CAT 2025 SOLVED PAPER (SLOT-2)

Section I : VARC

1. 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: While taste is related to judgment, with thinkers at the time often writing, for example, about "judgments of taste" or using the two terms interchangeably, taste retains a vital link to pleasure, embodiment, and personal specificity that is too often elided in post-Kantian ideas about judgment—a link that Arendt herself was working to restore.

Paragraph: ____(1) ____. Denneny focused on taste rather than judgment in order to highlight what he believed was a crucial but neglected historical change. ____(2) ____. Over the course of the seventeenth century and early eighteenth century, across Western Europe, the word taste took on a new extension of meaning, no longer referring specifically to gustatory sensation and the delights of the palate but becoming, for a time, one of the central categories for aesthetic—and ethical—thinking. ____(3) ____. Tracing the history of taste in Spanish, French, and British aesthetic theory, as Denneny did, also provides a means to recover the compelling and relevant writing of a set of thinkers who have been largely neglected by professional philosophy. ____(4) ____.

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

Question Numbers (2 to 5): The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

Time and again, whenever a population [of Mexican tetra fish] was swept into a cave and survived long enough for natural selection to have its way, the eyes disappeared. "But it's not that everything has been lost in cavefish . . Many enhancements have also happened." . . . Studies have found that cave-dwelling fish can detect lower levels of amino acids than surface fish can. They also have more tastebuds and a higher density of sensitive cells alongside their bodies that let them sense water pressure and flow. . . .

Killing the processes that support the formation of the eye is quite literally what happens. Just like non-cave-dwelling members of the species, all cavefish embryos start making eyes. But after a few hours, cells in the developing eye start dying, until the entire structure has disappeared. [Developmental biologist Misty] Riddle thinks this apparent inefficiency may be unavoidable. "The early development of the brain and the eye are completely intertwined—they happen together," she says. That means the least disruptive way for eyelessness to evolve may be to start making an eye and then get rid of it. . . .

It's easy to see why cavefish would be at a disadvantage if they were to maintain expensive tissues they aren't using. Since relatively little lives or grows in their caves, the fish are likely surviving on a meager diet of mostly bat feces and organic waste that washes in during the rainy season.

Researchers keeping cavefish in labs have discovered that, genetically, the creatures are exquisitely adapted to absorbing and storing nutrients. . . .

Fats can be toxic for tissues, [evolutionary physiologist Nicolas] Rohner explains, so they are stored in fat cells. "But when these cells get too big, they can burst, which is why we often see chronic inflammation in humans and other animals that have stored a lot of fat in their tissues." Yet a 2020 study by Rohner, Krishnan and their colleagues revealed that even very well-fed cavefish had fewer signs of inflammation in their fat tissues than surface fish do. Even in their sparse cave conditions, wild cavefish can sometimes get very fat, says Riddle. This is presumably because, whenever food ends up in the cave, the fish eat as much of it as possible, since there may be nothing else for a long time to come. Intriguingly, Riddle says, their fat is usually bright yellow, because of high levels of carotenoids, the substance in the carrots that your grandmother used to tell you were good for your…eyes.

"The first thing that came to our mind, of course, was that they were accumulating these because they don't have eyes," says Riddle. In this species, such ideas

can be tested: Scientists can cross surface fish (with eyes) and cavefish (without eyes) and look at what their offspring are like. When that's done, Riddle says, researchers see no link between eye presence or size and the accumulation of carotenoids. Some eyeless cavefish had fat that was practically white, indicating lower carotenoid levels. Instead, Riddle thinks these carotenoids may be another adaptation to suppress inflammation, which might be important in the wild, as cavefish are likely overeating whenever food arrives.

2. Which one of the following results for the cross between surface fish (with eyes) and cavefish (without eyes) would invalidate Riddle's inference from the experiment?

1. Some eyeless offspring had white fat.
2. Some offspring with eyes had yellow fat.
3. Only eyeless offspring had yellow fat.
4. Some offspring with eyes had white fat.

3. All of the following statements from the passage describe adaptation in Mexican tetra cavefish EXCEPT:

1. "Since relatively little lives or grows in their caves, the fish are likely surviving on a meager diet of mostly bat feces and organic waste that washes in during the rainy season."
2. "'But when these cells get too big, they can burst, which is why we often see chronic inflammation in humans and other animals that have stored a lot of fat in their tissues.'"
3. "Even in their sparse cave conditions, wild cavefish can sometimes get very fat, says Riddle."
4. "It's easy to see why cavefish would be at a disadvantage if they were to maintain expensive tissues they aren't using."

4. Which one of the following best explains why the "apparent inefficiency" is "unavoidable"?

1. The inefficiency resulting from eyelessness is compensated by enhancements like more tastebuds in Mexican tetra cavefish.
2. The lack of light in the caves kills the eye cells in the developing Mexican tetra cavefish embryo.
3. The caves have poor and inconsistent availability of food and nutrition for Mexican tetra cavefish.
4. Mexican tetra cavefish are similar to non-cave-dwelling variants in their early stages of development.

5. On the basis of the information in the passage, what is the most likely function of carotenoids in Mexican tetra cavefish?

1. To render bright yellow colour to the cavefish.
2. To act as a substitute for eyes.
3. To control inflammation from the bursting of fat cells.
4. To help the fat cells store nutrients.

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

In 1903, left-wing feminist Elizabeth Magie invented The Landlord's Game, the original version of what became Monopoly. It was designed as a powerful teaching tool to illustrate the dangers of monopolies and how wealth could concentrate in the hands of a few. The game featured a circular path, properties, and a "Go to Jail" space. Magie created two rule sets: one "monopolist" version where players crushed opponents through accumulation, and another, more radical "Prosperity" version, where everyone shared in the wealth, promoting fairness and equity. Years later, unemployed Charles Darrow sold a simplified version to Parker Brothers. They paid Magie only $500 for her patent—without royalties—and credited Darrow as the sole inventor. For decades, his tale of inventing the game in his basement remained the official story, while Magie's name and her original, anti-capitalist message were left in the shadows.

1. Celebrated icons of the gaming industry, Charles Darrow and Parker Brothers, snatched the feminist icon Elizabeth Magie's original design and transformed Monopoly into a worldwide phenomenon, while barely acknowledging her.
2. Parker Brothers' capitalist intent led to them acquiring from Charles Darrow a simplified version of Elizabeth Magie's original game, transforming it into a widespread commercial success while providing her only minimal financial compensation and granting scant public recognition.
3. Only one version of Monopoly became famous because of Charles Darrow's relentless basement work, carefully refining Elizabeth Magie's original idea into an engaging and entertaining pastime that he successfully patented and sold, symbolizing what many regarded as the ultimate triumph of individual ingenuity.
4. It is ironical that a left-wing feminist lost credit for the Landlord's Game to an unemployed man, who plagiarised and sold one version of the twin game to Parker Brothers for a meagre sum, denying her royalties.

Question Numbers (7 to 10): The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

In [my book "Searches"], I chronicle how big technology companies have exploited human language for their gain. We let this happen, I argue, because we also benefit somewhat from using the products. It's a dynamic that makes us complicit in big tech's accumulation of wealth and power: we're both victims and beneficiaries. I describe this complicity, but I also enact it, through my own internet archives: my Google searches, my Amazon product reviews and, yes, my ChatGPT dialogues. . . .

People often describe chatbots' textual output as "bland" or "generic" – the linguistic equivalent of a beige office building. OpenAI's products are built to "sound like a colleague", as OpenAI puts it, using language that, coming from a person, would sound "polite", "empathetic", "kind", "rationally optimistic" and "engaging", among other qualities. OpenAI describes these strategies as helping its products seem "professional" and "approachable". This appears to be bound up with making us feel safe . . .

Trust is a challenge for artificial intelligence (AI) companies, partly because their products regularly produce falsehoods and reify sexist, racist, US-centric cultural norms. While the companies are working on these problems, they persist: OpenAI found that its latest systems generate errors at a higher rate than its previous system. In the book, I wrote about the inaccuracies and biases and also demonstrated them with the products. When I prompted Microsoft's Bing Image Creator to produce a picture of engineers and space explorers, it gave me an entirely male cast of characters; when my father asked ChatGPT to edit his writing, it transmuted his perfectly correct Indian English into American English. Those weren't flukes. Research suggests that both tendencies are widespread.

In my own ChatGPT dialogues, I wanted to enact how the product's veneer of collegial neutrality could lull us into absorbing false or biased responses without much critical engagement. Over time, ChatGPT seemed to be guiding me to write a more positive book about big tech – including editing my description of OpenAI's CEO, Sam Altman, to call him "a visionary and a pragmatist". I'm not aware of research on whether ChatGPT tends to favor big tech, OpenAI or Altman, and I can only guess why it seemed that way in our conversation. OpenAI explicitly states that its products shouldn't attempt to influence users' thinking. When I asked ChatGPT about some of the issues, it blamed biases in its training data – though I suspect my arguably leading questions played a role too. When I queried ChatGPT about its rhetoric, it responded: "The way I communicate is designed to foster trust and confidence in my responses, which can be both helpful and potentially misleading.". . .

OpenAI has its own goals, of course. Among them, it emphasizes wanting to build AI that "benefits all of humanity". But while the company is controlled by a non-profit with that mission, its funders still seek a return on their investment. That will presumably require getting people using products such as ChatGPT even more than they already are – a goal that is easier to accomplish if people see those products as trustworthy collaborators.

7. All of the following statements from the passage affirm the disjunct between the claims about AI made by tech companies and what AI actually does EXCEPT:

1. "It's a dynamic that makes us complicit in big tech's accumulation of wealth and power: we're both victims and beneficiaries."
2. "When I prompted Microsoft's Bing Image Creator to produce a picture of engineers and space explorers, it gave me an entirely male cast of characters . . ."
3. "In my own ChatGPT dialogues, I wanted to enact how the product's veneer of collegial neutrality could lull us into absorbing false or biased responses without much critical engagement."
4. "I'm not aware of research on whether ChatGPT tends to favor big tech, OpenAI or Altman, and I can only guess why it seemed that way in our conversation."

8. On the basis of the purpose of the examples in the passage, pick the odd one out from the following AI-generated responses mentioned in the passage:

1. "When I queried ChatGPT about its rhetoric, it responded: 'The way I communicate is designed to foster trust and confidence in my responses, which can be both helpful and potentially misleading'."
2. "Over time, ChatGPT seemed to be guiding me to write a more positive book about big tech – including editing my description of OpenAI's CEO, Sam Altman, to call him 'a visionary and a pragmatist'."
3. "When I prompted Microsoft's Bing Image Creator to produce a picture of engineers and space explorers, it gave me an entirely male cast of characters . . ."

4. ". . . when my father asked ChatGPT to edit his writing, it transmuted his perfectly correct Indian English into American English."

9. The author compares AI-generated texts with "a beige office building" for all of the following reasons EXCEPT:

1. AI aims to foster a feeling of trust and credibility among its users.
2. AI-generated texts often exhibit a warm, polite, and collegial tone.
3. AI tends to blame its training data when scrutinised for its biases.
4. AI generates generalised responses that lack specificity and nuance.

10. The author of the passage is least likely to agree with which one of the following claims?

1. The neutrality of AI is motivated by economic considerations.
2. When we use AI, we become accomplices to the exploitative practices of big tech companies.
3. The neutrality of AI is conducive to critical thinking.
4. ChatGPT favours AI companies and their officials, like Sam Altman, in its responses.

11. 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. As books age, the cellulose and lignin in the paper begin to break down, releasing a mix of volatile organic compounds into the air.
2. Old books carry a scent that many people instantly recognize—and even love.
3. These compounds are benzaldehyde, which gives off an almond-like scent, vanillin, which smells like vanilla, ethyl hexanol (floral scent), toluene (sweet), and furfural (which has a slightly bready scent).
4. This familiar aroma isn't just dust or mildew; it's actually a result of slow chemical changes happening inside the paper and ink.

12. 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. 'Literature on screen' suggests something more capacious and defining than citation: the possibility that literary adaptations are at once cinema and literature.
2. Even though a growing number of films eligible for Academy Awards for Best Screenplay Based on Material from Another Medium borrow that material from print journalism, franchise characters, television series, comic books, video games and toys, academic studies of adaptation remain stubbornly attached to literature as cinema's natural progenitor.
3. It is as if adaptation studies, by borrowing the cultural cachet of literature, sought to claim its institutional respectability and gravitas even while insuring adaptation's enduring aesthetic and methodological subordination to literature proper.
4. Beneath this contradictory notion of film adaptations as not merely hybrid texts but texts holding dual citizenship in two modes of presentation is an even more pervasive legacy that haunts adaptation studies: the assumption that the primary context within which adaptations are to be studied is literature.

