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Q. Asha, Binod and Chitra have some money. First, Asha gives one-fourth of her money to Binod. Then Binod gives one-third of the money he now has to Chitra. After this, all three have ₹240 each. What was the ratio of the amounts Asha, Binod and Chitra had at the start?

(a) 8 : 7 : 3 (b) 4 : 3 : 2 (c) 8 : 7 : 4 (d) 7 : 6 : 3

Q. Three friends A, B and C play three rounds of a game. In each round, the loser doubles the money of each of the other two from his own pocket. A loses the first round, B loses the second and C loses the third. At the end, the amounts with A, B and C are in the ratio 1 : 2 : 3, and A's money has fallen by ₹340 from what he started with. How much money did C have at the start?

(a) ₹200 (b) ₹280 (c) ₹180 (d) ₹160

Q. A coaching centre has three batches A, B and C, whose strengths are in the ratio 4 : 5 : 6. In batch A, $\frac{3}{8}$ of the students are girls; in batch B, $\frac{2}{5}$ are girls; and in batch C, $\frac{5}{9}$ are girls. If the total number of girls in the three batches is more than 100, what is the smallest possible total number of students in the centre?

(a) 180 (b) 360 (c) 225 (d) 270

Q. In a school, the numbers of students in Class IX and Class X are in the ratio 5 : 6. In Class IX, boys and girls are in the ratio 3 : 2, and in Class X, boys and girls are in the ratio 5 : 7. The total number of students in the two classes is more than 500 but less than 1,000, and the total number of boys in the two classes is a multiple of 4. How many different values can the total number of students take?

(a) 6 (b) 23 (c) 5 (d) 12

Q. A shopkeeper reduces the price of sugar by r%, where r is a whole number. Both before and after the reduction, the price per kg is a whole number of rupees, and ₹1,800 buys a whole number of kilograms exactly. After the reduction, ₹1,800 buys exactly 3 kg more than before. How many different values can r take?

(a) 9 (b) 5 (c) 7 (d) 6

Q. A shopkeeper has fewer than 100 eggs. The first customer buys 25% of his eggs and 2 more. The second customer buys 25% of the eggs then left and 2 more. The third customer buys 25% of the eggs then left and 2 more. No egg is broken at any stage. How many eggs are left after the third customer?

(a) 19 (b) 46 (c) 22 (d) 15

Q. A fruit trader has ₹32,000 to spend and a van that can carry at most 500 kg. Mangoes cost him ₹40 per kg and he sells them at ₹55 per kg; apples cost him ₹100 per kg and he sells them at ₹130 per kg. He buys whole kilograms of each and sells everything he buys. What is the greatest profit he can make on one van-load?

(a) ₹10,500 (b) ₹9,600 (c) ₹7,500 (d) ₹11,000

Q. A shopkeeper sells a lamp for ₹480 and makes a profit. If his cost price had been ₹20 more (with the same selling price), his profit percentage would have been 10 percentage points less. What is the cost price of the lamp?

(a) ₹320 (b) ₹280 (c) ₹300 (d) ₹240

Q. A shopkeeper sold a cooler for ₹2,100 at a loss. The cost price of the cooler, in rupees, was exactly 100 times the loss percentage. It is also known that the loss was less than 50%. At what price should he have sold the cooler to make a profit of 15%?

(a) ₹8,050 (b) ₹2,415 (c) ₹3,000 (d) ₹3,450

Q. Rekha deposits ₹P in Account 1, which pays 20% per annum simple interest. At the end of each year she takes out that year's interest and deposits it in Account 2, which also pays 20% per annum simple interest on each deposit from the day it is made. At the end of 3 years she adds up everything in both accounts. Had she instead kept ₹P for 3 years at 20% per annum compound interest, compounded yearly, she would have had ₹64 more. What is P (in ₹)?

Q. A whole number of rupees is invested at r% per annum compound interest, compounded annually, where r is a whole number from 1 to 99. The interest earned in the second year is exactly ₹36 more than the interest earned in the first year. How many values of r are possible?

(a) 18 (b) 24 (c) 12 (d) 15

Q. Ten student scores are arranged from smallest to largest. The average of the lowest 9 is 42, while the average of the highest 9 is 47. By how much can the maximum possible overall average exceed the minimum possible overall average?

Q. A test has 20 questions. Each correct answer gets 3 marks, each wrong answer loses 1 mark, and an unattempted question gets 0. Five students got five different scores, and the average of their scores is 56. What is the lowest score among these five students?

(a) 52 (b) 54 (c) 53 (d) 51

Q. The marks of 12 students in a quiz are distinct whole numbers from 0 to 30 (both inclusive), and their average is 20. What is the largest possible number of students who scored more than the average?

(a) 9 (b) 10 (c) 8 (d) 11

Q. A container of capacity C litres is full of pure milk. k litres are taken out and replaced with water, and the operation is done once more after mixing. The milk left in the container is exactly 36 litres. If C and k are whole numbers, $k \geq 1$ and C is at most 200, how many different values can C take?

Q. A milk booth starts the day with a full can of pure milk. In the morning, p% of the can is sold and the can is refilled with water. In the evening, 2p% of the can is sold and the can is again refilled with water. Now milk forms 48% of the can. What is p?

(a) 26 (b) 24 (c) 20 (d) 30

Q. A team of 15 equally efficient workers can finish a job in 24 days if no one is absent. During the job, 6 of the workers took 5 days of leave each, and each of the other 9 workers took the same number of days of leave, x. All the leave was taken within the first 20 days, and a worker on leave does no work. The job was completed on the 28th day, that is, some work was still left at the end of day 27, and the job was finished by the end of day 28. What is the greatest possible value of x?

(a) 2 (b) 3 (c) 4 (d) 5

Q. A contractor must finish a job in 30 days and has 40 equally efficient workers, each paid ₹700 a day. After 18 days he finds that only half the job is done. There is a penalty of ₹25,000 for each day of delay. He can hire extra workers of the same efficiency at ₹1,000 a day each, for the rest of the job. If he hires just enough extra workers to finish exactly on time, how much does he save on the remaining part of the job (wages plus penalty) compared with not hiring anyone?

(a) ₹1,50,000 (b) ₹78,000 (c) ₹72,000 (d) ₹96,000

Q. A job needs 700 worker-days of work (that is, one worker alone would take 700 days). A contractor started it with some equally efficient workers. At the end of each day, exactly one-fourth of the workers present that day left the job (this was always a whole number of workers), and no one joined. The job took more than 2 days and was completed exactly at the end of a day. How many workers worked on the last day?

(a) 81 (b) 144 (c) 108 (d) 256

Q. A starts from P at 8:00 am and drives towards Q at 45 km/h. B starts from Q at 9:00 am and drives towards P at 30 km/h along the same road. PQ = 150 km. Each turns back immediately on reaching the far town and keeps driving at the same speed. At what time do they meet for the second time?

(a) 2:24 pm (b) 1:24 pm (c) 2:00 pm (d) 3:12 pm

Q. Arun and Bala must go to a village 27 km away and have one bicycle. Arun walks at 5 km/h and cycles at 15 km/h; Bala walks at 4 km/h and cycles at 12 km/h. They start together: Arun cycles for a while, leaves the bicycle by the roadside and walks the rest of the way, while Bala walks to the bicycle and cycles the rest. Both reach the village at the same time. How long does the journey take?

(a) 4 hours 30 minutes

(b) 3 hours 36 minutes

(c) 3 hours 45 minutes

(d) 4 hours

Q. On a two-lane highway, a car 4 m long moving at 72 km/h is behind a truck 16 m long moving at 54 km/h, with the front of the car 20 m behind the rear of the truck. The car pulls out into the other lane to overtake, keeping its speed, and can come back into its own lane only when its rear is 20 m ahead of the front of the truck. At the moment it pulls out, a bus is coming towards it in that other lane at 90 km/h. What is the least distance between the front of the car and the front of the bus at that moment, so that the car is back in its own lane by the time it would reach the bus?

