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Mock CAT – 05 2019

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QA

Sec 1

Direction for questions (1-5): Read the given passages and answer the questions that follow.

[…] It wasn't always this way. Many fields of mathematics germinated from the study of real world problems, before the underlying rules and concepts were identified. These rules and concepts were then defined as abstract structures. For instance, algebra, the part of mathematics in which letters and other general symbols are used to represent numbers and quantities in formulas and equations was born from solving problems in arithmetic. Geometry emerged as people worked to solve problems dealing with distances and area in the real world.

That process of moving from the concrete to the abstract scenario is known, appropriately enough, as abstraction. Through abstraction, the underlying essence of a mathematical concept can be extracted. People no longer have to depend on real world objects, as was once the case, to solve a mathematical puzzle. They can now generalise to have wider applications or by matching it to other structures can illuminate similar phenomena. An example is the adding of integers, fractions, complex numbers, vectors and matrices. The concept is the same, but the applications are different. […]

The earliest example of abstraction was when humans counted before symbols existed. […] Today, we use the Arabic numbers (also known as the Hindu-Arabic numerals): 0,1,2,3,4,5,6,7,8,9 to represent any integer, that is any whole number.

This is another example of abstraction, and it's powerful. It means we're able to handle any amount of sheep, regardless of how many stones we have. We've moved from real-world objects – stones, sheep – to the abstract. There is real strength in this: we've created a space where the rules are minimalistic, yet the games that can be played are endless.

Another advantage of abstraction is that it reveals a deeper connection between different fields of mathematics. Results in one field can suggest concepts and ideas to be explored in a related field. Occasionally, methods and techniques developed in one field can be directly applied to another field to create similar results.

Of course, abstraction also has its disadvantages. Some of the mathematical subjects taught at university level – Calculus, Real Analysis, Linear Algebra, Topology, Category Theory, Functional Analysis and Set Theory among them – are very advanced examples of abstraction.

These concepts can be quite difficult to learn. They're often tough to visualise and their rules rather unintuitive to manipulate or reason with. This means students need a degree of mathematical maturity to process the shift from the concrete to the abstract.

Many high school kids come to university with an undeveloped level of intellectual maturity to handle abstraction. This is because of the way mathematics was taught at high school. I have seen many students struggling, giving up or not even attempting to study mathematics because they weren't given the right tools at school level and they think that they just "can't do maths".

Teachers and lecturers can improve this abstract thinking by being aware of abstractions in their subject and learning to demonstrate abstract concepts through concrete examples. Experiments are also helpful to familiarise and assure students of an abstract concept's solidity.

This teaching principle is applied in some school systems, such as Montessori, to help children improve their abstract thinking. Not only does this guide them better through the maze of mathematical abstractions but it can be applied to other sciences as well.

Q.1

Which of the following best summarises the influence of abstraction on Mathematics?

1 ○ **It has made Mathematics less dependent on reality and more useful for application in other disciplines.**

2 **It has enabled us to extract the hidden essence of mathematical rules and widen their application.**

3 **It has minimised rules and maximised data extrapolation so that any mathematical principle can be used in a more holistic manner.**

4 **It has made concepts of advanced Mathematics too complicated to be of any use.**

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Answer key/Solution

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Q.2

Which of the following best describes the main point of the paragraph that precedes the opening paragraph of this passage?

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1 ○ **Mathematics, as a discipline, evolved by exposing the underlying rules of real world problems.**

2 **Mathematics, as a discipline, was believed to be a tool for solving only complex issues.**

3 **Mathematics, as a discipline, evolved by being a tool for exposing the complexities of different natural phenomena.**

4 **Mathematics, as a discipline, is believed to be devoid of much real life application or usage.**

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Q.3

As per the author, how can educators improve abstract thinking in students?

1 ○ **By being aware of the conceptual solidity, and adopting the Montessori style of teaching**

2 By using concrete examples, and teaching Mathematical principles in tandem with other Scientific disciplines

3 By being aware of the conceptual challenges, and using experiments and concrete examples

4 By juxtaposing experiments with concrete examples while being abstractly aware

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Q.4

Why does the author give the examples of Algebra and Geometry in the first paragraph?

1 ○ **To introduce the evolution of abstraction in Mathematics**

2 **To show how Mathematics remains a realistic subject**

3 **To introduce the origin of Mathematics in order to contrast it with abstraction**

4 **To show how Mathematics gradually lost its significance due to the advent of abstraction**

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Q.5

As per the passage, which of the following would best help students learn abstraction in Mathematics?

1 **They should be taught Calculus, Real Analysis, Linear Algebra etc. in high school.**

2 **They should be taught how to visualise and become more intuitive when they enter college.**

3 **They should be taught the right tools to become more mathematically mature during high school.**

4 **They should be taught how to of their mindset of ‘can’t do Maths’.**

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Answer key/Solution

Direction for questions (6-10): Read the given passages and answer the questions that follow.

The Lok Sabha passed the Citizenship (Amendment) Bill on 8 January 2019.The bill violates the Constitution because the classification it adopts is manifestly arbitrary and unjustified. Citizenship law defines a country's political and constitutional identity. Laying down rules that determine membership in our political community only on the basis of one's religious beliefs completely violates this principle.

The Lok Sabha passed the Citizenship (Amendment) Bill, 2016 under the shadow of immense opposition and protest. The proposed amendment seeks to make non-Muslim illegal migrants from Afghanistan, Pakistan, and Bangladesh eligible for citizenship. While its fate in the Rajya Sabha may be uncertain, there is a lurking possibility of it coming into effect as an ordinance.

While the Constitution contains some criteria of citizenship, it grants Parliament the power to determine them through legislation. These criteria, which are contained in the Citizenship Act, have evolved over the years. The courts have stayed away from interfering with these laws till now. Perhaps, the first time they will categorically do so is when the Supreme Court's constitutional bench will hear a challenge to the separate citizenship regime for Assam under Section 6A of the Citizenship Act.

Under the existing law, any person who was born in India till 1987 is an Indian citizen. Hence, till 1987, India followed the criterion of citizenship by birth. This criterion is narrowed down for persons born in India between 1987 and 2003. Such persons must have at least one parent who is an Indian citizen. A person can also be registered as an Indian citizen. A person qualifies for registration if, among other grounds, they are of Indian origin and have been residing in India or outside undivided India, are married to an Indian citizen or are a minor child of Indian citizens. A person can also apply for citizenship through naturalization following the procedures laid down in the act and rules.

In 2004, this scheme was amended by the introduction of the term "illegal migrant," which was defined as someone who enters or stays in India without legal authorisation. The amendment was an obvious response to the anxiety, well founded or otherwise, that Bangladeshi migrants would get Indian citizenship and participate in elections. After the amendment, any child born 2004 onwards to even one parent who is an illegal migrant would be disqualified from citizenship by birth. The amendment bill seeks to change this scheme. It removes the disqualification based on illegal migration for "minority communities," specifically "Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians from Afghanistan, Bangladesh and Pakistan." These groups would not be considered "illegal migrants," thus allowing them and their descendants to be Indian citizens or apply for Indian citizenship.

In other words, the proposed amendment seeks to make two changes, specifically for non-Muslim migrants from these three neighbouring countries: it removes the possibility of their and their descendants' disqualification from citizenship, and accelerates obtaining citizenship by naturalization.

Q.6

Why does the author say that the Citizenship (Amendment) Bill violates the Constitution?

1 **It makes granting of citizenship solely dependent on one's religious beliefs.**

2 **It stops many asylum seekers by unnecessarily discriminating against them because of their ethnicity.**

3 **Its arbitrary and unjustified classifications go against India's political and constitutional identity.**

4 **It ignores the possibility of illegal immigrants being granted asylum in India.**

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Q.7

Non-Muslim illegal migrants from which of the following countries may not be eligible for citizenship as per the amendment?

1 **Pakistan**

2 **Bangladesh**

3 **Afghanistan**

4 **Nepal**

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Q.8

Why have the courts stayed away from interfering with laws related to citizenship?

1 **The constitution has a rigid citizenship law in place.**

2 **The constitution has given the Parliament powers to determine citizenship laws.**

3 **The court orders have proved ineffective in matters of determining citizenship.**

4 **The union governments over the years have made efforts to not let the courts interfere.**

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Q.9

Under the existing law, who among the following cannot register for citizenship in India?

1 **People of Indian origin residing in India and outside undivided India**

2 **People who are married to Indian citizens**

3 Minor children of Indian citizens

4 Minor children of people who have applied for registration

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In 2004, this scheme was amended by the introduction of the term "illegal migrant," which was defined as someone who enters or stays in India without legal authorisation. The amendment was an obvious response to the anxiety, well founded or otherwise, that Bangladeshi migrants would get Indian citizenship and participate in elections. After the amendment, any child born 2004 onwards to even one parent who is an illegal migrant would be disqualified from citizenship by birth. The amendment bill seeks to change this scheme. It removes the disqualification based on illegal migration for "minority communities," specifically "Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians from Afghanistan, Bangladesh and Pakistan." These groups would not be considered "illegal migrants," thus allowing them and their descendants to be Indian citizens or apply for Indian citizenship.