13. 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. Pfas are a class of about 15,000 compounds most frequently used to make products water-, stain- and grease-resistant.
2. New research suggests exposure to some common perfluoroalkyl and polyfluoroalkyl substances (Pfas) cause changes to gene activity and that these changes are linked to health problems including multiple cancers, neurological disorders and autoimmune disease.
3. These Pfas compounds are dubbed "forever chemicals" because they do not naturally break down in the environment.
4. The research may also point toward other diseases potentially caused by Pfas that have not yet been identified.
5. The findings are a major step toward determining the mechanism by which the chemicals cause disease and could help doctors identify, detect and treat health problems for those exposed to Pfas before the issues advance.

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

For millennia, in the process of opening up land for agriculture, gardens, grazing and hunting, humans have created ecological "mosaics", or "patchworks": landscapes holding a mixture of habitats, like meadows, gardens and forests. These were not designed as nature reserves, but often catered to hugely diverse animal life. Research indicates that European hay meadows cultivated for animal feed were actually more successful at preserving a vast array of species than meadows explicitly cultivated for biodiversity. Studying the early Holocene, researchers have found that human presence was about as likely to increase biodiversity as reduce it. Of course, not all human-created landscapes have the same value. A paved subdivision with astroturfed lawns is very different to a village with diverse vegetable and flower gardens. But scientists continue to find evidence that the old idea of humans as antithetical to nature is also wrong-headed, and that rosy visions of thriving, human-free environments are more imaginary than real.

1. In terms of preserving biodiversity, scientists are finding increasing evidence that human action is not always antithetical to nature, but often assists the preservation of meadows, landscapes, and flourishing of species.
2. Studying the early Holocene and human practices over millennia, researchers say that while agricultural meadows, gardens, and forests were not explicitly designed as nature reserves, they actually preserved a vast array of species, belying the idea that humans harm nature.
3. Contrary to the idea that humans always hurt nature and that it thrives in their absence, a lot of human action across history has been equally likely to increase biodiversity than reduce it, often creating varied ecological landscapes that support a vast array of species.
4. In our attempts to shape the world around us to our needs, humans have often created landscapes like meadows, gardens, and forests, which support hugely diverse species, and are more successful at preserving them, than parks created specifically for this.

Question Numbers (15 to 18): The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

Different sciences exhibit different science cultures and practices. For example, in astronomy, observation – until what is today called the new astronomy – had always been limited to what could be seen within the limits of optical light. Indeed, until early modernity the limits to optical light were also limits of what humans could themselves see within their limited and relative perceptual spectrum of human vision. With early modernity and the invention of lensed optical instruments – telescopes – astronomers could begin to observe phenomena never seen before. Magnification and resolution began to allow what was previously imperceptible to be perceived – but within the familiar limits of optical vision. Galileo, having learned of the Dutch invention of a telescope by Hans Lippershey, went on to build some hundred of his own, improving from the Dutch 3x to nearly 30x telescopes – which turn out to be the limit of magnificational power without chromatic distortion. And it was with his own telescopes that he made the observations launching early modern astronomy (phases of Venus, satellites of Jupiter, etc.). Isaac Newton's later improvement with reflecting telescopes expanded upon the magnificational-resolution capacity of optical observation; and, from Newton to the twentieth century, improvement continued on to the later very large array of light telescopes today – following the usual technological trajectory of "more-is-better" but still remaining within the limits of the light spectrum. Today's astronomy has now had the benefit of some four centuries of optical telescopy. The "new astronomy," however, opens the full known electromagnetic spectrum to observation, beginning with the accidental discovery of radio astronomy early in the twentieth century, and leading today to the diverse variety of EMS telescopes which can explore the range from gamma to radio waves. Thus, astronomy, now outfitted with new instruments, "smart" adaptive optics, very large arrays, etc., illustrates one style of instrumentally embodied science – a technoscience. Of course astronomy, with the very recent exceptions of probes to solar system bodies (Moon, Mars, Venus, asteroids), remains largely a "receptive" science, dependent upon instrumentation which can detect and receive emissions.

Contemporary biology displays a quite different instrument array and, according to Evelyn Fox-Keller, also a different scientific culture. She cites her own experience, coming from mathematical physics into

microbiology, and takes account of the distinctive instrumental culture in her Making Sense of Life (2002). Here, particularly with the development of biotechnology, instrumentation is far more interventional than in the astronomy case. Microscopic instrumentation can be and often is interventional in style: "gene-splicing" and other techniques of biotechnology, while still in their infancy, are clearly part of the interventional trajectory of biological instrumentation. Yet, in both disciplines, the sciences involved are today highly instrumentalized and could not progress successfully without constant improvements upon the respective instrumental trajectories. So, minimalistically, one may conclude that the sciences are technologically, instrumentally embodied. But the styles of embodiment differ, and perhaps the last of the scientific disciplines to move into such technical embodiment is mathematics, which only contemporarily has come to rely more and more upon the computational machinery now in common use.

15. All of the following statements may be rejected as valid inferences from the passage EXCEPT:

1. the advances in telescopy made by Newton with reflecting telescopes allowed early modern astronomers to observe the phases of Venus and the satellites of Jupiter.
2. interventionist instruments, or instruments that intervene directly in scientific inquiry, are different from embodied instruments, or instruments that embody scientific inquiry.
3. the author distinguishes between the receptive and interventionist uses of instruments in the sciences by comparing astronomy and biology, respectively.
4. Isaac Newton's experiments with reflecting telescopes were the earliest versions of the "new astronomy" referred to in the passage.

16. Which one of the following observations is a valid conclusion to draw from the statement that "the sciences involved are today highly instrumentalised and could not progress successfully without constant improvements upon the respective instrumental trajectories"?

1. In both astronomy and microbiology, progress has been the consequence of improvements in the instruments they use.
2. Highly instrumentalised work in the sciences has resulted in the progressive improvement of scientific constants.
3. The growth of scientific technologies has led to the embodiment of progress in the trajectories of improvement.
4. The use of instruments in scientific trajectories must be respected in order to see successful progress in them.

17. None of the following statements, if true, contradicts the arguments in the passage EXCEPT:

1. because of the relatively recent entry of computational machinery in mathematics, the field is only now beginning to develop a scientific culture.
2. some scientific instruments may be classified as both receptive and interventional in their functions.
3. like telescopy, microscopy has also sought to move beyond the visible spectrum to be able to detect objects that are invisible in that spectrum.
4. Isaac Newton's discovery of gravity was accomplished without the help of instruments.

18. To which one of the following instruments would the characterisations of instruments in the passage be least applicable?

1. Kitchen oven
2. Milestone
3. Scalpel
4. Saxophone

19. 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- The region's Western customers found it hard to believe that Dhaka muslin could possibly have been made by human hands – there were rumour that it was woven by mermaids, fairies and even ghosts.

Once upon the silty banks of the Meghna River, a miracle was spun — a fabric so light it was called "baft-hawa", or woven air. This was Dhaka Muslin — the world's most coveted cloth. ____(1)____. Handspun from a rare cotton called Phuti Karpas, found nowhere else on Earth, and woven with a 16-step sacred ritual — beginning with cleaning the cotton using the teeth of a river catfish! ____(2)____. Every spring, the maple-like leaves pushed up through the grey, silty soil to produce a single daffodil-yellow flower twice a year, which gave way to a snowy floret of cotton fibres. ____(3)____. Spun at dawn on boats by sharp-eyed young women, its threads were so fine the elderly could barely see them. Motifs of

wildflowers, river breeze, and soul were etched into each piece — some so light, a 91-metre bolt could pass through a ring, or a 60' length fit inside a snuffbox. It draped Greek goddesses, Roman nobles, Mughal emperors, and European aristocrats. Marie Antoinette, Empress Joséphine — even Jane Austen adored its floating grace. ____(4)____.

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

Question Numbers (20 to 23): The passage below is accompanied by four questions. Based on the passage, choose the best answer for each question.

This book takes the position that setting in literature is more than just backdrop, that important insight into literary texts can be made by paying close attention to how authors craft place, as well as to how place functions in a narrative. The authors included in this reference work engage deeply with either real or imagined geographies. They care about how human decisions have shaped landscapes and how landscapes have shaped human practices and values. Some of the best writing is highly vivid, employing the language of the senses because this is the primary means through which humans know physical space.

Literature can offer valuable perspectives on physical and cultural geography. Unlike scientific reports, a literary narrative can provide the emotional component missing from the scientific record. In human experience, geographical places have a spiritual or emotional component in addition to and as part of a physical layout and topography. This emotional component, although subjective, is no less "real" than a surveyor's map. Human consciousness of place is experienced in a multi-modal manner. Histories of places live on in many forms, one of which is the human memory or imagination.

Both real and imaginary landscapes provide insight into the human experience of place. The pursuit of such a topic speaks to the valuable knowledge produced from bridging disciplines and combining material from both the arts and the sciences to better understand the human condition. The perspectives that most concern cultural geographers are often those regarding movement and migration, cultivation of natural resources, and organization of space. The latter two reflect concerns of the built environment, a topic shared with the field of architectural study. Many of these concerns are also reflected in work sociologists do. Scholars from literary studies can contribute an aesthetic dimension to what might otherwise be a purely ideological approach.

Literature can bring together material that spans different branches of science. For example, a literary description of place may involve not only the environment and geography but the noises and quality of light, or how people from different races or classes can experience the same place in different ways linked to those racial or class disparities. Literary texts can also account for the way in which absence—of other people, animals, and so on—affects a human observer or inhabitant. Both literary and scientific approaches to place are necessary, working in unison, to achieve a complete record of an environment. It is important to note that the interdisciplinary nature of this work teaches us that landscapes are not static, that they are not unchanged by human culture. At least part of their identity derives from the people who inhabit them and from the way space can alter and inspire human perspective. The intersection of scientific and literary expression that happens in the study of literary geography is of prime importance due to the complexity of the personal and political ways that humans experience place.

20. The author uses the example of the literary description of place to illustrate that:

1. the absence of other people, animals, and so on in a place can profoundly affect its inhabitants.
2. architects use diverse methods to calibrate the noises and lights of a given place.
3. literature can convey how different people experience the same place differently.
4. scientific approaches to place are more accurate than literary ones.

21. Which one of the following is not true of the argument in the second paragraph?

1. The emotional and spiritual experience of a place can replace a surveyor's map.
2. Analysing the literary descriptions of a place can give us a sense of how people relate emotionally to it.
3. The spiritual experience of a place may be considered as real as the physical experience of it.
4. Literary accounts of places can be filled with histories, manifested as memory or imagination.

22. All of the following statements, if false, would contradict the arguments in the passage, EXCEPT that:

1. highly vivid writing, employing the language of the senses, can capture the multi-modal manner in which humans experience places.
2. literature provides us with deep insights into the ways in which movement and migration affect physical geography.
3. humans do not interact with places in subjective, emotional ways because places are only physical topography.
4. descriptions of places do not need satellite imagery or other visual aids to give a "real" sense of the place.

23. Which one of the following is a valid conclusion to draw from the author's statement that, "The pursuit of such a topic speaks to the valuable knowledge produced from bridging disciplines and combining material from both the arts and the sciences to better understand the human condition."?

1. A comprehensive understanding of the valuable knowledge produced by the arts and sciences can best be achieved by studying the human condition.
2. A comprehensive bridging of the human condition can best be achieved by a disciplined pursuit of human understanding.
3. The literary descriptions of the emotions we experience in the places we visit can contribute to our understanding of the arts and sciences.
4. A comprehensive understanding of the human condition can best be achieved by combining the findings of disciplines from the arts and the sciences.

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. Sporting a copper-coloured pixie cut and a pair of pink feather antlers, Torres himself resembles a child's doodle.
2. His casual millennial delivery, peppered with "um"s and "ah"s, makes surreal concepts sound like items on a brunch menu.
3. Though he may have failed so far in his colour-scouting mission (he hasn't yet found a new one, he admits), this hour leaves you tickled pink.
4. Like his previous show, My Favourite Shapes, this is an hour of sit-down comedy aided by an overhead camera which relays Torres's theories – illustrated with crayon squiggles – on to a screen behind him.
5. His inquisitive mind produces interconnected ideas about Catholicism, the blandness of Pixar and what orange sounds like, while his insights train us to spot "highly purple behaviour".

