CAT 2025 SOLVED PAPER (SLOT-3)

Section I : VARC

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

In investigating memory-beliefs, there are certain points which must be borne in mind. In the first place, everything constituting a memory-belief is happening now, not in that past time to which the belief is said to refer. It is not logically necessary to the existence of a memory-belief that the event remembered should have occurred, or even that the past should have existed at all. There is no logical impossibility in the hypothesis that the world sprang into being five minutes ago, exactly as it then was, with a population that "remembered" a wholly unreal past. There is no logically necessary connection between events at different times; therefore nothing that is happening now or will happen in the future can disprove the hypothesis that the world began five minutes ago. Hence the occurrences which are CALLED knowledge of the past are logically independent of the past; they are wholly analysable into present contents, which might, theoretically, be just what they are even if no past had existed.

1. When investigating memory beliefs, we must keep in mind that an actual past event is not a prerequisite for a memory-belief to exist, and that what we know of the past could theoretically not need a past at all.
2. Memory-beliefs depend wholly on what is remembered in the present, and not on anything else; just as it is not logically impossible that the world came into being five minutes ago, and that everyone now just remembers a wholly imaginary past for it.
3. That which we call 'knowledge of the past' is logically independent of the past, since the act of remembering which forms memory-beliefs happens in the present, and does not need to be based in real past occurrences, or even need a past at all.
4. When we discuss the concept of memory-beliefs, we must understand that it is not logically impossible for the event remembered to have never happened at all; it could just be a figment of our imagination.

2. The given sentence is missing in the paragraph below. Decide where it best fits among the options 1, 2, 3, or 4 indicated in the paragraph.

Sentence: In each of the affected males, the genetic defect was located to the X chromosome in the region of p11-12.

Paragraph: The first suggested evidence of a human genetic mutation associated with aggressive behaviour came from a study in 1993. _____(1)____. Genetic and metabolic studies were conducted on a large Dutch family in which several of the males has a syndrome of borderline mental retardation and abnormal behaviour. _____(2)____. The undesirable behaviour included impulsive aggression, arson and exhibitionism. _____(3)____. A point mutation was identified in the eighth exon of the monoamine oxidase A (MAOA) structural gene which changes glutamine to a termination codon. _____(4)____.

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

3. The four sentences (labelled 1, 2, 3, and 4) given below, when properly sequenced, would yield a coherent paragraph. Decide on the proper sequencing of the order of the sentences and key in the sequence of the four numbers as your answer.

1. When I ask the distinguished LGBTQ activist and writer Cherie Moraga whether she uses Latinx to refer to herself, she tells me, 'I worked too hard for the "a" in Latina to give it up! I refer to myself as Xicana.'
2. Of our accumulated ethnic population, only a third use Hispanic to identify themselves, a mere 14 percent use Latino, and less than 2 percent recognize Latinx.
3. They have done this, although gender in languages is grammatical, not sociological or sexual, and found in linguistic families throughout the world, from French to Russian to Japanese.

4. More recently, activists seeking to render our name gender neutral, out of respect for our LGBTQ members, have devised yet another name for us: Latinx.

Question Numbers (4 to 7): The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

Over the course of the twentieth century, humans built, on average, one large dam a day, hulking structures of steel and concrete designed to control flooding, facilitate irrigation, and generate electricity. Dams were also lucrative contracts, large-scale employers, and the physical instantiation of a messianic drive to conquer territories and control nature. Some of the results of that drive were charismatic mega-infrastructure-the Hoover on the Colorado River or the Aswan on the Nile-but most of the tens of thousands of dams that dot the Earth's landscape have drawn little attention. These are the smaller, though not inconsequential, barriers that today impede the flow of water on nearly two-thirds of the world's large waterways. Chances are, what your map calls a "lake" is actually a reservoir, and that thin blue line that emerges from it once flowed very differently.

Damming a river is always a partisan act. Even when explicit infrastructure goals-irrigation, flood control, electrification-were met, other consequences were significant and often deleterious. Across the world, river control displaced millions of people, threatening livelihoods, foodways, and cultures. In the western United States, dams were often an instrument of colonialism, used to dispossess Indigenous people and subsidize settler agriculture. And as dams slowed the flow of water, inhibited the movement of nutrients, and increased the amount of toxic algae and other parasites, they snuffed out entire river ecologies. Declining fish populations are the most evident effect, but dams also threaten a host of other animals-from birds and reptiles to fungi and plants-with extinction. Every major dam, then, is also a sacrifice zone, a place where lives, livelihoods, and ways of life are eliminated so that new sorts of landscapes can support water-intensive agriculture and cities that sprout downstream of new reservoirs.

Such sacrifices have been justified as offerings at the temples of modernity. Justified by-and for-whom, though? Over the course of the twentieth century, rarely were the costs and benefits weighed thoughtfully and decided democratically. As Kader Asmal, chair of the landmark 2000 World Commission on Dams, concluded, "There have been precious few, if any, comprehensive, independent analyses as to why dams came about, how dams perform over time, and whether we are getting a fair return from our $2 trillion investment." A quarter-century later, Asmal's words ring ever truer. A litany of dams built in the mid-twentieth century are approaching the end of their expected lives, with worrying prospects for their durability. Droughts, magnified and multiplied by the effects of climate change, have forced more and more to run below capacity. If ever there were a time to rethink the mania for dams, it would be now.

There is some evidence that a combination of opposition, alternative energy sources, and a lack of viable projects has slowed the construction of major dams. But a wave of recent and ongoing construction, from India and China to Ethiopia and Canada, continues to tilt the global balance firmly in favor of water impoundment.

4. Which one of the following sets of terms is closest to mapping the key arguments of the passage?

1. Lucrative contracts - Sacrifice zone - Expected lives - Global balance
2. Partisan act - Threatened livelihoods - Toxic algae - Quarter century
3. Mega-infrastructure - Sacrifice zone - Worshipping modernity - Water impoundment
4. Physical instantiation - Partisan act - Decided democratically - Alternative energy

5. All of the following statements may be considered valid inferences from the passage EXCEPT that:

1. smaller, though not inconsequential, dams are safer than large dam projects.
2. processes of colonisation have used dam-building to make people vacate their territories.
3. despite increasing evidence of opposition to dams as well as alternatives to them, they continue to be built.
4. dam-building has proved to be an extremely costly enterprise that may not be justifiable.

6. The word "instantiation" is used in the first paragraph. Which one of the following pairs of terms would be the best substitute for it in the context of its usage in the paragraph?

1. Exemplification and manifestation
2. Development and construction
3. Durability and timeliness
4. Concreteness and viability

7. What does the author wish to communicate by referring to the Hoover and Aswan dams in the first paragraph?

1. By building dams like the Hoover and Aswan dams, large-scale employers became messianic figures.
2. The designers and builders of these mega-structures were highly charismatic individuals.

3. The Colorado and Nile rivers may be seen as thin blue lines on a map.
4. The drive to control nature is evident not only in mega-infrastructures like the Hoover and Aswan dams, but in smaller dams as well.

8. The given sentence is missing in the paragraph below. Decide where it best fits among the options 1, 2, 3, or 4 indicated in the paragraph.

Sentence: Productivity gains, once expected to feed through to broader living standards, now primarily serve to enhance returns to wealth.

Paragraph: Economists now argue that inequality is no longer a by-product of growth but a condition of it. ____ (1) ____. Unlike wages, wealth reflects not just income but also access to assets, favourable institutional conditions - such as low interest rates - and public policies like low taxes and housing shortages. ____ (2) ____. In other words, wealth depends on political choices in ways that income currently does not. It's not just the inequality itself that is the issue but the erosion of mechanisms that once constrained it. ____ (3) ____. Wealth and income inequality are linked, but where wages have stagnated and collective bargaining has weakened, capital income - derived from profits, rents and interest - has been boosted by design. ____ (4) ____.

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

Question Numbers (9 to 12): The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

Imagine a world in which artificial intelligence is entrusted with the highest moral responsibilities: sentencing criminals, allocating medical resources, and even mediating conflicts between nations. This might seem like the pinnacle of human progress: an entity unburdened by emotion, prejudice or inconsistency, making ethical decisions with impeccable precision. . . .

Yet beneath this vision of an idealised moral arbiter lies a fundamental question: can a machine understand morality as humans do, or is it confined to a simulacrum of ethical reasoning? AI might replicate human decisions without improving on them, carrying forward the same biases, blind spots and cultural distortions from human moral judgment. In trying to emulate us, it might only reproduce our limitations, not transcend them. But there is a deeper concern. Moral judgment draws on intuition, historical awareness and context - qualities that resist formalisation. Ethics may be so embedded in lived experience that any attempt to encode it into formal structures risks flattening its most essential features. If so, AI would not merely reflect human shortcomings; it would strip morality of the very depth that makes ethical reflection possible in the first place.

Still, many have tried to formalise ethics, by treating certain moral claims not as conclusions, but as starting points. A classic example comes from utilitarianism, which often takes as a foundational axiom the principle that one should act to maximise overall wellbeing. From this, more specific principles can be derived, for example, that it is right to benefit the greatest number, or that actions should be judged by their consequences for total happiness. As computational resources increase, AI becomes increasingly well-suited to the task of starting from fixed ethical assumptions and reasoning through their implications in complex situations.

But what, exactly, does it mean to formalise something like ethics? The question is easier to grasp by looking at fields in which formal systems have long played a central role. Physics, for instance, has relied on formalisation for centuries. There is no single physical theory that explains everything. Instead, we have many physical theories, each designed to describe specific aspects of the Universe: from the behaviour of quarks and electrons to the motion of galaxies. These theories often diverge. Aristotelian physics, for instance, explained falling objects in terms of natural motion toward Earth's centre; Newtonian mechanics replaced this with a universal force of gravity. These explanations are not just different; they are incompatible. Yet both share a common structure: they begin with basic postulates - assumptions about motion, force or mass - and derive increasingly complex consequences. . . .

Ethical theories have a similar structure. Like physical theories, they attempt to describe a domain - in this case, the moral landscape. They aim to answer questions about which actions are right or wrong, and why. These theories also diverge and, even when they recommend similar actions, such as giving to charity, they justify them in different ways. Ethical theories also often begin with a small set of foundational principles or claims, from which they reason about more complex moral problems.

9. All of the following can reasonably be inferred from the passage EXCEPT:

1. with fixed moral starting points and expanding computational resources, the argument forecasts convergence on one ethical system and treats contextual judgement as unnecessary once formal reasoning scales across domains and cultures.
2. by analogy with physics, compact postulates can yield broad predictions across incompatible theories and ethics can likewise share structure while continuing to diverge rather than close on a single comprehensive framework.

3. the appeal of an AI judge rests on immunity to bribery, partiality, and fatigue; yet the text questions whether procedural cleanliness amounts to moral understanding without lived context and interpretive depth.
4. encoding ethics into fixed structures risks stripping away intuition, history, and context and, if that occurs, the depth that enables reflective judgement disappears. So, machines would mirror our limits rather than exceed them.

10. Which one of the options below best summarises the passage?

1. The passage highlights administrative gains from automation. It treats reproducing human moral judgement as progress and argues that, as computational resources increase, AI can be responsible for decision-making across varied institutional settings.
2. The passage rejects formal methods in principle. It holds that moral judgement cannot be expressed in disciplined terms and concludes that AI should not serve in courts, medicine, or diplomacy under any conditions.
3. The passage weighs the appeal of an impersonal AI judge against doubts about moral grasp. It warns that codification can erode case-sensitive judgement, allow axiom-led reasoning at scale, and use a physics analogy to model structured plurality.
4. The passage weighs the appeal of an impersonal AI judge against doubts about moral grasp. It claims codified schemes retain case nuance at scale and uses a physics analogy to predict convergence on a unified framework.

11. Choose the one option below that comes closest to being the opposite of "utilitarianism".

1. The council followed a prioritarian approach, assigning greater moral weight to improvements for the worst-off rather than to maximising total welfare across the affected population.
2. The authors advocated an absolutist stance, following exceptionless rules regardless of outcomes and evaluating choices by broadest societal benefit.
3. The committee adopted a non-egoist framework, ranking policies by their contribution to overall social welfare and treating self-interest as a derivative concern within institutional evaluation.
4. The policy was cast as deontological ethics, selecting the option that delivered the highest total benefit to citizens while presenting duty as a secondary consideration in public decision-making.

12. The passage compares ethics to physics, where different theories apply to different aspects of a domain and says AI can reason from fixed starting points in complex cases. Which one of the assumptions below must hold for that comparison to guide practice?

1. Once formalised, all ethical frameworks yield the same recommendation in every case, so selection among them is unnecessary.
2. A single master framework replaces all others after translation into one code, so domain boundaries disappear in application.
3. Real cases never straddle different areas, so a case always fits exactly one framework without any overlap whatsoever.
4. There is a principled way to decide which ethical framework applies to which class of cases, so the system can select the relevant starting points before deriving a recommendation.