In other words, the proposed amendment seeks to make two changes, specifically for non-Muslim migrants from these three neighbouring countries: it removes the possibility of their and their descendants' disqualification from citizenship, and accelerates obtaining citizenship by naturalization.

Q.10

What key aspect of the 2004 amendment is the current amendment trying to change?

1 Removing disqualification on the basis of illegal migration for everyone

2 Strengthening the 'illegal migrant' clause of the 2004 amendment

3 Removing disqualification on the basis of illegal migration for the minority communities

4 Allowing registration to illegal migrants of one specific country

✔

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Answer key/Solution

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Sterne combines the two mediums of satire and sentimentality within his work to show the relationship between humour and emotion, between the body and mind, and between character and narrative. Furthermore, by means of the humour of the text it is possible to miss the intricacies of emotion that Sterne imbeds within his novel. *Tristram Shandy* presents mathematical proofs in order to show the location of the mind and body; it depicts characters not through words, but through simple actions such as a soft touching of the hand; it includes metanarratives, which invoke emotion in other characters as much as they do the narrator and reader; and, above all else it argues for moments of sentimentality, for moments when distraction and digression fade and all that remains is the resemblance of all mankind.

The sentimentality of Sterne's *Tristram Shandy* is present *ab ovo* and persists throughout the narrative as a complex relationship of mind and body. The text includes an early definition of their relationship by means of Tristram himself who states, "----I tremble to think what a foundation had been laid for a thousand weaknesses both of body and mind, which no skill of the physician or the philosopher could ever afterwards have set thoroughly to rights". In effect, the body and mind are similar to the middle section of a venn diagram, where it is impossible to set them "to rights" or "into a proper condition or order" (OED). Furthermore, when there is change in one it effects the other and they share the entirety of their elements, similar to their weaknesses. This idea is present within an essay on characterization and body in *Tristram Shandy* , by Juliet McMaster who states, "mind and body—with the indissoluble links between them, and their simultaneous tragic and comic discontinuity—are surely the major overarching subject of *Tristram Shandy* ".

Q.11

According to the author, the novelist Laurence Sterne's uniqueness, in comparison to other major novelists of the 18th Century, is exhibited:

1 **through his use of sentimentality and satire that pervaded the literary work of the century.**

2 **through his extraordinary ingenuity that could equally invoke empathy and laughter.**

3 **through his adherence to the laid down rules of novel writing scrupulously followed by only few other novelists of the century.**

4 **through the body of his novels that was remarkable for the use of parodies, satires, and denunciations.**

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Q.12

According to the passage, the role of sentimentality in the 18th century novels:

1 occupies a secondary place when the literary movements of the century are discussed.

2 comes as a counteract to the much pragmatic approach to literature assumed by the writers of the 17th century.

3 set a new trend in the literary world and exerted great influence on novelists like Jonathan Swift, Henry Fielding, and Daniel Defoe.

4 is much frowned upon by the novelists of today for its excessive leaning towards emotional imbalance.

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Q.13

According to the author, Tristram contends chiefly for instants:

1 that combine the two mediums of satire and sentimentality to show only the association of body and mind.

2 of sentimentality that occasionally rule the better parts of his characters in the novel.

3 when Laurence Sterne would like to be viewed as a progenitor of sentimentality in the English literary world.

4 when disruption and digression disappear and all that remains is the alikeness of all human race.

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Q.14

The main purpose of the passage is to:

1 argue that *Trsistram Shandy* , despite its sentimentality, has been viewed as a trendsetter in the literary world.

2 show how sentimentality continues throughout Sterne's *Tristram Shandy* as a complex relationship of mind and body.

3 depict how Sterne was effective in depicting his characters in *Tristram Shandy* through words and action.

4 show how Laurence Sterne's aesthetic aspirations were predominantly ruled by his projection of sentimentality.

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Q.15

Which of the following is the main point of the author in the last paragraph?

1 **Game of Thrones managed to not tell an unadulterated story of the fight between the good and the evil.**

2 **Game of Thrones earlier narrated a complex tale where things were not necessarily black and white.**

3 **Game of Thrones earned a strong fan base because its characters were never given an easy choice.**

4 **Game of Thrones became popular due to its focus on resolving the true dilemma of its characters.**

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Q.16

In the third paragraph, the phrase "trying to eat melting ice cream with a fork" means:

1 **Benioff and Weiss were bound to fail in telling the story of GOT as they were from Hollywood.**

2 **Hollywood makes it impossible for anyone to tell a linear story.**

3 **Hollywood makes it utterly impossible for TV shows like GOT to have a plot hole free narrative.**

4 **Benioff and Weiss had an impossible task as they lacked the ability of narrating a sociological tale.**

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Q.17

Which of the following is not a feature of a sociological narratives?

1 **Personal stories of the main characters**

2 **The influence of external factors on the characters' inner lives**

3 **A centralised protagonist who carries the burden of the narrative**

4 **A rationalization of one's action based on the incentives earned**

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Q.18

Which of the following, if true, would weaken the contention of the author that killing Hitler during his childhood wouldn't have mattered?

1 **There were many other leaders who shared the same views as Hitler but only the latter found favour with the masses.**

2 **The Germans were angry with their status in the world which made it easier for Hitler to manipulate their sentiments.**

3 **Fascism as a movement predates the rise of Hitler in Germany.**

4 **Hitler was a charismatic leader who was a master manipulator of people's psyche.**

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The appeal of a show that routinely kills major characters signals a different kind of storytelling, where a single charismatic and/or powerful individual, along with his or her internal dynamics, doesn't carry the whole narrative and explanatory burden. Given the dearth of such narratives in fiction and in TV, this approach clearly resonated with a large fan base that latched on to the show.

In sociological storytelling, the characters have personal stories and agency, of course, but those are also greatly shaped by institutions and events around them. The incentives for characters' behaviour come noticeably from these external forces, too, and even strongly influence their inner life.

People then fit their internal narrative to align with their incentives, justifying and rationalizing their behaviour along the way. (Thus the famous Upton Sinclair quip: "It is difficult to get a man to understand something, when his salary depends upon his not understanding it.")

The overly personal mode of storytelling or analysis leaves us bereft of deeper comprehension of events and history. Understanding Hitler's personality alone will not tell us much about rise of fascism, for example. Not that it didn't matter, but a different demagogue would probably have appeared to take his place in Germany in between the two bloody world wars in the 20th century. Hence, the answer to "would you kill baby Hitler,?" sometimes presented as an ethical time-travel challenge, should be "no," because it would very likely not matter much. It is not a true dilemma. […]

That tension between internal stories and desires, psychology and external pressures, institutions, norms and events was exactly what *Game of Thrones* showed us for many of its characters, creating rich tapestries of psychology but also behaviour that was neither saintly nor fully evil at any one point. It was something more than that: you could *understand* why even the characters undertaking evil acts were doing what they did, how their good intentions got subverted, and how incentives structured behaviour. The complexity made it much richer than a simplistic morality tale, where unadulterated good fights with evil.

Q.19

Which of the following can be inferred from the Upton Sinclair quotation mentioned in the passage?

1 **A hungry man can’t be expected to deliberate meditatively on the importance of life.**

2 **A person who is busy earning his livelihood will lead a law abiding life.**

3 **A person can’t challenge the authority figures in his/her life.**

4 **A man guided by personal incentives can have a compromised critical faculty.**

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Answer key/Solution

Direction for questions (20-24): Read the given passages and answer the questions that follow.

From the perspective of 19th-century visitors to the United States, the country's system of higher education was a joke. It wasn't even a system, just a random assortment of institutions claiming to be colleges that were scattered around the countryside. Underfunded, academically underwhelming, located in small towns along the frontier, and lacking in compelling social function, the system seemed destined for obscurity. But by the second half of the 20th century, it had assumed a dominant position in the world market in higher education. Compared with peer institutions in other countries, it came to accumulate greater wealth, produce more scholarship, win more Nobel prizes, and attract a larger proportion of talented students and faculty. US universities dominate global rankings.

How did this remarkable transformation come about? The characteristics of the system that seemed to be disadvantages in the 19th century turned out to be advantages in the 20th. Its modest state funding, dependence on students, populist aura, and obsession with football gave it a degree of autonomy that has allowed it to stand astride the academic world.

The system emerged under trying circumstances early in US history, when the state was weak, the market strong, and the church divided. Lacking the strong support of church and state, which had fostered the growth of the first universities in medieval Europe, the first US colleges had to rely largely on support from local elites and tuition-paying student consumers. They came into being with the grant of a corporate charter from state government, but this only authorised these institutions. It didn't fund them.

The rationale for starting a college in the 19th century usually had less to do with promoting higher learning than with pursuing profit. For most of US history, the primary source of wealth was land, but in a country with a lot more land than buyers, the challenge for speculators was how to convince people to buy their land rather than one of the many other available options. (George Washington, for instance, accumulated some 50,000 acres in the western territories, and spent much of his life unsuccessfully trying to monetise his holdings.) The situation became even more desperate in the mid-19th century, when the federal government started giving away land to homesteaders. One answer to this problem was to show that the land was not just another plot in a dusty agricultural village but prime real estate in an emerging cultural centre. And nothing said culture like a college. Speculators would 'donate' land for a college, gain a state charter, and then sell the land around it at a premium, much like developers today who build a golf course and then charge a high price for the houses that front on to it.