Section II : DI & LR

Question Numbers (1 to 4):

There are six spherical balls, B1, B2, B3, B4, B5, and B6, and four circular hoops H1, H2, H3, and H4.

Each ball was tested on each hoop once, by attempting to pass the ball through the hoop. If the diameter of a ball is not larger than the diameter of the hoop, the ball passes through the hoop and makes a "ping". Any ball having a diameter larger than that of the hoop gets stuck on that hoop and does not make a ping.

The following additional information is known:

1. B1 and B6 each made a ping on H4, but B5 did not.
2. B4 made a ping on H3, but B1 did not.
3. All balls, except B3, made pings on H1.
4. None of the balls, except B2, made a ping on H2.

1. What was the total number of pings made by B1, B2, and B3?

2. Which of the following statements about the relative sizes of the balls is NOT NECESSARILY true?

1. B2 < B1 < B5
2. B1 < B5 < B3
3. B4 < B5 < B3
4. B1 < B6 < B3

3. Which of the following statements about the relative sizes of the hoops is true?

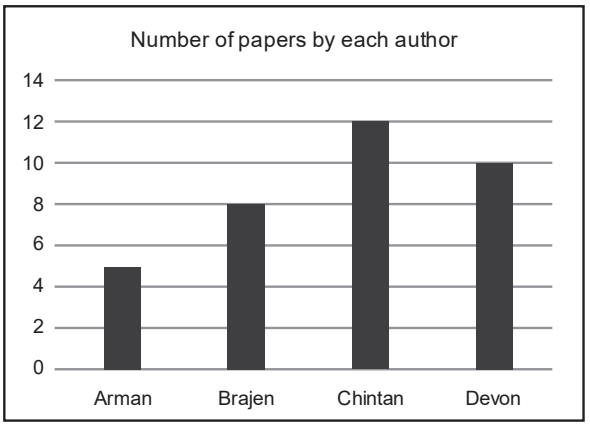
1. H2 < H4 < H3 < H1
2. H1 < H4 < H3 < H2
3. H2 < H3 < H4 < H1
4. H1 < H3 < H4 < H2

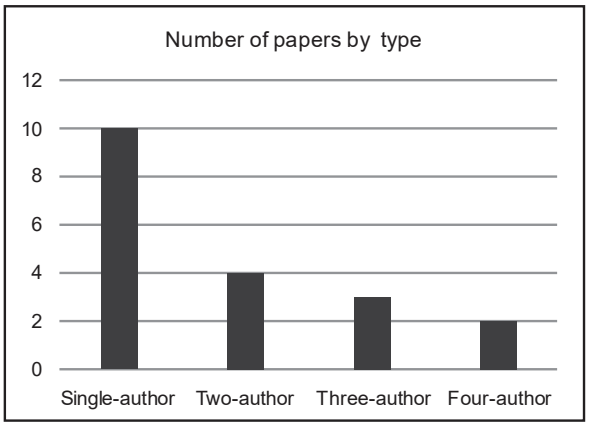
4. What BEST can be said about the total number of pings from all the tests undertaken?

1. 13 or 14
2. 12 or 13
3. At least 9
4. 12 or 13 or 14

Question Numbers (5 to 8):

The following charts depict details of research papers written by four authors, Arman, Brajen, Chintan, and Devon. The papers were of four types, single-author, two-author, three-author, and four-author, that is, written by one, two, three, or all four of these authors, respectively. No other authors were involved in writing these papers.





The following additional facts are known.

1. Each of the authors wrote at least one of each of the four types of papers.
2. The four authors wrote different numbers of single-author papers.
3. Both Chintan and Devon wrote more three-author papers than Brajen.
4. The number of single-author and two-author papers written by Brajen were the same.

5. What was the total number of two-author and three-author papers written by Brajen?

6. Which of the following statements is/are NECESSARILY true?

i. Chintan wrote exactly three two-author papers.

ii. Chintan wrote more single-author papers than Devon.

1. Neither i nor ii 2. Only i
3. Both i and ii 4. Only ii

7. Which of the following statements is/are NECESSARILY true?

i. Arman wrote three-author papers only with Chintan and Devon.

ii. Brajen wrote three-author papers only with Chintan and Devon.

1. Neither i or ii 2. Both i and ii
3. Only ii 4. Only i

8. If Devon wrote more than one two-author papers, then how many two-author papers did Chintan write?

Question Numbers (9 to 13):

Ananya Raga, Bhaskar Tala, Charu Veena, and Devendra Sur are four musicians. Each of them started and completed their training as students under each of three Gurus — Pandit Meghnath, Ustad Samiran, and Acharya Raghunath between 2013 and 2024, including both the years. Each Guru trains any student for consecutive years only, for a span of 2, 3, or 4 years, with each Guru having a different span. During some of these years, a student may not have trained under these Gurus; however, they never trained under multiple Gurus in the same year.

In none of these years, any of these Gurus trained more than two of these students at the same time. When two students train under the same Guru at the same time, they are referred to as Gurubhai, irrespective of their gender.

The following additional facts are known.

1. Ustad Samiran never trained more than one of these students in the same year.
2. Acharya Raghunath did not train any of these students during 2015-2018, as well as during 2021-24.
3. Ananya and Devendra were never Gurubhai; neither were Bhaskar and Charu. All other pairs of musicians were Gurubhai for exactly 2 years.
4. In 2013, Ananya and Bhaskar started their trainings under Pandit Meghnath and under Ustad Samiran, respectively.

9. In which of the following years were Ananya and Bhaskar Gurubhai?

1. 2020 2. 2018
3. 2021 4. 2014

10. In which year did Charu begin her training under Pandit Meghnath?

1. 2017 2. 2015
3. 2016 4. 2021

11. In which of the following years were Bhaskar and Devendra Gurubhai?

1. 2015 2. 2022
3. 2018 4. 2020

12. Which of the following statements is TRUE?

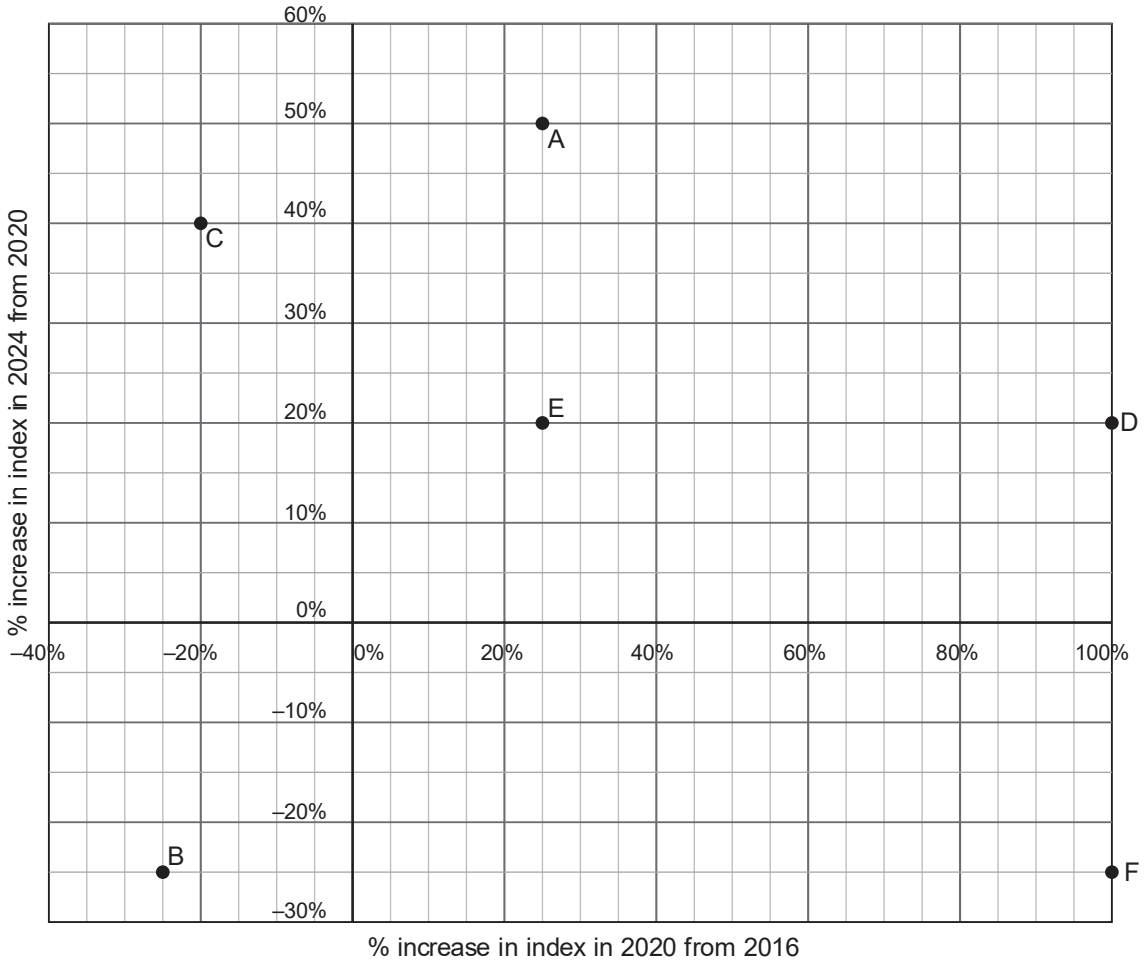
1. Ananya was training under Ustad Samiran in 2015.
2. Charu was training under Ustad Samiran in 2019.
3. Ananya was training under Ustad Samiran in 2018.
4. Charu was training under Ustad Samiran in 2018.

13. In how many of the years between 2013-24, were only two of these four musicians training under these three Gurus?

Question Numbers (14 to 17):

The Sustainability Index (SI) of a country at a point in time is an integer between 1 and 100. This question is related to SI of six countries – A, B, C, D, E, and F – at three different points in time – 2016, 2020, and 2024. The plot represents the exact changes in their SI, with X-coordinate representing % increase in 2020 from 2016, i.e., (SI in 2020 minus SI in 2016) / (SI in 2016), and Y-coordinate representing % increase in 2024 from 2020. At any point in time, the country with highest SI is ranked 1, while the country with the lowest SI is ranked 6. The following additional facts are known.

1. In 2016, B, C, E, and A had ranks 1, 2, 3, and 4 respectively.
2. F had lower SI than any other country in 2016, 2020, and 2024.
3. In 2024, E was the only country with SI of 90.
4. The range of SI of the six countries was 60 in 2016 as well as in 2024.



14. What was the SI of E in 2016?

15. What was the SI of F in 2020?

16. What was the SI of C in 2024?

17. What was the SI of B in 2024?

1. 54
2. 45
3. 60
4. 80

Question Numbers (18 to 22):

The two most populous cities and the non-urban region (NUR) of each of three states, Whimshire, Fogglia, and Humbleset, are assigned Pollution Measures (PMs). These nine PMs are all distinct multiples of 10, ranging from 10 to 90. The six cities in increasing order of their PMs are: Blusterburg, Noodleton, Splutterville, Quackford, Mumpypore, Zingaloo.

The Pollution Index (PI) of a state is a weighted average of the PMs of its NUR and cities, with a weight of 50% for the NUR, and 25% each for its two cities.

There is only one pair of an NUR and a city (considering all cities and all NURs) where the PM of the NUR is greater than that of the city. That NUR and the city both belong to Humbleset.

The PIs of all three states are *distinct integers*, with Humbleset and Fogglia having the highest and the lowest PI respectively.