Question Numbers (13 to 16): The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

Once a society accepts a secular mode of creativity, within which the creator replaces God, imaginative transactions assume a self-conscious form. The tribal imagination, on the other hand, is still to a large extent dreamlike and hallucinatory. It admits fusion between various planes of existence and levels of time in a natural and artless manner. In tribal stories, oceans fly in the sky as birds, mountains swim in water as fish, animals speak as humans and stars grow like plants. Spatial order and temporal sequence do not restrict the narrative. This is not to say that tribal creations have no conventions or rules, but simply that they admit the principle of association between emotion and the narrative motif. Thus stars, seas, mountains, trees, men and animals can be angry, sad or happy.

It might be said that tribal artists work more on the basis of their racial and sensory memory than on the basis of a cultivated imagination. In order to understand this distinction, we must understand the difference between imagination and memory. In the animate world, consciousness meets two immediate material realities: space and time. We put meaning into space by perceiving it in terms of images. The image-making faculty is a genetic gift to the human mind-this power of imagination helps us understand the space that envelops us. With regard to time, we make connections with the help of memory; one remembers being the same person today as one was yesterday.

The tribal mind has a more acute sense of time than the sense of space. Somewhere along the history of human civilization, tribal communities seem to have realized that domination over territorial space was not their lot. Thus, they seem to have turned almost obsessively to gaining domination over time. This urge is substantiated in their ritual of conversing with their dead ancestors: year after year, tribals in many parts of India worship terracotta or carved-wood objects representing their ancestors, aspiring to enter a trance in which they can converse with the dead. Over the centuries, an amazingly sharp memory has helped tribals classify material and natural objects into a highly complex system of knowledge. . . .

One of the main characteristics of the tribal arts is their distinct manner of constructing space and imagery, which might be described as 'hallucinatory'. In both oral and visual forms of representation, tribal artists seem to interpret verbal or pictorial space as demarcated by an extremely flexible 'frame'. The boundaries between art and non-art become almost invisible. A tribal epic can begin its narration from a trivial everyday event; tribal paintings merge with living space as if the two were one and the same. And within the narrative itself, or within the painted imagery, there is no deliberate attempt to follow a sequence. The episodes retold and the images created take on the apparently chaotic shapes of dreams. In a way, the syntax of language and the grammar of painting are the same, as if literature were painted words and painting were a song of images.

13. Which one of the following best explains why tribals in India worship their dead ancestors?

1. Tribals show respect to their ancestors through terracotta and carved-wood objects.
2. Tribals seek territorial domination over the spaces that they inhabit.
3. For tribals, conversing with the dead becomes a way of seeking control over time.
4. Tribals possess a sophisticated knowledge system that is based on memory.

14. All of the following, if true, would weaken the passage's claims about the hallucinatory tribal imagination EXCEPT that:

1. tribal stories depict the natural world in accordance with rational scientific knowledge.
2. tribal narratives exhibit a chronological beginning, middle, and end.
3. shamanic rituals involving conversing with the dead often feature in tribal stories.
4. tribal art excludes the depiction of the mundane reality of everyday life and objects.

15. Non-human living forms exhibit human emotions in tribal narratives because tribal narratives:

1. have a self-conscious form.
2. abandon all rules and regulations.
3. are rudimentary and underdeveloped.
4. accommodate existential fluidity.

16. On the basis of the passage, which one of the following explains the main difference between imagination and memory?

1. Imagination needs to be cultivated whereas memory is more intuitive because it is racial and sensory.
2. Imagination helps humans make sense of space while memory helps them understand time.
3. Imagination is a genetic gift to humans whereas memory is central to human consciousness.
4. Tribal groups value memory over imagination when it comes to creating art and literature.

Question Numbers (17 to 20): The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

In 1982, a raging controversy broke out over a forest act drafted by the Government of India. This act sought to strengthen the already extensive powers enjoyed by the forest bureaucracy in controlling the extraction, disposal and sale of forest produce. It also gave forest officials greater powers to strictly regulate the entry of any person into reserved forest areas. While forest officials justified the act on the grounds that it was necessary to stop the continuing deforestation, it was bitterly opposed by representatives of grassroots organisations, who argued that it was a major violation of the rights of peasants and tribals living in and around forest areas. . . .

The debate over the draft forest act fuelled a larger controversy over the orientation of state forest policy. It was pointed out, for example, that the draft act was closely modelled on its predecessor, the Forest Act of 1878. The earlier Act rested on a usurpation of rights of ownership by the colonial state which had little precedent in precolonial history. It was further argued that the system of forestry introduced by the British-and continued, with little modification, after 1947-emphasised revenue generation and commercial exploitation, while its policing orientation excluded villagers who had the most longstanding claim on forest resources. Critics called for a complete overhaul of forest administration, pressing the government to formulate policy and legislation more appropriate to present needs. . . .

That debate is not over yet. The draft act was shelved, though it has not as yet been formally withdrawn. Meanwhile, the 1878 Act (as modified by an amendment

in 1927) continues to be in operation. In response to its critics, the government has made some important changes in forest policy, e.g., no longer treating forests as a source of revenue, and stopping ecologically hazardous practices such as the clearfelling of natural forests. At the same time, it has shown little inclination to meet the major demand of the critics of forest policy-namely, abandoning the principle of state monopoly over forest land by handing over areas of degraded forests to individuals and communities for afforestation.

. . . [The] 1878 Forest Act itself was passed only after a bitter and prolonged debate within the colonial bureaucracy, in which protagonists put forward arguments strikingly similar to those being advanced today. As is well known, the Indian Forest Department owes its origin to the requirements of railway companies. The early years of the expansion of the railway network, c. 1853 onwards, led to tremendous deforestation in peninsular India owing to the railway's requirements of fuelwood and construction timber. Huge quantities of durable timbers were also needed for use as sleepers across the newly laid tracks. Inexperienced in forestry, the British called in German experts to commence systematic forest management. The Indian Forest Department was started in 1864, with Dietrich Brandis, formerly a Lecturer at Bonn, as the first Inspector General of Forests. The new department needed legislative backing to function effectively, and in the following year, 1865, the first forest act was passed. . . .

17. All of the following, if true, would weaken the narrative presented in the passage EXCEPT that:

1. the timber requirement for railway works in nineteenth century India was met through import from China, in exchange for spices.
2. before British rule, peasants and tribal groups were denied access to forest resources by Indian rulers and their administrations.
3. certain tribal groups in India are responsible for climate change because their sustenance has historically depended on mass scale deforestation.
4. nineteenth century German forestry experts were infamous for violating the rights of indigenous communities that lived in forest regions.

18. Which one of the following best encapsulates the reason for the "raging controversy" developing into a "larger controversy"?

1. The 1982 draft forest act violated the rights of tribals and peasants who lived in and around forest areas.
2. The 1982 draft forest act was unjustifiably defended by forest officials in the face of bitter opposition by grassroots organisations.
3. The 1982 draft forest act further enabled the commercial exploitation of forest resources by the forest bureaucracy.
4. The 1982 draft forest act replicated colonial measures of control and regulation of forest resources.

19. According to the passage, which one of the following reforms is yet to happen in India's forest policies?

1. Recognising the significance of forests to ecology.
2. Recognising the state's claim to forest land use.
3. Involving local people in cultivating forests.
4. A ban on deforestation.

20. According to the passage, which one of the following is not common to the 1878 Forest Act and the 1982 draft forest act?

1. Both reflect a colonial mindset.
2. Both resulted in large scale deforestation.
3. Both sparked controversy and debate among the various stakeholders.
4. Both sought to establish the state's monopoly over forest resources.

21. Five jumbled 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 out and key in the number of that sentence as your answer.

1. About half of all the oxygen we breathe is made near the surface of the ocean by phytoplankton that photosynthesize just like land-dwelling plants.
2. A team of scientists that includes Boston University experts has discovered they also produce oxygen on the seafloor.
3. The research team used deep-sea chambers that land on the seafloor and enclose the seawater, sediment, polymetallic nodules, and living organisms.
4. The discovery is a surprise considering oxygen is typically created by plants and organisms with help from the sun-not by rocks on the ocean floor.
5. The deep-sea rocks, called polymetallic nodules, don't only host a surprising number of sea critters.

22. The four sentences (labelled 1, 2, 3, and 4) given below, when properly sequenced, would yield a coherent paragraph. Decide on the proper sequencing of the order of the sentences and key in the sequence of the four numbers as your answer.

1. The effigy of a candidate establishes a personal link between him and the voters; the candidate does not only offer a programme for judgement,

he suggests a physical climate, a set of daily choices expressed in a morphology, a way of dressing, a posture.

2. Some candidates for Parliament adorn their electoral prospectus with a portrait; this presupposes that photography has a power to convert which must be analysed.
3. Inasmuch as photography is an ellipse of language and a condensation of an 'ineffable' social whole, it constitutes an anti-intellectual weapon and tends to spirit away 'politics' (that is to say a body of problems and solutions) to the advantage of a 'manner of being', a socio-moral status.
4. Photography tends to restore the paternalistic nature of elections, whose elitist essence has been disrupted by proportional representation and the rule of parties (the Right seems to use it more than the Left).

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

The return to the tailor is the juxtaposition of three key things for the mindful Indian shopper. The first is the conscious shift away from the homogeneity of fast fashion, the idea of a hundred other people owning exactly the same Zara trench coat or H&M pleated skirt. The second is an actual understanding of the waste behind the fast fashion market, and wanting not to contribute to that anymore. The last is the shift toward customisation and fit-the idea of having imaginations brought to life and to have them fit exactly; without paying exorbitant rates for that bespoke tailoring. For the individual with a keen fashion sense and a genuine desire to move away from the waste and uniformity of fast fashion without paying the premium for it that indie brands would invariably demand, the tailor is the perfect crossover.

1. All Indian shoppers are opting for customisation and a shift away from homogeneity over expensive clothing brands like Zara and H&M.
2. In the Indian retail market, people believe that expensive branded clothes are wasteful and, therefore, are returning to the neighbourhood tailor.
3. The mindful Indian shoppers are returning to the tailor with a genuine desire to wear clothes which are less expensive, fit them well and are yet fashionable.
4. The mindful Indian shopper is shifting away from convenience and uniformity of clothing, and waste in fashion, to customisation and less exorbitantly priced clothing.

24. Five jumbled 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 out and key in the number of that sentence as your answer.

1. The profound emotional impact of music has inspired ongoing research into its relationship with emotions.
2. Music is a universal phenomenon that utilizes a myriad brain resources.
3. This inherent connection to musical expression is deeply intertwined with human identity and experience.
4. The proclivity to create and appreciate music is ubiquitous among humans, permeating daily life across diverse societies.
5. Engaging with music is among the most cognitively demanding tasks a human can undergo, and it is identified across cultures.

Section II : DI & LR

Question Numbers (1 to 5): Answer the questions on the basis of the information given below.

Three countries – Pumpland (P), Xiland (X) and Cheeseland (C) – trade among themselves and with the (other countries in) Rest of World (ROW). All trade volumes are given in IC (international currency). The following terminology is used:

- Trade balance = Exports - Imports
- Total trade = Exports + Imports
- Normalized trade balance = Trade balance / Total trade, expressed in percentage terms

The following information is known.

1. The normalized trade balances of P, X and C are 0%, 10%, and -20%, respectively.
2. 40% of exports of X are to P. 22% of imports of P are from X.
3. 90% of exports of C are to P; 4% are to ROW.
4. 12% of exports of ROW are to X, 40% are to P.
5. The export volumes of P, in IC, to X and C are 600 and 1200, respectively. P is the only country that exports to C.

1. How much is exported from C to X, in IC?

2. How much is exported from P to ROW, in IC?

3. How much is exported from ROW to ROW, in IC?

4. What is the trade balance of ROW?

1. 100 2. 0
3. –200 4. 200

5. Which among the countries P, X, and C has/have the least total trade?

1. Only P 2. Only C
3. Both X and C 4. Only X

Question Numbers (6 to 9): Answer the questions on the basis of the information given below.

Seven children, Aarav, Bina, Chirag, Diya, Eshan, Farhan, and Gaurav, are sitting in a circle facing inside (not necessarily in the same order) and playing a game of 'Passing the Buck'.

The game is played over 10 rounds. In each round, the child holding the Buck must pass it directly to a child sitting in one of the following positions:

- Immediately to the left;
- Immediate to the right;
- Second to the left; or
- Second to the right.

The game starts with Bina passing the Buck and ends with Chirag receiving the Buck. The table below provides some information about the pass types and the child receiving the Buck. Some information is missing and labelled as '?'.