Of course, chartering a college is not the same as actually creating a functioning institution. So, speculators typically sought to affiliate their emergent college with a religious denomination, which offered several advantages. One was that it segmented the market. A Presbyterian college would be more attractive to Presbyterian consumers than the Methodist college in the next town. Another was staffing. Until the late-19th century, nearly all presidents and most faculty at US colleges were clergymen, who were particularly attractive to college founders for two reasons. They were reasonably well-educated, and they were willing to work cheap.

Q.20

Which of the following conditions, if true, would invalidate the passage's main argument?

1 **The education in America in the late 19th century was supervised by clergymen who were presidents at US colleges.**

2 **Investors donated land for a college and after they gained charter from the State, they sold the land around it.**

3 **The investors in colleges of the 19th century America sought to affiliate their budding colleges to religious denominations for purely spiritual reason.**

4 **The reason for starting a college in the 19th century America was to earn more to earn profit than to promote higher learning.**

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Answer key/Solution

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The rationale for starting a college in the 19th century usually had less to do with promoting higher learning than with pursuing profit. For most of US history, the primary source of wealth was land, but in a country with a lot more land than buyers, the challenge for speculators was how to convince people to buy their land rather than one of the many other available options. (George Washington, for instance, accumulated some 50,000 acres in the western territories, and spent much of his life unsuccessfully trying to monetise his holdings.) The situation became even more desperate in the mid-19th century, when the federal government started giving away land to homesteaders. One answer to this problem was to show that the land was not just another plot in a dusty agricultural village but prime real estate in an emerging cultural centre. And nothing said culture like a college. Speculators would 'donate' land for a college, gain a state charter, and then sell the land around it at a premium, much like developers today who build a golf course and then charge a high price for the houses that front on to it.

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Q.21

Which of the following conditions would weaken the efficacy of education in America in the 20th century?

1 **The first US colleges had to rely largely on support from local elites and tuition-paying student consumers.**

2 **Education in America began to be established and institutionalized as a component of ecclesiastical endeavour in its quest for spiritual well-being of its people.**

3 **What did not seem to work for education in the 19th century American began to work for it in the 20th century.**

4 **Education in America had assumed a dominant position in the world market in higher education in the second half of the 20th century.**

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Answer key/Solution

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Q.22

What is the main idea that the author is trying to highlight in the passage?

1 **The seeming disadvantage in one context could prove to be a huge advantage in another context.**

2 **The vast expanse of land in America had very little commercial value in the 19th century; so, the government evolved a land reform policy.**

3 **Education in America in the 19th century was seen as disorderly and profit-oriented; however, in the 20th century it saw a great leap and established itself as the dominant education hub of the world.**

4 **Education in America was largely imparted in line with the education system prevalent in the Mediaeval Europe.**

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Answer key/Solution

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Q.23

According to the author, the federal government began to give away land to homesteaders because:

1 **that way the government could show that the land was not only an agricultural land but a prime real estate and a developing cultural hub.**

2 **that way the vast land would be populated, and the colleges built in those places would attract students from there.**

3 **it was the opportune time to gain the confidence of the people and instigate economic reform of America.**

4 **the government want the settlers to be economically self-sufficient and contribute towards nation building in the 19th century America.**

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Answer key/Solution

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Q.24

On the basis of the passage, which of the following is the reason why clergymen were preferred as presidents and faculty of US colleges by the college founders in the 19th century?

1 **Presidents and faculty of US colleges who were clergymen could also help the students and the society in their spiritual growth.**

2 **Education was dominated by the Church.**

3 **The educational system of the time necessitated the college founders to hire a maximum number of teachers with ecclesiastical experience.**

4 **The college founders found that the clergymen were well-educated, and they were also ready to work for less money.**

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Answer key/Solution

Q.25

Directions for question (25): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

The world's most lethal and devastating weapon! Able to rectify and destroy, to heal and to harm! This tool, which can be used as the most harmonious of presents—wrapped and bound with the purest of intentions, has been the same that has ruined entire countries and cultures—delivered with manipulative vengeance capable of planting lethal thoughts. Even used in the smallest sum, its potency can carry the greatest of meaning. I believe in the power of words.

1 **Words are the most powerful weapons in the world.**

2 **One should be careful of using words.**

3 **Words are always disguised as gifts which eventually harm the receiver.**

4 **Words are potent tools with a lot of potential for causing damage.**

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Answer key/Solution

Q.26

Directions for question (26): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

The corruption of power is one of the most important psychosocial dynamics behind many important turning points in history, and in how the ills of society arise. In response, we have created elections, checks and balances, and laws and mechanisms that constrain the executive. Destructive historical figures often believe that they must stay in power because it is they, and only they, who can lead the people—and that any alternative would be calamitous. Leaders tend to get isolated, become surrounded by sycophants and succumb easily to the human tendency to self-rationalize. There are several examples in history of a leader who starts in opposition with the best of intentions and ends up acting brutally and turning into a tyrant if they take power.

1 Power corrupts and absolute power corrupts absolutely.

2 Leaders with the best of intentions inevitably succumb to the lure of power and become corrupt.

3 The corrupting influence of power has been a historical phenomenon, and this has led to the establishment of checks and balances in the society.

4 Corruption has been the core issue in the psychosocial dynamics of our world from ancient times with many powerful leaders becoming sycophants and delusional.

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Answer key/Solution

Q.27

Directions for question (27): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Logically, somebody who never puts effort into anything should be the master of effortlessness. But it is not so. If you want to know effortlessness, you need to know effort. When you reach the peak of effort, you become effortless. Only a person who knows what it is to work understands rest. Paradoxically, those who are always resting know no rest; they only sink into dullness and lethargy. This is the way of life.

1 People first need to understand the value of effort in order to master effortlessness.

2 Only those who are masters of something can understand the value of resting.

3 Only those who do something can afford to do nothing.

4 People need to first in order to understand rest.

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Answer key/Solution

Q.28

Directions for question (28): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. There is, as yet, no room for complacency about the care of dying cancer patients.
2. In addition, adequate resources are required to meet the social and health care needs of cancer patients at home.
3. There is still some way to go before all dying cancer patients receive high quality care.
4. Education in the principles of palliative care is needed at all levels of the NHS if high standards are to be reached.
5. At present, death from cancer is dealt with in terms of major decisions of the clinicians, of the family, and of the patient.

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Answer key/Solution

Q.29

Directions for question (29): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. She studied in France; she loved French literature.
2. There is no doubt, though, that her son has portrayed her, as truthfully as he could, in his Stalingrad dilogy.
3. In spite of this disability, she was clearly an unusually independent woman for her time.
4. She left her first husband for Semyon Osipovich Grossman, a Jewish Ukrainian chemical engineer who had graduated from the University of Bern.
5. Yekaterina was born with a misaligned hip joint.

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Answer key/Solution

Q.30

Directions for question (30): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. Throughout the autumn and winter, we told and re-told stories, seeing them in a new light, gently mentioning things we knew about one another's lives, murky memories, events we had not mentioned for years.
2. In the awful, wearying months in which Harvey Weinstein's ritualistic mistreatment of women was being recounted daily in the media, I found myself, like so many others, wondering and talking about the men in my life: ex-boyfriends, ex-stalkers, ex-harassers, ex-gropers.
3. Soon after the allegations against him were published, Weinstein's wife Georgina Chapman announced she was leaving him.
4. My friends and I looked back, fitfully, in agitation, at the things we had endured, the things we had kept silent about, and we looked around at the things that were bothering us now.
5. We talked with a renewed anger and frankness, a renewed sense of permission in so doing – and perhaps, too, a renewed sense of simplicity.

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Answer key/Solution

Q.31

Directions for question (31): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. They also shape our expectations of what love will be like – expectations by which we will want to abide, leading us to shoehorn our feelings into that idealised form.
2. This changed with the advent of modernity, where romantic love acquired the cultural acclaim that it commands today.
3. Just a few centuries ago, romance held a much less central position in the cultural imaginary than it does today: love was primarily a question of family allegiances and controlled reproduction.
4. The stories of love we find on the silver screen are not just representations of the emotions within us.

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Answer key/Solution

Q.32

Directions for question (32): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. Viral DNA sequences, incorporated long ago into the genomes of animals, may play a role in long-term memory formation.
2. These vesicles circulate in the body, but their purpose is largely unknown.
3. Two studies, one on mice and another on flies, focused on structures called *extracellular vesicles*, which form as the cell membrane pinches off from the cell.
4. The studies showed that many vesicles contained a gene called *Arc* that is implicated in long-term memory formation.

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Answer key/Solution

Q.33

Directions for question (33): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. If these minerals did originate in the mantle, they may provide information about the Earth's geological state at the moment it collided with a protoplanet, creating the terrestrial debris from which the Moon was formed.
2. The presence of these minerals bolsters the theory that the massive Aitken Basin at the Moon's South Pole was created by an enormous impact that exposed the lunar mantle and made it possible to study the Moon's deep history.
3. China's Chang'e-4 mission may have identified material from the Moon's mantle.
4. The Yutu-2 rover, which is exploring the Von Kármán crater on the far side of the Moon, identified two minerals that are not typical of the lunar surface: low-calcium pyroxene and olivine.

