

CAT 2023 E-Book



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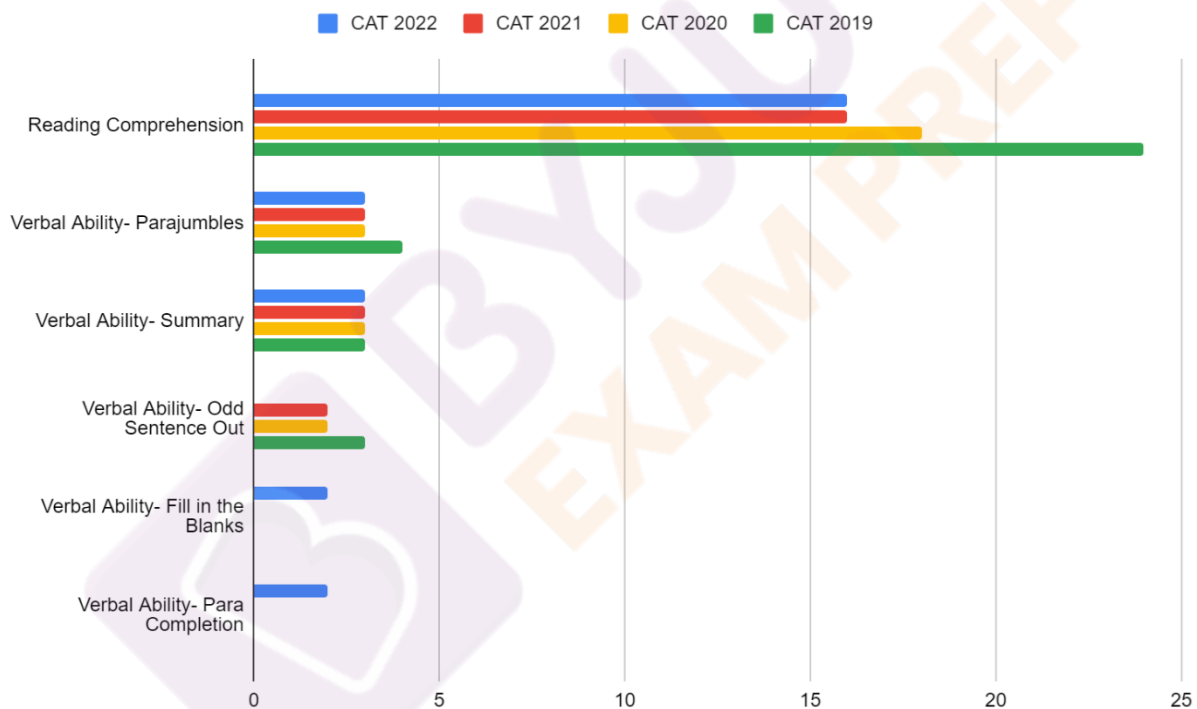
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Verbal Ability and Reading Comprehension (VARC)

Reading Comprehension

Reading Comprehension is the make or break part of the VARC (Verbal Ability and Reading Comprehension) section in CAT.

- Till 2019, 24 (71%) out of 34 questions were RC questions.
- In 2020, 18 (~69%) out of 26 questions were RC questions.
- In 2021, 16 (~67%) out of 24 questions were RC questions.
- In 2022, 16 (~67%) out of 24 questions were RC questions.



In 2022, there were 4 RCs of 4 questions each, and 8 Verbal Ability questions. Out of the remaining 8 questions, 3 were parajumbles (PJ), 3 were summary questions, and 2 were questions on fill in the blanks.

As far as the difficulty level of the VARC section of CAT is concerned, it has definitely gone up in the past 5–6 years. However, we cannot say this for the whole section. There is a kind of balance in the exam. The difficulty level of the VARC section of the latest (2022) CAT exam can be said to be Moderate because of tricky options in RCs however, all the slots were at par in terms of

difficulty level. Also, it was interesting to note that no Odd Sentence Out questions were asked in the CAT 2022 exam.

Hence, we can say that reading is a very important part of the preparation for CAT. However, we have made reading easier for you by analysing the genres from which RCs appeared in the CAT exam in the past 5 years.

Genre analysis (2017–22)

Genre	Occurrence (Number of Times)	Occurrence (Percentage)
Sociology and Anthropology	12	21.05%
Science and Technology	7	12.96%
Ecology/Zoology/Biology	6	11.11%
Business and Economy	3	5.56%
History	5	9.26%
Culture	3	5.26%
Philosophy and Psychology	6	10.53%
Politics	2	3.70%
Others	13	24.07%
Total	57	1

How to start preparing for RCs?

- Make reading a habit.
- Read actively and not just to finish the passage.
- Have a daily target for yourself.
- If you don't read at all, you may start with some short stories and articles.
- If you wish to read, then step out of your comfort zone and read from diverse sources.

What to read?

We have compiled a list of sources from which RCs came in the CAT exams in the last five years.

Source analysis (2017–22)

Source	Occurrence	Occurrence (Percentage)
NYT	8	14.03%
Excerpts from Books	8	14.03%
Aeon Essays	6	10.52%
The Guardian	4	7.02%
Smithsonian Magazine	4	7.02%
Time Magazine	3	5.26%
The Atlantic	2	3.51%
The Economist	2	3.51%

*Top 8 sources

** Total number of passages: 57

We can see that about 52% of the RCs came from 7 sources if we do not consider excerpts from books. So, is reading from just 7 sources a difficult job? Of course not! After all, you are preparing for CAT.

Let's make reading easier and more fruitful for you. Whenever you read a passage, keep a pen and notebook with you. Take the following steps:

1. Note down the main point / idea of each paragraph while reading. [It will be a guide to help you find answers.]
2. Find out the role of each paragraph in the passage.
3. Understand the central theme/ idea.
Direct (written somewhere in the passage)
Implied (not written but is there all the time)
4. Find out what is the author trying to do (tone)
 - Narrate
 - Analyse
 - Condemn
 - Praise
 - Make fun
 - Anything else

Practice Questions (Reading Comprehension).

Passage 1

Directions for questions 1 to 6: Read the passage given below, and answer the questions that follow it.

Across the West, politicians are increasingly condemning and attempting to restrict research in academic fields that challenge their own worldviews. The threat to academic freedom demands intellectual resistance, starting with an effort to develop a common understanding of the concept and why it matters.

The crisis of academic freedom is partly political and regulatory, featuring threats and legal restrictions on research and education. These are, in essence, attacks against the very notion of knowledge as a public good (though they are more disguised than is the case in countries like Turkey or Russia). But there is also an intellectual dimension to the crisis, born of the absence of a shared understanding of how academic freedom should be adapted to the present.

Academic freedom is a global challenge, but Europe has a particular problem with it. In Europe, higher education has been transformed by the creation of a European Higher Education Area, a process that started in 1999. Currently comprising 49 countries, the EHEA has created a common space for higher education with shared models and standards, intense exchanges, and joint regulations and institutions, which transcend national jurisdictions and academic traditions.

Yet, despite these remarkable changes, the work of developing a shared concept of academic freedom, suited to the present, has not kept up. Instead, academic freedom has simply been neglected, with scant agreement about what it even means. Whether one looks to higher-education policies or within universities themselves, there simply is no shared definition of the concept, nor any common recognition of why it is currently needed.

The enemies of academic freedom have profited from this vacuum, exploiting it for political benefit. When the European Commission sued Hungary in 2017 for infringing on academic freedom, it pointed to the fact that Central European University (CEU) had been forced out of the country. But the Hungarian government maintained that the EU had no jurisdiction, because there was no European definition of academic freedom – legal or otherwise – upon which to base its case. In the end, what should have been a clear-cut landmark case about academic freedom turned partly into a dispute about the delivery of commercial services under World Trade Organization rules.

For her part, French Minister for Higher education, Vidal, justified her attack on universities not only with political and legal arguments – namely, that restrictions on some disciplines are necessary to protect the rule of law and to prevent terrorism – but also with her own tendentious definition of academic freedom. Adopting a familiar tactic from the far right, the French government has tried to package its assault on postcolonial studies as a research project, as if it is simply exercising academic freedom for itself. By framing the issue in this way, the government can pretend that it is not cracking down on postcolonial studies for political reasons, but rather conducting its own “study” into the issue of “Islamogauchisme.” (Islamogauchism)

There is a recent precedent for this strategy in the UK. In 2017, Chris Heaton-Harris, a Conservative MP, demanded that all major universities in the country submit course syllabi and the names of any instructors teaching their students about Brexit. In response to the inevitable backlash, his excuse was that he “was doing research” for a book.

Q1. What is the main idea of the passage?

- A. Academic freedoms in the West and especially those in Europe are in crisis.
- B. Why Western politicians are restricting academic freedoms.
- C. The closing of the Western Mind.
- D. The lack of consensus in the West in defining the concept of academic freedoms.

Answer: A

Q2. The passage can be said to be:

- A. Data-driven
- B. Investigative
- C. Scholarly
- D. Abstruse

Answer: C

Q3. All of the following are NOT UNTRUE about academic freedoms EXCEPT?

- A. There is more academic freedom in the EU than in Turkey or Russia.
- B. The threats to academic freedoms are partly regulatory.
- C. France is conducting its own study on academic freedoms.
- D. There is no common broad-based definition in the EU as to the exact parameters that constitute academic freedoms.

Answer: C

Q4. According to the author, why are academic freedoms NOT UNNECESSARY for societies?

- A. The dissemination of a wide base of knowledge to the maximum number of students is beneficial.
- B. Academic freedoms create knowledge for the public good.
- C. It could lead to a breakdown in the rule of law.
- D. Academic freedoms foster a culture of learning for the sake of learning.

Answer: B

Q5. Which of the following real life events would MOST LIKELY win the author's approval?

- A. Citizens voting out the current regimes in Turkey and Russia
- B. More courses on gender-based studies in EU universities
- C. A landmark legal case that helps define the concept of academic freedoms in Europe
- D. A clear cut statement from politicians on subjects that can have academic freedoms and those that cannot

Answer: C

Q6. In the sixth paragraph, the author describes the French minister's definition of academic freedom as tendentious to mean:

- A. A lack of tendency to define academic freedoms
- B. A controversial definition of academic freedoms
- C. A vacuous definition of academic freedoms
- D. A political tendency to deny academic freedoms

Answer: B

Solution: Watch the async video 'RCs on politics / international affairs' for solutions.

Passage 2

Directions for questions 7 to 9: Read the passage given below, and answer the questions that follow it.

India is amongst the most unequal countries in the world to be a woman. The latest annual Global Gender Gap Index released by the World Economic Forum places India 17th from the bottom, with Afghanistan being the lowest. But unlike most nations in this dismal league, in India discrimination starts in the embryo. With the misuse of ultrasound technology for sex-selective abortion, each year India euphemistically has, as per UNFPA estimates, more than 46 million "missing women".

But why has India's rank slipped 28 places in the last year? Despite a string of state elections, the share of women ministers has declined sharply from 23 to 9 per cent. Further, Indian women's labour force participation has plummeted in the last decade to a mere 21 per cent. Before the pandemic, Indian boardrooms had only 15 percent of women, even as the #MeToo movement exposed the iceberg of sexual harassment in the workplace. Now there are fewer Indian women in the workforce than even Saudi Arabia. Workplace crèches, though legally mandatory in all offices with more than 50 employees and MNREGA worksites, are rare. Anganwadis, too, have yet to be expanded into crèches. On the other hand, the East Asian growth "miracle" was associated with large increases in working women.

Patriarchy is largely instilled at home. Indian women's daily work is almost 10 times more than men on unpaid domestic chores as per the 2019 NSSO time-use survey. There is now a wealth of new data from the first phase of the 2019-20 National Family Health Survey. Preliminary population weighted averages from 17 states reveal that even before the pandemic, child marriages have marginally increased since the previous survey in 2015-16. While education is now more inclusive, with three-fourths of women literate, only 37 percent complete Class 10.

Q7. What is the main purpose of the passage?

- A. It highlights the deteriorating position of Indian women with regard to education and employment.
- B. It gives an explanation for the gender gap between men and women.
- C. It emphasises the lack of access to education for most women.
- D. It describes in detail how the East Asian countries achieved high economic growth rates by including women in their workforce.

Answer: A

Q8. The author's tone in the passage can be best described as:

- A. Ironic
- B. Eulogistic
- C. Explanatory
- D. Satirical

Answer: C

Q9. According to the author, what differentiates India from most other countries with low rankings on the Global Gender Gap Index?

- A. The notion of patriarchy, which is instilled in all Indian women from a young age
- B. Lack of access to crèches for working mothers
- C. A high incidence of female foeticide
- D. Lack of adequate nutrition and educational opportunities for young girls, especially in rural areas

Answer: C

Solution: Watch the async video 'RCs on sociology and anthropology' for solutions.

Passage 3

Directions for questions 10 to 14: Read the passage given below, and answer the questions that follow it.

Actualism is a widely-held view in the metaphysics of modality. To understand the thesis of actualism, consider the following example. Imagine a race of beings — call them 'Aliens' — that is very different from any life-form that exists anywhere in the universe; different enough, in fact, that no actually existing thing could have been an Alien, any more than a given gorilla could have been a fruit fly. Now, even though there are no Aliens, it seems intuitively the case that there could have been such things. After all, life might have evolved very differently than the way it did in fact. For example, if the fundamental physical constants or the laws of evolution had been slightly different, very different kinds of things might have existed. So in virtue of what is it true that there could have been Aliens when in fact there are none, and when, moreover, nothing that exists in fact could have been an Alien?

To answer this question, a philosopher should try to identify the special features of the world that are responsible for the truth of claims about what could have been the case. One group of philosophers, the possibilists, offers the following answer: 'It is possible that there are Aliens' is true because there are in fact individuals that could have been Aliens. At first blush, this might appear to directly contradict the premise that no existing thing could possibly have been an Alien. The possibilist's thesis, however, is that existence, or actuality, encompasses only a subset of the things that, in the broadest sense, are. Rather, in addition to things like us that actually exist, there are merely possible things — possible Aliens, for example — that could have existed, but, as it happens, do not. So there are such things, but they just happen to exhibit a rather less robust but nonetheless fully-fledged type of being than we do. For the possibilist, then, 'It is possible that there are Aliens' is true simply in virtue of the fact that there are possible-but-non actual Aliens, i.e., things that could have existed (but do not) and that would have been Aliens if they had.