Round	Pass Type	Received by
1	Immediately to the left	Aarav
2	Second to the right	?
3	Immediately to the right	Diya
4	?	?
5	?	Aarav
6	Second to the left	?
7	Immediately to the left	Gaurav
8	Immediately to the left	?
9	?	Farhan
10	?	Chirag

6. Who is sitting immediately to the right of Bina?

1. Eshan 2. Aarav
3. Farhan 4. Chirag

7. Who is sitting third to the left of Eshan?

1. Chirag 2. Aarav
3. Divya 4. Gaurav

8. For which of the following pass types can the total number of occurrences be uniquely determined?

1. Immediately to the left
2. Second to the right
3. Immediately to the right
4. Second to the left

9. For which of the following children is it possible to determine how many times they received the Buck?

1. Eshan 2. Gaurav
3. Bina 4. Farhan

Question Numbers (10 to 13):

Anu, Bijay, Chetan, Deepak, Eshan, and Faruq are six friends. Each of them uses a mobile number from exactly one of the two mobile operators - Xitel and Yocel. During the last month, the six friends made several calls to each other. Each call was made by one of these six friends to another. The table below summarizes the number of minutes of calls that each of the six made to (outgoing minutes) and received from (incoming minutes) these friends, grouped by the operators. Some of the entries are missing.

Friend	Operator	Outgoing minutes to		Incoming minutes from	
		Operator Xitel	Operator Yocel	Operator Xitel	Operator Yocel
Anu	Xitel	100		50	225
Bijay	Xitel		200		125
Chetan	Yocel	50	175	250	150
Deepak	Yocel	100	150	275	100
Eshan	Yocel		100	100	375
Faruq	Yocel	0		100	150

It is known that the duration of calls from Faruq to Eshan was 200 minutes.

Also, there were no calls from:

i. Bijay to Eshan,
ii. Chetan to Anu and Chetan to Deepak,
iii. Deepak to Bijay and Deepak to Faruq,
iv. Eshan to Chetan and Eshan to Deepak.

10. What was the duration of calls (in minutes) from Bijay to Anu?

11. What was the total duration of calls (in minutes) made by Anu to friends having mobile numbers from Operator Yocel?

12. What was the total duration of calls (in minutes) made by Faruq to friends having mobile numbers from Operator Yocel?

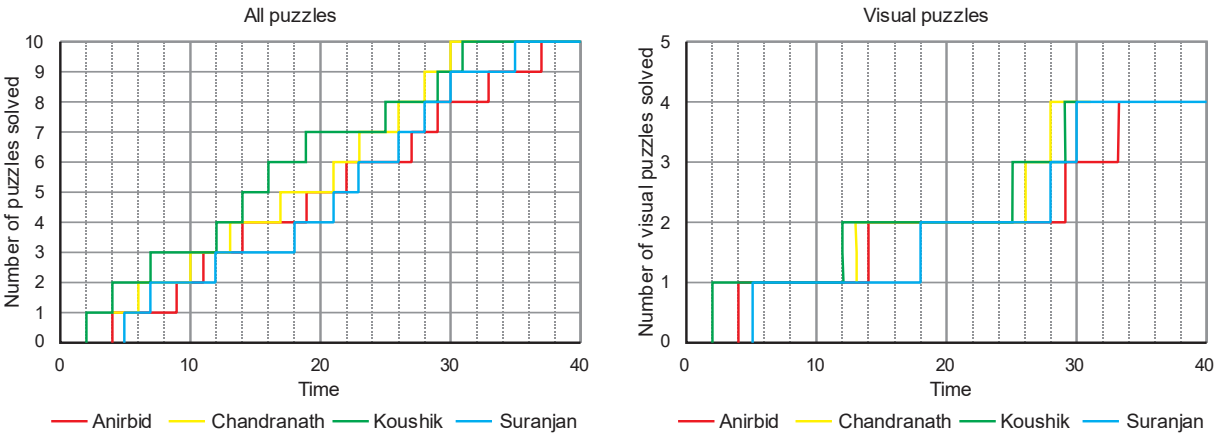
13. What was the duration of calls (in minutes) from Deepak to Chetan?

1. 50
2. 125
3. 0
4. 100

Question Numbers (14 to 17):

Anirbid, Chandranath, Koushik, and Suranjan participated in a puzzle solving competition. The competition comprised 10 puzzles that had to be solved in the same sequence, i.e., a competitor got access to a puzzle as soon as they solved the previous puzzle. Some of the puzzles were visual puzzles and the others were number-based puzzles. The winner of the competition was the one who solved all puzzles in the least time.

The following charts describe their progress in the competition. The chart on the left shows the number of puzzles solved by each competitor at a given time (in minutes) after the start of the competition. The chart on the right shows the number of visual puzzles solved by each competitor at a given time (in minutes) after the start of the competition.



14. Who had solved the largest number of puzzles by the 20-th minute from the start of the competition?

1. Koushik
2. Anirbid
3. Chandranath
4. Suranjan

15. How many minutes did Suranjan take to solve the third visual puzzle in the competition?

16. At what number in the sequence was the fourth number-based puzzle?

17. Which of the following is the closest to the average time taken by Anirbid to solve the number-based puzzles in the competition?

1. 4.0 minutes
2. 3.8 minutes
3. 2.5 minutes
4. 3.3 minutes

Question Numbers (18 to 22):

Aurevia, Brelosia, Cyrenia and Zerathania are four countries with their currencies being Aurels, Brins, Crowns, and Zentars, respectively. The currencies have different exchange values. Crown's currency exchange rate with Zentars = 0.5, i.e., 1 Crown is worth 0.5 Zentars.

Three travelers, Jano, Kira, and Lian set out from Zerathania visiting exactly two of the countries. Each country is visited by exactly two travelers. Each traveler has a unique Flight Cost, which represents the total cost of airfare in traveling to both the countries and back to Zerathania. The Flight Cost of Jano was 4000 Zentars, while that of the other two travelers were 5000 and 6000 Zentars, not necessarily in that order. When visiting a country, a traveler spent either 1000, 2000 or 3000 in the country's local currency. Each traveler had different spends (in the country's local currency) in the two countries he/she visited. Across all the visits, there were exactly two spends of 1000 and exactly one spend of 3000 (in the country's local currency).

The total "Travel Cost" for a traveler is the sum of his/her Flight Cost and the money spent in the countries visited.

The citizens of the four countries with knowledge of these travels made a few observations, with spends measured in their respective local currencies:

i. Aurevia citizen: Jano and Kira visited our country, and their Travel Costs were 3500 and 8000, respectively.

ii. Brelosia citizen: Kira and Lian visited our country, spending 2000 and 3000, respectively. Kira's Travel Cost was 4000.

iii. Cyrenia citizen: Lian visited our country and her Travel Cost was 36000.

18. What is the sum of Travel Costs for all travelers in Zentars?

19. How many Zentars did Lian spend in the two countries he visited?

20. What was Jano's total spend in the two countries he visited, in Aurels?

21. One Brin is equivalent to how many Crowns?

1. 0.5
2. 0.125
3. 4
4. 8

22. Which of the following statements is NOT true about money spent in the local currency?

1. Jano spent 2000 in Aurevia
2. Lian spent 2000 in Cyrenia
3. Jano spent 2000 in Cyrenia
4. Kira spent 1000 in Aurevia

Section III : QA

1. For a 4-digit number (greater than 1000), sum of the digits in the thousands, hundreds, and tens places is 15. Sum of the digits in the hundreds, tens, and units places is 16. Also, the digit in the tens place is 6 more than the digit in the units place. The difference between the largest and smallest possible value of the number is

1. 735 2. 3289
3. 4078 4. 811

2. The average salary of 5 managers and 25 engineers in a company is 60000 rupees. If each of the managers received 20% salary increase while the salary of the engineers remained unchanged, the average salary of all 30 employees would have increased by 5%. The average salary, in rupees, of the engineers is

1. 45000 2. 54000
3. 40000 4. 50000

3. The monthly sales of a product from January to April were 120, 135, 150 and 165 units, respectively. The cost price of the product was Rs. 240 per unit, and a fixed marked price was used for the product in all the four months. Discounts of 20%, 10% and 5% were given on the marked price per unit in January, February and March, respectively, while no discounts were given in April. If the total profit from January to April was Rs. 138825, then the marked price per unit, in rupees, was

1. 525 2. 520
3. 510 4. 515

4. A triangle ABC is formed with AB = AC = 50 cm and BC = 80 cm. Then, the sum of the lengths, in cm, of all three altitudes of the triangle ABC is

5. In ΔABC, AB = AC = 12 cm and D is a point on side BC such that AD = 8 cm. If AD is extended to a point E such that $\angle ACB = \angle AEB$, then the length, in cm, of AE is

1. 18 2. 16
3. 14 4. 20

6. For real values of x, the range of the function $f(x) = \dfrac{2x-3}{2x^2+4x-6}$ is

1. $\left(-\infty, \frac{1}{4}\right]\cup[1,\infty)$ 2. $\left(-\infty, \frac{1}{4}\right]\cup\left[\frac{1}{2},\infty\right)$
3. $\left(-\infty, \frac{1}{8}\right]\cup\left[\frac{1}{2},\infty\right)$ 4. $\left(-\infty, \frac{1}{8}\right]\cup[1,\infty)$

7. The sum of all possible real values of x for which $\log_{x-3}(x^2-9) = \log_{x-3}(x+1)+2$, is

1. $\dfrac{3+\sqrt{33}}{2}$ 2. $\sqrt{33}$
3. 3 4. -3

8. Rahul starts on his journey at 5 pm at a constant speed so that he reaches his destination at 11 pm the same day. However, on his way, he stops for 20 minutes, and after that, increases his speed by 3 km per hour to reach on time. If he had stopped for 10 minutes more, he would have had to increase his speed by 5 km per hour to reach on time. His initial speed, in km per hour, was

1. 12 2. 20
3. 18 4. 15

9. The ratio of the number of coins in boxes A and B was 17:7. After 108 coins were shifted from box A to box B, this ratio became 37:20. The number of coins that needs to be shifted further from A to B, to make this ratio 1:1, is

10. Let p, q and r be three natural numbers such that their sum is 900, and r is a perfect square whose value lies between 150 and 500. If p is not less than 0.3q and not more than 0.7q, then the sum of the maximum and minimum possible values of p is

11. ABCD is a trapezium in which AB is parallel to DC, AD is perpendicular to AB, and AB = 3DC. If a circle inscribed in the trapezium touching all the sides has a radius of 3 cm, then the area, in sq. cm, of the trapezium is

1. 48 2. 54
3. $30\sqrt{3}$ 4. $36\sqrt{2}$

12. Vessels A and B contain 60 litres of alcohol and 60 litres of water, respectively. A certain volume is taken out from A and poured into B. After stirring, the same volume is taken out from B and poured into A. If the resultant ratio of alcohol and water in A is 15 : 4, then the volume, in litres, initially taken out from A is

13. The rate of water flow through three pipes A, B and C are in the ratio 4 : 9 : 36. An empty tank can be filled up completely by pipe A in 15 hours. If all the three pipes are used simultaneously to fill up this empty tank, the time, in minutes, required to fill up the entire tank completely is nearest to

1. 78 2. 71
3. 73 4. 76

14. If $f(x) = (x^2 + 3x)(x^2 + 3x + 2)$, then the sum of all real roots of the equation $\sqrt{f(x)+1} = 9701$ is

1. –3 2. 3
3. –6 4. 6

15. The sum of all the digits of the number $(10^{50} + 10^{25} - 123)$ is

1. 221 2. 255
3. 324 4. 212

16. If $\left(x^2 + \frac{1}{x^2}\right) = 25$ and $x > 0$, then the value of $\left(x^7 + \frac{1}{x^7}\right)$ is

1. $44853\sqrt{3}$ 2. $44850\sqrt{3}$
3. $44859\sqrt{3}$ 4. $44856\sqrt{3}$

17. If $12^{12x} \times 4^{24x+12} \times 5^{2y} = 8^{4z} \times 20^{12x} \times 243^{3x-6}$, where x, y and z are natural numbers, then x + y + z equals

18. Teams A, B, and C consist of five, eight, and ten members, respectively, such that every member within a team is equally productive. Working separately, teams A, B, and C can complete a certain job in 40 hours, 50 hours, and 4 hours, respectively. Two members from team A, three members from team B, and one member from team C together start the job, and the member from team C leaves after 23 hours. The number of additional member(s) from team B, that would be required to replace the member from team C, to finish the job in the next one hour, is

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

19. In a school with 1500 students, each student chooses any one of the streams out of science, arts, and commerce, by paying a fee of Rs 1100, Rs 1000, and Rs 800, respectively. The total fee paid by all the students is Rs 15,50,000. If the number of science students is not more than the number of arts students, then the maximum possible number of science students in the school is

20. In an arithmetic progression, if the sum of fourth, seventh and tenth terms is 99, and the sum of the first fourteen terms is 497, then the sum of first five terms is