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Answer key/Solution

Q.34

Directions for question (34): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. We walked all the cemeteries and all the industrial yards.
2. It didn't take us long to walk every neighbourhood in Manhattan.
3. We eventually walked over every single bridge in the greater New York metropolitan area – and there are a lot of them.
4. So, pretty soon, we started exploring the outer boroughs as well.

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Answer key/Solution

Sec 2

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

Two wooden cuboids, each of dimension 4 cm × 5 cm × 10 cm, and 2 more wooden cuboids, each of dimension 6 cm × 5 cm × 10 cm, are painted with blue color on all sides. These 4 cuboids are stacked in such a way that a cube of dimensions 10 cm × 10 cm × 10 cm is formed. Now each pair of the opposite faces of the so formed cube are painted with a different colour among black, pink and green. This cube is now cut into smaller cubes of size 1 cm × 1 cm × 1 cm.

Q.35

How many smaller cubes have exactly 3 different colors painted on their surfaces?

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Answer key/Solution

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

Two wooden cuboids, each of dimension 4 cm × 5 cm × 10 cm, and 2 more wooden cuboids, each of dimension 6 cm × 5 cm × 10 cm, are painted with blue color on all sides. These 4 cuboids are stacked in such a way that a cube of dimensions 10 cm × 10 cm × 10 cm is formed. Now each pair of the opposite faces of the so formed cube are painted with a different colour among black, pink and green. This cube is now cut into smaller cubes of size 1 cm × 1 cm × 1 cm.

Q.36

How many smaller cubes are colourless?

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Answer key/Solution

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

Two wooden cuboids, each of dimension 4 cm × 5 cm × 10 cm, and 2 more wooden cuboids, each of dimension 6 cm × 5 cm × 10 cm, are painted with blue color on all sides. These 4 cuboids are stacked in such a way that a cube of dimensions 10 cm × 10 cm × 10 cm is formed. Now each pair of the opposite faces of the so formed cube are painted with a different colour among black, pink and green. This cube is now cut into smaller cubes of size 1 cm × 1 cm × 1 cm.

Q.37

How many cubes have exactly 2 colors painted on their surfaces?

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Answer key/Solution

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

Two wooden cuboids, each of dimension 4 cm × 5 cm × 10 cm, and 2 more wooden cuboids, each of dimension 6 cm × 5 cm × 10 cm, are painted with blue color on all sides. These 4 cuboids are stacked in such a way that a cube of dimensions 10 cm × 10 cm × 10 cm is formed. Now each pair of the opposite faces of the so formed cube are painted with a different colour among black, pink and green. This cube is now cut into smaller cubes of size 1 cm × 1 cm × 1 cm.

Q.38

All these smaller cubes of dimension 1 cm × 1 cm × 1 cm are painted with red colour and again joined to make the bigger cube of dimension 10 cm × 10 cm × 10 cm. This cube is then placed on a table. If infinite number of identical yellow coloured cubes of dimension 1 cm × 1 cm × 1 cm are available, then what is the minimum number of yellow cubes required to cover this big red cube such that a carpenter seeing it can see it as a yellow coloured cube?

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Answer key/Solution

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

Six friends - Saral, Anurag, Shashank, Nitish, Manu and Vaibhav - went for a picnic. They played 4 games - pool, cricket, table tennis and poker - during the picnic. At the end, Saral ranked all the remaining five in all 4 games. He ranked them on a scale of 1 to 5 in each game and each friend got a distinct rank in any game. However some of them might get the same rank in different games. After the ranking was done, it was found that the sum of all the rankings of Anurag, Shashank, Nitish, Manu and Vaibhav were in an increasing Arithmetic progression, in the same order.

Also, it is known that
I. Vaibhav didn't get rank 5 in any game and Anurag didn't get rank 2 in any game.
II. All 4 rankings of Manu consisted of 2 different numbers.
III. Shashank got rank 1 in poker and Nitish got rank 1 in cricket.

Q.39

For how many friends, the exact rank of each of the 4 games, can be calculated?

✔

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Answer key/Solution

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

Six friends - Saral, Anurag, Shashank, Nitish, Manu and Vaibhav - went for a picnic. They played 4 games - pool, cricket, table tennis and poker - during the picnic. At the end, Saral ranked all the remaining five in all 4 games. He ranked them on a scale of 1 to 5 in each game and each friend got a distinct rank in any game. However some of them might get the same rank in different games. After the ranking was done, it was found that the sum of all the rankings of Anurag, Shashank, Nitish, Manu and Vaibhav were in an increasing Arithmetic progression, in the same order.

Also, it is known that
I. Vaibhav didn't get rank 5 in any game and Anurag didn't get rank 2 in any game.
II. All 4 rankings of Manu consisted of 2 different numbers.
III. Shashank got rank 1 in poker and Nitish got rank 1 in cricket.

Q.40
If Shashank's rank in pool is 5, then what is Manu's rank in table tennis?

✔

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Answer key/Solution

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

Six friends - Saral, Anurag, Shashank, Nitish, Manu and Vaibhav - went for a picnic. They played 4 games - pool, cricket, table tennis and poker - during the picnic. At the end, Saral ranked all the remaining five in all 4 games. He ranked them on a scale of 1 to 5 in each game and each friend got a distinct rank in any game. However some of them might get the same rank in different games. After the ranking was done, it was found that the sum of all the rankings of Anurag, Shashank, Nitish, Manu and Vaibhav were in an increasing Arithmetic progression, in the same order.

Also, it is known that
I. Vaibhav didn't get rank 5 in any game and Anurag didn't get rank 2 in any game.
II. All 4 rankings of Manu consisted of 2 different numbers.
III. Shashank got rank 1 in poker and Nitish got rank 1 in cricket.

Q.41
What is Anurag's rank in cricket?

1 ○ **1**

2 **3**

3 **4**

4 **5**

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Answer key/Solution

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

Six friends - Saral, Anurag, Shashank, Nitish, Manu and Vaibhav - went for a picnic. They played 4 games - pool, cricket, table tennis and poker - during the picnic. At the end, Saral ranked all the remaining five in all 4 games. He ranked them on a scale of 1 to 5 in each game and each friend got a distinct rank in any game. However some of them might get the same rank in different games. After the ranking was done, it was found that the sum of all the rankings of Anurag, Shashank, Nitish, Manu and Vaibhav were in an increasing Arithmetic progression, in the same order.

Also, it is known that
I. Vaibhav didn't get rank 5 in any game and Anurag didn't get rank 2 in any game.
II. All 4 rankings of Manu consisted of 2 different numbers.
III. Shashank got rank 1 in poker and Nitish got rank 1 in cricket.

Q.42
If Manu's rank in pool is 5, then what is his rank in cricket?

1 **2**

2 **3**

3 **5**

4 **Cannot be determined**

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Answer key/Solution

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

In a game called 'STRAIGHTUN' a ball can be moved in straight lines among seven points – P, Q, R, S, T, U, and V in the following manner:
The ball can be moved between the points: P and S, P and R, Q and R, Q and V, R and U, V and T, S and Q, T and U in either way. The ball cannot be moved between any two points directly other than those mentioned above. Each time one player is allowed to move the ball among these points, with the condition that the ball does not touch any point more than once. A player wins Rs. 15, Rs. 25, Rs. 45, Rs. 55 and Rs. 75 when the ball touches the points P, U, S, T and V respectively. A player loses Rs. 35 and Rs. 65 when the ball touches the points R and Q respectively.
At the beginning of the game, a player is given a starting point from where the ball has to be started and the end point where the ball has to be stopped. At the end of the game the player wins/loses the money which is the total amount that one wins/loses at each point which the ball touches, including the starting and ending points. A player tries to win the maximum possible amount while moving the ball between these points.

Q.43
What is the maximum possible amount (in rupees) that can be won by a player while moving the ball from point T to point R?

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Answer key/Solution

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

In a game called 'STRAIGHTUN' a ball can be moved in straight lines among seven points – P, Q, R, S, T, U, and V in the following manner:
The ball can be moved between the points: P and S, P and R, Q and R, Q and V, R and U, V and T, S and Q, T and U in either way. The ball cannot be moved between any two points directly other than those mentioned above. Each time one player is allowed to move the ball among these points, with the condition that the ball does not touch any point more than once. A player wins Rs. 15, Rs. 25, Rs. 45, Rs. 55 and Rs. 75 when the ball touches the points P, U, S, T and V respectively. A player loses Rs. 35 and Rs. 65 when the ball touches the points R and Q respectively.
At the beginning of the game, a player is given a starting point from where the ball has to be started and the end point where the ball has to be stopped. At the end of the game the player wins/loses the money which is the total amount that one wins/loses at each point which the ball touches, including the starting and ending points. A player tries to win the maximum possible amount while moving the ball between these points.

Q.44
If the ball can be moved from Q to V and not from V to Q, and similarly from R to U and not from U to R, then what is the maximum possible amount (in rupees) that can be won by moving the ball starting from point P?