Actualists reject this answer; they deny that there are any non-actual individuals. Actualism is the philosophical position that everything there is — everything that can in any sense be said to be — exists, or is actual. Put another way, actualism denies that there is any kind of being beyond actual existence; to be is to exist, and to exist is to be actual. Actualism therefore stands in stark contrast to possibilism, which, as we've seen, takes the things there are to include possible but non-actual objects.

Of course, actualists will agree that there could have been Aliens. An actualist theory, therefore, will be a metaphysical theory that attempts to account for the truth of claims like 'It is possible that there are Aliens' without appealing to any non actual objects whatsoever. What makes actualism so philosophically interesting, is that there is no obviously correct way to account for the truth of claims like 'It is possible that there are Aliens' without appealing to possible but non actual objects.

Q10. Which of the following statements can be inferred from the passage?

- A. Actualism is a branch of philosophy that deals with a particular way of doing or experiencing something.
- B. In the world of possibilism, there should always be physical constants and the laws of evolution should remain the same.
- C. Actualists do not believe that inanimate objects exist.
- D. Aliens can only exist in the metaphysics of possibilism.

Answer: A

Q11. According to the passage, which of the following is NOT UNTRUE?

- A. The metaphysical theory of actualism is not popular.
- B. Actualism encompasses the possibilism metaphysical theory.
- C. Actualists accept that there may have been non-actual individuals.
- D. Actualism denies there is any kind of being beyond actual existence.

Answer: D

Q12. Which of the following statements will serve as an effective conclusion for the passage?

- A. In order to account for aliens, we have to consider the possibilism metaphysical theory.
- B. Actualism can account for the existence of aliens in a more comprehensive manner than other metaphysical theories, including possibilism.
- C. Possibilism is a more comprehensive metaphysical theory than actualism.
- D. The metaphysical theories of actualism and possibilism converge in trying to prove the existence of aliens.

Answer: A

Q13. In the second paragraph, the phrase 'merely possible' is in italics because:

- A. It distinguishes between the existence of aliens and their remote possibility of actually existing.
- B. It distinguishes between the existence of beings and beings that could have existed but do not.
- C. It affirms the belief that aliens do not exist.
- D. It asserts the opinion of the possibilists that aliens may exist or may have existed.

Answer: B

Q14. What is the main idea expressed in the passage?

- A. The analogous viewpoints of actualism and possibilism
- B. The thesis of actualism and its chief tenet that every being alive exists or is actual
- C. The divergent viewpoints of actualism and possibilism
- D. Actualism is a subset of possibilism

Answer: C

Solution: Watch the async video 'Abstract RCs' for solutions.

Passage 4

Directions for questions 15 to 18: Read the passage given below, and answer the questions that follow it.

At the heart of US sociology are two interlocking fixations: method and race. Together they prop up a liberal fantasy of discovering Black pain – of somehow measuring it and then documenting it in great detail, again and again. Black identities and lived experiences are endlessly layered and diverse, but this is a problem for methodologies that require (or presume) fixed categories to produce research that is generalisable, verifiable and replicable – the hallmarks of social scientific inquiry. Regardless of whether the work is qualitative or quantitative, it's the purported empiricism of the field that separates it from the humanities and interdisciplinary studies, encouraging a flattening of Black life that overlooks its diversity and pleasures. Blackness is treated only through the lens of social problems; we are defined by where we fall on normal distributions, or bell curves, that track how much we adhere to white norms, or else remain social outliers.

Increasingly, the public face of sociology is dominated by urban ethnography. Researchers often flock to this qualitative arena to study race and racism, because it promises to reveal stories from the perspective of those being examined. Ethnography allows researchers to delve deeper and to tease out subtleties that are glossed over in official state documents and surveys. The methodology has a faithful following, especially among idealistic graduate students and professors hoping to reconnect to the social justice concerns that carried them into the field in the first place. It affords them far more intimate access to their objects of study than other researchers can hope to attain, while positioning them as deeply sympathetic and eager to learn, in fine detail, how specific individuals experience and deal with a system that is hopelessly rigged against them. Yet even the most self-aware ethnographers can succumb to blind spots. In her ethnography *On the Run: Fugitive Life in an American City* (2014), Alice Goffman pieces together a compelling account of how easily young Black men find themselves ensnarled in the criminal justice system from a young age. They are hunted by police, like prey, and arrested, often for nonviolent offences: unpaid fines, missed court dates and other minor probation violations.

Goffman spent six years in a neighbourhood in West Philadelphia that she dubbed 'Sixth Street'. At the time, she was a sociology undergraduate, then graduate student working with some of the most prominent urban ethnographers in the field. Goffman set out to understand how poor Black

neighbourhoods are overpoliced, and what effects this relentless surveillance had on the lives of a group of teenagers and young men. She spent time with them at home and on the stoop. She visited them in hospitals, in jail and at sentencing hearings. In the book, Goffman forms close friendships with the men, and appears genuinely concerned about their welfare when their families and girlfriends prove unreliable support systems in threatening to call the police to resolve disputes over child support, for example, knowing that the young men have active warrants out for their arrest. The boys and men seem to have only each other – and Goffman.

Q15. How can we deduce that Alice Goffman succumbed to blind spots?

- A. Her book details only social problems that black people face.
- B. The ease with which black men are ensnared in the criminal justice system from a young age reflects this.
- C. Black people, especially men, were hunted by police as if they were prey.
- D. As a sociology student, she worked with the most prominent urban ethnographers in the field whose methods were flawed.

Answer: A

Solution:

Passage summary: The passage may appear dense in parts, but do not worry. Most of the questions are direct or fact-based. The first and the last paragraphs are extremely important and will help you answer most of the questions.

Genre: Sociology

Number of words: 511

Type of question: Specific idea-based question

The blind spot is stated in the first paragraph. Refer to the following extract:

'...encouraging a flattening of Black life that overlooks its diversity and pleasures. Blackness is treated only through the lens of social problems.'

Alice Goffman makes the same mistake in her book by focusing entirely on the social problems of black men. Thus, option A is the correct answer.

Options B and C are taken from her book. They are not her blind spots.

Nothing in the passage suggests that the work and methods of ethnographers were flawed. Eliminate option D.

Hence, the correct answer is option A.

Q16. All of the following statements may be considered valid inferences from the passage EXCEPT which one?

- A. Urban ethnography is popular because the stories are told from the perspective of the person who is being examined.
- B. Research on multilayered and diverse lives is not easily verifiable or replicable.
- C. The criminal justice system in the US treats all ethnicities equally.
- D. The over-policing of black neighbourhoods did not seem to cause any social problems for black women.

Answer: C

Solution:

Passage summary: The passage may appear dense in parts, but do not worry. Most of the questions are direct or fact based. The first and the last paragraphs are extremely important and will help you answer most of the questions.

Genre: Sociology

Number of words: 511

Type of question: Indirect/Inferential question

Option A is a valid inference. Refer to the following extract:

'Increasingly, the public face of sociology is dominated by urban ethnography. Researchers often flock to this qualitative arena to study race and racism, because it promises to reveal stories from the perspective of those being examined.'

Option B is also a valid inference. Refer to the following extract:

'Black identities and lived experiences are endlessly layered and diverse, but this is a problem for methodologies that require (or presume) fixed categories to produce research that is generalisable, verifiable and replicable.'

Option D too is a valid inference. Refer to the following extract:

'Goffman set out to understand how poor Black neighbourhoods are overpoliced, and what effects this relentless surveillance had on the lives of a group of teenagers and young men.' Black women have not been mentioned as being incarcerated in prisons in large numbers.

Option C is not a valid inference. Refer to the following extract: 'how specific individuals experience and deal with a system that is hopelessly rigged against them.' From this extract, it is clear that the system was rigged against blacks and in particular against black men.

Hence, the correct answer is option C.

Q17. According to the passage, which of the following statements is NOT the author's viewpoint?

- A. Sociology works through observations and experiments.
- B. Sociology in the US is fixated on studying black people because they are socially problematic.
- C. Goffman formed close friendships with the subjects whom she was studying.
- D. Urban ethnography is another flawed form of sociology.

Answer: D

Solution:

Passage summary: The passage may appear dense in parts, but do not worry. Most of the questions are direct or fact based. The first and the last paragraphs are extremely important and will help you answer most of the questions.

Genre: Sociology

Number of words: 511

Type of question: Direct/Fact-based question

Option A is the author's viewpoint. Refer to the following extract:

'Regardless of whether the work is qualitative or quantitative, it's the purported empiricism of the field (sociology) that separates it from the humanities and interdisciplinary studies.'

Here, empiricism means forming a theory or conclusion through observations and experiments.

Option B is mentioned in the first paragraph. Refer to the following extract:

'Blackness is treated only through the lens of social problems.'

Option C is mentioned in the final paragraph.

Option D is not the author's viewpoint. We cannot infer from reading paragraph 2 that the author feels that urban ethnography is another flawed form of sociological study.

Hence, the correct answer is option D.

Q18. Which set of keywords below most closely captures the arguments of the passage in the right order?

- A. Method and race, urban ethnography, Goffman's book, Goffman's observations
- B. US sociology, urban ethnography, Goffman's book, Goffman's work
- C. US sociology, urban ethnography, Goffman, Goffman's book
- D. US sociology, urban ethnography, Goffman's book, Goffman's life

Answer: B

Solution:

Passage summary: The passage may appear dense in parts, but do not worry. Most of the questions are direct or fact-based. The first and the last paragraphs are extremely important and will help you answer most of the questions.

Genre: Sociology

Number of words: 511

Type of question: Structure-based question

The first paragraph is about US sociology and its fixation on method and race.

The second paragraph is about urban ethnography.

The third paragraph is about Goffman's book. Eliminate option C.

The fourth paragraph is about Goffman, her observations, and partly about the contents of her book. In short, it is about Goffman's work. Eliminate options A and D.

Hence, the correct answer is option B.

Passage 5

Directions for questions 19 to 22: Read the passage given below, and answer the questions that follow it.

Over the past century, quantum field theory has proved to be the single most sweeping and successful physical theory ever invented. It is an umbrella term that encompasses many specific quantum field theories — the way “shape” covers specific examples like the square and the circle. The most prominent of these theories is known as the Standard Model, and it is this framework of physics that has been so successful.

But quantum field theory, or QFT, is indisputably incomplete. Neither physicists nor mathematicians know exactly what makes a quantum field theory a quantum field theory. They have glimpses of the full picture, but they can't yet make it out. There are various indications that there could be a better way of thinking about QFT. It feels like it's an animal you can touch from many places, but you don't quite see the whole animal.

Mathematics, which requires internal consistency and attention to every last detail, is the language that might make QFT whole. If mathematics can learn how to describe QFT with the same rigour with which it characterises well-established mathematical objects, a more complete picture of the physical world will likely come along for the ride.

Every other idea that's been used in physics over the past centuries had its natural place in mathematics. This is clearly not the case with quantum field theory. Nor is this a one-way street. For millennia, the physical world has been mathematics' greatest muse. The ancient Greeks invented trigonometry to study the motion of the stars. Mathematics turned it into a discipline with definitions and rules that students now learn without any reference to the topic's celestial origins. Almost 2,000 years later, Isaac Newton wanted to understand Kepler's laws of planetary motion and attempted to find a rigorous way of thinking about infinitesimal change. This impulse (along with revelations from Gottfried Leibniz) birthed the field of calculus, which mathematics appropriated and improved — and today could hardly exist without.

Now mathematicians want to do the same for QFT, taking the ideas, objects and techniques that physicists have developed to study fundamental particles and incorporating them into the main body of mathematics. This means defining the basic traits of QFT so that future mathematicians won't have to think about the physical context in which the theory first arose.

The rewards are likely to be great: Mathematics grows when it finds new objects to explore and new structures that capture some of the most important relationships — between numbers, equations and shapes. QFT offers both. Physics itself, as a structure, is extremely deep and often a better way to think about mathematical things we're already interested in. It's just a better way to organise them.

For 40 years at least, QFT has tempted mathematicians with ideas to pursue. In recent years, they've finally begun to understand some of the basic objects in QFT itself — abstracting them from the world of particle physics and turning them into mathematical objects in their own right. Yet it's still early days in the effort. We won't know until we get there, but it's certainly my expectation that we're just seeing the tip of the iceberg. If mathematicians really understood QFT, that would lead to profound advances in mathematics.

Q19. The analogy about QFT in the second para ('It's an animal...whole animal.') implies that:

- A. QFT has not been proven beyond doubt.
- B. QFT lacks internal consistency.
- C. QFT cannot be defined to the last detail in rigorous terms.
- D. QFT cannot really describe the physical world.

Answer: C

Solution:

Passage summary: It's very important to read the passage thoroughly and to understand the relationship between QFT and mathematics. Also, referring back to the passage for these questions is advisable as the questions are from specific parts of the passage.

Genre: Mathematics/Physics

Number of words: 538

Type of question: Indirect/Inferential question

Option A: The author doesn't call into question QFT's proof (we don't even know if it needs proof). The author simply points out the absence of any rigorous explanation for QFT. Hence, option 1 is incorrect.

Option B: There is no implication that QFT is not consistent. The desire to prove that QFT is consistent with its last detail using mathematics. Hence, option 2 is incorrect.

Option C: This is why the author feels mathematics is needed to define to the last detail the nature of QFT (even though there are glimpses of the full picture). Mathematics can help define QFT end to end; so, anyone can understand its complete essence. Hence, option 3 is the implication of the analogy.

Option D: The applications of QFT with respect to the real world have not been discussed.

Hence, option 4 is incorrect.

Q20. By saying 'Nor is this a one-way street', the author highlights that:

- A. Every idea in physics needs to be explained in mathematical terms.
- B. Mathematicians are inspired by the phenomena of the physical world.
- C. Mathematics has turned physics into a discipline with definitions and rules.
- D. Physics can gain rigour only with the help of mathematical principles.

Answer: B

Solution:

Passage summary: It's very important to read the passage thoroughly and to understand the relationship between QFT and mathematics. Also, referring back to the passage for these questions is advisable as the questions are from specific parts of the passage.

Genre: Mathematics/Physics

Number of words: 538

Type of question: Specific idea-based question

Option A: The one-way street expression was to show how mathematics in turn owes something to physics. Hence, it is not option A.

Option B: The one-way street was to explain how both fields owe each other a lot and that mathematics too has gained something from physics—that physics has been the muse for mathematicians. Hence, B is the answer.

Option C: The one-way street is an expression to define what mathematics owes to physics and not what mathematics has done for physics in the past. Hence, it is not C.