(a) 504 m (b) 540 m (c) 360 m (d) 600 m

Q. On a circular track 1 km long, a cyclist rides at 20 km/h and stops for exactly 1 minute at the starting point after completing each lap. A jogger runs at a steady 10 km/h without stopping. They start together from the starting point in the same direction. After how many minutes does the cyclist overtake the jogger for the first time?

(a) 10 (b) 12 (c) 9 (d) 11

Agenda of the session...

SECTION 1 -

RC Passages – CAT 2020 – NEW QUESTIONS

1 original CAT question in every passage

Objective – Practice multiple and new question types, all the while keeping it close to ACTUAL CAT.

SECTION 2 -

Some shockingly easy points / tweaks / questions from CAT 2025

Objective – If they come this year, be sure to grab them.

ROUGH SHEET

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The word ‘anarchy’ comes from the Greek anarkhia, meaning contrary to authority or without a ruler, and was used in a derogatory sense until 1840, when it was adopted by Pierre-Joseph Proudhon to describe his political and social ideology. Proudhon argued that organization without government was both possible and desirable. In the evolution of political ideas, anarchism can be seen as an ultimate projection of both liberalism and socialism, and the differing strands of anarchist thought can be related to their emphasis on one or the other of these.

Historically, anarchism arose not only as an explanation of the gulf between the rich and the poor in any community, and of the reason why the poor have been obliged to fight for their share of a common inheritance, but as a radical answer to the question ‘What went wrong?’ that followed the ultimate outcome of the French Revolution. It had ended not only with a reign of terror and the emergence of a newly rich ruling caste, but with a new adored emperor, Napoleon Bonaparte, strutting through his conquered territories.

The anarchists and their precursors were unique on the political Left in affirming that workers and peasants, grasping the chance that arose to bring an end to centuries of exploitation and tyranny, were inevitably betrayed by the new class of politicians, whose first priority was to re-establish a centralized state power. After every revolutionary uprising, usually won at a heavy cost for ordinary populations, the new rulers had no hesitation in applying violence and terror, a secret police, and a professional army to maintain their control.

For anarchists the state itself is the enemy, and they have applied the same interpretation to the outcome of every revolution of the 19th and 20th centuries. This is not merely because every state keeps a watchful and sometimes punitive eye on its dissidents, but because every state protects the privileges of the powerful.

The mainstream of anarchist propaganda for more than a century has been anarchist-communism, which argues that property in land, natural resources, and the means of production should be held in mutual control by local communities, federating for innumerable joint purposes with other communes. It differs from state socialism in opposing the concept of any central authority. Some anarchists prefer to distinguish between anarchist-communism and collectivist anarchism in order to stress the obviously desirable freedom of an individual or family to possess the resources needed for living, while not implying the right to own the resources needed by others. . . .

There are, unsurprisingly, several traditions of individualist anarchism, one of them deriving from the ‘conscious egoism’ of the German writer Max Stirner (1806–56), and another from a remarkable series of 19th-century American figures who argued that in protecting our own autonomy and associating with others for common advantages, we are promoting the good of all. These thinkers differed from free-market liberals in their absolute mistrust of American capitalism, and in their emphasis on mutualism.

1. Which of the following best captures the anarchist interpretation of revolutions in the 19th and 20th centuries?

A. Revolutions were not up to the mark because they could not mobilize workers and peasants effectively.
B. Revolutions brought dissatisfaction and collapsed due to foreign interventions and lack of resources.
C. Revolutions failed because new ruling elites reinstated centralized state authority under different guises.
D. Revolutions were necessary historical stages on the way to socialist states, even if incomplete.

2. What can be inferred about the anarchist-communist ideal from the passage?

A. It envisions decentralized federations of communities managing resources collectively.
B. It promotes the state's direct control over land and resources to prevent inequality.
C. It rejects forms of property, including the right to individual or family possessions.
D. It overlaps markedly with state socialism, while differing in terminology.

3. According to the passage, what was significant about Proudhon’s use of the word “anarchy”?
A. He revived the Greek meaning of lawlessness and applied it politically.
B. He transformed a derogatory term into a self-description of his political ideology.
C. He coined the word during the French Revolution to critique Napoleon’s rule.
D. He used it to describe violent uprisings rather than organized social ideals.

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4. Which of the following was a central claim of individualist anarchists in 19th-century America?
A. Free-market capitalism, properly regulated, would secure mutual prosperity.
B. Pursuing autonomy and voluntary associations could ultimately promote collective good.
C. Private ownership of productive resources was the foundation of liberty.
D. Individualism must be subordinated to collectivist anarchism for stability.

Actual CAT Question

5. Of the following sets of concepts, identify the set that is conceptually closest to the concerns of the passage.

1.Anarchism, Betrayal, Power, State.
2.Revolution, State, Strike, Egoism.
3.Revolution, State, Protection, Liberals.
4.Anarchism, State, Individual, Freedom.

ROUGH SHEET

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Ans: CABBD

Few realise that the government of China, governing an empire of some 60 million people during the Tang dynasty (618–907), implemented a complex financial system that recognised grain, coins and textiles as money. . . . Coins did have certain advantages: they were durable, recognisable and provided a convenient medium of exchange, especially for smaller transactions. However, there were also disadvantages. A continuing shortage of copper meant that government mints could not produce enough coins for the entire empire, to the extent that for most of the dynasty's history, coins constituted only a tenth of the money supply. One of the main objections to calls for taxes to be paid in coin was that peasant producers who could weave cloth or grow grain – the other two major currencies of the Tang – would not be able to produce coins, and therefore would not be able to pay their taxes. . . .

As coins had advantages and disadvantages, so too did textiles. If in circulation for a long period of time, they could show signs of wear and tear. Stained, faded and torn bolts of textiles had less value than a brand new bolt. Furthermore, a full bolt had a particular value. If consumers cut textiles into smaller pieces to buy or sell something worth less than a full bolt, that, too, greatly lessened the value of the textiles. Unlike coins, textiles could not be used for small transactions; as [an official] noted, textiles could not "be exchanged by the foot and the inch" . . .

But textiles had some advantages over coins. For a start, textile production was widespread and there were fewer problems with the supply of textiles. For large transactions, textiles weighed less than their equivalent in coins since a string of coins . . . could weigh as much as 4 kg. Furthermore, the dimensions of a bolt of silk held remarkably steady from the third to the tenth century: 56 cm wide and 12 m long . . . The values of different textiles were also more stable than the fluctuating values of coins. . . .

The government also required the use of textiles for large transactions. Coins, on the other hand, were better suited for smaller transactions, and possibly, given the costs of transporting coins, for a more local usage. Grain, because it rotted easily, was not used nearly as much as coins and textiles, but taxpayers were required to pay grain to the government as a share of their annual tax obligations, and official salaries were expressed in weights of grain. . . .

In actuality, our own currency system today has some similarities even as it is changing in front of our eyes. . . . We have cash – coins for small transactions like paying for parking at a meter, and banknotes for other items; cheques and debit/credit cards for other, often larger, types of payments. At the same time, we are shifting to electronic banking and making payments online. Some young people never use cash [and] do not know how to write a cheque . . .

1. Which of the following best captures the central theme of the passage?

A. The Tang dynasty's reliance on multiple currencies highlights the inefficiency of pre-modern monetary systems compared to the seamless digital systems of today.
B. The coexistence of multiple things as money in the Tang dynasty illustrates how societies adapt financial systems according to the prevailing need.
C. The multi-currency system of the Tang dynasty shows that economic policy failures, such as shortages of copper, were present in ancient empires with large populations.
D. The comparison between Tang dynasty money and modern digital transactions reveals that history is a linear progression toward ever-more efficient financial systems.