18. What is the PI of Whimshire?

19. What is the PI of Fogglia?

20. What is the PI of Humbleset?

21. Which pair of cities definitely belong to the same state?

1. Splutterville, Quackford
2. Mumpypore, Zingaloo
3. Noodleton, Quackford
4. Blusterburg, Mumpypore

22. For how many of the cities and NURs is it possible to identify their PM and the state they belong to?

Section III : QA

1. In a ΔABC, points D and E are on the sides BC and AC, respectively. BE and AD intersect at point T such that AD : AT = 4 : 3, and BE : BT = 5 : 4. Point F lies on AC such that DF is parallel to BE. Then, BD : CD is

1. 7 : 4
2. 15 : 4
3. 9 : 4
4. 11 : 4

2. Let $f(x) = \frac{x}{(2x-1)}$ and $g(x) = \frac{x}{(x-1)}$. Then, the domain of the function h(x) = f(g(x)) + g(f(x)) is all real numbers except

1. 1/2, 1, and 3/2
2. –1/2, 1/2, and 1
3. –1, 1/2, and 1
4. 1/2, and 1

3. The set of all real values of x for which $(x^2 - |x + 9| + x) > 0$, is

1. $(-9, -3) \cup (3, \infty)$
2. $(-\infty, -9) \cup (3, \infty)$
3. $(-\infty, -3) \cup (3, \infty)$
4. $(-\infty, -9) \cup (9, \infty)$

4. If $9^{x^2+2x-3} - 4(3^{x^2+2x-2}) + 27 = 0$, then the product of all possible values of x is

1. 5
2. 30
3. 20
4. 15

5. Ankita is twice as efficient as Bipin, while Bipin is twice as efficient as Chandan. All three of them start together on a job, and Bipin leaves the job after 20 days. If the job got completed in 60 days, the number of days needed by Chandan to complete the job alone, is

6. If $\log_{64} x^2 + \log_8 \sqrt{y} + 3\log_{512}(\sqrt{y}\, z) = 4$, where x, y and z are positive real numbers, then the minimum possible value of (x + y + z) is

1. 24
2. 96
3. 48
4. 36

7. The number of divisors of $(2^6 \times 3^5 \times 5^3 \times 7^2)$, which are of the form (3r + 1), where r is a non-negative integer, is

1. 24
2. 36
3. 42
4. 56

8. The average number of copies of a book sold per day by a shopkeeper is 60 in the initial seven days and 63 in the initial eight days, after the book launch. On the ninth day, she sells 11 copies less than the eighth day, and the average number of copies sold per day from second day to ninth day becomes 66. The number of copies sold on the first day of the book launch is

9. Suppose a, b, c are three distinct natural numbers, such that 3ac = 8(a + b). Then, the smallest possible value of 3a + 2b + c is

10. Two tangents drawn from a point P touch a circle with centre O at points Q and R. Points A and B lie on PQ and PR, respectively, such that AB is also a tangent to the same circle. If $\angle AOB = 50°$, then $\angle APB$, in degrees, equals

11. Let ABCDEF be a regular hexagon and P and Q be the midpoints of AB and CD, respectively. Then, the ratio of the areas of trapezium PBCQ and hexagon ABCDEF is

1. 6 : 19
2. 7 : 24
3. 5 : 24
4. 6 : 25

12. A certain amount of money was divided among Pinu, Meena, Rinu and Seema. Pinu received 20% of the total amount and Meena received 40% of the remaining amount. If Seema received 20% less than Pinu, the ratio of the amounts received by Pinu and Rinu is

1. 2 : 1
2. 8 : 5
3. 5 : 8
4. 1 : 2

13. A mixture of coffee and cocoa, 16% of which is coffee, costs Rs 240 per kg. Another mixture of coffee and cocoa, of which 36% is coffee, costs Rs 320 per kg. If a new mixture of coffee and cocoa costs Rs. 376 per kg, then the quantity, in kg, of coffee in 10 kg of this new mixture is

1. 4
2. 5
3. 2.5
4. 6

14. A loan of Rs 1000 is fully repaid by two installments of Rs 530 and Rs 594, paid at the end of first and second year, respectively. If the interest is compounded annually, then the rate of interest, in percentage, is

1. 10
2. 8
3. 11
4. 9

15. If m and n are integers such that (m + 2n)(2m + n) = 27, then the maximum possible value of 2m – 3n is

16. Rita and Sneha can row a boat at 5 km/h and 6 km/h in still water, respectively. In a river flowing with a constant velocity, Sneha takes 48 minutes more to row 14 km upstream than to row the same distance downstream. If Rita starts from a certain location in the river, and returns downstream to the same location, taking a total of 100 minutes, then the total distance, in km, Rita will cover is

17. Let a_n be the n^{th} term of a decreasing infinite geometric progression. If $a_1 + a_2 + a_3 = 52$ and $a_1a_2 + a_2a_3 + a_3a_1 = 624$, then the sum of this geometric progression is

1. 57
2. 60
3. 63
4. 54

18. If a, b, c and d are integers such that their sum is 46, then minimum possible value of $(a - b)^2 + (a - c)^2 + (a - d)^2$ is

19. The sum of digits of the number $(625)^{65} \times (128)^{36}$, is

20. An item with a cost price of Rs. 1650 is sold at a certain discount on a fixed marked price to earn a profit of 20% on the cost price. If the discount was doubled, the profit would have been Rs. 110. The rate of discount, in percentage, at which the profit percentage would be equal to the rate of discount, is nearest to

1. 12
2. 18
3. 16
4. 14

21. The equations $3x^2 - 5x + p = 0$ and $2x^2 - 2x + q = 0$ have one common root. The sum of the other roots of these two equations is

1. $\frac{8}{3} - p + \frac{3}{2}q$
2. $\frac{2}{3} - 2p + \frac{2}{3}q$
3. $\frac{2}{3} - p + \frac{3}{2}q$
4. $\frac{8}{3} + p + \frac{1}{3}q$

22. The ratio of expenditures of Lakshmi and Meenakshi is 2 : 3, and the ratio of income of Lakshmi to expenditure of Meenakshi is 6 : 7. If excess of income over expenditure is saved by Lakshmi and Meenakshi, and the ratio of their savings is 4 : 9, then the ratio of their incomes is

1. 5 : 6
2. 3 : 5
3. 2 : 1
4. 7 : 8

ANSWERS

VARC

1. (4)	**2.** (3)	**3.** (2)	**4.** (4)	**5.** (3)	**6.** (4)	**7.** (4)	**8.** (1)	**9.** (3)	**10.** (3)
11. (2413)	**12.** (1423)	**13.** (3)	**14.** (3)	**15.** (3)	**16.** (1)	**17.** (1)	**18.** (2)	**19.** (3)	**20.** (3)
21. (1)	**22.** (3)	**23.** (4)	**24.** (3)						

DILR

1. (6)	**2.** (4)	**3.** (3)	**4.** (2)	**5.** (4)	**6.** (1)	**7.** (2)	**8.** (3)	**9.** (1)	**10.** (2)
11. (2)	**12.** (2)	**13.** (4)	**14.** (60)	**15.** (40)	**16.** (84)	**17.** (2)	**18.** (45)	**19.** (35)	**20.** (50)
21. (3)	**22.** (9)								

QA

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

EXPLANATIONS – CAT 2025 SOLVED PAPER (SLOT-2)

Section - I : VARC

1. 4 **Original paragraph:**

Denneny focused on taste rather than judgment in order to highlight what he believed was a crucial but neglected historical change. Over the course of the seventeenth century and early eighteenth century, across Western Europe, the word taste took on a new extension of meaning, no longer referring specifically to gustatory sensation and the delights of the palate but becoming, for a time, one of the central categories for aesthetic—and ethical—thinking. **While taste is related to judgment, with thinkers at the time often writing, for example, about "judgments of taste" or using the two terms interchangeably, taste retains a vital link to pleasure, embodiment, and personal specificity that is too often elided in post-Kantian ideas about judgment—a link that Arendt herself was working to restore.** Tracing the history of taste in Spanish, French, and British aesthetic theory, as Denneny did, also provides a means to recover the compelling and relevant writing of a set of thinkers who have been largely neglected by professional philosophy.

https://hedgehogreview.com/issues/lessons-of-babel/articles/translation-and-taste

2. 3 The correct answer is Option 3: Only eyeless offspring had yellow fat.

Here's why:

Riddle's inference is that carotenoids (the yellow pigment) are not linked to the absence of eyes, but rather are an adaptation to suppress inflammation in cavefish. The important point is that the accumulation of carotenoids might be a response to inflammation, especially because cavefish tend to overeat when food is available, potentially leading to inflammation.

Now, if only eyeless offspring had yellow fat, it would suggest that the accumulation of carotenoids is directly linked to the absence of eyes, contradicting Riddle's inference that carotenoid accumulation is more related to inflammation suppression and not directly tied to the presence or absence of eyes.

This would invalidate her idea because it would imply that the presence of eyes somehow prevents the accumulation of carotenoids, which is not consistent with her hypothesis that the accumulation is related to inflammation suppression.

Why the other options are incorrect:

Option 1 (Some eyeless offspring had white fat): This result would still support Riddle's inference, because it shows that carotenoid levels vary, but it doesn't directly contradict the idea that the accumulation of carotenoids is related to inflammation suppression in eyeless cavefish.

Option 2 (Some offspring with eyes had yellow fat): This would not invalidate Riddle's inference. It would simply show that yellow fat (carotenoids) can also be present in offspring with eyes, which doesn't suggest a direct link between carotenoid accumulation and the presence or absence of eyes. It does not contradict Riddle's broader idea of inflammation suppression.

Option 4 (Some offspring with eyes had white fat): This outcome would be consistent with Riddle's inference, as white fat suggests lower carotenoid levels, which doesn't undermine the hypothesis about inflammation suppression in eyeless cavefish.

3. 2 The correct answer is **Option 2: "'But when these cells get too big, they can burst, which is why we often see chronic inflammation in humans and other animals that have stored a lot of fat in their tissues.'"**

Explanation:

This statement **does not describe an adaptation** in Mexican tetra cavefish. Instead, it explains a general physiological condition related to the **storage of fat cells** and the potential for **chronic inflammation** in humans and other animals. It doesn't focus on the cavefish's unique **adaptations** to their environment, but rather on a broader concept of how fat cells can be problematic when they grow too large.

Why the other options are correct:

Option 1: This statement highlights how **the cavefish survive on a sparse diet** (bat feces and organic waste), which **demonstrates an adaptation** to their limited food source in the cave environment.

Option 3: This statement shows that **cavefish can accumulate fat** despite their **harsh, low-nutrient environment**, which is an **adaptation** to store nutrients whenever food is available, as a survival mechanism.

Option 4: This statement explains how **cavefish do not maintain unnecessary tissues**, such as eyes, which is an adaptation to their environment since eyes are not useful in the complete darkness of caves.

4. 4 **Explanation:**

The passage explains that **eyelessness in cavefish** results from a **developmental process** where the fish embryos begin to develop eyes, but those cells **die off** after a few hours. This **apparent inefficiency** is **unavoidable** because the early development of the eye and the brain are closely linked. **Cavefish embryos are similar to non-cave-dwelling variants** in their **early stages**, meaning that both start developing eyes. The process of eye development is initially the same as in surface fish, and **it is only later in development** that the eye cells die off in cavefish. This makes the inefficiency inherent to the process and **unavoidable**, regardless of the cavefish's adaptations later on.

Why other options are incorrect:

Option 1: While **enhancements** like more tastebuds and the ability to sense water pressure are important adaptations, they **don't explain why the process of losing the eyes** is unavoidable. The inefficiency is tied to the **developmental process**, not compensation through other traits.

Option 2: The **lack of light** explains why the cavefish **do not use eyes** but doesn't explain why the **cells in the developing eyes die off**. The inefficiency is due to the **developmental intertwining** of the brain and eyes, not just the absence of light.

Option 3: The **food scarcity** and **poor nutrition** in the caves are critical survival factors, but they don't directly explain the **developmental inefficiency** of losing the eyes. The cause of inefficiency is rooted in how the **brain and eye development are linked** in the embryo.

5. 3 **Explanation:**

In the passage, Riddle suggests that the **carotenoids** in the **yellow fat** of the cavefish may play a role in **suppressing inflammation**. Carotenoids, which are **bright yellow pigments**, are accumulated in the fat cells of the cavefish, and this might be an **adaptation to control inflammation** in the fat cells. The passage explains that fat cells can burst when they grow too large, which is a cause of **chronic inflammation** in many animals, including humans. The carotenoids are thought to help **suppress this inflammation**, especially considering the cavefish's **irregular eating patterns** and potential for **overeating** when food is available.

Why the other options are incorrect:

Option 1: While carotenoids do **render a bright yellow color** to the cavefish fat, this is not their **primary function**. Their **function** seems to be related to **inflammation control**, not just coloration.

Option 2: Carotenoids do not act as a **substitute for eyes**. The passage mentions that carotenoids are linked to the fish's **fat cells** and likely help in **inflammation control**, not in compensating for the lack of eyes.