Option D: The one-way street is with respect to mathematics gaining from physics. Hence, it is not D.

Q21. The author's tone in the last paragraph of the passage can be said to be:

- A. Speculative
- B. Mildly optimistic
- C. Hopeful
- D. Informative

Answer: B

Solution:

Passage summary: It's very important to read the passage thoroughly and understand the relationship between QFT and mathematics. Also, referring back to the passage for these questions is advisable as the questions are from specific parts of the passage.

Genre: Mathematics/Physics

Number of words: 538

Type of question: Tone-based question

Option A: Speculation is guesswork. One is not sure when one's speculating. It's more based on pieces of information. So, while it is a close option here, the author suggesting that this is just the tip of the iceberg and knowing it will offer 'profound advances' is less speculation and more optimism. Hence, 1 is incorrect.

Option B: 'It's early days,' the author says. The author also remarks that there is plenty that can happen in the field. But the author also believes that there is a lot of potential based on good results. Hence, measured optimism is the tone. The author speaks about profound advances and great potential (but conditionally). So, there is optimism. It is not exuberant but mild at best. Hence, option 2 is the answer.

Option C: The author is not 'hoping' for any particular results. The author is merely extrapolating possibilities based on various scenarios. Hence, 3 is incorrect.

Option D: The last paragraph is more about predictions than information. Hence, 4 is incorrect.

Q22. Defining the basic traits of QFT will reward mathematics by:

- A. Allowing it to explore new structures
- B. Capturing important relationships between numbers, equations, and shapes
- C. Allowing it to grow through new objects and structures
- D. Allowing physics to better organise mathematical things

Answer: C

Solution:

Passage summary: It's very important to read the passage thoroughly and to understand the relationship between QFT and mathematics. Also, referring back to the passage for these questions is advisable as the questions are from specific parts of the passage.

Genre: Mathematics/Physics

Number of words: 538

Type of question: Direct/Fact-based question

Option A: Basically, this is the equivalent of 'defining basic traits of QFT'—allowing maths to explore new objects. The advantage it gives maths is that maths grows when it indulges in such exploration. Hence, option A is incorrect.

Option B: The new structures capture these relationships. This is not about the benefit that mathematics will derive by understanding QFT. Hence, option B is incorrect.

Option C: The author feels that mathematics grows when it explores new objects and new structures. Hence, defining QFT mathematically will reward mathematics by allowing it to grow further. Hence, option C is the answer.

Option D: This is an advantage that physics brings to the table, which is true. But this is not the reward that the author talks about. The reward for mathematics is not that QFT will organise it better. Hence, option D is incorrect.

Passage 6

Directions for questions 23 to 27: Read the passage given below, and answer the questions that follow it.

Between around three million and two million years ago, the climate in Africa became drier. During this interval, the early hominin genus *Australopithecus* gave way to our own genus, *Homo*. In the course of this transition, body proportions changed: whereas australopithecines were short and stocky, *Homo* had a taller, slimmer build with more surface area. These changes reduced our ancestors' exposure to solar radiation while allowing for greater exposure to wind, which increased their ability to dissipate heat, making them more water-efficient.

...As climate change replaced forests with grasslands, and early hominins became more proficient at travelling on two legs in open environments, they lost their body hair and developed more sweat glands. These adaptations increased our ancestors' ability to unload excess heat and thus maintain a safe body temperature while moving... In relatively dry environments akin to the ones early hominins evolved in, the evaporation of sweat cools the skin and blood vessels, which, in turn, cools the body's core.

Armed with this powerful cooling system, early humans could afford to be more active than other primates. In fact, some researchers think that persistence hunting—running an animal down until it overheats—may have been an important foraging strategy for our ancestors, one they could not have pursued if they did not have the means to avoid overheating.

This enhanced sweating ability has a downside, however: it elevates our risk of dehydration. Martin Hora of Charles University in Prague and his collaborators recently demonstrated that *Homo erectus* would have been able to persistence hunt for approximately five hours in the hot savanna before losing 10 percent of the body mass. In humans, 10 percent body mass loss from dehydration is generally the cut-off before the serious risk of physiological and cognitive problems or even death occurs. Beyond that point, drinking becomes difficult, and intravenous fluids are needed for rehydration.

Our vulnerability to dehydration means that we are more reliant on external sources of water. Desert-adapted animals such as sheep, camels, and goats can lose 20 to 40 percent of their body water without risking death. These animals have an extra compartment in the gut called the forestomach that can store water as an internal buffer against dehydration. In fact, desert-dwelling mammals have a range of adaptations to water scarcity. Some of these traits have to do with the functioning of the kidneys, which maintain the body's water and salt balance. The desert pocket mouse, for example, can live without water for months, in part because of the extreme extent to which its kidneys can concentrate urine. Humans can do this to a degree. But our limited ability to do so means we cannot go without fresh water for nearly so long as the pocket mouse.

Neither can we preload our bodies with water. The desert camel can drink and store enough water to draw on for weeks. But if humans drink too much fluid, our urine output quickly increases. Our gut size and the rate at which our stomach empties limit how fast we can rehydrate. Worse, if we drink too much water too fast, we can throw off our electrolyte balance and develop hyponatremia—abnormally low levels of sodium in the blood—which is just as deadly if not more so than dehydration.

Q23. All the following are evolutionary changes that gave humans a 'powerful cooling system' EXCEPT:

- A. loss of body hair
- B. slimmer build with an increased surface area
- C. more sweat glands
- D. skin and blood vessels that cool the body's core

Answer: D

Solution:

Passage summary: This is an easy passage to understand. However, a thorough reading is required to understand the central idea. This will help you answer most of the questions. Also, it's advisable to read a sentence before and after a particular paragraph if you go back to this paragraph to answer a question.

Genre: Biology

Number of words: 547

Type of question: Direct/Fact-based question

Option A: This has been mentioned in the second paragraph. Hence, it is not A.

Option B: This has been mentioned in the first paragraph. Hence, it is not B.

Option C: This has been mentioned in the passage. Hence, it is not C.

Option D: This is not an adaptation. Rather, it is the sweat that cools the skin and blood vessels.

Hence, the correct answer is option D.

Q24. Humans cannot preload their bodies with water because:

- A. Their urine output is higher.
- B. The gut size and the stomach's rate of emptying limit water storage.
- C. Excess water lowers the sodium levels in the blood, which causes hyponatremia.
- D. Too much water leads to electrolyte imbalance.

Answer: B

Solution:

Passage summary: This is an easy passage to understand. However, a thorough reading is required to understand the central idea. This will help you answer most of the questions. Also, it's advisable to read a sentence before and after a particular paragraph if you want to go back to that paragraph to answer a question.

Genre- Biology

Number of words- 547

Type of question- Direct/Fact-based question

Option A: This is not the reason why we cannot preload our bodies with water. The urine output is a correlation, not the cause. What causes the urine output to increase (it is not always high) is drinking too much fluid. Hence, it is not A.

Option B: This is the right reason. Even if we try to preload, our gut size and the rate at which the stomach empties limit our rate of rehydration. Hence, B is the answer.

Option C: It is not excess water but drinking too much water too fast that causes hyponatremia. Hence, it is not C.

Option D: Electrolyte imbalance is caused when we drink water too fast, but that doesn't explain why we can't preload. Hence, it is not D.

Hence, the correct answer is option D.

Q25. Which of the following, if proven to be true, strengthens the researchers' argument in the third paragraph about persistence hunting?

- A. Early humans lacked the stamina to indulge in physical activity for more than a couple of hours.
- B. Early humans could operate in teams to share the workload of persistence hunting.
- C. The human body can heat up quickly because of strenuous physical activity.
- D. Persistence hunting needs a regular intake of water to avoid dehydration.

Answer: C

Solution:

Passage summary: This is an easy passage to understand. However, a thorough reading is required to understand the central idea. This will help you answer most of the questions. Also, it's advisable to read a sentence before and after a particular paragraph if you want to go back to that paragraph to answer a question.

Genre: Biology

Number of words: 547

Type of question: Critical reasoning-based question

Option A: This is irrelevant because it doesn't relate to the argument about overheating and cooling. Hence, it is not A.

Option B: This shows that they could avoid overheating by simply sharing the workload instead chasing the animal down individually. Hence, it is not B.

Option C: If this is true, the author's argument that early humans could not indulge in persistence hunting unless they had the means to avoid overheating will be supported. Activity causes heating. Thus, they need a way to cool down. Hence, C strengthens the statement.

Option D: Even if this were true, this doesn't affect the researchers' argument that early humans used persistence hunting. And this option only makes persistence hunting look like a less viable option (leans more towards weakening the argument). Hence, it is not D.

Hence, the correct answer is option C.

Q26. The author mentions the example of the desert pocket mouse to drive home the point that:

- A. Different desert-dwelling mammals have adapted in different ways to water scarcity.
- B. Humans are more reliant on external sources of water than desert-adapted animals.
- C. Humans cannot concentrate urine the way desert-dwelling mammals can to conserve water.
- D. The kidneys of desert-dwelling mammals are better adapted to conserving the body's water and salt balance than those of humans.

Answer: D

Solution:

Passage summary: This is an easy passage to understand. However, a thorough reading is required to understand the central idea. This will help you answer most of the questions. Also, it's advisable to read a sentence before and after a particular paragraph if you want to go back to that paragraph to answer a question.

Genre: Biology

Number of words: 547

Type of question: Specific idea-based question

Option A: The example was not given to differentiate between the adaptations of the different mammals. Hence, it is not A.

Option B: This is the larger idea that the author is trying to elucidate in the paragraph. But this idea doesn't boil down to the specificity that the example of a desert pocket mouse entails, which has more to do with the kidneys.

Option C: The purpose of the example is always a bigger idea and not the example details in themselves. The example of the desert pocket mouse (and their ability to concentrate urine) was given to show something bigger. Hence, it is not C.

Option D: As understood from 'The desert pocket mouse, for example...', we can see that this example was used to highlight how the kidneys of desert-adapted mammals function.

Hence, the correct answer is option D.

Q27. Which of the following is the most appropriate title for the passage?

- A. The consequences of the enhanced sweating ability of humans
- B. The evolution of early humans to adapt to dry climates
- C. How human evolution helped them cope with overheating and dehydration
- D. How an enhanced sweating ability made humans vulnerable to dehydration

Answer: A

Solution:

Passage summary: This is an easy passage to understand. However, a thorough reading is required to understand the central idea. This will help you answer most of the questions. Also, it's advisable to read a sentence before and after a particular paragraph if you want to go back to that paragraph to answer a question.

Genre: Biology

Number of words: 547

Type of question: Title-based question

Option A: This represents both the aspects of the passage: humans' ability to sweat and the advantages and disadvantages that it brings. Hence, option A is the answer.

Option B: Only the first half of the passage was about dry climates in particular. Hence, it is not B.

Option C: While this is partially true, the passage does not discuss how humans cope with dehydration. Hence, it is not C.

Option D: This represents one-half of the passage, which is about the downsides of the enhanced sweating ability of humans. This doesn't cover the advantages of sweating. Hence, it is not D. Hence, the correct answer is option A.

Passage 7

Directions for questions 28 to 30: Read the passage given below, and answer the questions that follow it.

Emotion regulation to reduce distress appears to be a fundamental human behaviour that doesn't just happen within us, but between us. We implicitly and explicitly communicate how the distress can be calmed. This might be through physical presence, such as sitting together or giving a hug. Physical contact can have profound biochemical reactions that reduce stress. We lean on cognitive processes too, as people talk through the situation and identify reasons for reassurance or hope, or solve the problem collaboratively. At the heart of all of these interactions is being together. Certain psychotherapy techniques or religious or shamanic manipulations can even symbolically transform the stress.

Unfortunately, we don't live in a world where it's easy to alleviate suffering through interactions with other people. The documented rise in distress during the pandemic was likely due to the disruption of many of these processes. After all, physical presence and being together evolved as the most basic form of interpersonal emotion regulation. That contact and its

neurophysiological impact on our brains and bodies has been lost or greatly constricted. Even just mundane human connections can be emotionally soothing.

While emotional contagion is important within groups, it can be counterproductive for competition between groups. Feeling sadness when you see the suffering face of a rival might not help your kin or collective to thrive. Unfortunately, our biology seems to play out this way. Whereas the neurotransmitter oxytocin has an important role in bonding and empathy for 'in-group' members, it contributes to feelings of pleasure at the suffering of 'out-group' members. It's a biological pathway for Schadenfreude. Neuropsychological and neuroimaging studies suggest that we don't have the same emotional contagion lever for most out-group members. To raise the stakes against empathy even further, when a person is feeling anxious, threatened or distressed, they shrink their circle of who counts as an 'in-group'. In times when we're feeling joyful, magnanimity prevails. But when we feel threatened, we retreat to emotional connectedness with a small circle of intimates, and even those individuals might not be seen, proverbially, as being in the same boat.

Q28. Which of the following options BEST reflects the author's understanding of human response to distress in others?

- A. Human beings are capable of responding to distress in others.
- B. Some people are quicker at responding to distress than others.
- C. The response to distress is a function of culture.
- D. Human beings communicate in different ways to calm the distressed person.

Answer: D

Solution:

Passage summary:

Emotion regulation to reduce distress is a fundamental human behaviour that happens within and amongst us. Physical contact can have profound biochemical reactions that reduce stress. We lean on cognitive processes too. Human interaction and its neurophysiological impact on our brains and bodies were lost or greatly constricted. While emotional contagion is important within groups, it can be counterproductive for competition between groups. While oxytocin, which is a neurotransmitter, has an important role in bonding and empathy for 'in-group' members, it contributes to feelings of pleasure at the suffering of 'out-group' members.

Genre: Psychology

Number of words: 333

Type of question: Indirect/Inferential question

An understanding of the main point of the passage and a reading of the first few lines of the introductory paragraph will give the answer to this question. The author states that humans communicate implicitly and explicitly on how to reduce distress. The author then mentions methods used to do so, including physical contact like hugs or even cognitive ways.

Hence, the author believes that we communicate in different ways to calm the distressed person.

This is best explained in option D.

Hence, the correct answer is option D.

Q29. According to the author, how does emotional contagion work in humans?

- A. It decreases the competition between groups.
- B. It is different in different situations.
- C. It is stronger in 'out-groups' than it is in 'in-groups'.
- D. It is divisive and results in groupism.