2. The author argues that textiles were advantageous over coins in certain respects. Which of the following assumptions underlies this claim?

A. The circulation of textiles in the Tang dynasty was entirely free from counterfeiting or fraud.
B. People in the Tang dynasty were equally comfortable with non-metallic forms of money as with coins.
C. The stability of textile dimensions and value mattered more for economic transactions than their susceptibility to damage over time.
D. The weight of coins made them impractical for local transactions, but ideal for long-distance trade.

3. If a government today were to adopt a currency system inspired by the Tang dynasty, which of the following policies would be most consistent with the reasoning in the passage?

A. Encouraging the use of digital tokens for small, everyday purchases
B. Issuing copper coins for important transactions keeping durability in mind
C. Allowing different forms of payment for different transaction sizes
D. Making way for standardized digital credits, mirroring Tang's progressive thinking

4. Based on the passage, which of the following can be most accurately inferred about the monetary system of the Tang dynasty?

A. Although grain was used less frequently in general circulation than coins or textiles, it still served as a standard unit of account for compensating state officials.
B. Requiring peasants to pay taxes exclusively in coins would have been impractical because coins were too heavy to transport to government collection centers.
C. Because textiles could be easily divided into smaller units without losing proportional value, they were preferred over coins for everyday local purchases.
D. The government mandated the use of coins for large transactions to compensate for the fluctuating value of silk bolts over several centuries.

Actual CAT Question

5. During the Tang period, which one of the following would not be an economically sound decision for a small purchase in the local market that is worth one-eighth of a bolt of cloth?

1.Cutting one-eighth of the fabric from a new bolt to pay the amount.
2.Making the payment with the appropriate weight of grain.
3.Using coins issued by the government to make the payment.
4.Paying with a faded bolt of cloth that has approximately the same value.

ROUGH SHEET

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Ans: BCCAA

Vocabulary used in speech or writing organizes itself in seven parts of speech (eight, if you count interjections such as Oh! and Gosh! and Fuhgeddaboudit!). Communication composed of these parts of speech must be organized by rules of grammar upon which we agree. When these rules break down, confusion and misunderstanding result. Bad grammar produces bad sentences. My favorite example from Strunk and White is this one: “As a mother of five, with another one on the way, my ironing board is always up.”

Nouns and verbs are the two indispensable parts of writing. Without one of each, no group of words can be a sentence, since a sentence is, by definition, a group of words containing a subject (noun) and a predicate (verb); these strings of words begin with a capital letter, end with a period, and combine to make a complete thought which starts in the writer’s head and then leaps to the reader’s.

Must you write complete sentences each time, every time? Perish the thought. If your work consists only of fragments and floating clauses, the Grammar Police aren’t going to come and take you away. Even William Strunk, that Mussolini of rhetoric, recognized the delicious pliability of language. “It is an old observation,” he writes, “that the best writers sometimes disregard the rules of rhetoric.” Yet he goes on to add this thought, which I urge you to consider: “Unless he is certain of doing well, [the writer] will probably do best to follow the rules.”

The telling clause here is Unless he is certain of doing well. If you don't have a rudimentary grasp of how the parts of speech translate into coherent sentences, how can you be certain that you are doing well? How will you know if you're doing ill, for that matter? The answer, of course, is that you can't, you won't. One who does grasp the rudiments of grammar finds a comforting simplicity at its heart, where there need be only nouns, the words that name, and verbs, the words that act.

Take any noun, put it with any verb, and you have a sentence. It never fails. Rocks explode. Jane transmits. Mountains float. These are all perfect sentences. Many such thoughts make little rational sense, but even the stranger ones (Plums deify!) have a kind of poetic weight that's nice. The simplicity of noun-verb construction is useful—at the very least it can provide a safety net for your writing. Strunk and White caution against too many simple sentences in a row, but simple sentences provide a path you can follow when you fear getting lost in the tangles of rhetoric—all those restrictive and nonrestrictive clauses, those modifying phrases, those appositives and compound-complex sentences. If you start to freak out at the sight of such unmapped territory (unmapped by you, at least), just remind yourself that rocks explode, Jane transmits, mountains float, and plums deify. Grammar is . . . the pole you grab to get your thoughts up on their feet and walking.

1. The author claims that a rudimentary grasp of grammar is essential for meaningful writing. Which of the following, if true, would most seriously weaken this claim?

A. Some celebrated poets and novelists have written influential works despite breaking conventional grammatical rules.
B. Readers often focus more on the emotional resonance of writing than on its grammatical correctness.
C. Spoken language regularly violates grammar rules, yet communication usually remains effective.
D. Writers with strong vocabularies can still struggle with clarity if they lack an understanding of grammar.

2. What can be inferred from the author's discussion of Strunk's advice that "the best writers sometimes disregard the rules of rhetoric"?

A. Writers should freely abandon grammar rules whenever creativity demands it.

B. Only those with a strong command of grammar can safely deviate from its rules.

C. Following grammar rules is optional for beginners but mandatory for experts.

D. Grammar rules were designed to restrict creativity rather than enable it.

3. What is the tone of the author when referring to William Strunk as “that Mussolini of rhetoric”?

A. Admiring but cautious
B. Humorous yet critical
C. Neutral and explanatory
D. Hostile and dismissive

4. What is the author’s primary purpose in this passage?
A. To argue that all great writing arises from strict adherence to grammar rules.
B. To illustrate how a basic understanding of grammar provides both structure and creative freedom in writing.
C. To demonstrate that grammar is irrelevant compared to the flow of ideas in writing.
D. To show that noun-verb simplicity should replace more complex sentence structures in all writing.

Actual CAT Question

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5. Which one of the following statements, if false, could be seen as supporting the arguments in the passage?

1.An understanding of grammar helps a writer decide if she/he is writing well or not.
2.Regarding grammar, women writers tend to be more attentive to method and accuracy.
3.It has been observed that writers sometimes disregard the rules of rhetoric.
4.Perish the thought that complete sentences necessarily need nouns and verbs!

ROUGH SHEET

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Ans: CBBBD

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The claims advanced here may be condensed into two assertions: [first, that visual] culture is what images, acts of seeing, and attendant intellectual, emotional, and perceptual sensibilities do to build, maintain, or transform the worlds in which people live. [And second, that the] study of visual culture is the analysis and interpretation of images and the ways of seeing (or gazes) that configure the agents, practices, conceptualities, and institutions that put images to work. . . .

Accordingly, the study of visual culture should be characterized by several concerns. First, scholars of visual culture need to examine any and all imagery – high and low, art and nonart. . . . They must not restrict themselves to objects of a particular beauty or aesthetic value. Indeed, any kind of imagery may be found to offer up evidence of the visual construction of reality. . . .

Second, the study of visual culture must scrutinize visual practice as much as images themselves, asking what images do when they are put to use. If scholars engaged in this enterprise inquire what makes an image beautiful or why this image or that constitutes a masterpiece or a work of genius, they should do so with the purpose of investigating an artist's or a work's contribution to the experience of beauty, taste, value, or genius. No amount of social analysis can account fully for the existence of Michelangelo or Leonardo. They were unique creators of images that changed the way their contemporaries thought and felt and have continued to shape the history of art, artists, museums, feeling, and aesthetic value. But study of the critical, artistic, and popular reception of works by such artists as Michelangelo and Leonardo can shed important light on the meaning of these artists and their works for many different people. And the history of meaning-making has a great deal to do with how scholars as well as lay audiences today understand these artists and their achievements.