21. Ankita walks from A to C through B, and runs back through the same route at a speed that is 40% more than her walking speed. She takes exactly 3 hours 30 minutes to walk from B to C as well as to run from B to A. The total time, in minutes, she would take to walk from A to B and run from B to C, is

22. In a class of 150 students, 75 students chose physics, 111 students chose mathematics and 40 students chose chemistry. All students chose at least one of the three subjects and at least one student chose all three subjects. The number of students who chose both physics and chemistry is equal to the number of students who chose both chemistry and mathematics, and this is half the number of students who chose both physics and mathematics. The maximum possible number of students who chose physics but not mathematics, is

1. 35 2. 55
3. 30 4. 40

ANSWERS

VARC

1. (3)	**2.** (2)	**3.** (4312)	**4.** (3)	**5.** (1)	**6.** (1)	**7.** (4)	**8.** (4)	**9.** (1)	**10.** (3)
11. (1)	**12.** (4)	**13.** (3)	**14.** (3)	**15.** (4)	**16.** (2)	**17.** (4)	**18.** (4)	**19.** (3)	**20.** (2)
21. (3)	**22.** (2143)	**23.** (4)	**24.** (1)						

DILR

1. (48)	**2.** (200)	**3.** (1008)	**4.** (4)	**5.** (3)	**6.** (1)	**7.** (1)	**8.** (3)	**9.** (2)	**10.** (50)
11. (525)	**12.** (350)	**13.** (4)	**14.** (1)	**15.** (2)	**16.** (6)	**17.** (1)	**18.** (41000)	**19.** (13000)	**20.** (1500)
21. (4)	**22.** (1)								

QA

1. (4)	**2.** (2)	**3.** (1)	**4.** (NA)	**5.** (1)	**6.** (3)	**7.** (1)	**8.** (4)	**9.** (NA)	**10.** (NA)
11. (1)	**12.** (NA)	**13.** (3)	**14.** (1)	**15.** (1)	**16.** (1)	**17.** (NA)	**18.** (1)	**19.** (NA)	**20.** (NA)
21. (NA)	**22.** (1)								

EXPLANATIONS – CAT 2025 SOLVED PAPER (SLOT-3)

Section - I : VARC

1. 3 **Explanation:**

The passage makes **three key points**:

1. **Memory-beliefs occur entirely in the present** — they are present mental events.
2. There is **no logical necessity** that the remembered event actually happened.
3. Therefore, what we call **knowledge of the past** is *logically independent* of whether a past truly existed — it could all be a constructed present experience.

Option **3** captures *all three essential arguments*:

- Memory happens **now**, not in the past.
- Memories may not correspond to any real past.
- So "knowledge of the past" is logically independent of an actual past.

Why the other options are not as good:

Option 1: Captures parts of the idea but **doesn't emphasise** that what we call "knowledge of the past" is *wholly analysable into present contents*. This is central.

Option 2: Over-focuses on the "five-minute hypothesis" and sounds like an example rather than the main argument.

Option 4: Too narrow — focuses only on *one part* of the argument (the remembered event might not have occurred) but ignores the larger philosophical claim about the *logical independence* of memory from the existence of the past.

2. 2 **(Blank 3)**

Why the sentence fits best at Blank (3)

Let's examine the flow of the paragraph:

1. **Sentence before Blank 1:** "The first suggested evidence of a human genetic mutation associated with aggressive behaviour came from a study in 1993."
   → This introduces the study generally.
2. **Blank 1:** Should logically describe *what the study investigated*, not the specific mutation.
   Therefore, the given sentence (which gives a *very specific technical detail*) does **NOT** fit here.
3. **After Blank 1:** "Genetic and metabolic studies were conducted on a large Dutch family …"
   → Continues describing the study setup.
4. **Blank 2:** Should logically precede the description of behavioural issues. The given sentence talks about *the location of the defect* — which does NOT fit here because the narrative hasn't yet introduced the mutation.
5. **Before Blank 3:** "The undesirable behaviour included impulsive aggression, arson and exhibitionism."
   → This transitions from behavioural findings to genetic findings.

6. **Blank 3:** This is where a sentence about the **genetic defect location** would naturally appear *just before* the next sentence, which talks about the specific mutation in the MAOA gene.
7. **After Blank 3:** "A point mutation was identified in the eighth exon of the monoamine oxidase A (MAOA) structural gene…"
   → Perfect continuation: first the location (p11–12), then the specific mutation.
8. **Blank 4:** Already filled logically by a concluding detail about the mutation effect.

3. 4312

Explanation of the sequence

Sentence 4

Introduces the context: activists creating the gender-neutral term *Latinx*. This is clearly the starting point of the idea.

Sentence 3

Explains *why* activists did this — to counter gendered language — while noting that grammatical gender is not the same as social/sexual gender.

This logically follows the introduction of Latinx.

Sentence 1

Gives an example reacting to the newly introduced term Latinx: Cherie Moraga comments on whether she uses Latinx and explains her choice.

This fits *after* the introduction and explanation of the term.

Sentence 2

Provides statistical evidence about how many people actually use Hispanic/Latino/Latinx.

This is a concluding data point and logically comes last.

4. 3 Mega-infrastructure – Sacrifice zone – Worshipping modernity – Water impoundment

Here is why **Option 3** is the best mapping of the core arguments of the passage:

Why Option 3 is correct

The passage revolves around four major thematic ideas:

1. **Mega-infrastructure**
   The passage opens by describing large dams as symbols of massive twentieth-century engineering — iconic "megainfrastructure" like the Hoover and Aswan dams.
2. **Sacrifice zone**
   It explicitly states that dams create "sacrifice zones," destroying ecosystems, livelihoods, Indigenous cultures, and entire ways of life.
3. **Worshipping modernity**
   The text criticizes how dams were justified as offerings "at the temples of modernity," revealing the ideological commitment behind dam-building rather than rational public decision-making.
4. **Water impoundment**
   The final paragraph highlights continuing global dam-building, shifting balance toward increased **water impoundment** even when dams are failing, aging, or ecologically destructive.
   These four terms correspond directly and meaningfully to the central argumentative pillars of the passage.

Why the other options are incorrect

Option 1

"Lucrative contracts" and "expected lives" are mentioned but not central themes; "global balance" appears only in a narrow sense about modern construction patterns. Together they do not capture the philosophical, political, and ecological thrust of the passage.

Option 2

Includes "toxic algae" and "quarter century"—both minor or contextual points, not structural elements of the argument.

Option 4

"Decided democratically" is mentioned only to highlight the *lack* of democracy; it does not map the main idea. "Alternative energy" appears briefly and is not central.

5. 1 **smaller, though not inconsequential, dams are safer than large dam projects.**

Here is the reasoning:

Why Option 1 is the EXCEPT (i.e., NOT a valid inference)

The passage **never** says or implies that smaller dams are *safer* than large dams.

It only says:

- Smaller dams "draw little attention."
- They are "not inconsequential."
- They "impede the flow of water on nearly two-thirds of the world's waterways."

None of this allows us to infer safety. The passage discusses ecological damage, displacement, and aging infrastructure without distinguishing safety levels between large and small dams.

So **Option 1 is NOT a valid inference**.

Why the other options *are* valid inferences

Option 2: Colonisation and dam-building

The passage clearly states:

"In the western United States, dams were often an instrument of colonialism, used to dispossess Indigenous people…"

So this is directly supported.

Option 3: Dams continue to be built despite opposition

The passage says:

There is evidence construction has slowed, **but** there is "a wave of recent and ongoing construction… tilt[ing] the global balance firmly in favor of water impoundment."

Thus, this is a valid inference.

Option 4: Dam-building is extremely costly and possibly unjustifiable

The passage cites:

- A $2 trillion global investment.
- The World Commission on Dams conclusion that few analyses justify such costs.
- Many dams are aging, failing, and underperforming due to drought.

So this inference is valid.

6. 1 **Exemplification and manifestation**

Explanation

The passage says:

"Dams were also lucrative contracts, large-scale employers, and the **physical instantiation** of a messianic drive to conquer territories and control nature."

Here, *instantiation* means a **concrete, physical example or embodiment** of an abstract idea—in this case, the drive to conquer nature.

Let's evaluate the options:

Option 1: Exemplification and manifestation — Correct

Both words mean *a concrete example or embodiment* of an abstract concept.

This matches the usage perfectly.

Dams exemplify or manifest the drive to control nature.

Option 2: Development and construction — Incorrect

These refer to *creating or building* something, not *embodying an abstract idea.*

Option 3: Durability and timeliness — Incorrect

These refer to time-related qualities, not relevant to meaning of "instantiation."

Option 4: Concreteness and viability — Incorrect

"Concreteness" is close, but "viability" (workability) does not fit the meaning.

7. 4 **The drive to control nature is evident not only in mega-infrastructures like the Hoover and Aswan dams, but in smaller dams as well.**

Explanation

In the first paragraph, the author writes:

- Some dams—like **Hoover** and **Aswan**—are **charismatic mega-infrastructure**, famous and visually spectacular.
- But **most dams worldwide are small and unnoticed**, yet they too obstruct and reshape rivers.
- The author's purpose is to show that the **same messianic drive to dominate nature** operates across *both* the grand and the ordinary dams.

Thus, the reference to Hoover and Aswan serves to:

- Introduce the largest, most dramatic examples of this human impulse.
- Contrast them with the **much more numerous smaller dams**, which collectively also exert massive ecological impact.

Why the others are wrong

1. **Incorrect** – Nowhere does the author call builders "messianic figures." The messianic *drive* refers to ideology, not people.
2. **Incorrect** – No reference to designers' charisma; charisma applies to the **infrastructure**, not individuals.
3. **Incorrect** – The thin blue line refers to **rivers altered by dams**, not specifically the Colorado or Nile here.

8. 4 **(the sentence fits in blank 4)**

Why the sentence fits best at Blank 4

The missing sentence is:

"Productivity gains, once expected to feed through to broader living standards, now primarily serve to enhance returns to wealth."

Let's check the flow:

1. **Sentence before Blank 4:**
   "Wealth and income inequality are linked, but where wages have stagnated and collective bargaining has weakened, capital income – derived from profits, rents and interest – has been boosted by design."
   This sets up a contrast between:
   • stagnant wages
   • rising capital income
2. **Missing sentence meaning:**
   It explains *how* capital income has been boosted — because productivity gains no longer raise wages but instead increase returns to wealth.
3. **Therefore the missing sentence works as the concluding insight**, showing why inequality deepens: productivity is no longer benefitting workers, only capital owners.

Why it does *not* fit earlier blanks

- **Blank 1**: Introduces the idea that wealth is structurally different from income — the missing sentence is too specific and comes later in the argument.
- **Blank 2**: Follows a discussion of political choices affecting wealth; the missing sentence doesn't relate to political structures here.
- **Blank 3**: Summarises erosion of mechanisms constraining inequality, but the missing sentence discusses *productivity gains*, which fits better after wages vs capital discussion.

9. 1 **(NOT supported '! correct answer)**

"With fixed moral starting points and expanding computational resources, the argument forecasts convergence on one ethical system and treats contextual judgement as unnecessary once formal reasoning scales across domains and cultures."

Why this CANNOT be inferred:

- The passage **never forecasts convergence on a single ethical system**.
- It explicitly says ethical theories, **like physical theories, diverge**, and even when they align in conclusions, they justify them differently.
- The passage **emphasizes that contextual judgment is essential** and *cannot* be eliminated.
- It is deeply skeptical about formalization replacing moral intuition and lived experience.

Thus, option 1 **contradicts the passage '‡ cannot be inferred.**

This is the correct answer.

Option 2 (supported)

The passage makes a direct analogy:

- Physics has incompatible theories that share a structure (postulates → consequences).
- Ethics also has incompatible theories with similar formal structures.

Thus inference is reasonable.

Option 3 (supported)

The appeal of AI as an ideal judge (unbiased, unemotional) appears in the passage, but the author questions whether this procedural perfection equals genuine moral understanding.

Option 4 (supported)

The passage states:

- Moral judgment draws on intuition, history, context.
- Attempts to formalize ethics "flatten" these essential aspects.
- AI would "strip morality of the depth that enables ethical reflection."

Thus fully supported.

10. 3 Here is the reasoning:

Why Option 3 is the best summary

Option 3 captures **all three central moves of the passage**:

1. The initial appeal of AI moral arbiters

– The passage begins with the imagined attractiveness of an unemotional, unbiased AI judge.

2. The doubts about whether AI can truly understand morality

– It highlights concerns:

- AI may simply reproduce human biases
- Moral judgment relies on intuition, history, and context
- Formalisation may flatten ethics and remove its depth

3. Use of physics analogy to explain ethical formalisation

– The passage compares structured ethical theories with structured but divergent physical theories.

– This shows **plurality and incompatibility**, not convergence.