Answer: B

Solution:

Passage summary:

Emotion regulation to reduce distress is a fundamental human behaviour that happens within and amongst us. Physical contact can have profound biochemical reactions that reduce stress. We lean on cognitive processes too. Human interaction and its neurophysiological impact on our brains and bodies were lost or greatly constricted. While emotional contagion is important within groups, it can be counterproductive for competition between groups. While oxytocin, which is a neurotransmitter, has an important role in bonding and empathy for 'in-group' members, it contributes to feelings of pleasure at the suffering of 'out-group' members.

Genre: Psychology

Number of words: 333

Type of question: Specific idea-based question

A reading of the concluding paragraph will help us answer this question. The author shows how emotional contagion is different with in-group and out-group members. Again, it also depends on how one feels—one is magnanimous in a happy situation, but one tends to connect to a small circle when depressed.

Thus, we can say it is different in different situations.

Hence, the correct answer is option B.

Q30. Which of the following options represents the following expression?
'It's a biological pathway for Schadenfreude.'

- A. Oxytocin, which is a neurotransmitter, has an important role in bonding and empathy for 'in-group' members.
- B. When a person is feeling anxious, threatened, or distressed, they shrink their circle of who counts as an 'in-group'.
- C. Oxytocin, which is a neurotransmitter, contributes to feelings of pleasure at the suffering of 'out-group' members.
- D. When one feels threatened, even the small circle of intimate members may not be seen as being in the same boat.

Answer: C

Solution:

Emotion regulation to reduce distress is a fundamental human behaviour that happens within and amongst us. Physical contact can have profound biochemical reactions that reduce stress. We lean on cognitive processes too. Human interaction and its neurophysiological impact on our brains and bodies were lost or greatly constricted. While emotional contagion is important within groups, it can be counterproductive for competition between groups. While oxytocin, which is a neurotransmitter, has an important role in bonding and empathy for 'in-group' members, it contributes to feelings of pleasure at the suffering of 'out-group' members.

Genre: Psychology

Number of words: 333

Type of question: Specific idea-based question

The meaning of the given expression can be easily understood by reading the concluding paragraph of the passage. It states that 'Whereas the neurotransmitter oxytocin has an important role in bonding and empathy for 'in-group' members, it contributes to feelings of pleasure at the suffering of 'out-group' members. It's a biological pathway for Schadenfreude.'

Schadenfreude is the pleasure derived by a person from another person's misfortune.

The author mentions that oxytocin contributes to feelings of pleasure at the suffering of 'out-group' members and then sums up this point with the given statement.

Hence, the correct answer is option C.

Passage 8

Directions for questions 31 to 34: Read the passage given below, and answer the questions that follow it.

English folk music is not part of England's mainstream culture in the way its Scottish, Irish and Welsh traditional music counterparts are. It's not something you are taught to value. Some musicians are not proud to be performing English folk music. But it is time we knuckle down with a quiet pride in the surviving traditions.

We recorded some English folk musicians on their own turf, asking them to interpret the two words "from here". Our field recording trip around the country revealed to us how diverse the notion of Englishness and perceived authenticity in traditional music is.

Jon Boden chose a traditional drinking song—the story of a working man who hates his wife, who laments the loss of his father, but doesn't seem to care and drinks to lose himself.

In English folk music, the message of protest is often intrinsic. It has to be quietly subversive because our enemies are among us: our rulers and bosses. The Irish and Scottish have a sort of rebel music that is essentially about and against the English, but the English working class is almost being completely squashed. The act of living can be a protest in itself, that we won't quit or become invisible.

Woven into the fabric of our collective history is a resentment of the ways we have been treated for hundreds of years. Yet much of it is coded, in metaphors or symbolism. Nicola Kearey sings Georgie—in which a woman begs for her husband's life to be spared. His crime is poaching the Lord Judge's deer—a poor man's crime for which the penalty is his life. A lower-class man's life was worth less than one of the Lord Judge's animals. The song doesn't need to explicitly spell out the injustice, but people would have understood this.

English identity is complex and distinct from its neighbours—its working people were oppressed for longer. Even with the empire and its evils, we practised them on our own first. When you come here you become a part of that, and you suffer like the rest of us.

Just a Note/Wild Wild Whiskey documents the experience of the Irish coming to England in the mid-20th century. They endured terrible hardships: many were driven to find solace in drink, and their lives spiralled further into ruin. Their songs are a kind of meta-narrative of English culture, bringing these themes into existence, expressing the inexpressible.

The current climate of this country is an opportunity to try to understand why people think and act as they do. Condemnation only leads to further division and unrest. Unity only comes from understanding our shared history and finding empathy with all cultures. Pride in your heritage should not come at the expense of others. But this is what we are sold. We have always been under the same pressures, as much as now, and most of us are facing this struggle on a daily basis.

Q31. The author says that the message of protest in English folk music is 'quietly subversive' because:

- A. It is not part of England's mainstream culture.
- B. The people are surrounded by their rulers and bosses against whom the protest is directed.
- C. The English are the targets of the Irish rebel songs.
- D. The English are not proud of performing their folk music.

Answer: B

Solution:

Passage summary:

The passage is about English folk music, its themes, and the attitude of the English towards it. The author says that the message of protest is intrinsic and quietly subversive because the people who sing it are surrounded by their rulers and bosses. The common people were resentful of their treatment throughout the course of history, yet their songs are coded in metaphors and symbolism. The author ends the passage by stating that unity and empathy with all cultures is the need of the hour. The pressures and struggles of the past and present are identical.

Genre: Folk music

Number of words: 491

Type of question: Direct/ Fact based question

Refer to the following lines of paragraph 4:

'In English folk music, the message of protest is often intrinsic. It has to be quietly subversive because our enemies are among us: our rulers and bosses.'

Hence, the correct answer is option B.

Q32. All of the following have been mentioned about British folk music EXCEPT:

- A. The folk songs are often coded in metaphors and symbolism.
- B. British folk music is not part of the mainstream culture of England.
- C. The English are not explicitly taught to value their folk traditions.
- D. The recurrent theme of British folk music is drinking to forget hardships and oppression.

Answer: D

Solution:

Passage summary:

The passage is about English folk music, its themes, and the attitude of the English towards it. The author says that the message of protest is intrinsic and quietly subversive because the people who sing it are surrounded by their rulers and bosses. The common people were resentful of their treatment throughout the course of history, yet their songs are coded in metaphors and symbolism. The author ends the passage by stating that unity and empathy with all cultures is the need of the hour. The pressures and struggles of the past and present are identical.

Genre: Folk music

Number of words: 491

Type of question: Direct/ Fact based question

Option A has been mentioned in paragraph 5. Refer to the following lines:

'Woven into the fabric of our collective history is a resentment of the ways we have been treated for hundreds of years. Yet much of it is coded, in metaphors or symbolism.'

Options B and C have been mentioned in the opening paragraph.

Option D has not been mentioned. The passage mentions a song about a person who sought to lose himself by indulging in drinking, but nowhere is it mentioned that drinking was a recurrent theme.

Hence, the correct answer is option D.

Q33. At a conference on folk music and culture, the author of the passage is least likely to agree with which one of the following views?

- A. People should be proud of their own heritage and tradition but not at the cost of another's heritage.
- B. Struggles and hardships are an integral part of life, and we document our experience through music.
- C. Empathy with other cultures shows one's lack of pride in one's own culture and heritage.
- D. Britain is different from its neighbours in that its folk music and traditions are an intrinsic part of mainstream culture.

Answer: D

Solution:

Passage summary:

The passage is about English folk music, its themes, and the attitude of the English towards it. The author says that the message of protest is intrinsic and quietly subversive because the people who sing it are surrounded by their rulers and bosses. The common people were resentful of their treatment throughout the course of history, yet their songs are coded in metaphors and symbolism. The author ends the passage by stating that unity and empathy with all cultures is the need of the hour. The pressures and struggles of the past and present are identical.

Genre: Folk music

Number of words: 491

Type of question: Indirect / Inferential question

A reading of the first paragraph of the passage will help in answering the question. Refer to the following lines:

'English folk music is not part of England's mainstream culture in the way its Scottish, Irish and Welsh traditional music counterparts are.'

Hence, the correct answer is option D.

Q34. The primary purpose of the reference to Nicola Kearey and the song Georgie is to show:

- A. The system of crime and punishment in early England
- B. How the injustice people faced was expressed through music, though not explicitly
- C. How people of England rebelled openly against Lord Judge and his unfair treatment of a poor man
- D. To show how an animal's life was more valuable than a human life in mediaeval England

Answer: B

Solution:

Passage summary:

The passage is about English folk music, its themes, and the attitude of the English towards it. The author says the message of protest is intrinsic and quietly subversive because the people who sing it are surrounded by their rulers and bosses. The common people were resentful of their treatment throughout the course of history, yet their songs are coded in metaphors and symbolism. The author ends the passage by stating that unity and empathy with all cultures is the need of the hour. The pressures and struggles of the past and present are identical.

Genre: Folk music

Number of words: 491

Type of question: Indirect / Inferential question

Refer to the lines of paragraph 5 where the author says, 'The song doesn't need to explicitly spell out the injustice, but people would have understood this.'

So, we can infer that music was used to convey any injustice done to people.

Hence, the correct answer is option B.

Verbal Ability

As discussed at the beginning of this document, there are three types of questions that appear in CAT under the Verbal Ability section. Let's look at each one of them.

Parajumbles

Parajumble questions have been subjective since 2015. These questions have become easier since 2018. Let's see how.

Year/ Years	No. of sentences	Ways to solve a question
2015- 17	5	5!= 120
2018 onwards	4	4!= 24

We will now look at the easiest way to solve parajumbles. Instead of reading the given sentences again and again, look for the mandatory pairs and then solve a parajumble in not more than two minutes:

Step No.	Step	Time to be taken
1	Scanning for mandatory pairs/ sequences	30 seconds
2	Arrangement	60 seconds
3	Cross checking	30 seconds
Total time to be taken		120 seconds/ 2 minutes

Practice Questions (Parajumbles):

Q1. The four sentences (labelled A, B, C, D, and E) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Decide on the proper sequence of order of the sentences and key in this sequence of four letters as your answer.

- A. The emergence of life might not be the luck of atoms arranging themselves in the right way, it says, but inevitable even if the conditions are correct.
- B. But a new theory, proposed by a researcher at MIT and first reported in Quanta Magazine, proposes that when a group of atoms is exposed for a long time to a source of energy, it will restructure itself to dissipate more energy.
- C. 'You start with a random clump of atoms, and if you shine light on it for long enough, it should not be so surprising that you get a plant,' England said.
- D. Paul Rosenberg wrote on Richard Dawkins' site that the theory could make things 'a whole lot worse for creationists'.
- E. The problem for scientists who attempt to understand how life began is with understanding how living beings—which tend to be far better at taking energy from the environment and dissipating it as heat—could come about from non-living ones.

Answer: EBACD

Solution: Watch the async video 'Subjective PJs: Structures' for solutions.

Q2. The four sentences (labelled A, B, C, and D) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Decide on the proper sequence of order of the sentences and key in this sequence of four letters as your answer.

- A. Globally, the world's population of over-60s has doubled since 1980 to around a billion.
- B. It will double again by 2050.
- C. Nearly one in five EU citizens is over 65 years of age. This figure is expected to grow rapidly in the coming decades.
- D. A similar pattern is seen around the world.

Answer: CDAB

Solution: Watch the async video on 'Subjective PJs: Structures' for solutions.

Q3. The four sentences (labelled A, B, C, and D) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Decide on the proper sequence of order of the sentences and key in this sequence of four letters as your answer.

- A. Today, many people see democracy as under threat in a way that only a decade ago seemed unimaginable.
- B. What can we do to reverse this apparent trend and support democracy?

- C. Following the fall of the Berlin Wall in 1989, it seemed like democracy was the way towards the future.
- D. Some long-established democracies, such as the United States, are witnessing a violation of governmental norms that were once thought of as secure, and this has culminated in the recent insurrection at the US Capitol.

Answer: ACDB/ CADB

Solution: Watch the async video 'Subjective PJs: Structures' for solutions.

Q4. The four sentences (labelled A, B, C, and D) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Decide on the proper sequence of order of the sentences and key in this sequence of four letters as your answer.

- A. Conventional foresters believe that they are protecting ecosystems and are imitating or at most speeding up natural processes through their stewardship.
- B. However, the understanding of these ecosystems is grounded in a different philosophy about natural processes. In short, it is a different definition of evolution.
- C. For example, the more I think about the differences between conventional forestry and the original ecosystems of the forest, the more I conclude that the differences rest on a big misunderstanding.
- D. The path to greater harmony between all life forms is long and turns on perspective and scientific clarity.

Answer: DCAB

Solution:

Genre: Environment

Sentences A and B form a logical pair. A talks about 'protecting ecosystems', while B (with 'understanding these ecosystems') extends the thought further.

Sentences D and C form a pair. D states that 'perspective and scientific clarity' on harmony between all life forms is required, and C gives an example of the differences between conventional forestry and the original ecosystem.

Sentences C and A form a pair. C talks about 'conventional forestry', and A gives the beliefs of 'conventional foresters'.

Hence, the correct sequence is DCAB.

Q5. The four sentences (labelled A, B, C, and D) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Decide on the proper sequence of order of the sentences and key in this sequence of four letters as your answer.

- A. So, women who aspire to leadership roles face a 'competence-likeability dilemma': if they're clearly good at their jobs and successful, then they'll likely be seen as unfeminine and unappealing.
- B. It's impossible to understand how gender roles constrain men without considering how they do the same thing to women, and much more harshly.
- C. We ascribe more agentic qualities to men, such as being confident, assertive, and competitive, and more communal qualities to women, such as being sympathetic and caring.
- D. For one, there's a persistent belief that women have less agency or the ability to achieve goals and mastery.

Answer: BDCA

Solution:

Genre: Leadership/Business

Sentences B and D form a pair. Sentence D, with 'For one', talks about one constraining factor mentioned in sentence B.

Sentences D and C form a pair. D talks about women being perceived as having less agency than men, and C extends that thought by stating that we ascribe more agentic qualities to men.

Sentences C and A form a pair. Sentence 1, with 'So', gives the result of women being more sympathetic and caring, which is that women will be seen as unfeminine and unappealing if they are clearly good at their jobs.

Hence, the correct sequence is BDCA.

Q6. The four sentences (labelled A, B, C, and D) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Decide on the proper sequence of order of the sentences and key in this sequence of four letters as your answer.