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Third, scholars studying visual culture might properly focus their interpretative work on lifeworlds by examining images, practices, visual technologies, taste, and artistic style as constitutive of social relations. The task is to understand how artifacts contribute to the construction of a world. . . . Important methodological implications follow: ethnography and reception studies become productive forms of gathering information, since these move beyond the image as a closed and fixed meaning-event. . . .

Fourth, scholars may learn a great deal when they scrutinize the constituents of vision, that is, the structures of perception as a physiological process as well as the epistemological frameworks informing a system of visual representation. Vision is a socially and a biologically constructed operation, depending on the design of the human body and how it engages the interpretive devices developed by a culture in order to see intelligibly. . . . Seeing . . . operates on the foundation of covenants with images that establish the conditions for meaningful visual experience.

Finally, the scholar of visual culture seeks to regard images as evidence for explanation, not as epiphenomena.

1. The author's claim that "any kind of imagery may be found to offer up evidence of the visual construction of reality" most nearly suggests that:

A. The study of visual culture must distinguish between artworks of enduring aesthetic value and everyday imagery.

B. Aesthetic judgments are the only valid way of evaluating the role of images in society.

C. Only socially significant or historically relevant artworks can reveal how visual reality is constructed.

D. Images are important not because of their intrinsic qualities but because of the roles they play in shaping perceptions.

2. Which of the following statements would the author most likely agree with?
A. Michelangelo’s genius can be fully understood only through biographical accounts of his life.
B. The reception of an artwork by audiences across history is as significant to study as the artwork itself.
C. Visual culture can be adequately explained through analysis of visual objects alone, without reference to practices.
D. Biological structures of vision are irrelevant to understanding cultural representations.

3. The organization of the passage can best be described as:
A. Presenting two broad claims about visual culture, followed by four elaborated concerns that scholars must address.
B. Beginning with the failures of traditional art history and then outlining how visual culture corrects these failures.
C. Introducing visual culture by focusing on individual artists, before moving on to audience reception.
D. Outlining the methods of ethnography and reception studies, before defining what visual culture means.

4. Which one of the following best captures the primary purpose of the passage?
A. To argue that the study of visual culture is distinct from art history because it focuses exclusively on everyday imagery.
B. To show how visual culture is shaped solely by biological perception and not by cultural interpretation.
C. To explain the scope, methods, and concerns that should guide the study of visual culture.
D. To critique the overemphasis on artists like Michelangelo and Leonardo in the study of visual experience.

Actual CAT Question

5. Which one of the following best describes the word “epiphenomena” in the last sentence of the passage?

1.Phenomena amenable to analysis.

2.Phenomena supplemental to the evidence.

3.Overarching collections of images.

4.Visual phenomena of epic proportions.

Ans: DBACB

SECTION 2

Some 'hard-to-believe' and 'hard-to-ignore' POINTS from CAT 2025

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Often the well intentioned music lover or the traditionally-minded professional composer asks two basic questions when faced with the electronic music phenomena: (1) . . . is this type of artistic creation music at all? and, (2) given that the product is accepted as music of a new type or order, is not such music "inhuman"? . . . As Lejaren Hiller points out in his book Experimental Music (co-author Leonard M. Isaacson), two questions which often arise when music is discussed are: (a) the substance of musical communication and its symbolic and semantic significance, if any, and (b) the particular processes, both mental and technical, which are involved in creating and responding to musical composition. The ever-present popular concept of music as a direct, open, emotional expression and as a subjective form of communication from the composer, is, of course still that of the nineteenth century, when composers themselves spoke of music in those terms . . . But since the third decade of our century many composers have preferred more objective definitions of music, epitomized in Stravinsky's description of it as "a form of speculation in terms of sound and time". An acceptance of this more characteristic twentieth-century view of the art of musical composition will of course immediately bring the layman closer to an understanding of, and sympathetic response to, electronic music, even if the forms, sounds and approaches it uses will still be of a foreign nature to him.

Primary Purpose

CAT 2025

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A communication problem however will still remain. The principal barrier that electronic music presents at large, in relation to the communication process, is that composers in this medium are employing a new language of forms . . . where terms like 'densities', 'indefinite pitch relations', 'dynamic serialization', 'permutation', etc., are substitutes (or remote equivalents) for the traditional concepts of harmony, melody, rhythm, etc. . . . When the new structural procedures of electronic music are at last fully understood by the listener the barriers between him and the work he faces will be removed. . . .

The medium of electronic music has of course tempted many kinds of composers to try their hand at it . . . But the serious-minded composer approaches the world of electronic music with a more sophisticated and profound concept of creation. Although he knows that he can reproduce and employ melodic, rhythmic patterns and timbres of a traditional nature, he feels that it is in the exploration of sui generis languages and forms that the aesthetic magic of the new medium lies. And, conscientiously, he plunges into this search.

The second objection usually levelled against electronic music is much more innocent in nature. When people speak—sometimes very vehemently—of the 'inhuman' quality of this music they seem to forget that the composer is the one who fires the machines, collects the sounds, manipulates them, pushes the buttons, programs the computer, filters the sounds, establishes pitches and scales, splices tape, thinks of forms, and rounds up the over-all structure of the piece, as well as every detail of it.

The goal of the author over the course of this passage is to:
1.defend electronic music from certain common charges.
2.differentiate between electronic music and other forms of music.
3.defend the "serious-minded composer" from Lejaren Hill and Stravinsky.
4.differentiate the modern composer from the nineteenth century composer.

ANS - A

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How can we know what someone else is thinking or feeling, let alone prove it in court? In his 1863 book, A General View of the Criminal Law of England, James Fitzjames Stephen, among the most celebrated legal thinkers of his generation, was of the opinion that the assessment of a person's mental state was an inference made with "little consciousness." In a criminal case, jurors, doctors, and lawyers could watch defendants—scrutinizing clothing, mannerisms, tone of voice—but the best they could hope for were clues. . . . Rounding these clues up to a judgment about a defendant's guilt, or a defendant's life, was an act of empathy and imagination. . . . The closer the resemblance between defendants and their judges, the easier it was to overlook the gap that inference filled. Conversely, when a defendant struck officials as unlike themselves, whether by dint of disease, gender, confession, or race, the precariousness of judgments about mental state was exposed.

In the nineteenth century, physicians who specialized in the study of madness and the care of the insane held themselves out as experts in the new field of mental science. Often called alienists or mad doctors, they were the predecessors of modern psychiatrists, neurologists, and psychologists. . . . The opinions of family and neighbors had once been sufficient to sift the sane from the insane, but a growing belief that insanity was a subtle condition that required expert, medical diagnosis pushed physicians into the witness box. . . . Lawyers for both prosecution and defense began to recruit alienists to assess defendants' sanity and to testify to it in court.

Key Words –
Main Idea

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Irresponsibility and insanity were not identical, however. Criminal responsibility was a legal concept and not, fundamentally, a medical one. Stephen explained: "The question 'What are the mental elements of responsibility?' is, and must be, a legal question. It cannot be anything else, for the meaning of responsibility is liability to punishment." . . . Nonetheless, medical and legal accounts of what it meant to be mentally sound became entangled and mutually referential throughout the nineteenth century. Lawyers relied on medical knowledge to inform their opinions and arguments about the sanity of their clients. Doctors commented on the legal responsibility of their patients. Ultimately, the fields of criminal law and mental science were both invested in constructing an image of the broken and damaged psyche that could be contrasted with the whole and healthy one. This shared interest, and the shared space of the criminal courtroom, made it nearly impossible to consider responsibility without medicine, or insanity without law. . . .