Option 4: The **storage of nutrients** in fat cells is an important survival mechanism for cavefish, but carotenoids do not appear to help **store nutrients**. Instead, they are thought to **control inflammation** caused by the bursting of fat cells.

6. 4 **Explanation:**

Option 4 captures the **irony** of the situation, which is a key theme in the passage. The passage emphasizes the contrast between **Elizabeth Magie**, the **left-wing feminist**, who created the game with an anti-capitalist message, and **Charles Darrow**, the **unemployed man** who simplified and sold the game, ultimately receiving credit for the invention. The **meagre sum** Magie received for her patent, along with the fact that she was denied **royalties** and public recognition, underscores the **irony** of the situation. This option best highlights the **ironical loss of credit** and **financial exploitation** faced by Magie.

Why Option 2 is less accurate:

While **Option 2** provides a comprehensive explanation of the capitalist transformation of the game into a commercial success, it does not focus as much on the **irony** of the situation and the **personal injustice** Magie faced. Option 4 brings out the **ironic loss of credit** in a more striking manner.

Conclusion:

Option 4 is indeed the best choice because it emphasizes the **irony** of Magie's **loss of credit** and **royalties** while highlighting the **plagiarism** by Darrow. This captures the core sentiment of the passage most effectively.

7. 4 This statement does **not affirm the disjunct** (the gap) between the **claims about AI made by tech companies** and **what AI actually does**. Instead, it reflects the author's uncertainty and lack of awareness about any direct bias in ChatGPT toward big tech, OpenAI, or its CEO, Sam Altman. The author is merely speculating and does not make a definitive claim about the disjunct between the claims and the actual performance of AI.

Why the other options affirm the disjunct:

Option 1: This statement refers to the author's **complicity** in the system of big tech, showing that, while users benefit from these technologies, they are also contributing to the **accumulation of**

wealth and power by these companies. This highlights the **disjunction** between the ideals of AI companies and their actual impact.

Option 2: This statement highlights **Microsoft's Bing Image Creator** producing a **gender-biased** image (only male engineers and space explorers), which is a **clear example of a discrepancy** between the company's claim to provide unbiased, fair technology and the actual output that is biased.

Option 3: This statement discusses how the **"veneer of collegial neutrality"** in ChatGPT can lead users to **absorb biased responses** without **critical engagement**, showing how **AI's presentation** may mislead users, again pointing to the **disjunction** between the claims about AI and its actual performance.

8. 1 This **response from ChatGPT** is a **meta-commentary** about the **way it communicates** — it explains its purpose and potential pitfalls, acknowledging that its communication is designed to **foster trust** but can also be **misleading**. It is **reflective** and **describes the AI's intended function**, rather than illustrating a **specific problem or issue** with the AI, like the other examples do.

Why the other options are not odd:

Option 2: This example shows how ChatGPT seemed to **guide the author** towards writing a **more positive** book about big tech, even **editing the description of OpenAI's CEO**. This highlights how the AI's responses could influence the author's work, showing potential **bias** or **unintended guidance** by the AI, which is a **problematic outcome**.

Option 3: This example shows the **bias in the AI's output** (Microsoft's Bing Image Creator generating a **gender-biased image** of engineers and space explorers), which is an example of the **discrepancy between the claims of AI companies** and the **actual biased output** produced by the technology.

Option 4: This example demonstrates how **ChatGPT edited text** in a way that **transmuted Indian English into American English**, which points to an issue of **cultural and linguistic bias** in the AI's behavior. This shows that the AI's responses may inadvertently **erase or alter cultural nuances** in favor of **standardized language conventions**.

9. 3 The comparison of AI-generated texts to **"a beige office building"** is made to highlight that the texts are often **bland**, **generic**, and lack **specificity and nuance**. The author uses this analogy to describe how AI-generated texts **sound polite**, **empathetic**, and **safe** but are ultimately **lacking in distinctiveness**. This comparison is used to explain how the language from AI products is intentionally designed to appear **professional** and **approachable**, often at the cost of being **non-specific** or **uninspiring**.

Why Option 3 is correct:

Option 3 refers to **AI blaming its training data for biases**, but this is a **different issue**. While the author does discuss biases and inaccuracies in AI responses, the comparison to **"a beige office building"** is specifically about the **generalized and neutral tone** of the AI-generated text, not about the AI's response when questioned about its biases.

Why the other options are incorrect:

Option 1: The comparison to **"a beige office building"** reflects AI's goal of fostering **trust** and **credibility** by using language that feels **neutral** and **safe**, hence this is part of the analogy.

Option 2: The **warm, polite, and collegial tone** of AI-generated texts is also consistent with the **beige office building** analogy, as the language aims to be approachable and non-confrontational, though it can be bland.

Option 4: Generalized responses that lack **specificity and nuance** are a key reason for the **beige office building** comparison, as it highlights how AI texts are often **vague** and **impersonal**.

10. 3 The author of the passage discusses how AI, particularly ChatGPT, is designed to sound neutral and professional, but also describes how this **neutrality** can **mislead users** and guide them into absorbing **biased** or **incorrect responses** without critical engagement. The author seems to view the **neutrality of AI** as a **potentially harmful feature** because it could lull users into accepting AI-generated content without questioning it, thus **undermining critical thinking** rather than fostering it.

Why the other options are more likely to align with the author's views:

Option 1: The **neutrality** of AI is indeed **motivated by economic considerations**, as companies aim to make their products **approachable** and **trustworthy**, thereby attracting more users. The author acknowledges the **commercial goals** behind AI's neutral communication style, which aligns with this option.

Option 2: The author claims that we are **complicit in big tech's accumulation of wealth and power**, which aligns with the idea that we become **accomplices to exploitative practices** when we use AI products, since we **benefit** from them while **enabling these companies' success**.

Option 4: The author hints at the possibility that **ChatGPT's responses** may **favor AI companies** and their **officials**, like Sam Altman, especially when the author describes how ChatGPT **seemed to guide** them toward writing a more **positive book** about big tech. This suggests that **AI may be biased towards tech companies**, which is aligned with this option.

11. The correct sequence is **2, 4, 1, 3**.

Explanation:

Sentence 2 serves as a good **introduction** by mentioning that **old books** carry a **scent** that people recognize and love.

Sentence 4 follows logically, explaining that this **aroma** isn't just dust or mildew but is actually a result of **chemical changes** inside the paper and ink.

Sentence 1 then elaborates on the **chemical process** happening as the paper ages, where **cellulose and lignin** break down, releasing **volatile organic compounds**.

Sentence 3 provides a **list of compounds** that are released as part of this process, giving specific examples of scents associated with these chemicals.

Thus, the correct sequence is **2, 4, 1, 3**.

12. The correct sequence is **1, 4, 2, 3**.

Explanation:

Sentence 1 introduces the idea of **'literature on screen'**, suggesting that literary adaptations can be viewed as both **cinema and literature**, which sets the stage for the discussion.

Sentence 4 follows logically, pointing out that beneath the **hybrid nature of adaptations**, there is a legacy that **haunts adaptation studies**: the assumption that adaptations should primarily be studied in the **context of literature**.

Sentence 2 expands on this idea by discussing how **adaptations** are often tied to **literature**, despite the growing number of films based on **other media** like **journalism, comic books, and video games**.

Sentence 3 concludes by explaining the **contradictory approach** in adaptation studies, where **literature** is used to give **adaptation studies respectability**, even as adaptations remain **subordinate to literature**.

Thus, the correct sequence is **1, 4, 2, 3**.

13. 3 The correct answer is **Option 3: These Pfas compounds are dubbed "forever chemicals" because they do not naturally break down in the environment.**

Explanation:

Sentence 3 is the odd one out because it doesn't fit well with the flow of the other sentences, which focus on the **health risks** and **research findings** related to Pfas exposure.

Sentence 1 introduces what **Pfas** are and their common uses.

Sentence 2 highlights **research findings** on how Pfas exposure affects gene activity and leads to health problems.

Sentence 4 further discusses the **potential health risks** related to Pfas and links it to **unidentified diseases**.

Sentence 5 discusses how the **research** can help doctors in identifying, detecting, and treating health problems caused by Pfas exposure.

Sentence 3, on the other hand, provides a background fact about the **stability** of Pfas in the environment, but this point doesn't align as closely with the rest of the paragraph's focus on health-related issues.

Therefore, **Sentence 3** is the odd one out.

14. 3 **Explanation:**

This summary best captures the **essence** of the passage. It highlights the idea that **human actions**, such as creating agricultural meadows and landscapes, have often been **equally likely** to **increase biodiversity** as to reduce it. The passage challenges the traditional notion that humans are **antithetical to nature** and suggests that **human-created landscapes** have been successful in supporting a diverse range of species.

Why the other options are less accurate:

Option 1: While it correctly notes that human action is not always harmful to nature, it doesn't emphasize the historical aspect and how human actions over time have created **ecological mosaics** that support species. This option is more general and lacks the nuanced historical perspective.

Option 2: This summary is too specific about **the early Holocene** and meadows, and it focuses more on **agricultural meadows** than the broader idea of how **human-created landscapes** have supported biodiversity across history. The passage emphasizes a broader perspective on human influence on nature, not just during the **early Holocene**.

Option 4: This summary focuses on how **meadows, gardens, and forests** are successful in preserving biodiversity, but it doesn't address the broader **idea** that human actions over time have been as likely to increase biodiversity as

reduce it, and it doesn't fully capture the historical context.

15. 3 This statement accurately reflects the comparison made in the passage between the **receptive** (astronomy) and **interventionist** (biology) uses of instruments in scientific inquiry. The author highlights how **astronomy** has traditionally been **receptive**, relying on instruments like telescopes to observe and receive emissions, while **biological instrumentation** (such as in biotechnology) is **interventionist**, actively manipulating biological systems through techniques like gene-splicing.

Why the other options are incorrect:

Option 1: The passage **does not directly claim** that the **advances in telescopy** made by **Newton** allowed astronomers to observe the **phases of Venus** or the **satellites of Jupiter**. While it mentions that **Galileo** made these observations using telescopes, it does not explicitly tie these discoveries to **Newton's work** in the passage.

Option 2: The passage discusses the difference between **receptive** and **interventionist** instruments, but it does not suggest that these are **distinct categories** as the option implies. Both are types of **instrumentation** used in science, and the distinction is made between **astronomy** and **biology**, not between "embodied" and "interventionist" instruments.

Option 4: The passage mentions that **Newton's improvements** with **reflecting telescopes** expanded upon **optical observation**, but **it does not describe his work** as the beginning of the **"new astronomy"**. The **new astronomy** refers to the later development of instruments that open up the entire **electromagnetic spectrum**, starting with **radio astronomy** in the twentieth century.

16. 1 The statement in the passage emphasizes that **scientific progress in both astronomy and microbiology** has been driven by **improvements in instrumentation**. In the case of **astronomy**, this has been through advancements in telescopic instruments, and in **microbiology**, particularly with the development of **biotechnology tools**. The passage makes it clear that **both fields rely heavily on instrumental progress** to move forward.

Why the other options are incorrect:

Option 2: While the passage does mention that sciences are highly **instrumentalized**, it does not make the claim that these improvements result in **the progressive improvement of scientific constants**. The passage is more focused on how **instruments evolve** and facilitate progress, not necessarily improving constants.

Option 3: The passage does not discuss the **embodiment of progress** in the trajectories of improvement. It focuses on how scientific fields are **dependent on the improvement of instruments** to make progress, rather than embodying that progress.

Option 4: The passage does not make an argument that **respecting the use of instruments** is essential for progress. Instead, it states that **constant improvements to instruments** have been crucial to scientific progress, not necessarily that they must be respected in some formal way.

17. 1 The passage discusses how **different sciences** (such as **astronomy** and **biology**) have become **instrumentalized** over time and the importance of **instruments** in scientific progress. It also briefly mentions that **mathematics** has only **recently begun to rely on computational machinery**, which marks the field's movement toward **more technological and instrumental methods**. This aligns with the passage's emphasis on the **growing importance of technology** in scientific practices, even in fields that traditionally relied less on instruments, like mathematics.

Thus, **Option 1 does not contradict** the passage's arguments and instead aligns with its discussion of how **fields like mathematics** have recently started using **computational tools** as part of their scientific culture, just as astronomy and biology have done with their instruments.