- A. But the thing that never felt weird was that the Bible I carried around with me as I went to visit patient after patient, that I turned to in the guest room at David and Suzanne's or on my parents' couch to sustain me, was a nineteenth-century gothic romance novel.
- B. It was a surreal summer full of new experiences hitting like a tsunami.
- C. The Bible that I carried around that busy summer was Charlotte Brontë's Jane Eyre.
- D. You saw them coming, but that didn't mean you could outrun them.

Answer: BDAC

Solution:

Genre: Literature

It is difficult to locate the introductory sentence. Therefore, let us try and find pairs.

Sentences B and D form a pair. Sentence B describes a tsunami, and sentence 4 talks about what a tsunami is like—‘you saw them coming, but that didn’t mean you could outrun them’.

Sentences A and C form a pair. Sentence A talks about the Bible that the person carried with her, and C gives the name of this bible.

B and D come before A and C because A starts with a contrasting word, ‘but’, which refers to events previously mentioned in B and D.

Hence, the correct sequence is BDAC.

Q7. The four sentences (labelled A, B, C, and D) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Decide on the proper sequence of order of the sentences and key in this sequence of four letters as your answer.

- A. Unlike most accounts of the Opium War, the new book focuses not on the conflict itself but on its background, going back to the Chinese decision in the 1750s to restrict Western trade to the single port of Canton.
- B. Every China-watcher will want to read Stephen R Platt’s fascinating and beautifully constructed new book, *Imperial Twilight*.
- C. It is a worthy prequel to *Autumn in the Heavenly Kingdom*, which is his fine account of the Taiping Rebellion. The rebellion claimed an estimated 20 million Chinese lives between 1850 and 1864.
- D. As the West’s entanglement with China has deepened since the 1990s, so too has the fascination with the Opium War.

Answer: DBCA

Solution:

Genre: War

B and C are talking about the same Stephen Platt book, which is a worthy prequel to another book and a beautifully constructed book. A refers to the book as the ‘new book’. That’s the big clue. If A had followed C, then the author would have just referred to the book as ‘it’. If C comes in between B and A, then the author will need to refer to it as the ‘new book’. Plus, ‘it’ in C is the new book. D introduces the topic through an independent sentence. So, it starts the paragraph. Hence, DBCA is the correct sequence.

Summary

Summary questions come in the form of MCQs. These questions have appeared in CAT exams every now and then since 2003, and they have been appearing in CAT exams every year since 2016.

Summary questions are generally known for close and confusing options. Let's have a look at the kind of options that we will have to eliminate.



Practice Questions (Summary)

Q1. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

From the moment we are born, we are hardwired to seek attachment to others. Throughout our lives, relationships that involve attachment serve as sources of emotional security, joy and companionship, while at other times, pain and grief. Compared with those of other animals, human relationships are staggeringly multifaceted. Yet despite this, what lies at the core of our relationships is an elaboration of a phenomenon whose roots across the species spectrum are wide and deep. As we wend our way through life's course – from infancy to adolescence to adulthood to loss – attachment holds a strong grip on our lives, shifting to accommodate our changing needs.

- A. We instinctively seek attachment to others. As we go from infancy to adolescence to adulthood to loss, we constantly shift our attachments to accommodate our changing needs.
- B. We instinctively seek attachment to others; compared to animals, our relationships are much more multifarious.
- C. As we go from infancy to adolescence to adulthood to loss—attachment holds a strong grip on our lives, and it shifts to accommodate our changing needs.
- D. Attachment to others is instinctive to us but not to animals.

Answer: A

Solution:

Genre: Psychology

Option B does not mention that our attachment needs to shift as we go through the various stages of life .

Option C does not mention that attachments are hardwired to our brains or that we instinctively seek attachment to others.

Option D distorts the meaning of the paragraph. The paragraph does not mention that attachments are not instinctive to animals.

Option A summarises the paragraph correctly. It encapsulates the key points of the paragraph.

Hence, the correct answer is option A.

Q2. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

The record-setting heat across the western United States is helping to drive a dangerous side effect: Forests from Oregon to New Mexico are exceptionally dry and primed to ignite into wildfire. Researchers across the West are measuring record levels of dryness in the sticks, leaves and wood samples they extract from forests and grasslands and analyse to determine their moisture level. Dryness makes forests and grasslands more likely to burn if they are ignited by a source such as a downed power line, a smouldering campfire or a lightning strike.

- A. Forests that are experiencing exceptionally high temperatures become dry and are vulnerable to fire from sources such as a downed power line, campfire, or a lightning strike.
- B. The record heat with no rain across the western United States has made its forests vulnerable to fires from downed power lines, campfires, or a lightning strike.
- C. The record heat across the Western United States has made the forests exceptionally dry and vulnerable to fire from various sources.
- D. Due to the record heat in the western United States, its forests are vulnerable to wildfires from various sources.

Answer: C

Solution:

Option A omits to mention the location, i.e., western United states.

Option B brings in a new element—no rain—which has not been mentioned in the paragraph.

Option D does not give the reasons for the vulnerability of forests to fires—forests becoming 'dry', which is an important point in the paragraph.

Option C mentions all the important points and is the correct summary—record heat; forests becoming dry, which leads to vulnerability to fires from various sources.

Hence, the correct answer is option C.

Q3. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

Cockatoos, a kind of parrot, are a familiar presence throughout northern and eastern Australia, where they live in parks and in wooded areas. To some people, the cockatoo is a squawking pest that can damage a building's timbers with its beak; to others, the bird is a cherished companion. In captivity, sulphur-crested cockatoos can learn to mimic human speech, and some have been known to live for more than eighty years. There's a national pride in the bird: it appears on the Australian ten-dollar bill.

- A. Cockatoos are native only to Australia and are regarded both as pests as well as cherished companions.
- B. Cockatoos are native to Australia and can mimic human speech, which is why they are a national pride.
- C. Cockatoo is the national bird of Australia, and cockatoos are regarded both as pests as well as cherished companions.
- D. Cockatoos are native to Australia and are regarded both as pests as well as cherished companions.

Answer: D

Solution:

Option A distorts the meaning of the paragraph by stating that cockatoos are native only to Australia—which is something that is not mentioned in the paragraph.

Option B mentions that cockatoos are a national pride because they can mimic human speech—which is something that is not mentioned in the paragraph.

Option C wrongly states that the cockatoo is the national bird of Australia.

Option D summarises the paragraph correctly.

Hence, the correct answer is option D.

Q4. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

Ethiopia has gone through rapid economic transformation in recent years where population growth has more than been matched by economic expansion. Things hit a low point in the drought years of 2002 and 2003, but since then the average income per person has increased by more than 600%. That change, however, has not been experienced evenly across the country. In the capital, Addis Ababa, the growth has meant urban expansion and infrastructure improvements like the introduction of the city's light railway. But in other parts of the country, some have complained that they have not benefited from the economic growth - an accusation that has fuelled political protests in the past.

- A. Ethiopia has undergone rapid economic transformation in recent years, but the growth has not been experienced evenly across the country and that has led to political protests all over the country outside Addis Ababa.
- B. Ethiopia's population growth has been matched by economic expansion as average income per person has increased by more than 600% since 2003, but this growth has not been even, with the capital Addis Ababa recording the highest growth in incomes.
- C. Ethiopia has undergone rapid economic transformation in recent years, but that growth has not been experienced evenly across the country as the capital, Addis Ababa, has grown the fastest.
- D. Ethiopia has undergone rapid economic transformation in recent years, but that growth has not been experienced evenly across the country—leading to political protests.

Answer: D

Solution:

The important points of the paragraph are that Ethiopia has undergone rapid economic transformation in recent years, but that growth has not been even leading to political protests.

Only option D mentions these points in a succinct manner and is, therefore, the correct summary.

Option A distorts the meaning of the paragraph by stating 'political protests all over the country outside Addis Ababa'.

Option B is an inference—about the capital, Addis Ababa, recording the highest growth in incomes—that has not been made in the paragraph. Secondly, it does not mention the political protests.

Option C, too, makes an inference—the capital Addis Ababa has grown the fastest— which is not borne out by the paragraph.

Hence, the correct answer is option D.

Q5. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

In 'The Hidden Life of Trees', Wohlleben writes that 'when trees are really thirsty, they begin to scream'. He admits that this is probably 'a purely mechanical event'; this sound, which can be heard only by using special instruments, is in fact an ultrasonic vibration occurring in the trunk as its vascular system struggles to transport a scarce water supply up to the leaves. (Imagine a straw slurping at the dregs of a milkshake and you're close to envisioning it.) And yet, he writes, 'If we were to look through a microscope to examine how humans produce sounds, what we would see wouldn't be that different: the passage of air down the windpipe causes our vocal cords to vibrate.'

- A. Just like how the passage of air down the windpipe causes vocal cords to vibrate and produce sounds in humans when they are thirsty, trees produce sounds when they are thirsty.
- B. Humans and trees produce similar sounds when they are thirsty.
- C. Trees produce sounds when they are thirsty as their vascular system struggles to transport a scarce water supply up to the leaves. Similarly, humans do the same.
- D. Just like how the passage of air down the windpipe causes vocal cords to vibrate and produce sounds in humans when they are thirsty, trees produce similar sounds when they are thirsty as their vascular system struggles to transport a scarce water supply up to the leaves.

Answer: A

Solution:

The main points of the paragraph are that the sounds made when trees are thirsty are being compared to the sound that humans make when they are similarly thirsty and that the process is similar but not the actual sound itself.

Only option A gives this correct comparison between humans and trees and is, therefore, the correct summary.

Option B states that humans and trees produce similar sounds when they are thirsty. This is not borne out by the main paragraph.

Option C makes it appear that trees and humans have the same processes of making sounds when they are thirsty. Eliminate option C.

Option D assumes that the sounds that trees and humans make are similar. The paragraph mentions that the process of making sounds by humans and trees are similar when they are thirsty, not necessarily the sound itself. Eliminate option D.

Hence, the correct answer is option A.

Q6. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

The very first tall buildings were newspaper buildings and (headquarters for) communications companies like the New York Tribune or the Western Union Building—office buildings that concentrated a workforce, piled one on top of the other in order to make business very efficient. High Rise construction exploded across the US after the turn of the 20th century. Like all major shifts in architecture, the trend was underpinned by evolving engineering. The development of steel frames, which could be used instead of load-bearing masonry, made it easier and cheaper to build tall. The advent of the elevator, meanwhile, made inhabiting higher floors far more convenient.

- A. Evolving engineering, such as the development of steel frames and the advent of the elevator, enabled the explosive growth of high-rise buildings after the turn of the century.
- B. The very first tall buildings were newspaper buildings and communications companies built at the turn of the 20th century and were built in order to make businesses very efficient.
- C. High-rise buildings could be built due to evolving engineering and major shifts in architecture, and the very first tall buildings were newspaper buildings and communications companies.
- D. The construction of high-rise buildings exploded in the US at the beginning of the 20th century thanks to the development of steel frames and the advent of the elevator.

Answer: D

Solution:

The important points of the paragraph are that the construction of high-rise buildings exploded in the US at the beginning of the 20th century and that this was thanks to the development of steel frames and the advent of the elevator.

Only option D mentions these important points and is the correct answer.

Options A and C do not mention the century in which this explosive growth of high-rise buildings took place.

Option B does not mention the engineering aspects—steel frames and the elevator.

Hence, the correct answer is option D.

Q7. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

Socrates insisted that to know what it is that we do not know is the humbling first step of true knowledge. We need to add that the impossibility of knowing any such thing is one of the things that strikes us when we look closely at the reasoning and science of the past, even in the moments

of its greatest accomplishments ...When we look at the history of successful explanation and ask how it could be that it remained undamaged by the unreliable tools, unavailable technology, hidden errors carried on through the entire project of thought, inadequate basic terminology, sectors of ignorance built in like blank spots on a map and sometimes taking up 90 per cent of the map itself, then we can see just how fruitful the idea of local intelligibility is as the necessary alternative to certain knowledge.

- A. Local intelligibility helps us fill the gaps in the impossible task of knowing something we don't know.
- B. We cannot truly know what we don't know, even if we are aware of our lack of knowledge.
- C. When certain knowledge is missing, we have to make do with whatever we can comprehend about something that we are trying to understand.
- D. Anything that has been successfully explained has reached that stage after an enormous amount of speculation and local intelligibility.

Answer: A

Solution:

Genre: Philosophy

Option A: This option mentions all the ideas: local intelligibility, impossibility of knowing what we don't know, and the gaps. Hence, option A is the answer.

Option B: This presents a completely negative picture and leaves out the entire second half.

Option C: This skips the idea of local intelligibility, which is certainly the main idea. Hence, it is not option C.

Option D: The paragraph doesn't quite say that we made it through speculation. Hence, it is not option D.

Hence, the correct answer is option A.

Odd One Out / Odd Sentence Parajumbles

These questions have been a part of CAT exams for a very long time. In these questions, you have to pick the statement that doesn't fit into the paragraph formed by the other set of statements. Generally, the following statements are the answer to these questions:

- 1 Out of Context**
Statements which are not in line with the context of the other statements
- 2 New Ideas/ Independent Statements**
Statements which introduce new ideas or standalone statements which have nothing to do with the other statements
- 3 Different tone/ theme**
Statements in another tone or theme. (Eg- All statements are positive while one is negative)
- 4 Different narrative**
Statements in another narrative (Eg- all statements are in third person but one in first)
- 5 Dispensable statement**
Statements which don't really have anything to add to the paragraph and can be done away with

Practice Questions (Odd One Out / Odd Sentence Parajumbles):

Q1.

- A. The poets in question have, like other poets, various faults.
- B. But they were, at best, engaged in the task of trying to find the verbal equivalent for states of mind and feeling.
- C. And this means that they are more mature and that they dress better than later poets of certainly not less literary ability.
- D. Poetry comes from the heart and not from random philosophical concepts.
- E. It is not a permanent necessity that poets should be interested in philosophy or in any other subject.

Answer: D

Solution: Watch the async video 'Out of Context 2' for solutions.

Q2.

- A. The opening words of James Joyce's Ulysses seem initially to come from the realist world.
- B. However, the appearances are going to be deceptive; they become more so as we go through the novel.
- C. Joyce, after all, was a grand master.
- D. Its stylistic deviations become more obvious, even though they are founded in remarkably accurate history.
- E. The primary modernist technique here lies in Joyce's making of allusions, which lead us to feel the presence of underlying conceptual or formal structures.

Answer: C

Solution: Watch the async video 'Out of Context 2' for solutions.

Q3. Five jumbled up sentences, related to a topic, are given below. Four of them can be put together to form a coherent paragraph. Identify the odd one out and key in the number of the sentence as your answer.