Physicians and lawyers shared more than just concern for the mind. Class, race, and gender bound these middle-class, white, professional men together, as did family ties, patriotism, Protestantism, business ventures, the alumni networks of elite schools and universities, and structures of political patronage. But for all their affinities, men of medicine and law were divided by contests over the borders of criminal responsibility, as much within each profession as between them. Alienists steadily pushed the boundaries of their field, developing increasingly complex and capacious definitions of insanity. Eccentricity and aggression came to be classified as symptoms of mental disease, at least by some.

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Study the following sets of concepts and identify the set that is conceptually closest to the concerns and arguments of the passage.

1.Judgement, Belief, Accounts, Patronage.
2.Empathy, Prosecution, Knowledge, Business.
3.Assessment, Empathy, Prosecution, Patriotism.
4.Judgement, Insanity, Punishment, Responsibility.

ANS - D

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

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

Key Words –
Main Idea

CAT 2025

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

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

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

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

ANS - A

ANS - A

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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.

CR ke naam pe dhokha!!

CAT 2025

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.

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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.descriptions of places do not need satellite imagery or other visual aids to give a "real" sense of the place.

3.literature provides us with deep insights into the ways in which movement and migration affect physical geography.

4.humans do not interact with places in subjective, emotional ways because places are only physical topography.

Ans - D

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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. . . .

This needs just ‘Question Decoding’.

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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.

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."It's easy to see why cavefish would be at a disadvantage if they were to maintain expensive tissues they aren't using."
3."Even in their sparse cave conditions, wild cavefish can sometimes get very fat, says Riddle."
4."'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.'"

Ans - D

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Building Learning Networks

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.

Maaro is paragraph ko!!

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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.

Ans - B

Thanks



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Gauri, Hamza and Keshav played a card game of five rounds. Each of them held five cards numbered 1, 2, 3, 4 and 5. In each round, each player put one card face down, and the three cards were then turned over together. A card, once put down, could not be used again, so each player used every card exactly once.

A round was won by the player who had put down the highest card. If the highest card in a round was put down by two or by all three players, nobody won that round. The winners of the five rounds are given below.

Round	1	2	3	4	5
Winner	Nobody	Keshav	Hamza	Gauri	Keshav

The following is also known.

1. Hamza's cards in rounds 3, 4 and 5 were in decreasing order.

2. Hamza won a round with the card numbered 4.

3. Gauri's card in round 4 was an odd number.

4. In exactly three of the five rounds, the three cards put down were all different.

5. Keshav's card was higher than Hamza's card in exactly three of the five rounds.

Q. Which card did Keshav put down in round 2?

A. 2 B. 3 C. 4 D. 5

Q. Suppose clue 1 were replaced by 'The three cards put down in round 2 added up to 7', with everything else unchanged. What would be the total of the three cards put down in round 5?

Q. Suppose clue 3 were replaced by 'The three cards put down in round 2 added up to 8', with everything else unchanged. Which card would Keshav have put down in round 1?

A. 1 B. 2 C. 3 D. 5

Q. Suppose clue 5 were replaced by 'Gauri's card was higher than Keshav's card in exactly three of the five rounds', with everything else unchanged. In which round would Keshav have put down the card numbered 5?

Eight teams, A, B, C, D, E, F, G and H, played a knockout tournament. In the quarter-finals, A played B, C played D, E played F, and G played H. The winners of the first two quarter-finals met in semi-final 1 and the winners of the other two met in semi-final 2; the two semi-final winners played the final. Every match had a winner.

Before the tournament, four friends, Anvita, Bhushan, Chandrika and Dushyant, each predicted the winner of every match. Each friend's predictions were consistent: the pick for a semi-final was one of that friend's own picks for the two quarter-finals feeding it, and the pick for the final (the friend's champion) was one of the friend's two semi-final picks. A friend's two semi-final picks are that friend's finalists; the finalist not picked as champion is the team the friend picked to lose the final.

A friend scored 1 point for each correct quarter-final pick, 2 points for each correct semi-final pick and 4 points for picking the champion correctly.

The quarter-finals were won by A, D, E and G. The table gives each friend's quarter-final picks and total points. The results of the semi-finals and the final, and the friends' other picks, are not given.

The following is also known.

1. The team that Anvita picked as champion did not reach the final.

2. Nobody picked G as champion.

3. Nobody picked F as champion.

4. The team Chandrika picked as champion was the team Dushyant picked to lose the final.

5. No two friends picked the same two teams to play the final.

Friend	Pick for A v B	Pick for C v D	Pick for E v F	Pick for G v H	Total points
Anvita	A	D	F	H	4
Bhushan	B	D	E	G	9
Chandrika	A	C	E	H	2
Dushyant	A	D	E	H	5

Q. Which team did Dushyant pick as champion?

A. E B. A C. D D. H

Q. Suppose clue 2 were replaced by 'Anvita and Bhushan had no team in common between their picked finalists', with everything else unchanged. How many of the four friends picked E as one of their finalists?

Q. Suppose clue 4 were replaced by 'The team Dushyant picked as champion was the team Chandrika picked to lose the final', with everything else unchanged. How many different teams were picked as champion by the four friends?

Q. Suppose clue 3 were replaced by 'Team A reached the final', with everything else unchanged. Which team did Anvita pick as champion?

A. H B. D C. F D. A

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In a fantasy cricket contest, six players from one match could be picked: two batters, P and Q, two all-rounders, R and S, and two bowlers, T and U. The table shows the points each player earned in the match.

Player	P	Q	R	S	T	U
Role	Batter	Batter	All-rounder	All-rounder	Bowler	Bowler
Points	15	10	40	35	25	30

Five friends, Parag, Rina, Sudhir, Tulika and Vasu, each picked a team of exactly three players: one batter, one all-rounder and one bowler. Each friend also named one of the three players in their team as captain. A friend's score is the total of the points of the three players, with the captain's points counted twice. Different friends may pick the same players or the same captain.

Friend	Parag	Rina	Sudhir	Tulika	Vasu
Score	115	100	95	105	110

The following is also known.

1. Tulika and Vasu had exactly one player in common.

2. Sudhir's captain was not a bowler.

3. Rina and Sudhir named the same captain.

4. Bowler T was picked by exactly three friends.

5. Parag and Tulika had exactly one player in common.

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Q. For each friend, take the points that friend's captain earned in the match. What is the sum of these five numbers?

A. 125 B. 130 C. 135 D. 140

Q. Suppose clue 3 were replaced by 'Rina and Sudhir had no player in common', with everything else unchanged. How many friends would have picked R?

Q. Suppose clue 2 were replaced by 'Batter P was picked by exactly four friends', with everything else unchanged. Which friend would have picked exactly the same three players as Vasu?

A. Parag B. Rina C. Sudhir D. Tulika

Q. Suppose clue 1 were replaced by 'Tulika and Vasu named the same captain', with everything else unchanged. How many friends would have picked S?

A clinic has one doctor, who starts seeing patients at 9:00 a.m. One morning eight patients came in. Each patient was placed in one of three categories: Emergency, Urgent or Routine. A consultation takes 20 minutes for an Emergency patient, 15 minutes for an Urgent patient and 10 minutes for a Routine patient.

Whenever the doctor is free, the doctor at once calls in one of the patients who have arrived and are waiting: an Emergency patient if any is waiting, otherwise an Urgent patient, otherwise a Routine patient. Among waiting patients of the same category, the one who arrived earliest is called first. A patient who arrives at the very moment the doctor becomes free counts as waiting. A consultation, once started, is never interrupted, and if nobody is waiting the doctor waits for the next patient to arrive. A patient's waiting time is the time from arrival to the start of that patient's consultation.

The patients were called in this order: Abha, Bijoy, Chhaya, Falguni, Gopika, Himesh, Dhaval, Eknath.

The following is also known.