1 **135**

2 **150**

3 **90**

4 **155**

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Answer key/Solution

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

In a game called 'STRAIGHTUN' a ball can be moved in straight lines among seven points – P, Q, R, S, T, U, and V in the following manner:
The ball can be moved between the points: P and S, P and R, Q and R, Q and V, R and U, V and T, S and Q, T and U in either way. The ball cannot be moved between any two points directly other than those mentioned above. Each time one player is allowed to move the ball among these points, with the condition that the ball does not touch any point more than once. A player wins Rs. 15, Rs. 25, Rs. 45, Rs. 55 and Rs. 75 when the ball touches the points P, U, S, T and V respectively. A player loses Rs. 35 and Rs. 65 when the ball touches the points R and Q respectively.
At the beginning of the game, a player is given a starting point from where the ball has to be started and the end point where the ball has to be stopped. At the end of the game the player wins/loses the money which is the total amount that one wins/loses at each point which the ball touches, including the starting and ending points. A player tries to win the maximum possible amount while moving the ball between these points.

Q.45
What is the maximum possible amount (in rupees) a player may lose by moving the ball, touching exactly 4 points?

1 **10**

2 **20**

3 **30**

4 **40**

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Answer key/Solution

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

In a game called 'STRAIGHTUN' a ball can be moved in straight lines among seven points – P, Q, R, S, T, U, and V in the following manner:
The ball can be moved between the points: P and S, P and R, Q and R, Q and V, R and U, V and T, S and Q, T and U in either way. The ball cannot be moved between any two points directly other than those mentioned above. Each time one player is allowed to move the ball among these points, with the condition that the ball does not touch any point more than once. A player wins Rs. 15, Rs. 25, Rs. 45, Rs. 55 and Rs. 75 when the ball touches the points P, U, S, T and V respectively. A player loses Rs. 35 and Rs. 65 when the ball touches the points R and Q respectively.
At the beginning of the game, a player is given a starting point from where the ball has to be started and the end point where the ball has to be stopped. At the end of the game the player wins/loses the money which is the total amount that one wins/loses at each point which the ball touches, including the starting and ending points. A player tries to win the maximum possible amount while moving the ball between these points.

Q.46
In how many distinct ways can the ball be moved from point P to point T?

1 **0**

2 **1**

3 **2**

4 **more than 2**

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Answer key/Solution

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

In the 2018 edition of Champions league, eight teams participated - Liverpool, Barcelona, Real Madrid, Juventus, Ajax, Manchester City, Napoli and Bayern Munich. There were divided into two groups, where one group consisted of teams Liverpool, Barcelona, Real Madrid and Juventus, and the other group consisted of the remaining four teams. Each team of a group played one match against only one team of the other group. In order to qualify for the next round following rules had to be followed:
1. Team with a higher score wins the round.
2. If both the teams have equal score, then penalty shootout needs to be done just to decide the winner but the goals scored during the penalty shootout won't be counted in the total goals scored by these teams.
Note: Total score of the team = Number of goals scored by that team

There were total three rounds in the Champions league, with each round being a knockout round. Four teams qualified for the second round.
Matches played in round 1 between the two groups are as follows:

Match 1: Liverpool vs Napoli
Match 2: Barcelona vs Bayern Munich
Match 3: Real Madrid vs Manchester city
Match 4: Juventus vs Ajax

In round 2, match 1 was played between the winners of match 1 and match 2 of round 1, and match 2 was played between the winners of match 3 and match 4 of round 1.
The following table gives the information regarding the total goals scored and goals conceded by the teams in the first two rounds:

Teams	Goals Conceded (Goals scored by its opposite team)	Goals Scored
Liverpool	5	5
Napoli	3	2
Barcelona	3	7
Bayern Munich	4	1
Real Madrid	7	4
Manchester City	3	3
Juventus	2	0
Ajax	1	6

There was only one match where penalty shootout was played and this match was played in the 1st round.

Q.47
How many goals were scored by the team, which lost the match 2 of round 2, in that match?

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Answer key/Solution

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

In the 2018 edition of Champions league, eight teams participated - Liverpool, Barcelona, Real Madrid, Juventus, Ajax, Manchester City, Napoli and Bayern Munich. There were divided into two groups, where one group consisted of teams Liverpool, Barcelona, Real Madrid and Juventus, and the other group consisted of the remaining four teams. Each team of a group played one match against only one team of the other group. In order to qualify for the next round following rules had to be followed:
1. Team with a higher score wins the round.
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Barcelona	3	7
Bayern Munich	4	1
Real Madrid	7	4
Manchester City	3	3
Juventus	2	0
Ajax	1	6

There was only one match where penalty shootout was played and this match was played in the 1st round.

Q.48
Which of the following teams was involved in the penalty shootout?

1 **Ajax**

2 **Barcelona**

3 **Real Madrid**

4 **Liverpool**

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Answer key/Solution

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

In the 2018 edition of Champions league, eight teams participated - Liverpool, Barcelona, Real Madrid, Juventus, Ajax, Manchester City, Napoli and Bayern Munich. There were divided into two groups, where one group consisted of teams Liverpool, Barcelona, Real Madrid and Juventus, and the other group consisted of the remaining four teams. Each team of a group played one match against only one team of the other group. In order to qualify for the next round following rules had to be followed:
1. Team with a higher score wins the round.
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The following table gives the information regarding the total goals scored and goals conceded by the teams in the first two rounds:

Teams	Goals Conceded (Goals scored by its opposite team)	Goals Scored
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Napoli	3	2
Barcelona	3	7
Bayern Munich	4	1
Real Madrid	7	4
Manchester City	3	3
Juventus	2	0
Ajax	1	6

There was only one match where penalty shootout was played and this match was played in the 1st round.

Q.49
Which two teams played the final round?

1 **Barcelona, Madrid**

2 **Liverpool, Ajax**

3 **Barcelona, Ajax**

4 **Liverpool, Madrid.**

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Answer key/Solution

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

In the 2018 edition of Champions league, eight teams participated - Liverpool, Barcelona, Real Madrid, Juventus, Ajax, Manchester City, Napoli and Bayern Munich. There were divided into two groups, where one group consisted of teams Liverpool, Barcelona, Real Madrid and Juventus, and the other group consisted of the remaining four teams. Each team of a group played one match against only one team of the other group. In order to qualify for the next round following rules had to be followed:
1. Team with a higher score wins the round.
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Teams	Goals Conceded (Goals scored by its opposite team)	Goals Scored
Liverpool	5	5
Napoli	3	2
Barcelona	3	7
Bayern Munich	4	1
Real Madrid	7	4
Manchester City	3	3
Juventus	2	0
Ajax	1	6

There was only one match where penalty shootout was played and this match was played in the 1st round.

Q.50
Total how many goals were scored in all the matches of the 1st round?

1 **22**

2 **17**

3 **20**

4 **18**

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Answer key/Solution

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

Mrs. Akanksha is having a busy day as some guests are arriving at her place for lunch. She decided to cook six different dishes for the guests. The dishes she decided for the meal are Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs. She decided to use her large sized oven so that she can manage to cook all the dishes on time. Further each dish has a fixed cooking time as per the recipe book she is following. That cooking time (in minutes) for Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs are 44, 26, 28, 25, 37 and 52 respectively. It is known that she opens the oven for seven times. Everytime she opened the oven, she either placed some dishes in it or took out the cooked dishes from it or both. The order she followed to place or take out the dishes is given in the following table. She started her cooking at 11 am.

Oven Opened	Dish placed in	Dish cooked out
1st Time	Haggis, Scotch eggs	
2nd time	Trifle	
3rd Time	White pudding	
4th Time	Offal	Haggis, Trifle
5th Time	Black pudding	White pudding, Scotch eggs
6th Time		Offal
7th Time		Black pudding

Q.51

What is the total time (in minutes) taken by Akanksha to cook all the dishes?

1 **85**

2 **80**

3 **70**

4 **75**

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Answer key/Solution

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

Mrs. Akanksha is having a busy day as some guests are arriving at her place for lunch. She decided to cook six different dishes for the guests. The dishes she decided for the meal are Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs. She decided to use her large sized oven so that she can manage to cook all the dishes on time. Further each dish has a fixed cooking time as per the recipe book she is following. That cooking time (in minutes) for Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs are 44, 26, 28, 25, 37 and 52 respectively. It is known that she opens the oven for seven times. Everytime she opened the oven, she either placed some dishes in it or took out the cooked dishes from it or both. The order she followed to place or take out the dishes is given in the following table. She started her cooking at 11 am.

Oven Opened	Dish placed in	Dish cooked out
1st Time	Haggis, Scotch eggs	
2nd time	Trifle	
3rd Time	White pudding	
4th Time	Offal	Haggis, Trifle
5th Time	Black pudding	White pudding, Scotch eggs
6th Time		Offal
7th Time		Black pudding

Q.52

For how many minutes Offal and White pudding were together in the oven?