- A. Consider the case of machine learning systems, which discover novel correlations in data.
- B. The entire purpose of using the system is to uncover correlations that are in some cases impossible to see with only human cognitive powers.
- C. AI-driven systems are, often by their very nature, unpredictable, which means that engineers and designers cannot reliably foresee what might occur once the system is deployed.
- D. In such cases, the programmers cannot predict the results that the system will spit out.
- E. The methods of correlating data for AI use are remarkably consistent.

Answer: E

Solution:

Genre: Science

E is the odd sentence in the paragraph because it is not related to the theme of AI-driven systems being unpredictable. Instead, E states that the methods of correlating data for AI use are remarkably consistent.

C opens the paragraph by stating that AI-driven systems are unpredictable.

D, with 'In such cases' referring to the unpredictable nature of AI-driven systems, extends the thought of unpredictability by stating that programmers cannot predict the results that the system will spit out.

A and B form a pair, with both talking about correlations of data. A states that machine learning uncovers novel correlations of data, and B states that the purpose of AI is to uncover correlations that are impossible for human cognitive powers.

Hence, the odd sentence in the paragraph is E.

Q4. Five jumbled up sentences, related to a topic, are given below. Four of them can be put together to form a coherent paragraph. Identify the odd one out and key in the number of the sentence as your answer.

- A. Pice hotels derive their name from the Hindi word 'paise', which is the lowest denomination of the Indian rupee.
- B. It's easy to miss the narrow entry to Hotel Sidheshwari Ashram, which is tucked in the alley behind Kolkata's Sir Stuart Hogg Market (New Market), but it's the fragrant whiff of fish seared in mustard oil that directs customers to the door.
- C. An accountant perched between the staircase and the dining room keeps score of every serve.
- D. The seats lining the marble-top tables fill up in quick succession as hungry office workers break for lunch.
- E. It's rush hour and the restaurant, which is one of Kolkata's few remaining pice hotels, is packed to the gills: waiters in bright orange livery dart in and out of the kitchen; bowlfuls of vegetables, fish, and meat preparations accompany mounds of rice laid out on banana leaf plates.

Answer: A

Solution:

Genre: Food/Culture

A is the odd sentence in the paragraph as it does not describe the bustling activities of a typical pice hotel but instead informs us as to where the name 'pice' was derived from.

B opens the paragraph by describing a particular pice hotel.

D and E describe the rush hour at this pice hotel and are, therefore, a logical pair.

C tells us a little more about this hotel, i.e., about an accountant perched between the staircase and the dining room keeping score of every serve.

Hence, the odd sentence in the paragraph is A.

Q5. Five jumbled up sentences, related to a topic, are given below. Four of them can be put together to form a coherent paragraph. Identify the odd one out and key in the number of the sentence as your answer.

- A. When a satellite is launched, the rocket begins by going slowly upwards through the air.
- B. However, it meets less air as it goes higher.
- C. As the rocket goes higher, it travels faster.
- D. This is because the atmosphere becomes thinner.
- E. The rocket still does not become too hot.

Answer: E

Solution:

Genre: Astronomy

The answer to this question is not obvious because all the sentences are about the process of a rocket rising steadily up in the air. However, E does not fit into the process anywhere. Let's have a look.

A is the first sentence as it mentions how a rocket begins.

C follows as it talks about the next step, which is that of the rocket going higher.

B follows C. Note the use of 'however'.

D follows B as D proved the reason for B.

E is random and does not fit into the process and is, therefore, the answer.

Hence, the correct answer is sentence E.

Q6. Five jumbled up sentences, related to a topic, are given below. Four of them can be put together to form a coherent paragraph. Identify the odd one out and key in the number of the sentence as your answer:

- A. While talking to a group, one should feel self-confident and courageous.
- B. Nor is it a gift bestowed by providence on only a few.
- C. One should also learn how to think calmly and clearly.
- D. One should be arrogant and insensitive to the feelings of the other people in the group.
- E. It is not as difficult as most men imagine.

Answer: D

Solution:

Genre: Sociology

This is neither a very straightforward question nor a difficult one. One has to read the sentences carefully to be able to answer the question. A, C, E, and B form a sequence, starting with how a person should feel in a group and then move on to thinking what it's not. D is the odd one out as it talks about being arrogant and insensitive, which is nowhere close to the paragraph's theme.

Hence, the correct answer is sentence D.

Watch our async videos on types of questions in RCs to score better in RCs.

Data Interpretation and Logical Reasoning (DILR)

The DILR section of CAT can be broken down into two parts:

- Logical Reasoning
- Data Interpretation

In essence, this is a section that grills you on puzzles. However, over the last 2 to 3 decades, it has become comparatively easier to club these puzzles into specific categories, which we like to call topics.

Here is a list of all the topics from which questions can be asked in the exam.

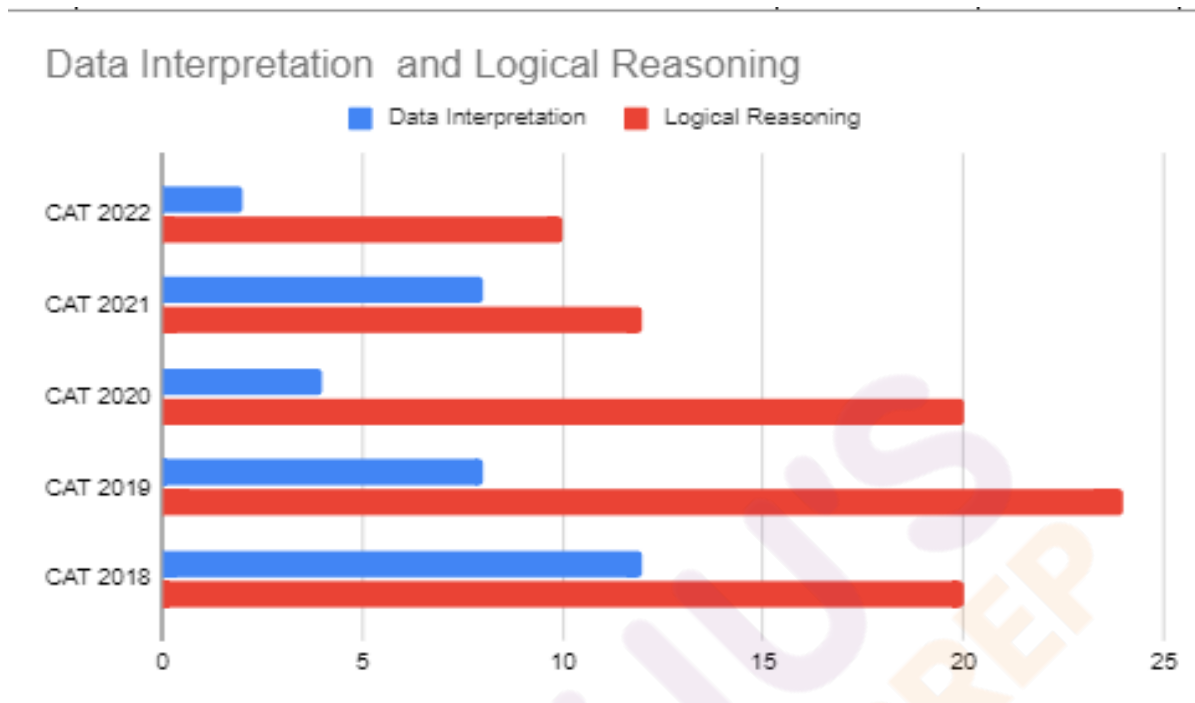
1. Logical Reasoning

- 1.1. Arrangements
 - 1.1.1. Linear
 - 1.1.2. Circular
- 1.2. Games and Tournaments
- 1.3. Selection
- 1.4. Networks and Routes
- 1.5. Venn Diagrams
- 1.6. Binary Logic

2. Data Interpretation

- 2.1. Tables
 - 2.1.1. Based on calculation(with numbers)
 - 2.1.2. Production and consumption
 - 2.1.3. Sales, costs, and profits
- 2.2. Tables
 - 2.2.1. Based on calculation (with percentages)
- 2.3. Tables
 - 2.3.1. Non-calculation (counting)

The section does have two parts, but one cannot assume that the weightage of both the parts is equal or even close to being equal in the examination. As can be seen in the table below, the DILR section of the paper is highly skewed towards Logical Reasoning. In fact, the weightage of the DI part has gone down from 37.5% in 2018 to only 16.7 % in 2020. In 2021, however, the percentage shot up to 40%. However, if you actually take a look at the sets of DI in 2021, only one set is purely based on DI calculation, while the other has some element of logic involved. So, this 40% is deceiving as half of this is not purely DI.



*Table 1

It's pretty clear that you need to focus more on LR than DI in order to do well in the exam. Let's first find out why this is happening.

The main reason is that the IIMs are looking for students who aren't necessarily great at quick calculations but can decipher data and utilise it to come to logical conclusions; thus, the highest weightage is actually to a third kind of sub-set called logic-based DI. In these sets, not only is a student's ability to comprehend graphical representation of data tested, but also his/her ability to use that understanding to infer or conclude further pieces of information under hypothetical conditions.

Now that we have understood the difference between LR and DI, we know that LR becomes our focus. However, there is a long list of topics to be covered in LR. Therefore, let's look at some statistics before we talk about the important ones you need to focus on.

Sr.No.	Topic	Number of Sets in PYQP 2017-22
1	Reasoning Based DI	10
2	Scheduling and Matrix	6
3	Matrix Arrangement	7
4	Venn Diagram	7
5	Matrix and Grid	7
6	Unconventional and Hybrid Games and Tournament	6
7	Arithmetic Caselet	3
8	Order and Ranking	3
9	Missing Data	3
10	Mathematical AR	4
11	Logic Based Table	3
12	Arithmetic Based DI	2
13	Gantt Chart	2
14	Maxima-Minima Concept	2
15	Algebra Caselet	2
16	Routes and Networks	3
17	Misc	11

* Table 2

It's clear from the table above that you need to pay special attention to the following four topics to perform well in the exam.

1. Reasoning-based DI
2. Arrangements and matrix sets
3. Grouping, distributions, and selections
4. Set theory (venn diagram)
5. Games and tournaments

You can easily get a 99 percentile in the DILR section of CAT if you focus only on these five topics and aim for cent percent accuracy.

Now, let's look at the number of total questions and the number of questions you need to answer correctly in the DILR section.

There used to be a total of 32 questions in this section till 2019, while it reduced to 24 questions in 2020 due to the shortened duration of the exam from 180 minutes to 120 minutes. In 2021, the number of questions were further reduced to 20 and it remained the same in 2022. Consequently, the time allotted for each of the three sections came down from 60 minutes to 40 minutes each.

The table below shows the marks you need to attempt to achieve your desired percentile.

Percentile	Marks in				
	CAT 2022	CAT 2021	CAT 2020	CAT 2019	CAT 2018
99.5	-	38	39	57	50
99	35.15	33	34	53	44
95	25.63	25	25	38	34
90	19.36	20	20	32	27
80	15.14	14-15	16	24	22

*Table 3

As you can see from the table, you need to attempt only ~50% of the questions correctly to score 99 percentile, ~38% to score 95, and ~30% to score 90 percentile in the LRDI section.

So, does this sound difficult or unachievable? Of course not. However, if you still have doubts about DILR and want to know more about it, watch the introduction video of DILR in MBA Exams from our Asynchronous Series.

Practice Questions (DILR):

Set 1:

Directions for questions 1 to 6:

- 28 players participated in a tennis tournament.
- The players are seeded from 1 to 128 with seed 1 being the top seed and seed 128 being the last seeded player. The tournament takes place in a knockout format with different rounds.
- In each round, the winner of a match between two players advances in the next round while the loser is eliminated. This process is repeated till the finals.
- In the first round, the player seeded 1 plays against the player seeded 128, the player seeded 2 plays against the player seeded 127, and so on.
- An upset is said to happen if a lower seeded player beats a higher seeded player. The matches are scheduled such that in case of no upsets in each round, the highest-seeded player plays against the lowest-seeded player left in the tournament.
- The second highest-seeded player plays against the second lowest-seeded player left and so on.

1. How many rounds are there in the tournament?

2. How many matches will be played in the tournament?

3. Which seeded player faced the player seeded 11 in the pre quarter finals (round 4) if the tournament had no upsets?

4. If there were no upsets in the tournament, which of the following seeds never played against the player who is seeded 5?

- A. 124
- B. 60
- C. 27
- D. 12

5. If the player who was seeded 116 reached the semi-finals, then at least how many matches resulted in upsets?

- A. 3
- B. 4
- C. 5
- D. 6

6. If the tournament had only two upsets, then how many matches can the player seeded 23 win?

- A. 2
- B. 3
- C. 4
- D. 1

Solution: Watch the async video titled 'Conventional Games and Tournaments: Knock Out' for solutions.

Set 2:

Directions for questions 1 to 5:

Answer the questions based on the following information:

Sixteen teams have been invited to participate in the ABC Gold Cup cricket tournament.

The tournament is conducted in two stages.

In the first stage, the teams are divided into two groups. Each group consists of eight teams, with each team playing every other team in its group exactly once.

At the end of the first stage, the top four teams from each group advance to the second stage, while the rest are eliminated. The second stage comprises several rounds.

A round involves one match for each team.

The winner of a match in a round advances to the next round, while the loser is eliminated. The team that remains undefeated in the second stage is declared the winner and claims the Gold Cup.

The tournament rules are such that each match results in a winner and a loser with no possibility of a tie.

In the first stage, a team earns one point for each win and no points for a loss.

At the end of the first stage, the teams in each group are ranked based on the total points to determine the qualifiers advancing to the next stage.

Ties are resolved by a series of complex tie-breaking rules so that exactly four teams from each group advance to the next stage.

1. What is the total number of matches played in the tournament?
 - A. 28
 - B. 55
 - C. 65
 - D. 35

2. The minimum number of wins needed for a team in the first stage to guarantee its advancement to the next stage is:
 - A. 5
 - B. 6
 - C. 7
 - D. 4

3. What is the highest number of wins for a team in the first stage in spite of which it would be eliminated at the end of the first stage?
 - A. 1
 - B. 2
 - C. 3
 - D. 4

4. What is the number of rounds in the second stage of the tournament?
 - A. 1
 - B. 2
 - C. 3
 - D. 4

5. Which of the following statements is true?
 - A. The winner will have more wins than any other team in the tournament.
 - B. At the end of the first stage, no team eliminated from the tournament will have more wins than any of the teams qualifying for the second stage.
 - C. It is possible that the winner will have the same number of wins in the entire tournament as a team eliminated at the end of the first stage.
 - D. The number of teams with exactly one win in the second stage of the tournament is four.