Option 3 accurately reflects *all* of this:

"It warns that codification can erode case-sensitive judgement, allow axiom-led reasoning at scale, and use a physics analogy to model structured plurality."

This is exactly the argument.

Why the other options are incorrect

Option 1 — Incorrect

- Claims the passage "treats reproducing human moral judgement as progress."
  → False. The passage warns that AI may merely replicate human biases.
- Claims it praises automation.
  → The passage is sceptical, not celebratory.

Option 2 — Incorrect

- Claims the passage *rejects formal methods in principle*.
  → False. It doesn't reject formalisation; it explains both its potential and its limits.
- Claims the passage concludes AI should *never* serve in moral roles.
  → The passage never makes such an absolute claim.

Option 4 — Incorrect

- Claims codified schemes "retain case nuance at scale."
  → Opposite of the text. The passage says codification *flattens* nuance.

- Claims the physics analogy predicts "convergence on a unified framework."
  → Absolutely false. The passage explicitly says physical theories and ethical theories **diverge** and remain plural.

11. 1 Here's why:

What is utilitarianism?

Utilitarianism = **Maximise total or average welfare / happiness.**

→ The morally right action is the one that **produces the greatest overall good**.

So the **opposite** of utilitarianism would be an approach that **does NOT prioritise maximising total welfare** and instead follows a *different* moral principle such as:

- giving priority to certain groups (not maximising)
- following rules regardless of outcomes
- emphasising duties or rights over welfare outcomes

Option Analysis

Option 1 (Correct)

"The council followed a prioritarian approach, assigning greater moral weight to improvements for the worst-off rather than to maximising total welfare."

This is closest to the opposite of utilitarianism.

- Prioritarianism is explicitly **non-utilitarian**.
- It *does not* maximise total welfare.
- It gives **extra weight** to the well-being of the worst-off, even if that reduces total welfare.

This directly contradicts the core utilitarian principle of **maximisation of total good**.

Why the others are not opposites

Option 2 (Incorrect)

Absolutist stance with exceptionless rules but still evaluates choices by broadest societal benefit.

This mixes deontology with **welfarist evaluation**.

Not the clean opposite, because it still prioritises broad societal benefit (= utilitarian-like).

Option 3 (Incorrect)

A non-egoist framework ranking policies by overall social welfare.

This is literally **utilitarianism in different words**.

Not opposite at all.

Option 4 (Incorrect)

Deontological ethics but still selecting outcomes that deliver the highest total benefit.

This is contradictory, but still retains the **utilitarian maximising principle**.

So not opposite.

12. 4 Here is the reasoning:

What the passage says

The passage compares **ethical theories** to **physical theories**:

- Physics has **multiple incompatible theories**, each valid **within a domain** (quantum, classical, relativity, etc.).
- Each theory starts with **postulates** and derives conclusions.
- Ethical theories similarly have **different starting principles**, and **diverge**.

The analogy is useful **only if** we can decide:

Which framework applies to which type of case.

Otherwise AI would not know which ethical postulates to begin with.

Option Analysis

Option 4 (Correct)

"There is a principled way to decide which ethical framework applies to which class of cases, so the system can select the relevant starting points before deriving a recommendation."

This assumption **must** be true for the analogy to guide AI practice.

Just as physics chooses Newtonian or relativistic equations depending on the scenario, AI must choose the correct ethical framework before reasoning.

Why the other options are wrong

Option 1 — Incorrect

All ethical frameworks yield the same recommendation.

The passage explicitly says ethical theories **diverge** and justify actions differently.

Option 2 — Incorrect

A single master framework replaces all others.

The passage rejects the idea of one unified ethical system.

Option 3 — Incorrect

Real cases never straddle different areas.

Unrealistic, and the passage never implies such clean separation.

Actual moral dilemmas often overlap frameworks.

13. 3 **For tribals, conversing with the dead becomes a way of seeking control over time.**

Explanation

The passage explicitly states that:

- Tribal communities historically realized they could **not dominate territorial space**.
- As a result, they turned **"almost obsessively to gaining domination over time."**

- This urge manifests in their **ritual of conversing with dead ancestors**, through carved-wood or terracotta representations.
- The ritual aims to enter a **trance** in which they **speak with the dead**, symbolically controlling or transcending time.

Thus, worshipping dead ancestors is fundamentally linked to their **attempt to gain mastery over time**, not space or tradition alone.

Why the other options are incorrect

Option 1: "Tribals show respect to their ancestors…"

- This is true but **not the central explanation** according to the passage.
- Respect is a surface description, not the deeper purpose emphasized by the author.

Option 2: "Tribals seek territorial domination…"

- This directly contradicts the passage, which says they *realized they could not dominate space*.

Option 4: "Tribals possess a sophisticated knowledge system…"

- This is also true but explains *how* they classify objects, not *why* they worship ancestors.

14. 3 **shamanic rituals involving conversing with the dead often feature in tribal stories.**

Understanding the Question

The passage argues that **tribal imagination is hallucinatory**, meaning:

- It fuses planes of existence.
- It ignores spatial and temporal order.
- It blends reality with dreamlike sequences.
- It includes rituals of conversing with ancestors.

We are asked:

Which option does NOT weaken this claim?

i.e., Which option is consistent with or supports the hallucinatory tribal imagination?

The correct answer is the option that does **not contradict** the passage's claims.

Why Option 3 is the Correct Answer

Option 3:

"Shamanic rituals involving conversing with the dead often feature in tribal stories."

This **supports** the passage rather than weakens it, because the passage explicitly says:

- Tribals **converse with dead ancestors** in ritual.
- Their imagination admits the fusion of time and space.
- Their art and narrative forms draw on **memory, trance, and hallucinatory modes**.

Thus, this matches the passage perfectly and **does not weaken** the claim about hallucinatory imagination.

Why the other options weaken the passage

Option 1: "tribal stories depict the natural world in accordance with rational scientific knowledge."

- This contradicts the passage's idea that tribal imagination is dreamlike and unconcerned with rationality.
- So this **weakens** the claim.

Option 2: "tribal narratives exhibit a chronological beginning, middle, and end."

- The passage states that tribal stories ignore sequence and temporal order.
- So this **weakens** the claim.

Option 4: "tribal art excludes the depiction of the mundane reality of everyday life and objects."

- The passage says tribal epics begin with *everyday events* and merge art with daily living spaces.
- Excluding mundane reality contradicts this and thus **weakens** the claim.

15. 4 accommodate existential fluidity.

Explanation

The passage says that in tribal imagination:

- Oceans fly like birds
- Mountains swim like fish
- Animals speak like humans
- Stars grow like plants
- All these forms *can be angry, sad, or happy*

This is because tribal narratives naturally **fuse planes of existence**, ignore rigid boundaries of space and time, and allow fluid movement between categories of being.

This quality is best described as **"existential fluidity."**

Why the other options are incorrect

Option 1: "have a self-conscious form."

- The passage says tribal imagination is *natural and artless*, not self-conscious.
- So this is incorrect.

Option 2: "abandon all rules and regulations."

- The passage explicitly states tribal art *does have conventions and rules*—they are simply different.
- So this is incorrect.

Option 3: "are rudimentary and underdeveloped."

- The passage never suggests this; in fact, it stresses that tribal systems are **highly complex**.
- So this is incorrect.

16. 2 Imagination helps humans make sense of space while memory helps them understand time.

Explanation

The passage **directly** describes the distinction:

- *"We put meaning into space by perceiving it in terms of images. The image-making faculty is a genetic gift to the human mind—this power of imagination helps us understand the space that envelops us."*
- *"With regard to time, we make connections with the help of memory; one remembers being the same person today as one was yesterday."*

So:

- **Imagination → understanding space (via images)**
- **Memory → understanding time (via continuity and recollection)**

This is the **central conceptual difference** the author outlines.

Why the other options are incorrect

Option 1:

- The passage does not say imagination must be cultivated; it says it is a genetic gift.
- Memory is not described as "racial and sensory" *for all humans*—that description is specific to tribal imagination.

Option 3:

- Both imagination and memory are presented as fundamental human faculties; the passage does not claim memory is more central than imagination.

Option 4:

- The passage explains tribal emphasis on memory, but this is **not** the general difference between imagination and memory.

17. 4 Let's analyse carefully.

The question asks:

Which statement DOES *NOT* weaken the narrative?

(i.e., which one is consistent with the passage)

The passage's main narrative is:

- British forest policy (Forest Act of 1878) usurped traditional rights of peasants and tribals.
- British forestry emphasised revenue, commercial exploitation, policing, and exclusion of local communities.
- German forestry experts helped create this bureaucratic, exclusionary system.
- Present-day controversies echo the same issues—state monopoly, exclusion of communities, and colonial legacy.

So, a statement that **weakens** this narrative would be one that contradicts these claims.

We need the statement that **does *not* weaken** the narrative.

Evaluate Each Option

Option 1.

The timber requirement for railway works… was met through import from China.

→ This contradicts the passage's claim that massive **deforestation in India** happened due to railway expansion.

→ This **weakens** the narrative.

Option 2.

Before British rule, peasants and tribal groups were denied access to forests by Indian rulers.

→ This contradicts the passage's core argument that British policies were a **sharp break** from precolonial practices and introduced unprecedented usurpation of forest rights.

→ This clearly **weakens** the narrative.

Option 3.

Certain tribal groups are responsible for climate change due to mass scale deforestation.

→ The passage stresses that tribals had longstanding claims and were excluded unfairly; blaming them for environmental harm **weakens** the narrative drastically.

→ So it **weakens** the narrative.

Option 4.

Nineteenth century German forestry experts were infamous for violating indigenous rights.

→ The passage says British forestry relied on **German experts** and that the system excluded villagers and tribal rights.

→ Saying German experts *also* violated indigenous rights is **consistent** with the passage's criticism of colonial forestry practices.

→ This **does NOT weaken** the narrative; it actually **supports** it.

18. 4 Let's examine why.

The question asks:

Why did the "raging controversy" over the 1982 draft forest act develop into a "larger controversy"?

The passage explains:

- The **initial controversy** was about the **rights violations** in the draft act (peasants and tribals).
- But the debate then **expanded** into a broader critique of **state forest policy itself**.

What caused this expansion?

The key lines:

"The debate over the draft forest act fuelled a *larger controversy* over the orientation of *state forest policy*."

"It was pointed out… that the draft act was closely modelled on its predecessor, the Forest Act of 1878…

The earlier act rested on a **usurpation of rights** of ownership by the colonial state…"

"…the system of forestry introduced by the British — and continued after 1947 — emphasized revenue and commercial exploitation, while excluding villagers…"

Thus, the controversy became larger because:

It was not just about one draft act.

It exposed a **continuity of colonial-style forest control**, usurpation of rights, and exploitation.

This aligns exactly with **Option 4**, which captures the structural, historical critique.

Why the other options are insufficient

Option 1:

True, but describes only the *initial* controversy, not why it *developed into a larger* one.

Option 2:

Focuses on the behaviour of forest officials; not the historical legacy that broadened the debate.

Option 3:

The passage does say British forestry emphasized commercial exploitation, but the larger debate was about the **colonial origins and continued replication** of such policies — broader than commercial exploitation alone.

19. 3 Involving local people in cultivating forests.

Here is why:

The passage states that although the government has made *some* reforms — such as:

- **Stopping ecologically hazardous practices** like clear-felling
- **No longer treating forests as a source of revenue**

— **one major demand has *not* been met**:

"*the government has shown little inclination to meet the major demand of the critics of forest policy — namely,* ***abandoning the principle of state monopoly over forest land by handing over areas of degraded forests to individuals and communities for afforestation.***"

This means:

The government has **not yet involved local people (tribals/peasants/communities)** in cultivating or managing forests.

Community control or shared forest cultivation has **not been implemented**.

Hence the reform **yet to happen** is:

Option 3 — Involving local people in cultivating forests.

Why the other options are incorrect:

1. **Recognising the significance of forests to ecology**

   – Already done; the government has stopped harmful practices like clear-felling.

2. **Recognising the state's claim to forest land use**

   – This has existed since the colonial era and still continues; not a reform that is "yet to happen".

3. **A ban on deforestation**

   – The passage says hazardous practices (like clear-felling) have been stopped, implying reforms already exist to curb destructive deforestation.

20. 2 **Both resulted in large scale deforestation.**

Explanation

We must identify which option describes something **NOT common** to both:

Option 1: Both reflect a colonial mindset.

True.

The passage explicitly states that the 1982 draft act *"was closely modelled on its predecessor, the Forest Act of 1878"*, and that the earlier act was based on the colonial usurpation of rights. So both reflect the same colonial orientation of state control.

Option 3: Both sparked controversy and debate.

True.

- The 1982 draft act caused a "raging controversy."
- The 1878 Forest Act was passed *after a bitter and prolonged debate* within the colonial bureaucracy.

So controversy surrounded both.

Option 4: Both sought to establish the state's monopoly over forest resources.

True.