1 **8**

2 **10**

3 **12**

4 **6**

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Answer key/Solution

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

Mrs. Akanksha is having a busy day as some guests are arriving at her place for lunch. She decided to cook six different dishes for the guests. The dishes she decided for the meal are Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs. She decided to use her large sized oven so that she can manage to cook all the dishes on time. Further each dish has a fixed cooking time as per the recipe book she is following. That cooking time (in minutes) for Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs are 44, 26, 28, 25, 37 and 52 respectively. It is known that she opens the oven for seven times. Everytime she opened the oven, she either placed some dishes in it or took out the cooked dishes from it or both. The order she followed to place or take out the dishes is given in the following table. She started her cooking at 11 am.

Oven Opened	Dish placed in	Dish cooked out
1st Time	Haggis, Scotch eggs	
2nd time	Trifle	
3rd Time	White pudding	
4th Time	Offal	Haggis, Trifle
5th Time	Black pudding	White pudding, Scotch eggs
6th Time		Offal
7th Time		Black pudding

Q.53

For how many minutes exactly two dishes were there in the oven?

1 **33**

2 **18**

3 **25**

4 **20**

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Answer key/Solution

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

Mrs. Akanksha is having a busy day as some guests are arriving at her place for lunch. She decided to cook six different dishes for the guests. The dishes she decided for the meal are Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs. She decided to use her large sized oven so that she can manage to cook all the dishes on time. Further each dish has a fixed cooking time as per the recipe book she is following. That cooking time (in minutes) for Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs are 44, 26, 28, 25, 37 and 52 respectively. It is known that she opens the oven for seven times. Everytime she opened the oven, she either placed some dishes in it or took out the cooked dishes from it or both. The order she followed to place or take out the dishes is given in the following table. She started her cooking at 11 am.

Oven Opened	Dish placed in	Dish cooked out
1st Time	Haggis, Scotch eggs	
2nd time	Trifle	
3rd Time	White pudding	
4th Time	Offal	Haggis, Trifle
5th Time	Black pudding	White pudding, Scotch eggs
6th Time		Offal
7th Time		Black pudding

Q.54

If Akanksha decides to cook Steak and Kidney Pie also, whose cooking time is 36 minutes, then when must she place it in the oven so that she does not need to open the oven for extra time?

1 **1st time**

2 **2nd time**

3 **3rd time**

4 **4th time**

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Answer key/Solution

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

Eight friends – Jaadu, Basanti, Hulk, Kailasha, Boby, Lamboo, Kippu and Chiya - are sitting at a circular table, facing towards the center. Each of them has a distinct hobby among - gossiping, make-up, sports, photography, cooking, traveling, dancing and singing - not necessarily in the same order. They live in same building, having three floors. Not more than three friends are living on the same floor. The floors in the building are numbered from bottom to top i.e, the bottom most floor is numbered as 1st and the topmost as 3rd.

• One of the friends sitting adjacent to Kailasha, who likes gossiping and lives on the 3rd floor, likes makeup.
• Jaadu is sitting second to the left of Kailasha and shares the floor in the building with the one who likes to travel.
• Lamboo does not share the floor with anyone except Hulk, who likes singing and is sitting opposite to Kailasha.
• The one who likes cooking neither sits nor shares the floor with Jaadu and the one who likes singing.
• Lamboo and the one who likes dancing sit together but Lamboo is not sitting with the one who likes cooking or gossip.
• Jaadu does not like dancing or photography. Boby is sitting opposite to Chiya but he does not live on the 3rd floor.
• Hulk lives on the 2nd floor and only two people are sitting between him and Basanti.

Q.55

Who likes cooking?

1 **Chiya**

2 **Boby**

3 **Jaadu**

4 **Cannot be determined**

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Answer key/Solution

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

Eight friends – Jaadu, Basanti, Hulk, Kailasha, Boby, Lamboo, Kippu and Chiya - are sitting at a circular table, facing towards the center. Each of them has a distinct hobby among - gossiping, make-up, sports, photography, cooking, traveling, dancing and singing - not necessarily in the same order. They live in same building, having three floors. Not more than three friends are living on the same floor. The floors in the building are numbered from bottom to top i.e, the bottom most floor is numbered as 1st and the topmost as 3rd.

• One of the friends sitting adjacent to Kailasha, who likes gossiping and lives on the 3rd floor, likes makeup.
• Jaadu is sitting second to the left of Kailasha and shares the floor in the building with the one who likes to travel.
• Lamboo does not share the floor with anyone except Hulk, who likes singing and is sitting opposite to Kailasha.
• The one who likes cooking neither sits nor shares the floor with Jaadu and the one who likes singing.
• Lamboo and the one who likes dancing sit together but Lamboo is not sitting with the one who likes cooking or gossip.
• Jaadu does not like dancing or photography. Boby is sitting opposite to Chiya but he does not live on the 3rd floor.
• Hulk lives on the 2nd floor and only two people are sitting between him and Basanti.

Q.56

If Jaadu lives on the 3rd floor, then on which floor did Kippu live?

1 1st

2 2nd

3 3rd

4 Cannot be determined

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Answer key/Solution

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

Eight friends – Jaadu, Basanti, Hulk, Kailasha, Boby, Lamboo, Kippu and Chiya - are sitting at a circular table, facing towards the center. Each of them has a distinct hobby among - gossiping, make-up, sports, photography, cooking, traveling, dancing and singing - not necessarily in the same order. They live in same building, having three floors. Not more than three friends are living on the same floor. The floors in the building are numbered from bottom to top i.e, the bottom most floor is numbered as 1st and the topmost as 3rd.

- **One of the friends sitting adjacent to Kailasha, who likes gossiping and lives on the 3rd floor, likes makeup.**
- **Jaadu is sitting second to the left of Kailasha and shares the floor in the building with the one who likes to travel.**
- **Lamboo does not share the floor with anyone except Hulk, who likes singing and is sitting opposite to Kailasha.**
- **The one who likes cooking neither sits nor shares the floor with Jaadu and the one who likes singing.**
- **Lamboo and the one who likes dancing sit together but Lamboo is not sitting with the one who likes cooking or gossip.**
- **Jaadu does not like dancing or photography. Boby is sitting opposite to Chiya but he does not live on the 3rd floor.**
- **Hulk lives on the 2nd floor and only two people are sitting between him and Basanti.**

Q.57

If Jaadu lives on the 1st floor, then who among the following definitely lives on the 3rd floor?

1 Kippu

2 Basanti

3 Chiya

4 Lamboo

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Answer key/Solution

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

Eight friends – Jaadu, Basanti, Hulk, Kailasha, Boby, Lamboo, Kippu and Chiya - are sitting at a circular table, facing towards the center. Each of them has a distinct hobby among - gossiping, make-up, sports, photography, cooking, traveling, dancing and singing - not necessarily in the same order. They live in same building, having three floors. Not more than three friends are living on the same floor. The floors in the building are numbered from bottom to top i.e, the bottom most floor is numbered as 1st and the topmost as 3rd.

- **One of the friends sitting adjacent to Kailasha, who likes gossiping and lives on the 3rd floor, likes makeup.**
- **Jaadu is sitting second to the left of Kailasha and shares the floor in the building with the one who likes to travel.**
- **Lamboo does not share the floor with anyone except Hulk, who likes singing and is sitting opposite to Kailasha.**
- **The one who likes cooking neither sits nor shares the floor with Jaadu and the one who likes singing.**
- **Lamboo and the one who likes dancing sit together but Lamboo is not sitting with the one who likes cooking or gossip.**
- **Jaadu does not like dancing or photography. Boby is sitting opposite to Chiya but he does not live on the 3rd floor.**
- **Hulk lives on the 2nd floor and only two people are sitting between him and Basanti.**

Q.58

How many friends are sitting between Hulk and Basanti, when counted clockwise from Hulk?

1 **3**

2 **4**

3 **2**

4 **5**

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Answer key/Solution

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Hundred CL employees, during the appraisal period, have been given ratings from 0 to 5, on five parameters i.e. R – Risk taking, O – Openness, O – Ownership, H – Honesty, I – Innovation, of their core values. The table given below provides the number of employees who were given rating from 1 to 5 in each parameter.

Ratings \ Parameters	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17

Q.59

Find the maximum possible number of employees who have received same rating in all 5 parameters.

1 **68**

2 **78**

3 **60**

4 **80**

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Answer key/Solution

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Hundred CL employees, during the appraisal period, have been given ratings from 0 to 5, on five parameters i.e. R – Risk taking, O – Openness, O – Ownership, H – Honesty, I – Innovation, of their core values. The table given below provides the number of employees who were given rating from 1 to 5 in each parameter.

	Parameters				
Ratings	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17

Q.60

Which of the following can be the maximum number of employees who have received rating of 3 in exactly 4 parameters?

1 **17**

2 **16**

3 **13**

4 **14**

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Answer key/Solution

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Hundred CL employees, during the appraisal period, have been given ratings from 0 to 5, on five parameters i.e. R – Risk taking, O – Openness, O – Ownership, H – Honesty, I – Innovation, of their core values. The table given below provides the number of employees who were given rating from 1 to 5 in each parameter.

Ratings \ Parameters	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17

Q.61

If S is the total number of employees who received rating of 2 or more than 2 and 4 or less than 4 i.e. 2 ≤ rating ≤ 4, in each parameter, then the value of S can be

1 **49**

2 **41**

3 **78**

4 **65**

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Answer key/Solution

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Hundred CL employees, during the appraisal period, have been given ratings from 0 to 5, on five parameters i.e. R – Risk taking, O – Openness, O – Ownership, H – Honesty, I – Innovation, of their core values. The table given below provides the number of employees who were given rating from 1 to 5 in each parameter.