1. Abha was not a Routine patient.

2. Abha and Himesh were in different categories.

3. Gopika and Himesh were in the same category.

4. The last consultation ended at 10:50 a.m.

5. Chhaya waited exactly 15 minutes.

Patient	Abha	Bijoy	Chhaya	Dhaval	Eknath	Falguni	Gopika	Himesh
Arrival time	9:00	9:05	9:15	9:20	9:30	9:40	9:45	9:55

Q. What was the total of the waiting times of the eight patients, in minutes?

Q. Suppose clue 4 said that the last consultation ended at 10:55 a.m., with everything else unchanged. Which patients would then have been Emergency patients?

A. Falguni only

B. Gopika and Himesh

C. Abha and Falguni

D. Falguni, Gopika and Himesh

Q. Suppose clue 5 were replaced by 'Bijoy waited exactly 15 minutes', with everything else unchanged. In how many different ways could the categories of the eight patients then have been assigned?

Q. Suppose clue 5 were replaced by 'Falguni waited exactly 5 minutes', with everything else unchanged. Which of the following is the complete list of Urgent patients?

A. Gopika and Himesh

B. Falguni, Gopika and Himesh

C. Bijoy, Gopika and Himesh

D. Bijoy, Falguni, Gopika and Himesh

A logistics company runs five sorting hubs: Argo, Boreal, Cygnus, Delta and Ember. During one shift, every sorting line in every hub processed a whole number of batches. For each hub, the table gives the smallest and largest number of batches processed by any one line in that hub, and the average number of batches per line. Both the smallest and the largest number occurred on at least one line in each hub. The number of lines in each hub is not given.

Hub	Smallest	Largest	Average
Argo	2	10	6
Boreal	1	9	3
Cygnus	3	9	6
Delta	4	9	5
Ember	2	8	5

The five hubs together had 38 lines, which processed 185 batches in all. Argo and Cygnus together had two lines more than Boreal, and Argo had more lines than Cygnus. Delta and Ember differed by exactly two lines.

Q. In how many different ways can the numbers of lines in the five hubs be assigned? (Two ways are different if at least one hub has a different number of lines.)

Q. What is the largest possible number of lines, across the five hubs, that processed exactly 6 batches?

A. 15 B. 16 C. 17 D. 18

Q. What is the smallest possible number of lines, across the five hubs, that processed 4 or fewer batches?

Q. If the number of lines that processed exactly 6 batches is as large as possible, what is the smallest possible number of lines that processed 4 or fewer batches?

A. 14 B. 15 C. 16 D. 17

Q. For two sets A and B, let AΔB denote the set of elements which belong to A or B but not both. If P = {1,2,3,4}, Q = {2,3,5,6,}, R = {1,3,7,8,9}, S = {2,4,9,10}, then the number of elements in (PΔQ) Δ (RΔS) is

A.7

B. 8

C. 9

D. 6

Q. In a gathering it was found that 60% of the people present were more than 50 kgs in weight and 70% of the people were more than 5 feet tall. If 10% of the people satisfied neither of the two conditions, find the percentage of people who were both more than 50 kgs in weight and more than 5 feet tall.

Q. In a group, 50 people can sing, 40 can dance and 30 can act. Also 25 can sing and dance, 25 can dance and act and 30 can sing and act. Find the number of people who can do atleast one of singing, dancing and acting.

a) 50

b) 60

c) 65

d) Cannot be determined

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

A.72 and 80, respectively

B. 75 and 90, respectively

C. 72 and 88, respectively

D. 75 and 96, respectively

Q. A club has 256 members of whom 144 can play football, 123 can play tennis, and 132 can play cricket. Moreover, 58 members can play both football and tennis, 25 can play both cricket and tennis, while 63 can play both football and cricket. If every member can play at least one game, then the number of members who can play only tennis is

A.32 B. 43 C. 38 D. 45

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

A.41 B.42 C.40 D. 43

Q. In the month of September, 215 clients of a consulting firm provided feedback about at least one of the following three issues: slow project delivery, excessive cost, or poor communication.

- 180 clients mentioned slow project delivery or excessive cost.
- 170 clients mentioned excessive cost or poor communication.
- 140 clients mentioned slow project delivery or poor communication.

If 45 clients mentioned exactly two of these three issues, how many clients complained about all three?

a) 15 b) 20 c) 25 d) Data insufficient

Q. Each of 74 students in a class studies at least one of the three subjects H, E and P. Ten students study all three subjects, while twenty study H and E, but not P. Every student who studies P also studies H or E or both. If the number of students studying H equals that studying E, then the number of students studying H is

Q. Students in a college have to choose at least two subjects from chemistry, mathematics and physics. The number of students choosing all three subjects is 18, choosing mathematics as one of their subjects is 23 and choosing physics as one of their subjects is 25. The smallest possible number of students who could choose chemistry as one of their subjects is

A.22 B. 19 C. 20 D. 21

Q. In a high school having 150 students, 100 participate in chess club, 30 participate in Debate club and 75 participate in Robotics club

Find the minimum number of students participating in both the Chess Club and the Debate .

Q. In a high school having 150 students, 100 participate in chess club, 30 participate in Debate club and 75 participate in Robotics club

Find the minimum number of students who are participating neither in Debate club nor Robotics.

Q. If among 200 students, 105 like pizza and 134 like burger, then the number of students who like only burger can possibly be

A.26

B. 23

C. 96

D. 93

Q. A survey in a school reveals the following data about students who practice running, swimming, and cycling:

- 45% of students practice running.
- 30% of students practice swimming.
- 55% of students practice cycling.
- 20% of students practice exactly two of the three sports.
- 5% of students practice none of the sports.

What percentage of students practices all three sports?

Q. In a survey of political preferences, 78% of those asked were in favour of at least one of the proposals: I, II and III. 50% of those asked favoured proposal I, 30% favoured proposal II and 20% favoured proposal III. If 5% of those asked favoured all three of the proposals, what percentage of those asked favoured more than one of the three proposals?

a) 10 b) 12 c) 17 d) 22

Q. There are 3 clubs A, B & C in a town with 40, 50 & 60 members respectively. While 10 people are members of all 3 clubs, 70 are members in only one club. How many belong to exactly two clubs?

a) 20

b) 25

c) 50

d) 70

Q. Fifty college teachers are surveyed as to their possession of colour TV, VCR and tape recorder. Of them, 22 own colour TV, 15 own VCR and 14 own tape recorders. Nine of these college teachers own exactly two items out of colour TV, VCR and tape recorder; and, one college teacher owns all three. How many of the 50 teachers own none of the three gadgets?

a) 4

b) 9

c) 10

d) 11

Q. 250 students took the CAT test having three sections. 230 cleared section I, 190 cleared section II and 140 cleared section III. How many students, at the least, cleared all the three sections?

a) 140 b) 0 c) 160 d) None of the above

Q. In a Grand Prix, 90% of drivers faced tyre problems, 85% of the drivers faced engine problems, 75% of drivers faced steering problems, and 70% of the drivers faced transmission problems. Find the minimum percentage of drivers who faced all the four problems.

a) 15%

b) 25%

c) 30%

d) 20%

Q. In a survey of hobbies, it was found that 98% of people enjoy reading, 95% enjoy cooking, 94% enjoy gardening, 91% enjoy hiking, 88% enjoy painting, and 82% enjoy gaming. If every person enjoys at least one of these hobbies, then find the minimum percentage of people who enjoy all six hobbies.

a) 48%

b) 60%

c) 38%

d) 17%

Q. There are three electives and at least one elective has to be selected.75% opted for marketing,62% opted for finance and 83% for HR. What is the maximum number of students that can specialize in all three?

a) 15%

b) 25%

c) 45%

d) 60%

Q. In a class of 60, 42 cleared QA cut off, 48 cleared VARC cut off and 30 cleared LRDI cut off . What is he maximum number of students who cleared all the three cut offs?