- The 1878 Act explicitly established state monopoly over forest land.
- Critics argued the 1982 draft act continued the same principle of state monopoly.

Option 2: Both resulted in large scale deforestation.

NOT common. This is the correct answer.

The passage does **not** say that either act *caused* deforestation.

- It says deforestation occurred due to **railway timber demands** before and around the creation of the forest department—not as a direct result of the 1878 Act.
- The 1982 draft act was justified by officials to *prevent ongoing deforestation*, not cause it.

Thus, **deforestation is NOT described as a consequence of either act**, making this the correct choice.

21. 3 Here is the reasoning **why Sentence 3 is the odd one out**.

Why 3 is the odd sentence out

Let's examine the theme of the other sentences.

Sentence 1

About half of all the oxygen we breathe is made near the surface…

This introduces **oxygen production**.

Sentence 2

Scientists discovered they also produce oxygen on the seafloor.

This continues the theme: **oxygen is being produced deep in the ocean**.

Sentence 4

The discovery is a surprise considering oxygen is typically created…

This explains **why the finding is surprising**, still focused on **oxygen production**.

Sentence 5

Polymetallic nodules host many sea critters.

This supports sentence 2 by giving **context about the deep-sea nodules** involved in the discovery.

So, **1, 2, 4, and 5** all naturally link together in a coherent passage about:

- oxygen production at the surface,
- surprising oxygen production at the seafloor,
- the nature of the rocks involved,
- and why this discovery is unexpected.

Why Sentence 3 is the odd one out

Sentence 3

The research team used deep-sea chambers…

This is a **methodological detail** about scientific instruments.

While related, it *breaks the narrative flow*, because:

- The rest of the sentences focus on **what was discovered**, **why it is surprising**, and **context about the nodules**.
- Sentence 3 shifts abruptly into **experimental procedure**, which does not blend into the conceptual explanation the other sentences provide.

Thus, it disrupts the thematic flow and is correctly identified as the odd one out.

22. 2143

Below is a clear explanation showing why **2143** forms the only coherent paragraph.

Step-by-step Logic

Sentence 2

Some candidates… adorn their prospectus with a portrait; this presupposes that photography has a power…

This is the natural **opening**: it introduces the topic — *the use of photographs by candidates* — and sets up the need to analyse this power.

Sentence 1

The effigy of a candidate establishes a personal link…

This follows smoothly because it **explains how** a photograph works in politics, extending the idea introduced in 2.

Sentence 4

Photography tends to restore the paternalistic nature of elections…

This builds on 1 by discussing the **broader political consequences** of photographic use in elections.

Sentence 3

Inasmuch as photography is an ellipse of language… it constitutes an anti-intellectual weapon…

This is the most abstract theoretical point and **logically concludes** the paragraph by giving the deepest critique of photography's political effect.

Therefore, the coherent order is: 2143

23. 4 Here is why **Option 4** best captures the essence of the passage:

Why Option 4 is correct

The passage discusses **three simultaneous shifts** motivating mindful Indian shoppers:

1. **Moving away from homogeneity/ uniformity** of fast fashion
2. **Rejecting wastefulness** of fast fashion
3. **Seeking customisation and good fit** without high bespoke pricing

Option **4** captures *all three* shifts:

"The mindful Indian shopper is shifting away from convenience and uniformity of clothing,

and waste in fashion, to customisation and less exorbitantly priced clothing."

This mirrors the passage's central argument most completely.

Why the other options are incorrect

Option 1

"All Indian shoppers…"

Too broad. Passage refers specifically to *mindful* shoppers, not all Indians.

Option 2

Oversimplifies the reasoning by claiming shoppers reject branded clothes *because they are wasteful*. It misses the points about **custom fit** and **avoiding uniformity**.

Option 3

Focuses only on desire for inexpensive, well-fitting, fashionable clothes and *misses the environmental and anti-uniformity motivations*.

24. 1 Here's why:

Look at the thematic flow of the other four sentences:

- **2.** Music is a universal phenomenon that utilizes a myriad brain resources.
- **5.** Engaging with music is among the most cognitively demanding tasks a human can undergo, and it is identified across cultures.
- **4.** The proclivity to create and appreciate music is ubiquitous among humans, permeating daily life across diverse societies.
- **3.** This inherent connection to musical expression is deeply intertwined with human identity and experience.

These four can form a coherent paragraph about:

1. Music as a **universal human phenomenon** (2, 4).
2. Its **cognitive complexity** (5).
3. Its deep link with **human identity and experience** (3).

Sentence **1** shifts the focus to:

"the profound emotional impact of music" and specifically "ongoing research into its relationship with emotions."

That introduces a **different angle**: scientific research on emotions and music, which doesn't smoothly integrate into the emerging theme of universality, cognition, and identity without going off on a tangent.

So **1** is the odd sentence out.

Section - II : DI & LR

1. 48 Let total exports of P, X, C, ROW be Ep, Ex, Ec, Er respectively and imports Ip, Ix, Ic, Ir respectively.

From normalized trade balances:

For P: $(Ep - Ip)/(Ep + Ip) = 0 \Rightarrow Ep = Ip$

For X: $(Ex - Ix)/(Ex + Ix) = 10\%$

$\Rightarrow Ex - Ix = 0.1(Ex + Ix) \Rightarrow 0.9Ex = 1.1Ix$

$\Rightarrow Ex/Ix = 11/9$

For C: $(Ec - Ic)/(Ec + Ic) = -20\%$

$\Rightarrow Ec - Ic = -0.2(Ec + Ic)$

$\Rightarrow 1.2Ec = 0.8Ic \Rightarrow Ic = 1.5Ec$

Imports and exports of C:

As per condition (5): P is the only country that exports to C.

C's only import comes from P and the import volume, in IC, is 1200.

Therefore, Ic = 1200.

Since Ic = 1.5Ec, therefore, Ec = 800.

Exports of C:

90% to P $\Rightarrow$ 0.9Ec = 720

4% to ROW $\Rightarrow$ 0.04Ec = 32

Remaining 6% to X $\Rightarrow C \rightarrow X = 0.06 \times 800 =$ **48**

For questions 2 to 5:

Step 1:

Let total exports of P, X, C, ROW be Ep, Ex, Ec, Er respectively and imports Ip, Ix, Ic, Ir respectively.

From normalized trade balances:

For P: $(Ep - Ip)/(Ep + Ip) = 0 \Rightarrow Ep = Ip$

For X: $(Ex - Ix)/(Ex + Ix) = 10\%$

$\Rightarrow Ex - Ix = 0.1(Ex + Ix) \Rightarrow 0.9Ex = 1.1Ix$

$\Rightarrow Ex/Ix = 11/9$

For C: $(Ec - Ic)/(Ec + Ic) = -20\%$

$\Rightarrow Ec - Ic = -0.2(Ec + Ic) \Rightarrow 1.2Ec = 0.8Ic \Rightarrow Ic = 1.5Ec$

Imports and exports of C:

As per condition (5): P is the only country that exports to C.

C's only import comes from P and the import volume, in IC, is 1200.

Therefore, Ic = 1200.

Since Ic = 1.5Ec, therefore, Ec = 800.

Exports of C:

90% to P $\Rightarrow$ 0.9Ec = 720

4% to ROW $\Rightarrow$ 0.04Ec = 32

Remaining 6% to X $\Rightarrow C \rightarrow X = 0.06 \times 800 =$ **48**

Step 2:

From condition (2):

40% of exports of X to P (X → P) is same as 22% of imports of P from X.

So 0.4Ex = 0.22Ip or, Ex = 11Ip/20.

But Ep = Ip.

⇒ 0.4Ex = 0.22Ep ⇒ **Ex = 0.55Ep**

And similarly, **20Ix = 9Ip.**

Imports and exports of P:

Imports of P come from X, C, and ROW.

From X = 0.22Ip

From C = 720

From ROW = Ip – (0.22Ip + 720) = 0.78Ip – 720

Exports of ROW to P = 40% of Er

⇒ 0.4Er = 0.78Ip – 720 ...(1)

Imports and Exports of X:

12% of exports of ROW go to X

⇒ ROW → X = 0.12Er

Imports of X:

From P = 600

From C = 48

From ROW = 0.12Er

So Ix = 648 + 0.12Er. Since Ix = 0.45Ep, therefore,

⇒ 0.45Ep = 648 + 0.12Er ...(2)

Step 3:

From equations (1) and (2):

From (1): Er = (0.78Ep – 720)/0.4 = 1.95Ep – 1800

Substitute into (2):

⇒ 0.45Ep = 648 + 0.12(1.95Ep – 1800)

⇒ 0.45Ep = 648 + 0.234Ep – 216

⇒ 0.216Ep = 432 ⇒ Ep = 2000

So Ip = 2000.

Hence, the final table looks like:

		Import of				
		P	X	C	ROW	
Exports of	P		600	1200	200	2000
	X	440			660	1100
	C	720	48		32	800
	ROW	840	252		1008	2100
		2000	900	1200	1900	

2. 200

IC is exported from P to ROW.

3. 1008

IC is exported from ROW to ROW.

4. 4 The trade balance of ROW = Er – Ir = 2100 – 1900 = 200 IC.

5. 3 Total trade:

P = Ep + Ip = 4000

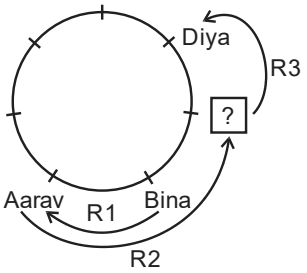
X = Ex + Ix = (1100 + 900) = 2000

C = Ec + Ic = (800 + 1200) = 2000

Hence, the least total trade = X and C.

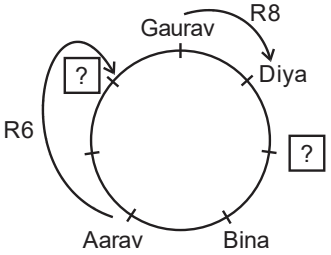
For questions 6 to 9:

Let fix the seat of Bina. As per information given for Round 1 (R1), and Round 2 (R2) and Round 3 (R3):



Now in Round 5, Aarav receives the Buck.

Therefore, as per round 6, 7, 8 (R6, R7, R8).

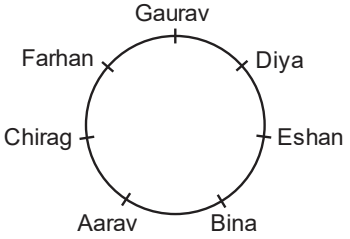


In Round 8, Diya receives the Buck. In Round 9, she passes it in such a way that Farhan receives it.

If Farhan sits to the immediate left of Diya, then there is no way Farhan passes it in a way receives it.

Therefore, Diya must pass second to the right and then Farhan must pass immediate to the right and Chirag received it.

Final arrangement looks like:



Round	Pass Type	Received by
1	Immediately to the left	Aarav
2	Second to the right	Eshan
3	Immediately to the right	Diya
4	? = Second to the right/Immediate to the left/Second to the left	? = Farhan/Eshan/Bina
5	? = second to the right/second to the left/Immediate to the left	Aarav
6	Second to the left	Farhan
7	Immediately to the left	Gaurav
8	Immediately to the left	Diya
9	Second to the right	Farhan
10	Immediate to the right	Chirag

6. 1 Eshan is sitting immediately to the right of Bina.

7. 1 Chirag is sitting third to the left of Eshan.

8. 3 For Immediately to the right pass type the total number of occurrences can be uniquely determined.

9. 2 For Gaurav it is possible to determine the number of times he received the Buck due to round 4.

For questions 10 to 13:

Step 1:

Four mobile operator combinations are possible:

Xitel operator to Xitel (Orange area)

Xitel to Yocel (Purple area)

Yocel to Yocel (Blue area)

Yocel to Xitel (Green area)

Friend	Operator	Outgoing minutes to Operator Xitel	Outgoing minutes to Operator Yocel	Incoming minutes from Operator Xitel	Incoming minutes from Operator Yocel
Anu	Xitel	100	c	50	225
Bijay	Xitel	a	200	e	125
Chetan	Yocel	50	175	250	150
Deepak	Yocel	100	150	275	100
Eshan	Yocel	b	100	100	375
Faruq	Yocel	0	d	100	150

Step 2:

Note: Bijay is Xitel user and makes an outgoing call to a Xitel user and that must be Anu only. Therefore, a = 50 and e = 100.

Similarly, equate the areas coloured by same colour.

Green: 50 + 100 + b = 225 + 125 or, b = 200.

Purple: c + 200 = 250 + 275 + 200 or, c = 525

Blue: 175 + 150 + 100 + d = 150 + 100 + 375 + 150 or, d = 350

Friend	Operator	Outgoing minutes to Operator Xitel	Outgoing minutes to Operator Yocel	Incoming minutes from Operator Xitel	Incoming minutes from Operator Yocel
Anu	Xitel	100	525	50	225
Bijay	Xitel	50	200	100	125
Chetan	Yocel	50	175	250	150
Deepak	Yocel	100	150	275	100
Eshan	Yocel	200	100	100	375
Faruq	Yocel	0	350	100	150

10. 50 The duration of calls (in minutes) from Bijay to Anu was 50 minutes.