Ratings \ Parameters	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17

Q.62

Find the minimum number of employees who received rating of 2 or more than 2 and 4 or less than 4, in at least 2 parameters.

1 **37**

2 **38**

3 **39**

4 **40**

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Answer key/Solution

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

Fifteen students from A to O have been selected from 5 standards - 1st, 2nd, 3rd, 4th and 5th - of a school, with 3 students selected from each standard, to lead for the Republic day parade. Every student from a standard has to wear a shirt of distinct colour among Saffron, White and Green, to form a Tri-colour. Further, all the students were arranged in five rows and three columns. Each row has the students of the same standard whereas each column has the students wearing same coloured shirt. All the students are facing North and rows are numbered as 1 to 5 from North to South. All of them are standing in such a way that their row number is same as their standard i.e, all students from 1st standard are standing in row 1, students from 2nd standard are standing in row 2 and so on.
Further, some additional information is also known.
1. A is in the 1st standard and G is wearing a white coloured shirt.
2. D and G are in the same row and G is immediately ahead of E.
3. C is in the 3rd standard and he is not in the same row or column as of E.
4. There are three people standing between E and I. Also K and F share the same row with E.
5. B, O and N are in the same row.
6. L is wearing a green coloured shirt and is standing behind J.
7. D, H and O are standing in the same column at three consecutive positions, not necessarily in that order.

Q.63
If B and F are in the same column, then for how many people will it not be possible to determine the colour of their shirt?

1 **1**

2 **2**

3 **3**

4 **0**

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Answer key/Solution

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

Fifteen students from A to O have been selected from 5 standards - 1st, 2nd, 3rd, 4th and 5th - of a school, with 3 students selected from each standard, to lead for the Republic day parade. Every student from a standard has to wear a shirt of distinct colour among Saffron, White and Green, to form a Tri-colour. Further, all the students were arranged in five rows and three columns. Each row has the students of the same standard whereas each column has the students wearing same coloured shirt. All the students are facing North and rows are numbered as 1 to 5 from North to South. All of them are standing in such a way that their row number is same as their standard i.e, all students from 1st standard are standing in row 1, students from 2nd standard are standing in row 2 and so on.
Further, some additional information is also known.
1. A is in the 1st standard and G is wearing a white coloured shirt.
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3. C is in the 3rd standard and he is not in the same row or column as of E.
4. There are three people standing between E and I. Also K and F share the same row with E.
5. B, O and N are in the same row.
6. L is wearing a green coloured shirt and is standing behind J.
7. D, H and O are standing in the same column at three consecutive positions, not necessarily in that order.

Q.64
For how many students is it possible to uniquely determine the colour of the shirt they are wearing?

1 **11**

2 **13**

3 **10**

4 **12**

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Answer key/Solution

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

Fifteen students from A to O have been selected from 5 standards - 1st, 2nd, 3rd, 4th and 5th - of a school, with 3 students selected from each standard, to lead for the Republic day parade. Every student from a standard has to wear a shirt of distinct colour among Saffron, White and Green, to form a Tri-colour. Further, all the students were arranged in five rows and three columns. Each row has the students of the same standard whereas each column has the students wearing same coloured shirt. All the students are facing North and rows are numbered as 1 to 5 from North to South. All of them are standing in such a way that their row number is same as their standard i.e, all students from 1st standard are standing in row 1, students from 2nd standard are standing in row 2 and so on.
Further, some additional information is also known.
1. A is in the 1st standard and G is wearing a white coloured shirt.
2. D and G are in the same row and G is immediately ahead of E.
3. C is in the 3rd standard and he is not in the same row or column as of E.
4. There are three people standing between E and I. Also K and F share the same row with E.
5. B, O and N are in the same row.
6. L is wearing a green coloured shirt and is standing behind J.
7. D, H and O are standing in the same column at three consecutive positions, not necessarily in that order.

Q.65
How many possible combinations are there in which students can be arranged?

1 **8**

2 **6**

3 **4**

4 **9**

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Answer key/Solution

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

Fifteen students from A to O have been selected from 5 standards - 1st, 2nd, 3rd, 4th and 5th - of a school, with 3 students selected from each standard, to lead for the Republic day parade. Every student from a standard has to wear a shirt of distinct colour among Saffron, White and Green, to form a Tri-colour. Further, all the students were arranged in five rows and three columns. Each row has the students of the same standard whereas each column has the students wearing same coloured shirt. All the students are facing North and rows are numbered as 1 to 5 from North to South. All of them are standing in such a way that their row number is same as their standard i.e, all students from 1st standard are standing in row 1, students from 2nd standard are standing in row 2 and so on.
Further, some additional information is also known.
1. A is in the 1st standard and G is wearing a white coloured shirt.
2. D and G are in the same row and G is immediately ahead of E.
3. C is in the 3rd standard and he is not in the same row or column as of E.
4. There are three people standing between E and I. Also K and F share the same row with E.
5. B, O and N are in the same row.
6. L is wearing a green coloured shirt and is standing behind J.
7. D, H and O are standing in the same column at three consecutive positions, not necessarily in that order.

Q.66
Who among the following students is definitely wearing a green coloured shirt?

1 **B**

2 **C**

3 **N**

4 **F**

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Answer key/Solution

Sec 3

Q.67
If 'm' Harmonic Means are inserted between a and b, where 'm' is a root of the equation $(1 - ab)x^2 - (a^2 + b^2)x - (1 + ab) = 0$, then the difference between the last and the first Harmonic means is

1 **(b – a)**

2 **ab(b – a)**

3 **a(b – a)**

4 ab(a – b)

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Answer key/Solution

Q.68

A container contains 160 ml solution of ethanol, H_2SO_4 and water such that their respective volumes are in an Arithmetic Progression, in that order. Later 100ml of H_2SO_4 and water solution is added to that container, so that the volume of the three liquids still remains in an A.P. with same order. Find the percentage of the H_2SO_4 in the solution that was added.

1 16.67 %

2 33.33%

3 50%

4 75%

✔

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Answer key/Solution

Q.69

A circle, having radius equals to 3 units, is drawn with its centre at (8, 7) and another circle is drawn taking the line segment, joining (–12, 8) and (4, –4), as diameter. Find the number of common tangents to these two circles.

1 3

2 2

3 4

4 None of these

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Answer key/Solution

Q.70

Parimal, a hard working IIT-JEE aspirant, takes coaching from two different teachers who lives in city A and city B. Parimal starts from city A and travels 50 metres to the East, then 50 metres North-East, and finally another 50 metres East to reach city B. If the shortest distance between cities A and B is in the form of $a\sqrt{b+\sqrt{c}}$ metres, then find the value of $a + b + c$.

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Answer key/Solution

Q.71

Three men A, B and C are running around concentric circular race tracks, of respective lengths 100 m, 200m and 400 m, in the same direction at the speeds of 6 m/s, 16 m/s and 8 m/s respectively. They all started at the same time from the points, on their track, intersected by a line joining the three circles and the center of the tracks. After how long will they again be in a straight line formed by joining the center of the tracks and the outermost track for the first time?

1 **25 seconds**

2 **50 seconds**

3 **100 seconds**

4 **Never**

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Answer key/Solution

Q.72

In a sequence, the sum of first n terms is equal to $5n^2 + 6n$. Find the sum of the 3rd, 4th and 5th terms of the sequence.

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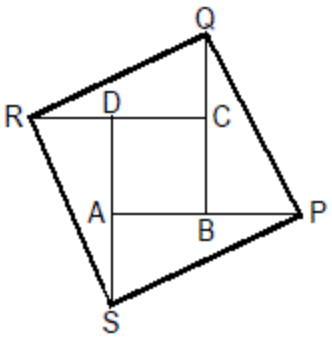
Answer key/Solution

Q.73

Each side of a square ABCD is produced to equal to its length to form another square PQRS, as shown in the diagram below. What is the ratio of the areas of the square ABCD and square PQRS?



1 **1 : 3**

2 **1 : 4**

3 **1 : 5**

4 **1 : 8**

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Answer key/Solution

Q.74

For two sets A and B, (A – B) denotes the set of elements which belong to A and not in B.
If P = {2, 5, 7, 8}, Q = {5, 6, 9, 10}, R = {1, 4, 9, 11} and S = {2, 6, 10, 11},
then find $((P - Q) \cup (R - S)) \cap ((P \cap S) - (Q \cap R))$.

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Answer key/Solution

Q.75

If w, x, y and z are integers such that $1 < w \leq x \leq y \leq z$ and wxyz = 924, then how many possible values exist for z?

1 **3**

2 **4**

3 **7**

4 **6**

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Answer key/Solution

Q.76

If a, b and c are positive numbers in a G.P. such that $a^{25} = b^{45} = c^{n}$, then find the value of n.