(a) 50 (b) 30 (c) 10 (d) 33

Q. In a survey, each of the 120 respondents had to choose at least one favorite fast food restaurant out of four given options.
It was found that McDonald's was selected by 60 people, Burger King by 50 people, Taco Bell by 40 people, and Wendy's by 30 people.

Find the minimum and maximum number of people who could have chosen all four restaurants.

a) 10,30

b) 0,20

c) 0,30

d) 10,20

A survey was conducted regarding social media platforms. Respondents had to tick all the platforms they had used in the last week. The platforms listed were Facebook, Instagram, and Twitter.
120 people sent in their responses. It was found that 80 had used Facebook, 75 had used Instagram, and only 45 had used Twitter.

Q. Find the minimum number of people who may have used at least one of these three sites.

a) 45 b) 80 c) 120 d) None of the above

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Q. Find the maximum number of people who may have used all these three sites.

a) 45 b) 80 c) 120 d) None of the above

Q. In a class of 100 students, 73 like coffee, 80 like tea and 52 like lemonade. It may be possible that some students do not like any of these three drinks. Then the difference between the maximum and minimum possible number of students who like all the three drinks is

A.48 B. 53 C. 47 D. 52

Q. Each of the 1200 employees at a company belongs to either the HR department or the IT department, but not both. An internal audit revealed the following information:

i. 40 male employees in the IT department were not promoted.
ii. 700 employees belong to the HR department.
iii. 300 IT department employees were not promoted.
iv. 90 male employees were not promoted.
v. 300 HR department employees are either male employees who were not promoted or female employees who were promoted.
vi. 360 female employees are either IT department employees who were promoted or HR department employees who were not promoted.
vii. 150 male employees who belong to the HR department were promoted.

How many female employees in the IT department were not promoted?

A speciality supermarket sells 320 products. Each of these products was either a cosmetic product or a nutrition product. Each of these products was also either a foreign product or a domestic product. Each of these products had at least one of the two approvals – FDA or EU. The following facts are also known:

1. There were equal numbers of domestic and foreign products.

2. Half of the domestic products were FDA approved cosmetic products.

3. None of the foreign products had both the approvals, while 60 domestic products had both the approvals.

4. There were 140 nutrition products, half of them were foreign products.

5. There were 200 FDA approved products. 70 of them were foreign products and 120 of them were cosmetic products.

Q. How many foreign products were FDA approved cosmetic products?

Q. How many cosmetic products did not have FDA approval? a) 10 b) 60 c) 50 d) Cannot be determined

Q. Which among the following options best represents the number of domestic cosmetic products that had both the approvals?

a) At least 10 and at most 80
b) At least 20 and at most 70
c) At least 20 and at most 50
d) At least 10 and at most 60

Q. If 70 cosmetic products did not have EU approval, then how many nutrition products had both the approvals?

a) 10 b) 20 c) 50 d) 30 Q-31.

Q. If 50 nutrition products did not have EU approval, then how many domestic cosmetic products did not have EU approval?

1000 patients currently suffering from a disease were selected to study the effectiveness of treatment of four types of medicines — A, B, C and D. These patients were first randomly assigned into two groups of equal size, called treatment group and control group. The patients in the control group were not treated with any of these medicines; instead they were given a dummy medicine, called placebo, containing only sugar and starch. The following information is known about the patients in the treatment group.

a. A total of 250 patients were treated with type A medicine and a total of 210 patients were treated with type C medicine.

b. 25 patients were treated with type A medicine only. 20 patients were treated with type C medicine only. 10 patients were treated with type D medicine only.

c. 35 patients were treated with type A and type D medicines only. 20 patients were treated with type A and type B medicines only. 30 patients were treated with type A and type C medicines only. 20 patients were treated with type C and type D medicines only.

d. 100 patients were treated with exactly three types of medicines.

e. 40 patients were treated with medicines of types A, B and C, but not with medicines of type D. 20 patients were treated with medicines of types A, C and D, but not with medicines of type B.

f. 50 patients were given all the four types of medicines. 75 patients were treated with exactly one type of medicine.

Q. How many patients were treated with medicine type B?

Q. The number of patients who were treated with medicine types B, C and D, but not type A was:

Q. How many patients were treated with medicine types B and D only?

Q. The number of patients who were treated with medicine type D was:

A survey of 600 schools in India was conducted to gather information about their online teaching learning processes (OTLP).

The following four facilities were studied.

F1: Own software for OTLP

F2: Trained teachers for OTLP

F3: Training materials for OTLP

F4: All students having Laptops

The following observations were summarized from the survey.

1. 80 schools did not have any of the four facilities – F1, F2, F3, F4.
2. 40 schools had all four facilities.
3. The number of schools with only F1, only F2, only F3, and only F4 was 25, 30, 26 and 20 respectively.
4. The number of schools with exactly three of the facilities was the same irrespective of which three were considered.
5. 313 schools had F2.
6. 26 schools had only F2 and F3 (but neither F1 nor F4).
7. Among the schools having F4, 24 had only F3, and 45 had only F2.
8. 162 schools had both F1 and F2.
9. The number of schools having F1 was the same as the number of schools having F4.

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

A.80 B. 64 C. 200 D. 50

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

A.185 B. 95 C. 45 D. 85

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

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

Q. Let $T_k = \left(\frac{1}{3}\right)^{k-1}$ for $k = 1, 2, 3, \ldots$. Find the sum of the products $T_i\, T_j$ over all pairs of positive integers $i < j$.

(a) $\frac{3}{8}$ (b) $\frac{27}{32}$ (c) $\frac{9}{16}$ (d) $\frac{9}{8}$

Q. All positive integers that are neither perfect squares nor perfect cubes are written in increasing order: 2, 3, 5, 6, 7, 10, 11, … . Find the 2026th term of this sequence.

(a) 2078 (b) 2071 (c) 2083 (d) 2080

Q. Evaluate the infinite sum $\frac{1}{(3+1)} + \frac{2}{(3^2+1)} + \frac{4}{(3^4+1)} + \frac{8}{(3^8+1)} + \ldots$, whose k-th term (k = 0, 1, 2, ...) is $\frac{2^k}{(3^{2^k}+1)}$.

(a) $\frac{2}{3}$ (b) $\frac{1}{3}$ (c) $\frac{3}{5}$ (d) $\frac{1}{2}$

Q. A sequence satisfies $a_1 = 1$ and $a_{n+1} = a_n + 1/a_n$ for every $n \geq 1$. What is $[a_{1000}]$, where [x] is the greatest integer not exceeding x?

(a) 31 (b) 45 (c) 44 (d) 63

Q. A sequence has $a_1 = 1$, and for every $n \geq 1$ the numbers a_n and a_{n+1} are the two roots of the quadratic $x^2 - b_n x + 2^n = 0$. Find $b_1 + b_2 + \ldots + b_{20}$.

(a) 6141 (b) 7161 (c) 8185 (d) 7167

Q. For what value of k does $(x-1)(x-2)(x-3)(x-4) = k$ have exactly three distinct real solutions?

(a) $\frac{1}{4}$ (b) $\frac{25}{16}$ (c) 1 (d) $\frac{9}{16}$

Q. For integers k with $0 \leq k \leq 10$, which value of k makes $x^4 - kx^3 + 14x^2 - kx + 1 = 0$ have exactly four distinct real roots?

(a) 7 (b) 6 (c) 8 (d) 9

Q. Find the sum of all real solutions of $\frac{5x}{(x^2+x+2)} - \frac{2x}{(x^2-5x+2)} = 3$.

(a) 4 (b) 1 (c) 5 (d) 8

Q. The quadratic $x^2 - ax + b = 0$ has two distinct positive integer roots. Here a is a two-digit number with both digits non-zero, and b is the number obtained by reversing the digits of a. Find the sum of all possible values of a.