Solution: Watch the async video titled 'Conventional Games and Tournaments: Round Robin' for solutions.

Set 3:

Directions for questions 1 to 4:

Applicants for the doctoral programmes of Ambi Institute of Engineering (AIE) and Bambi Institute of Engineering (BIE) have to appear for a Common Entrance Test (CET). The test has three sections: Physics (P), Chemistry (C), and Maths (M).

Among those appearing for CET, those at or above 80th percentile in at least two sections and at or above the 90th percentile overall are selected for the Advanced Entrance Test (AET) conducted by AIE. AET scores are used by AIE for the final selection.

For the 200 candidates who are at or above 90th percentile overall based on CET, the following are known about their performance in CET:

1. No one is below 80th percentile in all 3 sections.
2. 150 are at or above 80th percentile in exactly two sections.
3. The number of candidates at or above 80th percentile only in P is the same as the number of candidates at or above 80th percentile only in C. The same is the number of candidates at or above the 80th percentile only in M.
4. Number of candidates below 80th percentile in P : Number of candidates below 80th percentile in C : Number of candidates below 80th percentile in M = 4 : 2 : 1

BIE uses a different process for selection. If any candidate is appearing in the AET by AIE, BIE considers their AET score for final selection provided the candidate is at or above the 80th percentile in P.

Any other candidate at or above the 80th percentile in P in CET, but who is not eligible for the AET, is required to appear in a separate test to be conducted by BIE to be considered for the final selection.

Altogether, there are 400 candidates this year who are at or above the 80th percentile in P.

1. What best can be concluded about the number of candidates sitting for the separate test for BIE who were at or above the 90th percentile overall in CET?

- A. 3 or 10
- B. 10
- C. 5
- D. 7 or 10

2. If the number of candidates who are at or above the 90th percentile overall and at or above the 80th percentile in all three sections in CET is actually a multiple of 5, what is the number of candidates who are at or above the 90th percentile overall and at or above the 80th percentile in both P and M in CET?

3. If the number of candidates who are at or above the 90th percentile overall and also at or above the 80th percentile in all three sections in CET is actually a multiple of 5, then how many candidates were shortlisted for the AET for AIE?

4. If the number of candidates who are at or above the 90th percentile overall and also at or above the 80th percentile in P in CET is more than 100, how many candidates had to sit for the separate test for BIE?

Solution: Watch the async video titled 'Venn Diagram: 3 Parameters' for the solutions.

Set 4:

Directions for questions 1 and 2:

Among 160 students of a class, 90 students pass in Accounts, 70 students pass in Economics, and 65 students pass in Business Studies. Among these, 55 students pass in Accounts and Economics, 40 students pass in Economics and Business Studies, and 45 students pass in Accounts and Business Studies.

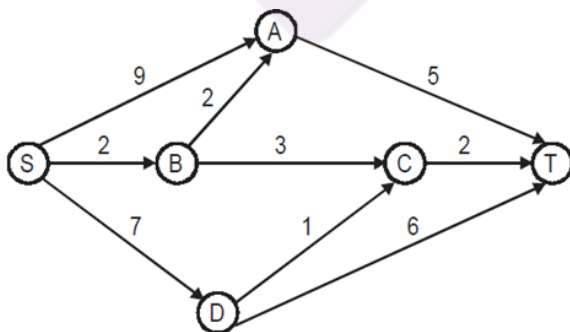
1. What is the maximum number of students who pass in all the three subjects?

2. What is the minimum number of students who pass in at least one subject?

Solution: Watch the async video titled 'Venn Diagram: 3 Parameters: Maxima and Minima' for the solutions.

Set 5: Reasoning Based DI: Routes and Networks

A significant amount of traffic flows from point S to point T in the one-way street network shown below. Points A, B, C, and D are junctions in the network, and the arrows mark the direction of traffic flow. The fuel cost (in rupees) for travelling along a street is indicated by the number adjacent to the arrow representing the street.



Motorists travelling from point S to point T would obviously take the route for which the total cost of travelling is the minimum. If two or more routes have the same least travel cost, then motorists are indifferent while choosing them.

Hence, the traffic gets evenly distributed among all the least costly routes.

The government can control the flow of traffic only by levying an appropriate toll at each junction.

For example, if a motorist takes the route S-A-T (using junction A alone), then the total cost of travel would be Rs. 14 (i.e., Rs. 9 + Rs. 5) plus the toll charged at junction A.

1. If the government wants to ensure that no traffic flows on the street from D to T, while an equal amount of traffic flows through junctions A and C, then a feasible set of tolls charged (in rupees) at junctions A, B, C, and D, respectively, to achieve this goal is:

- A. 1, 5, 3, 3
- B. 1, 4, 4, 3
- C. 1, 5, 4, 2
- D. 0, 5, 2, 2

2. If the government wants to ensure that all motorists travelling from S to T pay the same amount (fuel costs and toll combined) regardless of the route they choose and the street from B to C is under repairs (and hence unusable), then a feasible set of tolls charged (in rupees) at junctions A, B, C, and D, respectively, to achieve the is goal is:

- A. 2, 5, 3, 2
- B. 0, 5, 3, 1
- C. 2, 3, 5, 1
- D. 1, 3, 5, 1

3. If the government wants to ensure that the traffic at S gets evenly distributed along the street from S to A, from S to B, and from S to D, then a feasible set of tolls charged (in rupees) at junctions A, B, C, and D, respectively, to achieve this goal is:

- A. 0, 5, 4, 1
- B. 0, 5, 2, 2
- C. 1, 5, 3, 3
- D. 1, 5, 3, 2

4. If the government wants to ensure that all routes from S to T get the same amount of traffic, then a feasible set of tolls charged (in rupees) at junctions A, B, C, and D, respectively, to achieve this goal is:

- A. 0, 5, 2, 2
- B. 0, 5, 4, 1
- C. 1, 5, 3, 3
- D. 1, 5, 3, 2

5. The government wants to devise a toll policy such that the total cost for the commuters per trip is minimised. The policy should also ensure that not more than 70 per cent of the total traffic passes through junction B. The cost incurred by the commuter travelling from point S to point T under this policy will be:

- A. Rs. 7
- B. Rs. 9
- C. Rs. 10
- D. Rs. 13

Solution: Watch the async video titled 'Reasoning Based DI: Routes and Networks' for the solutions.

Set 6:

Directions for questions 1 to 4:

You are given an $n \times n$ square matrix to be filled with numerals so that no two adjacent cells have the same numeral. Two cells are called adjacent if they touch each other horizontally, vertically, or diagonally. So, a cell in one of the four corners has three cells adjacent to it, and a cell in the first or last row or column, which is not in the corner, has five cells adjacent to it. Any other cell has eight cells adjacent to it.

1. What is the minimum number of different numerals needed to fill the 3×3 square matrix?



2. What is the minimum number of different numerals needed to fill the 5×5 square matrix?



3. Suppose you are allowed to make one mistake, that is, one pair of adjacent cells can have the same numeral. What is the minimum number of different numerals required to fill a 5×5 matrix?

- A. 4
- B. 9
- C. 16
- D. 25

4. Suppose that all the cells adjacent to any particular cell must have different numerals. What is the minimum number of different numerals needed to fill a 5×5 square matrix?

- A. 9
- B. 25
- C. 16
- D. 4

Solution: Watch the async video titled 'Reasoning Based DI: Numbers Arrangement' for the solutions.

Set 7: Arrangement: Linear Arrangement

Directions for questions 1 to 4:

Mr Bankatlal acted as a judge for the beauty contest. There were four participants, viz., Ms Andhra Pradesh, Ms Uttar Pradesh, Ms West Bengal, and Ms Maharashtra. Mrs Bankatlal, who was very anxious about the result, asked about it as soon as he was back home. Mr Bankatlal told her that the one who was wearing the yellow saree won the contest.

When Mrs Bankatlal pressed for further details, he elaborated as follows:

- i. All of them were sitting in a row.
- ii. All of them wore sarees of different colours, viz., green, yellow, white, and red.
- iii. There was only one runner-up, and she was sitting beside Ms Maharashtra.
- iv. The runner-up was wearing the green saree.
- v. Ms West Bengal was not sitting at the end and was not the runner-up.
- vi. The winner and the runner-up are not sitting adjacent to each other.
- vii. Ms Maharashtra was wearing a white saree.
- viii. Ms Andhra Pradesh was wearing a green saree.
- ix. The participants wearing the yellow saree and the white saree were at the ends.

1. Who wore the red saree?

- A. Ms Andhra Pradesh
- B. Ms West Bengal
- C. Ms Uttar Pradesh
- D. Ms Maharashtra

2. Ms West Bengal was sitting adjacent to:

- A. Ms Andhra Pradesh and Ms Maharashtra
- B. Ms Uttar Pradesh and Ms Maharashtra
- C. Ms Andhra Pradesh and Ms Uttar Pradesh
- D. Ms Uttar Pradesh only

3. Who wore the yellow saree?

- A. Ms Andhra Pradesh
- B. Ms West Bengal
- C. Ms Uttar Pradesh
- D. Ms Maharashtra

4. Who was the runner-up?

- A. Ms Andhra Pradesh
- B. Ms West Bengal
- C. Ms Uttar Pradesh
- D. Ms Maharashtra

Solution: Watch the async video titled 'Arrangement - Linear Arrangement' for the solutions.

Set 8: Arrangement: Matrix and Grid

Directions for questions 1 to 6:

A farmer had a rectangular land containing 205 trees. He distributed the land among his four daughters, Abha, Bina, Chitra, and Dipti, by dividing the land into twelve plots along three rows (X, Y, Z) and four columns (1, 2, 3, 4) as shown in the figure below:

	1	2	3	4
X	12 C			
Y	21 A			A
Z	B	C	9	28

The plots in rows X, Y, Z contained mango, teak, and pine trees, respectively. Each plot had trees in non-zero multiples of 3 or 4, and none of the plots had the same number of trees. Each daughter got an even number of plots. In the figure, the number mentioned in the top left corner of a plot is the number of trees in that plot, while the letter in the bottom right corner is the first letter of the name of the daughter who got that plot (for example, Abha got the plot in row Y and column 1 containing 21 trees). Some information in the figure got erased, but the following is known:

1. Abha got 20 trees more than Chitra but 6 trees less than Dipti.
2. The largest number of trees in a plot was 32, but it was not with Abha.
3. The number of teak trees in column 3 was double of that in column 2 but half of that in column 4.
4. Both Abha and Bina got a higher number of plots than Dipti.
5. Only Bina, Chitra, and Dipti got corner plots.
6. Dipti got two adjoining plots in the same row.
7. Bina was the only one who got a plot in each row and each column.
8. Chitra and Dipti did not get plots which were adjacent to each other (either in row, column, or diagonal).
9. The number of mango trees was double the number of teak trees.

1. How many mango trees were there in total?

- A. 126
- B. 84
- C. 98
- D. 49

2. Which of the following is the correct sequence of trees received by Abha, Bina, Chitra, and Dipti (in that order)?

- A. 50, 69, 30, 56
- B. 60, 39, 40, 66
- C. 44, 87, 24, 50
- D. 54, 57, 34, 60

3. How many pine trees did Chitra receive?

- A. 15
- B. 18
- C. 30
- D. 31

4. Who got the plot with the smallest number of trees and how many trees did that plot have?

- A. Abha, 4 trees
- B. Dipti, 6 trees
- C. Bina, 3 trees
- D. Bina, 4 trees

5. Which of the following statements is NOT true?

- A. Bina got 32 pine trees.
- B. Chitra got 12 mango trees.
- C. Abha got 41 teak trees.
- D. Dipti got 56 mango trees.

6. Which column had the highest number of trees?

- A. 3
- B. Cannot be determined
- C. 2
- D. 4

Solution: Watch the async video titled 'Arrangement - Matric & Grid' for solutions.

Quantitative Ability (QA)

Quantitative Ability is logic masquerading as maths. There is a reason why this section is not called mathematics; CAT tests you on your ability to comprehend, process, and solve logically, utilising options and language often accompanied with a basic understanding of mathematical concepts, rather than testing you on higher maths or look to validate every step used by you in your quest to get to the right answer. There is just one *mantra* to ace the Quantitative Ability section of CAT—understand the fundamentals, have conceptual clarity, and be an ace in Arithmetic + Algebra!

So, let's look at the five main QA topics CAT tests you on in the order of their priority:

1. Arithmetic
2. Algebra
3. Geometry and Mensuration
4. Number System
5. Modern Maths

Before you jump to conclusions and start preparing randomly from anywhere you want, let's look at some statistics. Let's look at the topic-wise bifurcation of questions asked in CAT from 2019 to 2022.

Topics	CAT 2019	CAT 2020	CAT 2021	CAT 2022
Arithmetic	14	10	10-12	8-9
Algebra	11-13	6-8	6-8	7-9
Geometry Mensuration	4-6	5-6	3-5	3-4
Number System	2-3	2-3	1-2	1-3
Modern Math	0-1	0-2	1	0-3
Overall	34	26	22	22

*Table 1

It's pretty clear from the table above that the exam has been highly skewed towards a couple of topics over the past years. Almost 70% of the exam has been from the following two topics:

1. Arithmetic
2. Algebra

Hence, you need to concentrate majorly on these topics to perform well in the exam.

Now, let's look at the number of total questions and the number of questions you need to answer correctly in the QA section to score specific percentiles.

There used to be a total of 34 questions in this section till 2019, while it was reduced to 26 questions in 2020 due to the shortened duration of the exam from 180 minutes to 120 minutes. In 2021, the number further came down to 22. Consequently, the time allotted for each of the three sections came down from 60 minutes to 40 minutes each (2020,2021,2022 had a 40 min sectional time limit)

The table below shows the number of questions you need to attempt to achieve your desired percentile.

Percentile	Marks in				
	CAT 2022	CAT 2021	CAT 2020	CAT 2019	CAT 2018
99.5	-	40	50	69	58
99	35.14	35-36	44	63	51
95	23.63	24	30	43	41
90	17.98	17	23	34	34
80	11.23	12	16	23	24

*Table 2

As you can see from the table above, you need to attempt ~60% of the questions correctly to score 99 percentile, ~41% to score 95 percentile, and ~34% to score 90 percentile in the QA section. Even if you want to play safe and keep a buffer, you can attempt a question or two more. Thus, if you are aiming for a 99th percentile, you need to have an accuracy level of 100% to rely only on Arithmetic and Algebra, which isn't easy. Hence, while you pick these topics to start with, the next topics can be picked up in the following order:

1. Geometry and Mensuration
2. Number System
3. Modern Maths

So, does this sound difficult or unachievable? Of course not. However, if you still have doubts about QA and want to know more about it, watch the introduction video of Quant in MBA exams from our Asynchronous Series.