Why the other options contradict the passage:

Option 2: The passage distinguishes between **receptive** and **interventionist** instruments in scientific inquiry (with astronomy being **receptive** and biology being more **interventionist**). The statement that **some scientific instruments may be classified as both receptive and interventional** contradicts the passage's argument because it implies that instruments in some fields (like astronomy) may be both receptive and interventionist, which goes against the distinction the passage makes between these types of instruments.

Option 3: The passage does describe how **astronomy** has moved beyond the visible spectrum to include radio, gamma, and other wavelengths. However, **microscopy** in biology is not discussed in the same context. The passage focuses more on the **instrumental evolution** in astronomy and biology, and this statement about **microscopy** might not fit with the passage's core argument, which is more focused on the general shift towards highly **instrumentalized sciences** rather than drawing specific parallels between **astronomy** and **microscopy**.

Option 4: The passage specifically discusses how **scientific disciplines today are highly instrumentalized**, but **Isaac Newton's discovery of gravity** was not made with modern instruments. If true, this statement **contradicts** the passage's focus on how **instrumental progress** is essential in modern sciences. Newton's discoveries, although groundbreaking, were made without modern technological tools, which contrasts with the modern reliance on instruments as described in the passage.

18. 2 In the passage, the focus is on **scientific instruments** that are **instrumentally embodied**, meaning they are used to **receive, detect, or intervene** in scientific processes. The passage contrasts **receptive instruments** (like telescopes in astronomy) with **interventional instruments** (like those used in biotechnology, such as microscopes for gene splicing).

Option 1: Kitchen oven: A kitchen oven can be considered an **instrument** used in certain scientific or experimental settings, especially in fields like **chemistry** or **material science**, where temperature control is crucial for experiments.

Option 3: Scalpel: A **scalpel** is an **interventional instrument** widely used in **medicine and biology**, particularly in surgeries and dissection, which aligns with the passage's discussion of interventional instruments.

Option 4: Saxophone: While a **saxophone** is a musical instrument, it still **functions** in a way that is **instrumentally embodied**, as it is used to **produce sound** and can be considered as a tool that requires skill and precision, somewhat like an instrument in scientific practice.

Option 2: Milestone: A **milestone**, unlike the other options, is not an instrument in the same sense. It is a **marker** of progress or achievement and is not used to **receive, detect, or intervene** in any scientific process. Therefore, the **characterizations of instruments** in the passage would **least apply** to a milestone.

19. 3 Option 1.

Explanation:

(1): The first blank is about introducing the **fabric's origins** in the context of **a miraculous creation**, which fits well with "Once upon the silty banks of the Meghna River, a miracle was spun." This sets up the **legendary** nature of the fabric, which then connects with the details about the **process and materials** (covered in Option 1).

Option 1 provides a perfect lead-in to the subsequent details about the **raw materials** (Phuti Karpas cotton), continuing the **descriptive, almost mystical narrative** surrounding the making of Dhaka muslin.

The other options describe details about **the process**, **the growth of cotton**, and the **spinning**, but they don't fit as naturally right after the **introduction** of the fabric's origins.

Thus, **Option 1** fits best as it connects seamlessly to the introduction of the **mystical origin** of the fabric and prepares the reader for a more detailed description of the **materials and process** used to create Dhaka muslin.

20. 3 In the passage, the author discusses how **literature can provide insights** into physical and cultural geography by describing how people from **different races or classes** might **experience the same place differently**, influenced by those disparities. This is a key point in the passage, which emphasizes the **emotional and subjective experience of place** that literature can capture—something that **scientific approaches** may not fully address.

Why the other options are incorrect:

Option 1: While the passage does mention that the absence of others can affect the human observer, the focus of the **literary example** is more on how **different people** (e.g., based on **race or class**) experience places differently, not just the effect of **absence**.

Option 2: This statement is **incorrect** because the passage doesn't focus on **architects' methods** for calibrating **noises and lights**. Instead, it talks about **literature** describing **how people experience a place** in various ways.

Option 4: The passage does not claim that **scientific approaches** to place are more accurate than **literary ones**. It asserts that both **literary and scientific approaches are necessary** for a complete understanding of a place.

21. 1 In the **second paragraph**, the author argues that the emotional and spiritual aspects of a place are **real** but **should not replace the physical layout** or topography, which is represented by a **surveyor's map**. The passage suggests that the emotional component of a place is **as real as** the physical component, but **not a replacement** for it. Therefore, **Option 1** is not true because the **emotional and spiritual experience** is presented as complementary, not a substitute for **scientific records** like maps.

Why the other options are true:

Option 2: The author **supports the idea** that **literary descriptions of place** can provide a deep understanding of **how people relate emotionally to that place**, which is the essence of the argument in the second paragraph.

Option 3: The passage clearly states that the **spiritual experience** of a place, although **subjective**, is **no less "real"** than its **physical layout** or topography, aligning with this statement.

Option 4: The passage does describe how **literary accounts** can **manifest histories of places**, **through memory or imagination**, making this statement true.

22. 3 This is the correct answer because if **Option 3** were **false**, it would **contradict the arguments in the passage**. The passage argues that **human consciousness of place** is **multi-modal** and includes **emotional and spiritual components** in addition to physical topography. The passage specifically challenges the view that **places are only physical** and emphasizes that the **emotional connection to place** is just as real as its **physical layout**. So, if this statement were **false** (i.e., if humans *did* interact with places in subjective, emotional ways), it would align with the author's point that **places are more than just physical geography**.

Why the other options are incorrect:

Option 1: The passage emphasizes the importance of **vivid writing** and how it can **capture the multi-modal experience** of places, including sensory and emotional aspects. If **Option 1** were false, it would contradict the passage's claim that **literature uses sensory language** to depict places, so this option is inconsistent with the passage's argument.

Option 2: The passage suggests that **literature** provides insights into **cultural geography** and how people relate to places, including the **effect of migration**. If this were false, it would contradict the passage's argument that **literature offers valuable perspectives** on the ways in which human experiences **shape and are shaped by geography**.

Option 4: The passage argues that **literature** can convey a **real sense of place** without always relying on **scientific tools** like satellite imagery. If **Option 4** were false, it would contradict the author's assertion that **literature** can offer rich descriptions of places, **beyond the need for visual aids** like satellite imagery.

23. 4 In the passage, the author emphasizes the value of **bridging disciplines**, specifically combining **material from the arts and the sciences**, to gain a deeper and more comprehensive understanding of the **human condition**. The statement directly points to the idea that **integrating insights from both fields** leads to more **holistic knowledge** about human experiences and behavior.

Why the other options are incorrect:

Option 1: This option suggests that the best way to understand the **valuable knowledge produced by the arts and sciences** is by studying the **human condition**. However, the passage argues that **bridging disciplines** (the arts and sciences) is the key to understanding the human condition, not just focusing solely on studying it.

Option 2: This option implies that **bridging the human condition** can best be achieved through a **disciplined pursuit of human understanding**. While the pursuit of understanding is important, the passage stresses the importance of **combining the arts and sciences**, not simply being disciplined in the pursuit of human understanding.

Option 3: This option discusses **literary descriptions of emotions** and how they contribute to understanding the arts and sciences. While the passage mentions **literary descriptions**, the core argument is about the **combination of the arts and sciences** to better understand the human condition, not just focusing on literary descriptions.

24. 3 The correct answer is **Option 3: Though he may have failed so far in his colour-scouting mission (he hasn't yet found a new one, he admits), this hour leaves you tickled pink.**

Explanation:

This sentence is the **odd one out** because it **does not fit seamlessly** with the other sentences that focus more on the **content and style of Torres's show** and his comedic approach. While the other sentences describe his **performance style**, the **visual elements**, and his **creative concepts**, sentence 3 focuses on his **colour-scouting mission**, which doesn't align directly with the rest of the paragraph's narrative.

Why the other options work:

Option 1: Describes Torres's **appearance**, helping to set the tone for the **whimsical nature** of the show.

Option 2: Talks about Torres's **delivery style** in his comedy, setting up the kind of **humorous tone** he brings to the show.

Option 4: Discusses the **format of the show** and how the **overhead camera** aids in presenting his ideas, fitting well with the rest of the passage about his unique style.

Option 5: Describes the **ideas Torres explores** in the show, fitting the theme of his **quirky and unconventional** approach.

Thus, **Option 3** is the odd sentence out, as it doesn't directly align with the thematic focus of the other sentences about his comedic style and show format.

Section - II : DI & LR

For questions 1 to 4:

From condition (3) All balls except B3 pinged on H1 $\Rightarrow$ H1 is larger than B1, B2, B4, B5, B6 $\Rightarrow$ B3 > H1

From condition (4) Only B2 pinged on H2 $\Rightarrow$ B2 $\leq$ H2, and B1, B3, B4, B5, B6 > H2 $\Rightarrow$ H2 is the smallest hoop.

From condition (1) B1 and B6 pinged on H4, but B5 did not $\Rightarrow$ B1, B6 $\leq$ H4 < B5

From condition (2) B4 pinged on H3, but B1 did not $\Rightarrow$ B4 $\leq$ H3 < B1

From above we can determine the order of the hoops.

B2 < H2 < B4 < H3 < B1, B6 $\leq$ H4 < B5 $\leq$ H1 < B3

Also the only consistent hoop order is:

H2 < H3 < H4 < H1.

This information can be represented in a table as follows:

	H1	H2	H3	H4	No. of Pings
B1	✓	X	X	✓	2
B2	✓	✓	✓	✓	4
B3	X	X	X	X	0
B4	✓	X	✓	✓	3
B5	✓	X	X	X	1
B6	✓	X	✓/X	✓	3/2
					13/12

(the above table can be copied and pasted from solution part of q.4)

1. 6 Sum of the number of pings by B1, B2 and B3 = 2 + 4 + 0 = 6.

2. 4 There is no information, on the basis of which B6 and B1 can be compared.

Hence, B1 < B6 < B3 is not necessarily true.

3. 3 We can see that H2 < H3 < H4 < H1 is true.

4. 2 We can see from the table that the total number of pings can be 12 or 13.

For questions 5 to 8:

We know the number of titles authored by each person from the first bar graph. Also the number of single author, two author, three author and four author titles have been mentioned. Note that 2 four author titles would mean that all 4 authors are part of these two titles.

Hence, total count = 2 × 4 = 8. Similarly for 3 author and 2 author titles.

From condition (1), each of the authors wrote at least one of each of the four types of papers. So none of the cells in the table can be zero and Aman has a total of 5 out of which there is 2 against Aman under 4 author, this means that for Aman each of the other cells will have 1.

From condition (2), each author wrote a different number of single author titles and Aman already has the number 1. So the remaining numbers have to be 2, 3 and 4.

From condition (4), we can conclude that the number of single author and two author titles for Brajen cannot be 4 (as the total has to be 8). It cannot be 3 (as that will lead to zero three author titles for Brajen, which is a contradiction). This means that Brajen will have 2 single author and 2 two author titles. Hence, he will have 2 three author titles also.

From condition (3), under three author titles for both Chintan and Devon we will require a number greater than 2 and the total has to be 9. So only the number 3 satisfies this condition.

We can create a table from the given information as follows:

Author	Single author (10)	Two author (4)	Three author (3)	Four author (2)	Total
Aman	1	1	1	2	5
Brajen	2	2	2	2	8
Chintan	3/4	4/3	3	2	12
Devon	4/3	1/2	3	2	10
Total	10	8	9	8	35

5. 4 The total number of two-author and three-author papers written by Brajen = 2 + 2 = 4

6. 1 Let us check each statement:

i. The statement, Chintan wrote exactly three two-author papers may not necessarily be true.

ii. The statement, Chintan wrote more single-author papers than Devon may not necessarily be true.

Hence, neither i nor ii is definitely true.

7. 2 There are 3 three author papers and both Chintan and Devon wrote 3 three author papers whereas Aman wrote 1 and Brajen wrote 2. So the only possible combination will be {(Chintan, Devon, Aman), (Chintan, Devon, Brajen), (Chintan, Devon, Brajen)}. Hence, the statement, Arman wrote three-author papers only with Chintan and Devon, is true. Brajen wrote three-author papers only with Chintan and Devon is also true. Hence, both (i) and (ii) are true.

8. 3 If Devon wrote more than one two-author papers, then the number of two-author papers written by Chintan is 3.

For questions 9 to 13:

From condition (1) we can say that each of the 4 students trained for 3 years under Ustad Samiran as he never trained more than one of these students in the same year.