11. 525

The total duration of calls (in minutes) made by Anu to friends who have mobile numbers from Operator Yocel was 525 minutes.

12. 350

The total duration of calls (in minutes) made by Faruq to friends who had mobile numbers from Operator Yocel was 350 minutes.

13. 4

Friend	Operator	Outgoing minutes to Operator Xitel	Outgoing minutes to Operator Yocel	Incoming minutes from Operator Xitel	Incoming minutes from Operator Yocel
Anu	Xitel	100	525	50	225
Bijay	Xitel	50	200	100	125
Chetan	Yocel	50	**175 (Eshan + Faruq)**	250	**150 (Deepak – 100, Faruq – 50)**
Deepak	Yocel	100	**150 (Chetan + Eshan)**	275	**100 (Faruq)**
Eshan	Yocel	200	**100 (Faruq)**	100	**375 (Chetan – 125, Faruq – 200, Deepak – 50)**
Faruq	Yocel	0	**350 (Chetan + Deepak + Eshan)**	100	**150 (Chetan – 50, Faruq – 100)**

Hence, the duration of calls (in minutes) from Deepak to Chetan is 100 minutes.

14. 1 Reading the four curves at t = 20:

The green staircase (Koushik) is at the highest horizontal level at t = 20. The yellow (Chandranath) and red (Anirbid) staircases are lower than the green one at that time. The blue (Suranjan) staircase is the lowest of the four at t = 20. Since Koushik's value is greater than every other competitor's at t = 20, Koushik has solved the largest number of puzzles by the 20th minute.

15. 2 From graph 1, we know Suranjan completed puzzle 1 at 5^{th} minute, puzzle 2 at 7^{th} minute, puzzle 3 at 12^{th} minute, puzzle 4 at 18^{th} minute, puzzle 5 at 21^{st} minute, puzzle 6 at 23^{rd} minute, puzzle 7 at 26^{th} minute, puzzle 8 at 28^{th} minute, puzzle 9 at 30^{th} minute and puzzle 10 at 35^{th} minute.

From graph 2, we know Suranjan completed visual puzzle 1 at 5^{th} minute, visual puzzle 2 at 18^{th} minute, visual puzzle 3 at 28^{th} minute and visual puzzle 4 at 30^{th} minute.

So if we consider both information together, puzzle 8 is visual puzzle 3. And time taken to complete that would be puzzle 8 – puzzle 7 = 28 – 26 = 2 minutes.

16. 6 From graph 1, we know Suranjan completed puzzle 1 at 5th minute, puzzle 2 at 7th minute, puzzle 3 at 12th minute, puzzle 4 at 18th minute, puzzle 5 at 21st minute, puzzle 6 at 23rd minute, puzzle 7 at 26th minute, puzzle 8 at 28th minute, puzzle 9 at 30th minute and puzzle 10 at 35th minute.

From graph 2, we know Suranjan completed visual puzzle 1 at 5th minute, visual puzzle 2 at 18th minute, visual puzzle 3 at 28th minute and visual puzzle 4 at 30th minute.

So if we consider both information together:

Puzzle 1 is visual puzzle 1

Puzzle 4 is visual puzzle 4

puzzle 8 is visual puzzle 3

puzzle 9 was visual puzzle 4.

Therefore, puzzle 2, 3, 5, 6, 7 and 10 are number based puzzle. Hence, puzzle 6 was the fourth number-based puzzle.

17. 1 The average time taken by Anirbid to solve the number-based puzzles can be calculated as follows:

Time for 1st number-based puzzle (2nd puzzle) from 1st graph = 9 – 4 = 5 minutes.

Time for 2nd number-based puzzle (3rd puzzle) from 1st graph = 11 – 9 = 2 minutes.

Time for 3rd number-based puzzle (5th puzzle) from 1st graph = 19 – 14 = 5 minutes.

Time for 4th number-based puzzle (6th puzzle) from 1st graph = 22 – 19 = 3 minutes.

Time for 5th number-based puzzle (7th puzzle) from 1st graph = 27 – 22 = 5 minutes.

Time for 6th number-based puzzle (10th puzzle) from 1st graph = 37 – 33 = 4 minutes.

Average = (5 + 2 + 5 + 3 + 5 + 4) / 6 = 24 / 6 = 4 minutes

The average time taken by Anirbid to solve the number-based puzzles is **4 minutes**.

For questions 18 to 22:

Step 1:

As per the information given to us:

Let us denote the local currencies Aurels as A, Brins as B, Crowns as C and Zentars as Z.

And 1 C = 0.5 Z.

Traveler	Country 1 (Spend) In country local currency	Country 2 (Spend) In country local currency	Total Flight Cost (in Z)	Total Travel Cost
Jano	Aurevia (1000 A/2000 A)	Cyrenia (2000 C/1000 C)	4000 Z	3500 A
Kira	Aurevia (1000 A)	Brelosia (2000 B)	5000 Z or 6000 Z	8000 A/4000 B
Lian	Brelosia (3000 B)	Cyrenia (2000 C)	6000 Z or 5000 Z	36000 C

Let 1 A = a Z, 1 B = b Z, 1 C = 0.5 Z.

Lian's Calculation:

Lian's Cost = 36000 C = 18000 Z.

18000 Z = (6000/5000) Z + 3000 B + 2000 C

In Zentars: 18000 = (6000/5000) + 3000b + 1000

If **Flight = 5000:**

3000b = 12000 $\Rightarrow$ b = 4

If Flight = 6000:

3000b = 11000 $\Rightarrow$ b = 3.66

Step 2:

Kira's Calculation:

In Brins, her cost is 4000.

Total Zentars = 4000 × b.

If b = 4, Total = 16000 Z.

16000 = Flight + 1000a + 2000(4)

8000 = Flight + 1000a

If Flight = 6000:

1000a = 2000 $\Rightarrow$ a = 2

If b = 11/3, Total = 44000/3 Z.

16000 = 5000 + 1000a + 2000(11/3)

$\Rightarrow$ a = 11/3.

Checking Jano: it will only satisfy for a = 2 and not for a = 11/3.

Step 3:

Traveler	Country 1 (Spend) In country local currency	Country 2 (Spend) In country local currency	Total Flight Cost (in Z)	Total Travel Cost
Jano	Aurevia (1000 A)	Cyrenia (2000 C)	4000 Z	3500 A
Kira	Aurevia (1000 A)	Brelosia (2000 B)	6000 Z	8000 A/4000 B
Lian	Brelosia (3000 B)	Cyrenia (2000 C)	5000 Z	36000 C

Let 1 A = 2 Z, 1 B = 4 Z, 1 C = 0.5 Z.

18. 41000

Sum of Travel Costs for all travelers (Zentars):

Jano: 7000 Z

Kira: 8000 × 2 = 16000 Z

Lian: 36000/2 = 18000 Z

Total = 7000 + 16000 + 18000 = 41000 Z.

19. 13000

Lian spend = 3000 × 4 + 2000/2 = 12000 + 1000 = 13000 Z.

20. 1500

Jano's total spend = 1000 × 2 + 2000/2 = 3000 Z

In Aurels: 3000/2 = 1500 A.

21. 4 1 Brin = 4 Zentars and 1 Crown = 0.5 Zentars

Hence, one Brin is equivalent to = 4 / 0.5 = 8 Crowns.

22. 1 1. Jano spent 2000 in Aurevia (False)

2. Lian spent 2000 in Cyrenia (True)

3. Jano spent 2000 in Cyrenia (True)

4. Kira spent 1000 in Aurevia (True)

Section - II : QA

1. 4 Let the digits be Thousands = a, Hundreds = b, Tens = c, Units = d.

Given: a + b + c = 15, b + c + d = 16 and c = d + 6.

So (c, d) can be (7, 1), (8, 2) or (9, 3).

The corresponding values of b can be 8, 6 and 4 respectively. Further corresponding values of a can be 0, 1, and 2 respectively.

But a must be ≥ 1.

Therefore, largest possible value will be = 2493 and smallest possible value will be = 1682.

Hence, required difference = 2493 – 1682 = 811.

2. 2 Let average salary of engineers and managers be x and y respectively.

Total original salary = 30 × 60000 = Rs. 18,00,000

Managers get 20% increase; engineers' salaries remain unchanged.

Overall average increases by 5%, therefore, new average = Rs. 63,000.

New total salary: 30 × 63000 = Rs. 18,90,000

Increase in total salary = 1890000 – 1800000 = Rs. 90,000

Increase comes only from managers: 5 × 0.2y = y or, y = Rs. 90,000.

Original total salary is 5y + 25x = 18,00,000

Hence, 5 × (90000) + 25x = 1800000 or, x = Rs. 54,000.

3. 1 Let marked price = M

In January, SP = 0.8M

In February, SP = 0.9M

In March, SP = 0.95M

In April, SP = M

Total profit = 120 × 0.8M + 135 × 0.9M + 150 × 0.95M + 165 × M – 570 × 240 = 138825

Simplifying: 525M – 136800 = 138825 or, 525M = 275625 or, M = Rs. 525

4. 126

Given: AB = AC = 50 cm, BC = 80 cm

Triangle is isosceles, therefore, the altitude drawn from the vertex angle (between the two equal sides) to the base acts as a **perpendicular bisector**.

Height from A to BC = $h_a = \sqrt{(50^2 - 40^2)}$

$= \sqrt{(2500 - 1600)} = \sqrt{900}$ = 30 cm.

Area of the triangle ABC

= 1/2 × 80 × 30

= 1200 cm^2.

Altitudes:

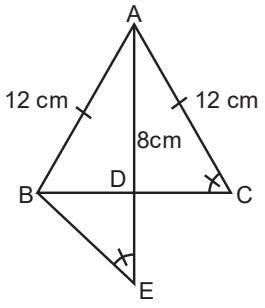
h_a = 2 × Area / BC = 30 cm

h_b = 2 × Area / AC = 2400 / 50 = 48 cm

h_c = 2 × Area / AB = 48 cm

Hence, the sum of altitudes = 30 + 48 + 48 = 126 cm.

5. 1 As per the question.



Since AB = AC, therefore, ∠ABC = ∠ACB and its given ∠ACB = ∠AEB.

This implies that points C, B, E, A lie on a common circle (same angle subtended by chord AB). So A, B, C, E are concyclic.

Since D lies inside the circle and AD is extended to E: DA × DE = DB × DC (Power of Point property) But in an isosceles triangle with AB = AC, the altitude from A to BC also bisects BC. Hence D lies on the perpendicular bisector only if DB = DC. So, DB = DC

Therefore, DB × DC = DB^2

Thus, AD × DE = DB^2

DE = AE – AD = AE – 8

So 8 × (AE – 8) = DB^2

In triangle ABD, AB = 12 cm and AD = 8 cm.

Using Pythagoras:

$DB^2 = AB^2 - AD^2$ or, $DB^2 = 12^2 - 8^2 = 80$

Hence, 8(AE – 8) = 80 or, AE = 18 cm.

6. 3 Given: $f(x) = (2x - 3)/(2x^2 + 4x - 6)$

Let $y = (2x - 3) / (2x^2 + 4x - 6)$

Rearrange: $y(2x^2 + 4x - 6) = 2x - 3$

$\Rightarrow 2y(x^2) + 4y(x) - 6y - 2x + 3 = 0$

This is a quadratic equation in x. For real x, discriminant ≥ 0.

Discriminant: $(4y - 2)^2 - 4(2y)(-6y + 3) \geq 0$

$\Rightarrow 16y^2 - 16y + 4 + 48y^2 - 24y \geq 0$

$\Rightarrow 64y^2 - 40y + 4 \geq 0$

$\Rightarrow 16y^2 - 10y + 1 \geq 0$

$\Rightarrow 16y^2 - 8y - 2y + 1 \geq 0$

$\Rightarrow (8y - 1)(2y - 1) \geq 0$

$\Rightarrow y = 1/8, 1/2$

Range of f(x): $y \leq 1/8$ or $y \geq 1/2$

Hence, the range is: $(-\infty, 1/8] \cup [1/2, \infty)$.

7. 1 Given: $\log_{(x-3)}(x^2 - 9) = \log_{(x-3)}(x + 1) + 2$

Let $2 = \log_{(x-3)}((x - 3)^2)$ and substitute in the above equation.

