10} 2$

13. Correct Answer – 2

Explanation:

Here we need to check in three ranges

Case 1 $\Rightarrow x \geq 2$, we get

$$x - 2 = x + 2 - (x - 2)$$

$$x = 6 \text{ (Satisfied)}$$

Case 2 $\Rightarrow -2 \leq x < 2$, we get

$$2 - x = x + 2 - [-(x - 2)]$$

$$x = \frac{2}{3} \text{ (Satisfied)}$$

Case 3 $\Rightarrow x < -2$, we get

$$2 - x = -x - 2 + (x - 2)$$

$$x = 6 \text{ (Not Satisfied)}$$

Number of distinct real values of x , satisfying the equation will be 2.

14. Correct Answer – 30

Explanation:

Here if you think carefully and assume initially the whole container was filled with milk.

Firstly, x litre of milk was replaced with water. Second time $2x$ litre of mixture was replaced with water. Resultant milk left is 72%. So water is 28%.

$$(-x) + (-2x) + (-x) \frac{(-2x)}{100} = -28$$

$$(-3x) + \frac{(2x^2)}{100} = -28$$

Solving it we get $x = 10\%$

$$10\% \text{ of } 300 = 30.$$

The amount of water, in litres, that was initially poured into the container was 30.

15. Correct Answer – D

Explanation:

$$\text{Given } f(x) + 2f\left(\frac{1}{x}\right) = 3x \dots\dots\dots \text{(I)}$$

$$\text{For } \frac{1}{x}, \text{ we get } f\left(\frac{1}{x}\right) + 2f(x) = \frac{3}{x} \dots\dots\dots \text{(II)}$$

Putting the value of $f(x) = 3$ in I, we get

$$3 + 2f\left(\frac{1}{x}\right) = 3x$$

$$\Rightarrow f\left(\frac{1}{x}\right) = \frac{3x-3}{2} \dots\dots\dots \text{(III)}$$

Putting the value of $f(x) = 3$ in II, we get

$$f\left(\frac{1}{x}\right) + 2(3) = \frac{3}{x}$$

$$\Rightarrow f\left(\frac{1}{x}\right) = \frac{3-6x}{x} \dots\dots\dots \text{(IV)}$$

$$\text{Equating III and IV, we get, } \frac{3x-3}{2} = \frac{3-6x}{x} \Rightarrow x^2 + 3x - 2 = 0$$

$$\text{Sum of roots} = -\frac{3}{1} = -3$$

The sum of all possible values of x will be -3 .

16. Correct Answer – A

Explanation:

Ravi gets 10% discount on this marked price, and thus saves Rs 15

Means 10% of MP = 15Rs

MP = 150 Rs.

Discount is 15 Rs,

$$\text{SP} = 150 - 15 = 135$$

Gopi marks a price on a product in order to make 20% profit

Means 1.2 CP = MP
 1.2 CP = 150
 CP = 125 Rs

Profit = SP – CP
 Profit = 135 – 125
 Profit = 10 Rs

17. Correct Answer – C

Explanation:

The sum $\frac{1}{t_2} + \frac{1}{t_4} + \frac{1}{t_6} + \dots + \frac{1}{t_{2022}} + \frac{1}{t_{2024}}$ is

$$\text{At } n = 4, t_4 = \frac{4-3}{4-1} \times t_2 = -\frac{1}{3}$$

$$\text{At } n = 6, t_6 = \frac{6-3}{6-1} \times t_4 = -\frac{1}{5}$$

And so on.

$$t_{2024} = -\frac{1}{2023}$$

$$\frac{1}{t_2} + \frac{1}{t_4} + \frac{1}{t_6} + \dots + \frac{1}{t_{2022}} + \frac{1}{t_{2024}} = -(1 + 3 + 5 + \dots + 2023)$$

$$\text{Total terms are } \frac{2024}{2} = 1012$$

$$\text{Sum of first } n \text{ odd natural numbers} = n^2$$

$$\Rightarrow -(1 + 3 + 5 + 7 + \dots + 2023) = -(1012)^2 = -1024144$$

18. Correct Answer – 378

Explanation:

We will consider the cases of 1 digit, 2 digit and 3-digit numbers satisfying the above condition separately.

$$\text{1-digit numbers with non-repeating digits} = 9$$

$$\text{2-digit numbers with non-repeating digits} = 9 \times 9 = 81$$

$$\text{3-digit numbers with non-repeating digits} = 4 \times 9 \times 8 = 288$$

Total 378 such numbers exist

19. Correct Answer – B

Explanation:

If we go by the options using the formula for net % change

$$= a + b + \frac{ab}{100} \text{ i.e., } 25 + 50 + 25 \times \frac{50}{100} = 87.5.$$

We can see that 25 satisfies the condition properly. Therefore, it is the answer.

20. Correct Answer – B

Explanation:

If Mohit is 2 times as efficient as Sam, then

Efficiency of Mohit: Efficiency of Sam = 2: 1 i.e. (M: S = 2: 1)

If Mohit is 3 times as efficient as Ayna (M: A = 3: 1)

therefore S: M: A = 3: 6: 2

Total work = $3 \times 20 = 60$

According to the question

Sam & Mohit work on the 1st day (So, S + M will complete $3 + 6 = 9$ units work in one day.)

Sam & Ayna work on the 2nd day (So, S + A will complete $3 + 2 = 5$ units work in one day.)

Mohit & Ayna work on the 2nd day (So, M + A will complete $6 + 2 = 8$ units work in one day.)

So, in 3 days $9 + 5 + 8 = 22$ units work gets finished

& in 6 days $22 \times 2 = 44$ unit gets completed

On 7th day S + M will complete 9 units work

On 8th day S + A will do 5 units work

On 9th day M + A will do 2 units work.

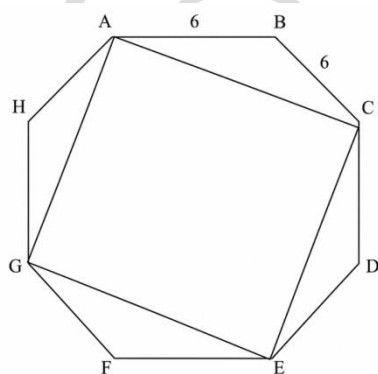
So, in total the work gets completed on the 9th day but S works on 6 days in total i.e. 1st, 2nd, 4th, 5th, 7th and 8th day

Therefore, the fraction of the work done by Sam in those 6 days will be $\frac{6 \times 3}{60} = \frac{3}{10}$

21. Correct Answer – A

Explanation:

As per the given figure below



AC is the shortest diagonal of the octagon and the length of the short diagonal of an octagon is

$a\sqrt{2 + \sqrt{2}}$ where a is the side of a regular octagon.

So, the length of AC will be $6\sqrt{2 + \sqrt{2}}$

And, the area of the square ACEG will be $(6\sqrt{2 + \sqrt{2}})^2 = 36(2 + \sqrt{2})$

22. Correct Answer – C

Explanation:

The condition for a system of linear equations to have no solution is

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

Therefore, $\frac{p}{3} = \frac{-4}{k} \neq \frac{2}{a} \Rightarrow -12 = pk$

and $\frac{-4}{k} \neq \frac{2}{a} \Rightarrow -4a \neq 2k \Rightarrow 2a + k \neq 0$