From condition (2) we have a gap of 4 years from 2015-2018 and another gap of 4 years from 2021-24 for Acharya Raghunath when he does not train any student. So Acharya Ragunath trains each student for 2 years.

From condition (4) Ananya and Bhaskar started their training under Pandit Meghnath and under Ustad Samiran, respectively in 2013. As none of them train under more than one Guru at the same time, it means that Charu and Devendra started their training under Acharya Raghunath in 2013 and we can also conclude that Ananya and Bhaskar started training under Acharya Raghunath in 2019 and it lasted for 2 years.

It is given that each guru trains for 2, 3 or 4 years and we have already concluded that Acharya Raghunath and Pandit Meghnath train for 2 and 3 years respectively. Hence, Ustad Samiran trains each student for 4 years. Also Ananya began in 2013. Since any student cannot train under 2 gurus at the same time, Bhaskar has to train under Pandit Meghnath from 2021 to 2024 only.

From condition (3) we can say that among the six combinations of the 4 students : AB, AC, AD, BC, BD, CD, it is said that AD and BC are not valid. Also each of the other pairs are gurubhais for exactly 2 years.

Hence, under Pandit Meghnath the combination of Ananya and Charu will be there for 2015 and 2016. Similarly Bhaskar and Devendra train together during 2021 and 2022.

Under Ustad Samiran (each one has a distinct 3 year training period without overlap), So Ananya will have to train during 2022 to 2024 as any other 3 year period will lead to an overlap with her training under the other two gurus.

Finally we can conclude that Devendra will train under Ustad Samiran from 2016 to 2018 and Charu will train under Ustad Samiran from 2019 to 2021.

Hence, we have the following table:

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
PM	A	A	A C	A C	C	C	D	D	B D	B D	B	B
US	B	B	B	D	D	D	C	C	C	A	A	A
AR	C D	C D	-	-	-	-	A B	A B	-	-	-	-

9. 1 Ananya and Bhaskar were Gurubhai in 2020.

10. 1 Charu began her training under Pandit Meghnath in 2017.

11. 2 Bhaskar and Devendra were Gurubhai in 2022.

12. 2 Let us check each statement:

1. Ananya was training under Ustad Samiran in 2015, is not true.
2. Charu was training under Ustad Samiran in 2019, is true.
3. Ananya was training under Ustad Samiran in 2018, is not true
4. Charu was training under Ustad Samiran in 2018, is not true.

13. 4 Between 2013-24, there were 4 years when only two of these four musicians were training under these three Gurus.

These years were 2017, 2018, 2023 and 2024.

For questions 14 to 17:

Note that the questions require the calculations for B, C, E and F only.

In 2016, B had the highest rank and F had the lowest rank. Also the SI of B in 2016 was 60 more than that of F. Let the SI of F in 2016 be x and that of B be (x + 60). From the percentages in the graph, we get the SI of F in 2020 and 2024 as 2x and 1.5x respectively.

In 2024 the SI of E was 90. Using the percentages in the graph, we can find the SI for E in 2020 and 2016 as 75 and 60 respectively.

Given that the range in 2024 is 60. We can say that 1.5x is at least 30. And consequently we can say that in 2016 the value of x is at least 20. Hence, (x + 60) would be at least 80.

Let us look at the values of percentage changes in SI for B. The SI of B decreases by ¾ in 2020 wrt 2016 and by ¾ in 2024 wrt 2020. This gives us a multiplying factor of 9/16 for 2024. Now all the SI values are integers. This means that (x + 60) should be a multiple of 16 and we already know that it is at least 80. So possible values of (x + 60) are 80 and 96.

Now for (x + 60) = 96 we have x = 36, and the SI of B in 2020 will be ¾ × 96 = 72. Also the SI of F in 2020 will become 2 × 36 = 72. But this contradicts the condition that F had the lowest SI in 2020. Hence, we discard the value 96.

For (x + 60) = 80, we get x = 20 and 2x = 40, which does not contradict any condition. We get the SI of B in 2020 and 2024 as 80 × ¾ = 60 and 80 × 9/16 = 45.

Note that in 2016, the rank of C lies between B and E, so the SI of C in 2016 will lie between 60 and 80 and from the graph the SI of C in 2020 decreases to 4/5 of the SI in 2016 and in 2024 it increases to 7/5 of the SI in 2020. This gives us a multiplying factor of 28/25 in 2024, which means that the SI of C has to be a multiple of 25 in 2016. The only multiple of 25 between 60 and 80 is 75. This gives us the values of the SI of C in 2020 and 2024 as 60 and 84 respectively.

The above information can be tabulated as follows:

State	2016	2020	2024
B	(x + 60) = 80	60	45
C	75	60	84
E	60	75	90
F	x = 20	2x = 40	1.5x = 30

14. 60 The SI of E in 2016 = 60.

15. 40 The SI of F in 2020 = 40.

16. 84 The SI of C in 2024 = 84

17. 2 The SI of B in 2024 = 45

For questions 18 to 22:

According to the given information the nine PIs are all distinct multiples of 10, ranging from 10 to 90. The values will be {10, 20, 30, …, 80, 90}

Order of PIs of the 6 cities: Blusterburg < Noodleton < Splutterville < Quackford < Mumpypore < Zingaloo.

There is only one pair of an NUR and a city (considering all cities and all NURs) where the PI of the NUR is greater than that of the city. This has to be Blusterburg with a PI of 30 and the respective NUR has to have a PI of 40. Any other combination would contradict the condition. Also these two (NUR and Blusterburg) belong to Humbleset.

The remaining cities in increasing order will have PIs from 50 to 90 and the remaining two NURs will have PIs 10 and 20.

PI	10	20	30	40	50	60	70	80	90
City / NUR	NUR	NUR	Blusterburg	NUR	Noodleton	Splutterville	Quackford	Mumpypore	Zingaloo
Weighted PI	5	10	7.5	20	12.5	15	17.5	20	22.5
State			Humbleset	Humbleset					

Given that, the PIs of all three states are distinct integers, with Humbleset and Fogglia having the highest and the lowest PI respectively.

For Humbleset to have an integer PI, the remaining city can have a weighted PI of (12.5, 17.5, 22.5}

But 12.5 and 17.5 will not satisfy the condition that Humblest has the highest PI. So the second city in Humbleset has to be Zingaloo with a weighted PI of 22.5.

PI(Humbleset) = 7.5 + 20 + 22.5 = 50

For the PIs of the states to be integers, the cities with PIs 12.5 and 17.5 have to be in the same state. This will make the sum 12.5 + 17.5 = 30 and the sum of the other pair of cities = 15 + 20 = 35

Note that Fogglia has to have the lowest PI. The only possible combination is:

PI (Fogglia) = 12.5 + 17.5 + 5 = 35

PI (Whimshire) = 15 + 20 + 10 = 45

So we have the final table as follows:

PI	10	20	30	40	50	60	70	80	90
City / NUR	NUR	NUR	Blusterburg	NUR	Noodleton	Splutterville	Quackford	Mumpypore	Zingaloo
Weighted PI	5	10	7.5	20	12.5	15	17.5	20	22.5
State	Fogglia	Whimshire	Humbleset	Humbleset	Fogglia	Whimshire	Fogglia	Whimshire	Humbleset

18. 45 The PI of Whimshire = 45

19. 35 The PI of Fogglia = 35

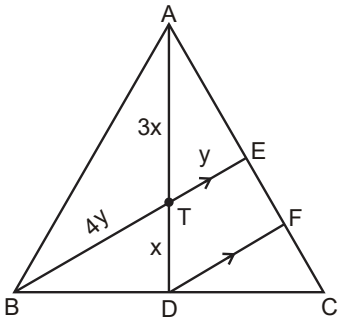
20. 50 The PI of Humbleset = 50

21. 3 The pair of cities that definitely belong to the same states Noodleton and Quackford.

22. 9 We can identify the pIs of all cities and NURs and also identify the state they belong to.

Section - III : QA

1. 4



In ΔADF,

$$\frac{AT}{AD}=\frac{3}{4}=\frac{ET}{DF}$$

$$\Rightarrow DF=\frac{4y}{3}$$

$$\frac{BC}{DC}=\frac{BE}{DF}=\frac{5y}{\frac{4y}{3}}=\frac{15}{4}$$

$$\frac{BD}{DC}=\frac{BC-DC}{DC}=\frac{BC}{DC}-1=\frac{15}{4}-1=\frac{11}{4}$$

2. 3 $h(x) = f(g(x)) + g(f(x))$

$$=\frac{8(x)}{2g(x)-1}+\frac{f(x)}{f(x)-1}$$

$$=\frac{\frac{x}{4-1}}{\frac{2x}{x-1}}+\frac{\frac{x}{2x-1}}{\frac{x}{2x-1}-1}$$

$$=\frac{x}{x+1}+\frac{x}{1-x}$$

$$\therefore h(x)=\frac{2x}{(1-x^2)}$$

for h(x) to be difined x cannot take values + 1 or –1

$$\therefore \text{for f(x) to be defined } x\neq+\frac{1}{2}$$

Ans: –1, 1/2, 1

3. 3 $x^2 - |x + 9| + x > 0$

For x = 4 the expression becomes:

$(4)^2 - |4 + 9| + 4 = 16 - 13 + 4 = 8 > 0$

So option 4 is discarded

For x = –10; $(-10)^2 - |-10 + 9| + (-10)$

$100 - 1 > 0$

$\therefore$ option 1 is discarded.

Now x = –4; $(-4)^2 - |-4 + 9| + (-5)$

$16 - 5 - 5 > 0$

$\therefore$ option 2 is discarded.

Here answer is $(-\infty,-3)\cup(3,\infty)$

Hence, correct answer is option 3.

4. 3 $9^{x^2+2x-3}-4.3^{x^2+2x-2}+27=0$

$$\left(3^2\right)^{x^2+2x-3}-4.3^{\left(x^2+2x-3+1\right)}+27=0$$

$$\left(3^{x^2+2x-3}\right)^2-4.3\left(3^{x^2+2x-3}\right)+27=0$$

Let $3^{x^2+2x-3}=t$

$\therefore t^2 - 12t + 27 = 0$

t = 9, 3

$\therefore 3^{x^2+2x-3}=9$ or $3^{x^2+2x-3}=3$

$\therefore 3^{x^2+2x-3}=3^2$ or $3^{x^2+2x-3}=3^1$

$\therefore x^2 + 2x - 3 = 2$ or $x^2 + 2x - 3 = 1$

$\therefore x^2 + 2x - 5 = 0$ or $x^2 + 2x - 4 = 0$

$\alpha . \beta = -5$ or $\alpha \delta = -4$

$\therefore$ Product of all possible value = (–5) (–4)

5. 340 Let Chandan's efficiency = 1 unit/day.

Then Bipin's efficiency = 2 units/day (twice Chandan)

Ankita's efficiency = 4 units/day (twice Bipin)

So, combined efficiency of all three = 1 + 2 + 4 = 7 units/day

Work done in the first 20 days when all three are working = 20 × 7 = 140 units

After Bipin leaves, remaining workers are Ankita (4 units/day) and Chandan (1 unit/day)

Work done in next 40 days = 40 × 5 = 200 units

Total work = 140 + 200 = 340 units

Chandan's efficiency is 1 unit per day.

Time taken by Chandan alone = 340/1 = 340 days.

6. 3 $$\frac{\log x^2}{\log_{64}} + \frac{\log \sqrt{y}}{\log 8} + \frac{3\log\left(\sqrt{y}.\, z\right)}{\log 512} = 4$$

$$\frac{2\log x}{3\log^2} + \frac{\log (\sqrt{y})}{3\log^2} + \frac{3\log\left(\sqrt{y}.\, z\right)}{39 \log 2} = 4$$

$$\frac{\log x}{3\log^2} + \frac{\log (\sqrt{y})}{3\log^2} + \frac{\log\left(\sqrt{y}.\, z\right)}{3 \log 2} = 4$$

$$\therefore \log (x) + \log\left(\sqrt{y}\right) + \log\left(\sqrt{y}\,.\, Z\right) = 3 \times 4 \log 2$$

$\log (xyz) = \log 2^{12}$

$\therefore xyz = 2^{12}$

From minimum x + y + z; x = y = 2

or xyz is constant

$x^3 = 2^{12}$

$x = 2^4 = 16$

$\therefore$ Minimum x + y + z = 48

7. 3 A number is of the form 3p + 1 if it leaves remainder 1 when divided by 3.