(a) 27 (b) 94 (c) 49 (d) 76

Q. Let $f(x) = x^2 + px + q$, where p and q are real. If $f(f(1)) = f(f(2)) = 0$ and $f(1) \neq f(2)$, find $f(0)$.

(a) $\frac{3}{2}$ (b) -1 (c) $-\frac{3}{2}$ (d) $-\frac{5}{2}$

Q. Here [x] is the greatest integer not exceeding x. Find the sum of all real x satisfying $[x^2] = 3x - 2$.

(a) $\frac{11}{3}$ (b) 3 (c) 6 (d) $\frac{16}{3}$

Q. Find the minimum value of $|x| + |x - 3| + \frac{12}{|x|}$ for real $x \neq 0$.

(a) 5 (b) 6 (c) 7 (d) 8

Q. Find the value of a for which $|x-1| + |x-4| = 2|x-a|$ has infinitely many real solutions.

(a) 1.5 (b) 2 (c) 3 (d) 2.5

Q. How many ordered pairs of integers (x, y) satisfy $|2x - y| + |x - 2y| = 6$?

(a) 8 (b) 12 (c) 24 (d) 16

Q. For real x, let g(x) be the largest of the three numbers $|x-1|$, $|x-5|$ and $|2x-9|$. Find the minimum value of g(x).

(a) $\frac{7}{3}$ (b) 2 (c) $\frac{5}{2}$ (d) 3

Q. For real x, let $f(x) = |x - 1| + |2x - 3| + |3x - 5| + |4x - 7| + \ldots + |10x - 19|$, where the k-th term is $|kx - (2k - 1)|$ for $k = 1, 2, \ldots, 10$. Find the minimum value of f(x).

(a) $\frac{27}{7}$ (b) $\frac{25}{6}$ (c) 5 (d) 10

Q. A polynomial $P(x)$ leaves remainder $3x - 1$ when divided by $(x - 1)^2$. What is the remainder when $[P(x)]^3$ is divided by $(x - 1)^2$?

(a) $12x - 4$ (b) $27x - 1$ (c) $36x - 8$ (d) $36x - 28$

Q. Real numbers a, b and c satisfy $a + b + c = 1$, $a^2 + b^2 + c^2 = 3$ and $a^3 + b^3 + c^3 = 4$. Find $a^5 + b^5 + c^5$.

(a) 11 (b) 10 (c) 9 (d) 12

Q. The equation $x^4 - 7x^3 + kx^2 + 14x - 12 = 0$ has four real roots, and the product of two of them is -3. Find k.

(a) 7 (b) 6 (c) 5 (d) 8

Q. For every non-negative integer n, let f(n) be the remainder when n^2 is divided by 11. For how many integers n with $1 \leq n \leq 200$ is $f(f(n)) = f(n)$?

(a) 55 (b) 37 (c) 54 (d) 36

Q. A function f maps positive integers to positive integers, is strictly increasing, and satisfies $f(f(n)) = 3n$ for every positive integer n. Find f(2026).

Q. For real k, the system $(k + 1)x + y = 2k + 3$ and $x + (k + 1)y = 2k + 5$ has a unique solution. What is $x + y$?

(a) 3

(b) Depends on k

(c) 5

(d) 4

Q. Riya multiplied the day of the month of her birthday by 12 and the number of the month (January = 1, …, December = 12) by 31. The two products add up to 368. On which date is her birthday?

(a) 17 May (b) 8 October (c) 10 August (d) 29 June

Q. A frog starts at 0 on the number line. Each jump takes it either 7 units to the right or 11 units to the left. What is the least number of jumps after which the frog can be exactly at 100?

(a) 15 (b) 22 (c) 19 (d) 33

Q. How many integers x satisfy $\left|\log^2\left[\frac{x+1}{5-x}\right]\right| < 1$?

(a) 0 (b) 2 (c) 1 (d) 3

Q. All real solutions of $log_{(x^2)}\,[(x^2-1)^2]=1$ are r_1, r_2, r_3, r_4. Find ${r_1}^4+{r_2}^4+{r_3}^4+{r_4}^4$.

(a) 12 (b) 18 (c) 16 (d) 14

Q. For real k, $\log_2|x^4 - 10x^2 + 9| = k$ has exactly six distinct real solutions for k in an interval. Find the length of that interval.

(a) $\log_2\left(\frac{9}{8}\right)$ (b) $\log_2\left(\frac{4}{3}\right)$ (c) $\log_2\left(\frac{9}{4}\right)$ (d) $\log_2\left(\frac{16}{9}\right)$

Q. Here [t] denotes the greatest integer less than or equal to t (the greatest integer function). How many integers k with $1 \leq k \leq 1000$ satisfy $[\log_2(k)] = 2\,[\log_4(k)]$?

(a) 340 (b) 511 (c) 341 (d) 682

Q. Real numbers x and y satisfy $\log_4(x + 2y) + \log_4(x - 2y) = 1$. Find the minimum value of $|x| - |y|$.

(a) $\sqrt{2}$ (b) 2 (c) $\sqrt{3}$ (d) 1

Q. How many real numbers x satisfy $\log_5(3^x + 4^x) = \log_4(5^x - 3^x)$?

(a) 0 (b) 1 (c) 2 (d) More than 2

Q. How many triangles with integer side lengths, all three sides different, have perimeter 40? (Triangles with the same three side lengths are counted once.)

(a) 24 (b) 33 (c) 27 (d) 144

Q. Which of the following correctly orders the numbers $P = 31^{11}$, $Q = 17^{14}$ and $R = 3^{35}$?

(a) $P < R < Q$ (b) $R < P < Q$ (c) $P < Q < R$ (d) $Q < P < R$

Q. Let $t = \frac{21}{3}$. Rational numbers p, q, r satisfy $\frac{1}{1+t+2t^2} = p + qt + rt^2$. Find $p + q + r$.

(a) $\frac{3}{7}$ (b) $\frac{1}{23}$ (c) $\frac{3}{23}$ (d) $-\frac{3}{23}$

Q. Find the sum of all real x satisfying $(3x - 2)^{\frac{1}{3}} + (x - 6)^{\frac{1}{3}} = 2$, where real cube roots are used.

(a) $\frac{31}{8}$ (b) $\frac{47}{8}$ (c) $\frac{15}{8}$ (d) -2

Q. Find the set of all real x satisfying $(x^2 - 3x + 3)^{x^2-4} < 1$.

(a) $(-2, 1)$ (b) $(-2, 2)$ (c) $(1, 2)$ (d) $(-2, 1) \cup (1, 2)$

Q. For how many integers a with $1 \leq a \leq 10$ does the equation $|4^x - 4| + |2^x - 1| = a$ have exactly two real solutions x?

(a) 3 (b) 2 (c) 4 (d) 5

Q. P(x) is a degree-4 polynomial with leading coefficient 1, and $P(1) = 2, P(2) = 4, P(3) = 6, P(4) = 8$. Find $P(6) + P(-1)$.

Q. When $P(x)$ is divided by $(x-1)(x-2)$, the remainder is $3x+1$. When $P(x)$ is divided by $(x-2)(x-3)$, the remainder is $5x-3$. If $R(x)$ is the remainder when $P(x)$ is divided by $(x-1)(x-2)(x-3)$, find $R(4)$.

Q. A function f satisfies $f(x + y) = f(x) + f(y) + 2xy - 1$ for all real x and y, and $f(1) = 4$. Find $f(1) + f(2) + \ldots + f(10)$.

Q. How many integers x satisfy $\log_{(}|x-1|_{)}(x+11) \geq 2$?