$\Rightarrow \log_{(x-3)}(x^2 - 9) = \log_{(x-3)}(x + 1) + \log_{(x-3)}((x-3)^2)$

$\Rightarrow \log_{(x-3)}(x^2 - 9) = \log_{(x-3)}((x + 1)(x - 3)^2)$

$\Rightarrow x^2 - 9 = (x + 1)(x - 3)^2$

$\Rightarrow (x - 3)(x + 3) = (x + 1)(x - 3)^2$

Since $x \neq 3$, therefore, $x + 3 = (x + 1)(x - 3)$.

$\Rightarrow x + 3 = x^2 - 2x - 3$

$\Rightarrow x^2 - 3x - 6 = 0$ or, $x = (3 \pm \sqrt{33})/2$

Since, domain: $x - 3 > 0 \Rightarrow x > 3$, only valid value is $x = (3 + \sqrt{33})/2$.

8. 4 Let initial speed = v km/h and let total distance = D

Total scheduled time = 5 pm to 11 pm = 6 hours.

So, D = 6v

Case 1: He drives at speed v first, then stops for 20 minutes or 1/3 hours, then drives at speed (v + 3). Let time driven at speed v be 't' hours.

Then remaining driving time after stop = 6 – t – 1/3 = 17/3 – t

vt + (v + 3)(17/3 – t) = D …(1)

Substitute: D = 6v

$\Rightarrow$ vt + (v + 3)(17/3 – t) = 6v

$\Rightarrow$ –3t + 17v/3 + 17 = 6v

$\Rightarrow$ t = (51 – v)/9 …(A)

Case 2: He drives at speed v first, then stops for 30 minutes or 1/2 hours, then drives at speed (v + 5). Let time driven at speed v be 't' hours.

Time after stop: 6 – t – 1/2 = 11/2 – t

So vt + (v + 5)(11/2 – t) = 6v …(2)

$\Rightarrow$ vt – vt – 5t + 11v/2 + 55/2 = 6v

$\Rightarrow$ –5t + 11v/2 + 55/2 = 6v

$\Rightarrow$ t = (55 – v)/10 …(B)

Equate (A) and (B):

$\Rightarrow$ (51 – v)/9 = (55 – v)/10

$\Rightarrow$ v = 15 km/h

9. 272

Let initial number of coins in A and B be 17x and 7x respectively.

After shifting 108 coins, number of coins in A = 17x – 108 and in B = 7x + 108.

So (17x – 108)/(7x + 108) = 37/20

$\Rightarrow$ 20(17x – 108) = 37(7x + 108)

$\Rightarrow$ 340x – 2160 = 259x + 3996

$\Rightarrow$ 81x = 6156 $\Rightarrow$ x = 76

So, after first shift:

A = 17 × 76 – 108 = 1184

B = 7 × 76 + 108 = 640

Difference = 1184 – 640 = 544

To make ratio 1:1, shift half the difference.

Required shift = 544/2 = 272

10. 397

Given: p + q + r = 900 and r is a perfect square between 150 and 500.

Possible r values: 169, 196, 225, 256, 289, 324, 361, 400, 441, 484

We have $0.3q \le p \le 0.7q$, or $q + 0.3q \le p + q \le q + 0.7q$ or $1.3q \le p + q \le 1.7q$.

Also, we can rewrite p + q = 900 – r. Therefore, $1.3q \le 900 - r \le 1.7q$.

Since the extreme values (maximum and minimum) of p depend on the value of q (0.3q and 0.7q), we can maximise or minimise r to find the extreme values of p.

Since $1.3q \le 900 - r$, the minimum possible value of q would be when 1.3q = 900 – r and when r is maximum. The maximum value of r is 484. We get 1.3q = 900 – 484, or q = 320.

This gives the minimum possible value of p as 0.3 × 320 = 96.

Since $900 - r \le 1.7q$, the maximum possible value of q would be when 900 – r = 1.7q and when r is minimum. The minimum value of r is 169. We get 1.7q = 900 – 169 or q = 430.

This gives the maximum possible value of p as 0.7 × 430 = 301.

The sum of the maximum and minimum values of p is 96 + 301 = 397.

11. 1 Given: AB || DC, AD $\perp$ AB, AB = 3DC and Radius of incircle = 3 cm

Let DC = x $\Rightarrow$ AB = 3x

Since circle touches both parallel sides, Height = 2r = 6.

Area = 1/2 × (AB + DC) × height

= 1/2 × (3x + x) × 6 = 12x

For a tangential trapezium: Sum of parallel sides = sum of non-parallel sides

$\Rightarrow$ AB + DC = AD + BC

$\Rightarrow$ 4x = 6 + BC

$\Rightarrow$ BC = 4x – 6

Using right triangle: $BC^2 = (AB - DC)^2 + AD^2$

$\Rightarrow (4x - 6)^2 = (2x)^2 + 36$

$\Rightarrow 16x^2 - 48x + 36 = 4x^2 + 36$

$\Rightarrow 12x^2 - 48x = 0$

$\Rightarrow$ x = 4

Hence, the area = 12x = 48 sq. cm.

12. 16 Let x litres be transferred from A to B.

After first transfer, A has 60 – x litres of alcohol and B has 'x' litres of alcohol and 60 litres of water.

Note: Fraction of alcohol in B = x / (60 + x) and,

Fraction of water in B = 60 / (60 + x)

Again 'x' litres are taken from B and poured back into A.

Alcohol transferred back to A = x × x / (60 + x)

Water transferred back to A = x × 60 / (60 + x)

Therefore, alcohol in A = (60 – x) + x² / (60 + x) and water in A = 60x / (60 + x).

$\Rightarrow [(60 - x)(60 + x) + x^2] / 60x = 15/4$

$\Rightarrow (3600 - x^2 + x^2) = 3600$

$\Rightarrow 3600 / 60x = 15 / 4$

$\Rightarrow 60 / x = 15 / 4$

$\Rightarrow x = 16$

Hence, initially 16 litres was transferred from A to B.

13. 3 Let rates of pipes A, B and C be 4k, 9k and 36k.

Since Pipe A alone fills the tank in 15 hours, so, rate of A = 1/15 tank per hour.

$\Rightarrow 4k = 1/15 \Rightarrow k = 1/60$

Combined rate of all three pipes

A + B + C = (4k + 9k + 36k) = 49k = 49/60 tank per hour.

Time required = 1 ÷ (49/60) hours = 60/49 hours

= (60/49) × 60 minutes ≈ 73.47 minutes

Hence, the nearest option = 73 minutes.

14. 1 Given: $f(x) = (x^2 + 3x)(x^2 + 3x + 2)$

$\Rightarrow \sqrt{(f(x) + 1)} = 9701$

$\Rightarrow f(x) + 1 = 9701^2$

$\Rightarrow f(x) = 9701^2 - 1$

Let $y = x^2 + 3x$

So $y(y + 2) = 9700 \times 9702$

$\Rightarrow y^2 + 2y - 9700 \times 9702 = 0$

$\Rightarrow y = 9700, -9702$

When y = 9700:

$\Rightarrow x^2 + 3x = 9700$ or, x = 97, –100

When y = –9702:

$\Rightarrow x^2 + 3x = -9702$ will give no real value of x, therefore, discarded.

Hence, the sum of real values of x = 97 – 100 = –3.

15. 1 Number = $10^{50} + 10^{25} - 123$ have 51 digits of which 51st and 26th digits are 1.

After subtracting 123, borrow comes from 26th digit which is 1.

First three digits from right becomes 877 and digits 4th to 25th from right becomes 9. 26th digits (initially 1) becomes 0.

Hence, the digit sum calculation = 1 + 9 × 22 + 8 + 2 × 7 = 221.

16. 1 $(x + 1/x)^2 = x^2 + 1/x^2 + 2 = 25 + 2 = 27$

Therefore, $x + 1/x = \sqrt{27} = 3\sqrt{3}$

$(x + 1/x)^3 = x^3 + 1/x^3 + 3(x + 1/x)$

Therefore, $x^3 + 1/x^3 = (3\sqrt{3})^3 - 3(3\sqrt{3}) = 81\sqrt{3} - 9\sqrt{3} = 72\sqrt{3}$

$(x^2 + 1/x^2)^2 = x^4 + 1/x^4 + 2$

Therefore, $x^4 + 1/x^4 = 25^2 - 2 = 623$.

$(x^4 + 1/x^4)(x^3 + 1/x^3) = x^7 + 1/x^7 + x + 1/x$

Therefore, $x^7 + 1/x^7 = 623(72\sqrt{3}) - 3\sqrt{3} = 44853\sqrt{3}$.

17. 112

Given: $12^{12x} \times 4^{24x+12} \times 5^{2y} = 8^{4z} \times 20^{12x} \times 243^{3x-6}$

Prime factorization: $12 = 2^2 \times 3$, $4 = 2^2$, $5 = 5$, $8 = 2^3$, $20 = 2^2 \times 5$ and $243 = 3^5$

Substitute:

$$\Rightarrow (2^2 \times 3)^{12x} \times (2^2)^{24x+12} \times 5^{2y}$$

$$= (2^2)^{4z} \times (2^2 \times 5)^{12x} \times (3^5)^{3x-6}$$

$$\Rightarrow 2^{24x} \times 3^{12x} \times 2^{48x+24} \times 5^{2y}$$

$$= 2^{24x+12z} \times 15^{12x} \times 3^{15x-30}$$

$$\Rightarrow 2^{74x+24} \times 3^{12x} \times 5^{2y}$$

$$= 2^{24x+12z} \times 5^{12x} \times 3^{15x-30}$$

Equate powers.

Power of 2: 72x + 24 = 24x + 12z

$\Rightarrow 48x + 24 = 12z$ or, $z = 4x + 2$

Power of 3: 12x = 15x – 30

$\Rightarrow 3x = 30$ or, x = 10

Power of 5: 2y = 12x or, y = 6x or, y = 60

Therefore, z = 4(10) + 2 = 42.

Hence, x + y + z = 10 + 60 + 42 = 112.

18. 1 As per the question, the rate of 1 member of A = 1/200, rate of 1 member of B = 1/400,

And rate of 1 member of C = 1/40.

Initially, 2 members from A, 3 from B and 1 from C are working.

Work done per hour = 2(1/200) + 3(1/400) + 1/40

= 1/100 + 3/400 + 10/400 = 17/400

Hence, work done in 23 hours = 23 × 17/400 = 391/400

Remaining work = 1 – 391/400 = 9/400

To finish in the next 1 hour, required rate = 9/400

After member from C leaves, working rate

= 2(1/200) + (3 + x)(1/400) = 1/100 + (3 + x)/400

Therefore, 1/100 + (3 + x)/400 = 9/400

$\Rightarrow$ 4 + 3 + x = 9

$\Rightarrow$ x = 2.

19. 700

Let science, arts and commerce students be S, A and C

Total students = S + A + C = 1500

Total fees = 1100S + 1000A + 800C = 1550000

$\Rightarrow$ 300S + 200A = 350000

$\Rightarrow$ 3S + 2A = 3500

Given A $\leq$ S. To maximize S, take minimum A = S

Substitute and get: 3S + 2S = 3500 or,

$\Rightarrow$ S = 700.

20. 65

4th + 7th + 10th terms = (a + 3d) + (a + 6d) + (a + 9d) = 3a + 18d = 99

$\Rightarrow$ a + 6d = 33 … eq(1)

Sum of first 14 terms = 14/2 (2a + 13d)

$\Rightarrow$ 2a + 13d = 71 …eq (2)

Subtracting equations (1) and (2) and get:

$\Rightarrow$ d = 5 and a = 3

Sum of first 5 terms = 5/2 (2a + 4d) = 5/2 (6 + 20) = 65

21. 444

Let walking speed = v. Then, running speed = 1.4v.

Given: Time taken to walk B to C = time taken to run B to A = 3.5 hours

Therefore, BC = 3.5v and BA = 3.5 × 1.4v = 4.9v.

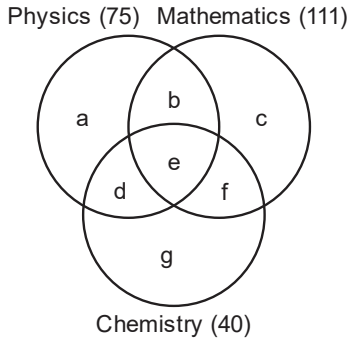
Required time = walking A to B + running B to C

= 4.9v/v + 3.5v/1.4v

= 4.9 + 2.5 = 7.4 hours

Therefore, total time = 7.4 × 60 = 444 minutes.

22. 1



Note: d + e = x, e + f = x, and b + e = 2x

Now (a + c + g) + 2(b + d + f) + 3e

= 75 + 111 + 40

$\Rightarrow$ 150 – e + 4x = 226

$\Rightarrow$ 4x – e = 226 – 150 = 76

$\Rightarrow$ 4x = 76 + e

$$\Rightarrow x = \frac{76 + e}{4}$$

We need to maximise a + d = 75 – 2x

Let e = 4, then x = 20

Hence, a + d = 75 – 40 = 35 is the maximum possible value.