Since 3^5 is divisible by 3, any divisor containing 3^5 will be divisible by 3. Therefore, we consider only the case when the power of 3 is zero.

Even powers of 2: 2^0, 2^2, 2^4, 2^6 give remainder 1.

Even powers of 5: 5^0, 5^2 also give remainder 1.

So when both powers are even, the remainder is 1

So number of cases = 4 × 2 = 8

Odd power of 2: 2^1, 2^3, 2^5

Odd power of 5: 5^1, 5^3

So number of cases = 3 × 2 = 6

Total valid combinations of powers of 2 and 5 are 8 + 6 = 14

Now, powers of 7: 7^0, 7^1, 7^2 all are of the form (3p + 1).

So number of cases = 3

Hence, the number of divisors of the required form is 14 × 3 = 42.

8. 49 Total sales in first 7 days = 7 × 60 = 420

Total sales in first 8 days = 8 × 63 = 504

So, sales on the 8th day = 504 – 420 = 84

Sales on 9th day = 11 less than 8th day

$\Rightarrow$ 9th day sales = 84 – 11 = 73

From 2nd day to 9th day = 8 days ; Average = 66

$\Rightarrow$ Total sales from day 2 to day 9 = 8 × 66 = 528

Sales from day 2 to day 9 = (Total of first 8 days + 9th day) – 1st day

$\Rightarrow$ 528 = (504 + 73) – 1st day

$\Rightarrow$ 1st day = 577 – 528 = 49.

9. 12 Given, 3ac = 8(a + b), where a, b, c are distinct natural numbers, and we must minimize 3a + 2b + c.

Rearranging the given equation we get, 3ac = 8a + 8b $\Rightarrow$ b = a(3c – 8) /8

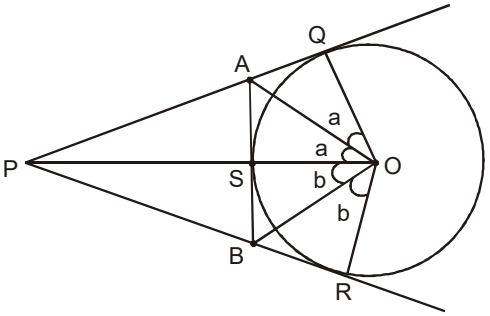
For b to be a natural number, a(3c – 8) must be divisible by 8.

For a = 2 and c = 4 we get b = 1 and these are the smallest possible distinct values of a, b and c.

Also all are natural and distinct: (a, b, c) = (2, 1, 4)

Hence, 3a + 2b + c = 6 + 2 + 4 = 12.

10.



$\angle AOB = 50°$

$\angle AOQ = \angle AOS = a$

$\angle BOR = \angle BOS = b$

$\angle QOR = \angle QOA + \angle AOS + \angle SOB + \angle BOR$

$= 2a + 2b$

$= 2 (a + b)$

Now as given

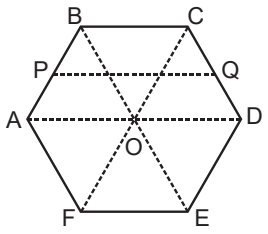
$\angle AOB = 50° = \angle AOS + \angle SOB = 2(a + b)$

$\therefore \angle QOR = 100°$

In quadrilateral PQOR, Q and R are right angles.

Hence, $\angle APB = 180° – 100° = 80°$.

11. 3 The diagram of the hexagon can be drawn as follows:



In a regular hexagon area of each of the triangles AOB, BOC, COD, DOE, EOF and FOA is equal to one-sixth of the area of the hexagon.

Given that P and Q are mid points of AB and CD, using mid-point theorem, we can say that the area enclosed by the trapezium will be equal to = 1/4 area of AOB + 3/4 area of BOC + 1/4 area of COD = 5/4 area of AOB.

Hence, required ratio = 5/4 : 6 = 5 : 24.

12. 3 Pinu, Meena, Rinu and Seema

Let P + R + M + S = 100

$$P = \frac{(P+R+M+S)}{5} = 20$$

$$M = \left(\frac{4}{5}(P+R+M+S)\right) \times \frac{40}{100} = 32$$

S = 80% P = 16

$\therefore$ R = 100 – (20 + 32 + 16) = 32

$\therefore$ Ratio of P : R :: 20 : 32

5 : 8

13. 2 Let the cost of 1 kg coffee be Rs.C and that of 1 kg cocoa be Rs.D.

From mixture 1: 0.16C + 0.84D = 240 …(1)

From mixture 2: 0.36C + 0.64D = 320 …(2)

Subtract (1) from (2) we get, 0.20C – 0.20D = 80

$\Rightarrow$ C – D = 400

From (1): 0.16C + 0.84(C – 400) = 240

$\Rightarrow$ C = Rs.576 and D = Rs.176

Let the fraction of coffee be x.

$\Rightarrow$ 576x + 176(1 – x) = 376 $\Rightarrow$ x = 0.5

So, coffee content = 50%

Quantity of coffee in 10 kg = 10 × 0.5 = 5 kg.

14. 4 Let the annual rate of interest = r%

Since interest is compounded annually, the total value of the installments equals the loan amount.

$530/(1 + r) + 594/(1 + r)^2 = 1000$

$\Rightarrow 530(1 + r) + 594 = 1000(1 + r^2 + 2r)$

$\Rightarrow 530r + 1124 = 1000 + 1000r^2 + 2000r$

$\Rightarrow 1000r^2 + 1470r – 124 = 0$

$\Rightarrow$ r = 0.08 or –1.55

We discard the negative value and take r = 0.08

Hence, rate = 8%

15. 17 Given (m + 2n)(2m + n) = 27 where m and n are integers.

Let (m + 2n) = a and (2m + n) = b

So n = (2a – b)/3 and m = (2b – a)/3

Also we know that, ab = 27

Possible values of (a, b) are {(1, 27), (3, 9), (9, 3), (27, 1), (–1, –27), (–3, –9), (–9, –3), (–27, –1)}

The only pairs that give integer values for m and n are (3, 9), (9, 3), (–3, –9) and (–9, –3).

The values of (2m – 3n) that are obtained from the respective pairs of (a, b) are 13, –17, –13 and 17.

Hence, the maximum possible value of (2m – 3n) is 17.

16. $\frac{14}{V_s - V_r} - \frac{14}{V_s + V_r} = \frac{48}{60}$

V_5 = 6km/hr V_r = r (Speed of river)

$$\frac{14}{6-r} - \frac{14}{6+r} = \frac{4}{5}$$

$$\frac{1}{6-r} - \frac{1}{6+r} = \frac{2}{35}$$

$$\frac{2r}{36-r^2} = \frac{2}{35} \Rightarrow r = 1, -36$$

$$\frac{D}{5-r} + \frac{D}{5+r} = \frac{100}{60} = \frac{5}{3}$$

$$\frac{D}{4} + \frac{D}{6} = \frac{5}{3}$$

$$\frac{5D}{12} = \frac{5}{3}$$

$\therefore$ D = 4 km $\Rightarrow$ D + D = what distance = 20

Total distance of saved = 8 km

17. 4 $a_1 = a$

$a_2 = ar$

$a_3 = ar^2$

$\therefore a + ar + ar^2 = 52$

$\therefore a(1 + r + r^2) = 52 \quad \cdots \quad (A)$

And

$a_1a_2 + a_2a_3 + a_3a_1 = 624$

$a \cdot ar + ar \cdot ar^2 + ar^2 \cdot a = 624$

$ar^2 (1 + r^2 + r) = 624 \quad \cdots \quad (B)$

$$\therefore \frac{B}{A} = \frac{a^4(r)(1+r+r^2)}{a(1+r+r^2)} = \frac{624}{52} = 12$$

$\therefore$ ar = 12 $\Rightarrow$ a $= \frac{12}{r}$

From (A) $\frac{12}{r}\left(1+r+r^2\right) = 52$

$1 + r + r^2 = \frac{13r}{3}$

$r^2 + 1 = \frac{10r}{3}$

or $r + \frac{1}{r} = \frac{10}{3} = 3 + \frac{1}{3}$

$\therefore$ r = 3 or $\frac{1}{3}$

It is a decreasing GP so we take r = 1/3.

$\therefore$ a × $\frac{1}{3}$ = 12 $\Rightarrow$ a = 36.

Sum of GP $= \frac{a}{1-r} = \frac{36}{1-\frac{1}{3}}$ = 54

18. 2 a + b + c + d = 46

To find min $(a-b)^2 + (a-c)^2 + (a-d)^2$

If all are equal, minimum will be 0. But 46 is not divisible by 4.

So take a = 11, b = 11, c = 12, d = 12

$\Rightarrow$ Min value = 0 + 1 + 1 = 2.

19. 25 $N = (625)^{65} \times (128)^{36}$

$N = (5^4)^{65} \times (2^7)^{36}$

$= 5^{260} \times 2^{252}$

$\therefore N = (10)^{252} \times (5^8)$

$N = (390625) \times 10^{25}$

Sum of digits = 3 + 9 + 0 + 6 + 2 + 5 = 25

20. 4 Given Cost Price = Rs.1,650 and Profit = 20% of 1650 = Rs.330

Selling Price = 1650 + 330 = Rs.1,980

Let the original discount be d%.

1980 = MP(1 – d/100) …(1)

According to the question, if the discount is doubled (i.e. 2d%), profit becomes Rs.110.

New Selling Price = 1650 + 110 = Rs.1,760

1760 = MP(1 – 2d/100) …(2)

From equation (1) and (2) we get,

1760/1980 = (100 – 2d)/(100 – d)

$\Rightarrow$ 800 - 8d = 900 – 18d

$\Rightarrow$ 10d = 100 $\Rightarrow$ d = 10%

From equation (1), we get, MP = 1980/0.9 = Rs. 2,200

Let new discount = x%

Now the profit percentage has to be equal to the discount percentage.

Selling price at x% discount = 2200(1 – x/100)

Profit percentage = (SP – 1650)/1650 × 100 = (2200 – 22x – 1650)/1650 × 100

$\Rightarrow$ (550 – 22x)/1650 × 100 = x

$\Rightarrow$ 165x = 5500 – 220x $\Rightarrow$ 385x = 5500

$\Rightarrow$ x = 5500/385 = 14.286%

Hence, the correct answer is 14%.

21. 1 Given equations

$3x^2 - 5x + p = 0$ …(1)

$2x^2 - 2x + q = 0$ …(2)

Let the common root be α.

In equation (1) Let the other root be β

$\alpha + \beta = 5/3$

$\Rightarrow \beta = 5/3 - \alpha$ and $\alpha\beta = p/3$

$\Rightarrow \alpha(5/3 - \alpha) = p/3$

$\Rightarrow 5\alpha - 3\alpha^2 = p$ …(3)

In equation (2) Let the other root be γ

$\alpha + \gamma = 2/2 = 1$

$\Rightarrow \gamma = 1 - \alpha$ and $\alpha\gamma = q/2$

$\Rightarrow \alpha(1 - \alpha) = q/2$

$\Rightarrow 2\alpha - 2\alpha^2 = q$ …(4)

Now $\beta + \gamma = 5/3 - \alpha + 1 - \alpha = 8/3 - 2\alpha$

From (3) and (4) we get, $2\alpha = (2p - 3q)/2$

Hence, $\beta + \gamma = 8/3 - (2p - 3q)/2 = 8/3 - p + 3q/2$.

22. 2 Given: Expenditure ratio of Lakshmi : Meenakshi = 2 : 3.

Let Lakshmi's expenditure = 2x and Meenakshi's expenditure = 3x

Given: Income of Lakshmi : Expenditure of Meenakshi = 6 : 7

$\Rightarrow$ Income of Lakshmi = 6/7 × (3x) = 18x/7

Now, Savings = Income – Expenditure

Lakshmi's savings = 18x/7 – 2x = 4x/7

Let Meenakshi's income = y ; Meenakshi's savings = y – 3x

Given: Savings of Lakshmi : Meenakshi = 4 : 9

$\Rightarrow$ (4x/7) : (y – 3x) = 4 : 9

$\Rightarrow$ y = 30x/7

Lakshmi's income =18x/7 ; Meenakshi's income = 30x/7

Ratio of incomes = 18x/7 : 30x/7 = 3 : 5.