Practice Questions (QA):

I. Arithmetic

1. The rate of increase of the price of sugar is observed to be two percent more than the inflation rate expressed in percentage. The price of sugar, on January 1, 1994, is Rs. 20 per kg. The inflation rate for the years 1994 and 1995 are expected to be 8% each. The expected price of sugar on January 1, 1996, would be:

- A. Rs. 23.60
- B. Rs. 24.00
- C. Rs. 24.20
- D. Rs. 24.60

Solution: Watch the async video titled 'Successive Percentage' for the solution.

2. A man bought 'x' articles from a dealer at 3 for Rs. 5. He bought 'x' more articles from a different dealer at 4 for Rs. 6. He sold those '2x' articles at 5 for Rs. 10. Find his profit percentage.

- A. 28%
- B. 26.3%
- C. 25%
- D. 20%

Solution: Watch the async video titled 'Profit, Loss and Discount - 2' for the solution.

3. If the difference between the SI and the CI for 2 years at 15% per annum is Rs. 90, find the principal.

Solution: Watch the async video titled 'Simple and Compound Interest - 3' for the solution.

4. In an examination, Rama's score was one-twelfth of the sum of the scores of Mohan and Anjali. After a review, the score of each of them increased by 6. The revised scores of Anjali, Mohan, and Rama were in the ratio 11 : 10 : 3. So, Anjali's score exceeded Rama's score by:

- A. 26
- B. 32
- C. 25
- D. 35

Solution: Watch the async video titled 'Applications of Ratios' for the solution.

5. Find the average of the marks obtained by five students whose marks are 85, 82, 93, 86, and 94.

Solution: Watch the async video titled 'Applications of Averages' for the solution.

6. Mani, Tani, Gani, and Sani started a business with investments in the ratio of $\frac{1}{2} : \frac{1}{3} : \frac{1}{4} : \frac{1}{5}$; at the end of the year, Gani received a profit of Rs. 2400. Find the sum of the profits for the remaining three persons.

Solution: Watch the async video titled 'Partnership' for the solution.

7. A can of phenyl when fully filled holds 20 litres. 5 litres of phenyl is removed and filled with water. Then 4 litres of the solution is replaced by water. Again, 5 litres of the solution is replaced by water. Find the percentage of water in the can after three operations.

- A. 45%
- B. 55%
- C. 40%
- D. 60%

Solution: Watch the async video titled 'Mixtures - 2' for the solution.

8. A, B, and C can complete a particular work in 10, 15, and 18 days, respectively. They worked on a rotation basis with A working on the first day, B on the second day, C on the third day, and A again on the fourth day and so on. In how many days will the work be completed?

- A. 12.5 days
- B. 13.17 days
- C. 15.33 days
- D. 14.67 days

Solution: Watch the async video titled 'Time and Work - 2 Alternate day, share of Money and Efficiency' for the solution.

9. Pipe A alone takes 25 minutes to fill a tank, while Pipe B alone can empty the tank in 20 minutes. If both the pipes are opened together, then after how much time (in minutes) will it be empty if it is already full?

- A. 75
- B. 80
- C. 100
- D. 60

Solution: Watch the async video titled 'Time and Work - 3 : Pipes and cisterns' for the solution.

10. A car moving on a road at 54 km/h overtakes a cyclist travelling at 20 km/h at 6:30 a.m. The car also overtakes a pedestrian walking at 3 km/h at 9:30 a.m. At what time would the cyclist overtake the pedestrian?

- A. 2:30 p.m.
- B. 3:30 p.m.
- C. 4:30 p.m.
- D. None of the above

Solution: Watch the async video titled 'Relative Speed' for the solution.

11. City A to City B is a downstream journey on a stream which flows at a speed of 5 km/h. Boats P and Q run a shuttle service between the two cities that are 300 km apart. Boat P, which starts from City A, has a still water speed of 25 km/h, while boat Q, which starts from City B at the same time, has a still water speed of 15 km/h. When will the two boats meet for the first time and the second time?

- A. 20 hours
- B. 10 hours
- C. 15 hours
- D. 18 hours

Solution: Watch the async video titled 'Boats and Streams Questions' for the solution.

12. In a 6800-metre race around a circular track having circumference of 400 metres, A and B start from the same point and at the same time with speeds of 50 m/s and 30 m/s, respectively, in the same direction. How many times did A cross B before he won the race?



Solution: Watch the async video titled 'Race - Circular Race - 1' for the solution.

II. Algebra

1. Iqbal dealt some cards to Mushtaq and himself from a full pack of playing cards and laid the rest aside. Iqbal then said to Mushtaq, 'If you give me a certain number of your cards, I will have four times as many cards as you will have. If I give you the same number of cards, I will have thrice as many cards as you will have.' Of the given choices, which could represent the number of cards with Iqbal?

- A. 9
- B. 31
- C. 12
- D. 35

Solution: Watch the async video titled 'Linear Equations - 2 Variables' for the solution.

2. Find the minimum value of the quadratic polynomial $x^2 - 6x + 7$.

- A. -1
- B. 0
- C. -2
- D. -3

Solution: Watch the async video titled 'Quadratic Equations - 2' for the solution.

3. If α , β , and γ are the roots of $x^3 - 4x^2 + 3x - 10 = 0$, then find the value of $\alpha^2 + \beta^2 + \gamma^2$.

- A. 22
- B. 10
- C. 13
- D. None of these

Solution: Watch the async video titled 'Higher Order Equation' for the solution.

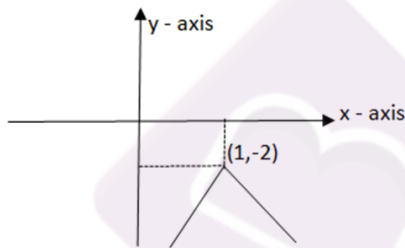
4. For a group travelling together, 50 berths were reserved in a train. The reservations were made in three different classes: AC 2 TIER, AC 3 TIER, and Sleeper class. The price of each ticket is Rs. 500, Rs. 300, and Rs. 200, respectively. A total amount of Rs. 12,500 was spent.

If at least four berths have been reserved in each class, then the number of ways in which the reservation can be made is:

- A. 4
- B. 5
- C. 6
- D. 7

Solution: Watch the async video titled 'Special Equation' for the solution.

5. The graph below is best represented by which of the following choices? (figure not to scale)



- A. $y = -|x - 1| + 2$
- B. $y = -|x + 1| + 2$
- C. $y = -|x - 1| - 2$
- D. $y = -|x - 1| + 2$

Solution: Watch the async video titled 'Functions and Graph - 2' for the solution.

6. If $x > 1$ and $y > -1$, then which among the following statements is definitely true?

- A. $xy > -2$
- B. $-x < 2y$
- C. $xy < -2$
- D. $-x > 2y$

Solution: Watch the async video titled 'Inequalities - 1' for the solution.

7. A ball is dropped from a building of height 120 metres, and it rebounds to $\frac{4}{5}$ th of the previous height at every drop. Find the total distance travelled by the ball before it comes to rest.



Solution: Watch the async video titled 'Sequence and Series - 2' for the solution.

8. If $\log_c a = (1/2)$ and $\log_d b = (1/3)$, where $a, b, c,$ and d are distinct natural numbers, what is the minimum possible value of $(a + b + c + d)$?

- A. 10
- B. 24
- C. 36
- D. 22

Solution: Watch the async video titled 'Logarithm - 1' for the solution.

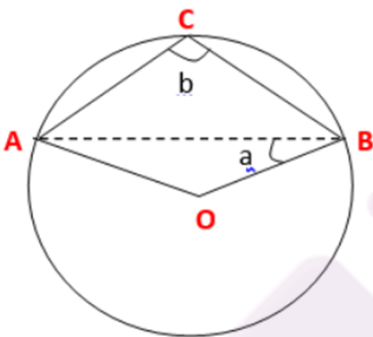
III. Geometry

1. When the length of each side of a triangle is subtracted from the sum of the lengths of the other two sides, 22 cm, 30 cm, and 48 cm are obtained. Find the area of the triangle.

- A. $60\sqrt{55}$ sq cm
- B. $50\sqrt{55}$ sq cm
- C. $35\sqrt{44}$ sq cm
- D. None of these

Solution: Watch the async video titled 'Triangles 2' for the solution.

2. In the figure below, O is the centre of the circle. If $a = 18^\circ$, then find the measure of 'b'.



Solution: Watch the async video titled 'Circles - Properties of Chords' for the solution.

3. The angle of elevation of a jet plane from a point A on the ground is 60 degrees. After a flight of 30 seconds, the angle of elevation changes to 30 degrees. If the jet plane is flying at a constant height of $3600\sqrt{3}$, find the speed of the jet plane.

- A. 180 m/s
- B. 240 m/s
- C. 300 m/s
- D. 320 m/s

Solution: Watch the async video titled 'Heights and Distances' for the solution.

4. How many integral coordinates lie on the circumference of the circle, $x^2 + y^2 = 13$?

Solution: Watch the async video titled 'Coordinate Geometry' for the solution.

IV. Numbers

1. If all the factors of 7200 are written in increasing order, from left to right, then the factor which occupies the 48th position from the left end is:

- A. 1200
- B. 900
- C. 1440
- D. 800

Solution: Watch the async video titled 'Factors - 1' for the solution.

2. Out of 4 numbers a, b, c, and d, each pair of numbers has the same highest common factor. Find the highest common factor of all the four numbers if the least common multiple of a and b is 310 and that of c and d is 641.

Solution: Watch the async video titled 'HCF LCM Methods' for the solution.

3. Find the remainder when 3^{135} is divided by 67.

Solution: Watch the async video titled 'Remainders - 2' for the solution.

V. Permutations and Combinations

1. From a group of 5 men and 6 women, 3 persons are to be selected from each group to perform in a movie. However, Ms Y will not come if Mr Y is selected. In how many ways can the selection be done?

Solution: Watch the async video titled 'P&C 1: Combination Basics' for the solution.

2. In how many ways can 'm' boys and 'n' girls sit in a circle with no two girls together in the following cases?

a. $m = 5$ and $n = 5$

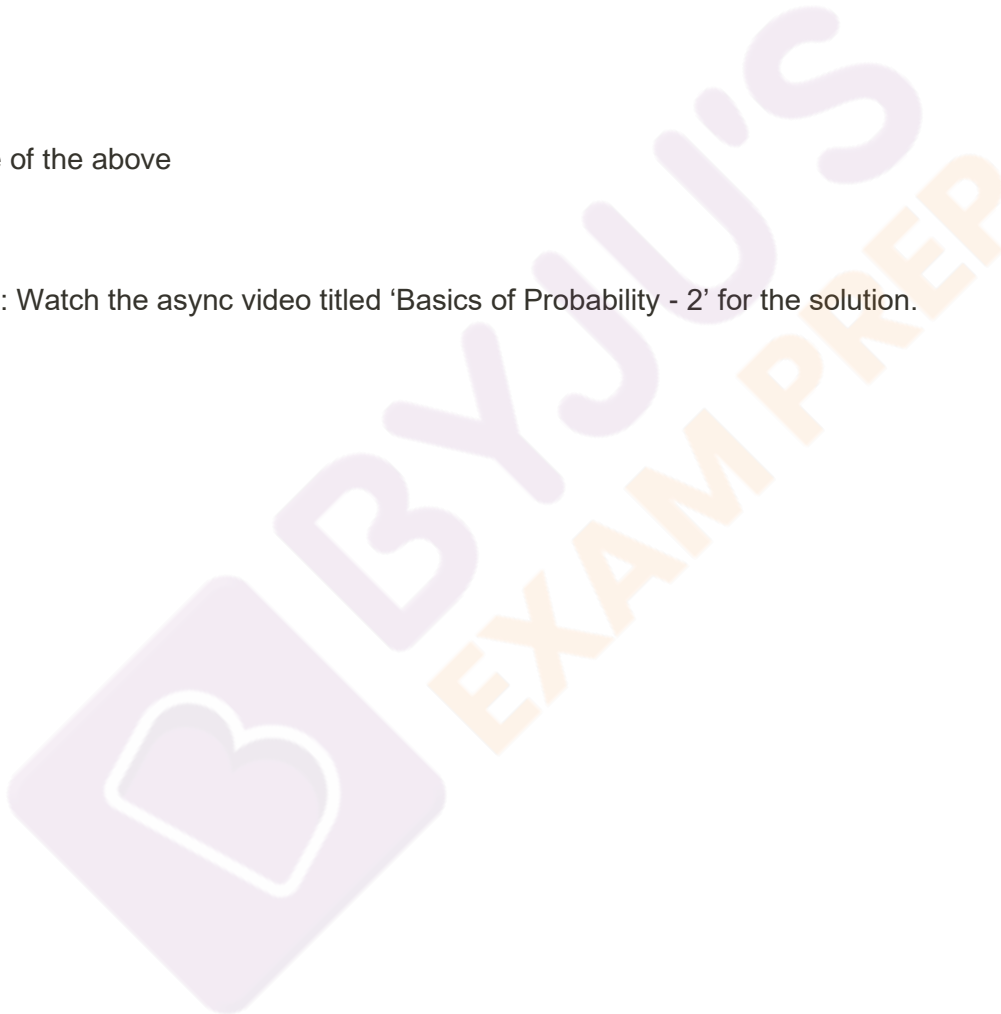
b. $m = 5$ and $n = 3$

Solution: Watch the async video titled 'P&C 7 : Permutation : Circular, Triangular, Rectangular arrangement' for the solution.

3. A bag contains 4 red and 5 black cards. Two cards are drawn without replacement. Find the probability that one is red and the other is black.

- A. $\frac{1}{2}$
- B. $\frac{5}{9}$
- C. $\frac{4}{9}$
- D. None of the above

Solution: Watch the async video titled 'Basics of Probability - 2' for the solution.



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Our Achievers



99.95%iler
CAT 2022

Vinayak Chaturvedi



99.75%iler
CAT 2022

Sarojit Auddya



99.70%iler
CAT 2022

Smarth Bansal