✖

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Answer key/Solution

Q.77

A milkman started with 20 liters of pure milk and then mixed 10 liters of water to it. Realizing that the milk has turned very watery, he added 5 liters of pure milk to the solution. And since it turned out to be quite milky again, he sold 15 liters of this solution at the original price of the milk. He then added another 10 liters of water and then again 5 liters of additional pure milk to the remaining solution. He then sold this whole solution at the original price of the milk. The absolute difference between the profit percentage earned when he first sold the 15 liters solution and when he sold the remaining 35 liters solution is

1 **less than 50%**

2 **equal to 50%**

3 **greater than 50%**

4 **Data Insufficient**

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Answer key/Solution

Q.78

A function S(n) is defined as the sum of the digits of n. If S(S(S(n))) = 1, then find the minimum value of S(n) × n.

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Answer key/Solution

Q.79

If $y = -\frac{x^2+3\sqrt{x}(2x+9)+162}{x+9\sqrt{x}+18}$, where x is an integer in the interval [16, 81], then find the range of y.

1 **13 ≤ y ≤ 63**

2 **−63 ≤ y ≤ −13**

3 **39 ≤ y ≤ 75**

4 **−39 ≤ y ≤ −52**

×

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Answer key/Solution

Q.80

If a : b = 2 : 3 and c : d = 4 : 5 where a, b, c and d are positive, then which of the following options contain the required information using which a : d can be calculated?

1 **ac : d = 8 : 1**

2 **bc : a = 6 : 1**

3 **ab : c^2 = 3 : 8**

4 **None of these**

×

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Answer key/Solution

Q.81

If $\left(\alpha, \frac{1}{\alpha}\right)$ are the roots of the equation $px^2 + qx + r = 0$, then the roots of the equation $4rx^2 - 2qx + p = 0$ are

1 $\left(\frac{\alpha}{2}, \frac{1}{2\alpha}\right)$

2 $\left(\frac{-\alpha}{2}, \frac{-1}{2\alpha}\right)$

3 $\left(\frac{2}{\alpha}, \frac{\alpha}{2}\right)$

4 $\left(\frac{\alpha}{4}, \frac{1}{4\alpha}\right)$

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Answer key/Solution

Q.82

Vijay has a collection of n books. If the number of ways in which he can select at least one of the n books is 65535, then what is the number of ways in which he can select exactly four books?

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Answer key/Solution

Q.83

A wall is to be built in exactly 15 days. Rahul, along with his friend, started working and when 20% of the work was left, Rahul left the work. To complete the work in the remaining 5 days now, Rahul's friend worked with his efficiency increased by 60%. If they both work together to complete the work in 15 days and Rahul works for all 15 days, then after how many days his friend needs to stop working?

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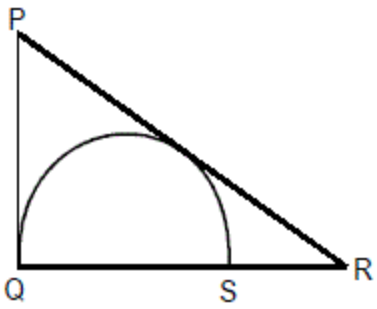
Answer key/Solution

Q.84



Find the radius (in cm) of the semicircle inscribed in a triangle as shown above, where the sides PQ, QR and PR are 15 cm, 36 cm and 39 cm respectively.

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Answer key/Solution

Q.85

If a and b are real numbers, then which of the following CANNOT be inferred?

1 **In order for a^2 to be equal to b^2, it is sufficient that a be equal to b.**

2 **If a^2 is equal to b^2, then a is equal to b.**

3 **a is equal to b implies that a^2 is equal to b^2.**

4 **If a^2 is not equal to b^2, then a is not equal to b.**

✖

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Answer key/Solution

Q.86

N is a 'n' digit number with all distinct non zero digits. N, when multiplied by 1, 2, 3,…. n, gives numbers which have the same digits as that of N but in different order. But when multiplied by (n+1), gives a number containing n digits with all its digits as 9 only. Find the value of number N.

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Answer key/Solution

Q.87

In a trapezium PQRS, SR = PQ = 25 cm and SP is parallel to RQ. A circle, with center C, is inscribed in the trapezium. If the area of the trapezium is 600 cm^2, then find the radius of the circle.

1 **7.5cm**

2 **8cm**

3 **12cm**

4 **9cm**

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Answer key/Solution

Q.88

Jar P contains 6 liters of a 54% milk solution, Jar Q contains 3 liters of a 57% milk solution and Jar R contains 1 liter of x% milk solution. 'y/z' liters of the solution from Jar R is transferred to Jar P and the remaining solution of Jar R is transferred to Jar Q such that resulting solutions in jar P and jar Q both contain 50% milk solution. If y and z are positive integers co prime to each other, then find the value of x + y + z.

1 **57**

2 **28**

3 **39**

4 **Cannot be determined**

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Answer key/Solution

Q.89

How many integers are present in the domain of $\frac{\sqrt{4-x^2}}{\log|x|}$?

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Answer key/Solution

Q.90

A shopkeeper sells articles worth Rs. 220 each with a mark-up of 40%. He has 2 schemes for the customers:
1) For every 4 articles purchased, get an article free, OR
2) On a purchase of 6 articles get a bag worth Rs. 500 free.
On a day, 50 customers purchased 4 articles each and hence took use of scheme 1 whereas 30 customers purchased 6 articles each and took use of scheme 2. If these were the only customers who purchased from his shop that day, then what is the total profit (in Rupees) earned by the shopkeeper?

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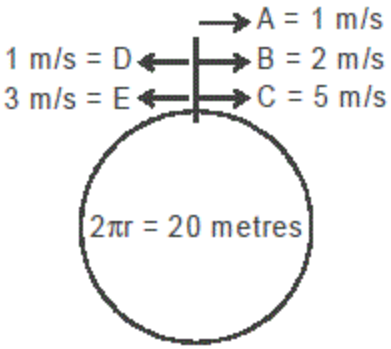
Answer key/Solution

Q.91



What is the total number of distinct meeting points of any 2 persons? (All persons start at the same time)

1 **29**

2 **28**

3 **16**

4 **None of these**

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Answer key/Solution

Q.92

A man gets 20 minutes late to his office, if he drives at 40 km/h and is 4 minutes early, if he drives at 50 km/h. By how much time will he be early or late, if he drives at 48km/h?

1 **1 minute early**

2 **On time**

3 **1 minute late**

4 **2 minutes late**

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Answer key/Solution

Q.93

Raj invested in a piece of land for Rs. 5,00,000. Its value increased by T% every year for 3 years. Had he invested in a scheme which gives T% p.a. simple interest, the value of his investment would have been Rs. 64,000 less. Find the value of T.

1 **14**

2 **17**

3 **20**

4 **21**

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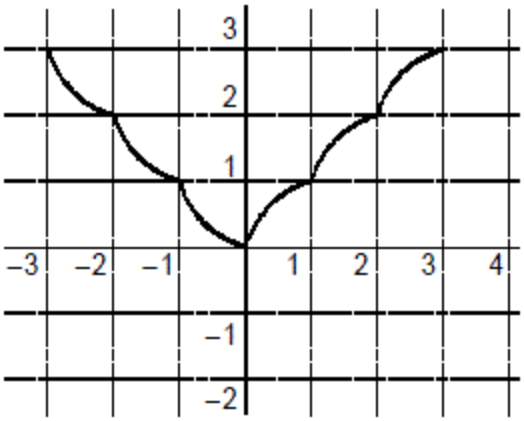
Answer key/Solution

Q.94

The graph given below represents which of the following function?



1 $y = |[x] + \sqrt{x - [x]}|$

2 $y = |[x] - \sqrt{x + [x]}|$

3 $y = |\sqrt{x - [x]} - [x]|$

4 $y = |x - \sqrt{x - [x]}|$

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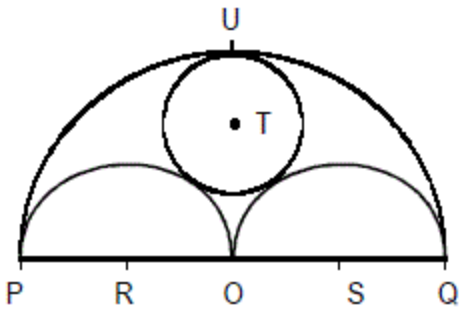
Answer key/Solution

Q.95

In the figure shown below, PQ is the diameter of a semicircular field. O is the midpoint of PQ. R is the center of the semicircle, with diameter OP, and S is the center of the semicircle, with diameter OQ. T is the center of the circle touching these three semicircles. A horse is tied at each point R, S and T, with a rope equivalent to that semicircle or circle's respective radius, such that each horse can graze over the respective inner semicircular region or the circular region in which it is tied. Find the approximate percentage of the area of the outer semicircular field over which the horses cannot graze.



1 **28%**

2 **36%**

3 **39%**

4 **42%**

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Answer key/Solution

Q.96

If $\log_3 2, \log_3(\log_x 2)$ and $\log_{\sqrt{2}} 9$ are in a Geometric Progression, then which of the following values can x assume?

1 2^9 or $2^{\frac{1}{9}}$

2 3^9 or $3^{\frac{1}{9}}$

3 9^2 or $9^{\frac{1}{2}}$

4 **None of these**

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Answer key/Solution

Q.97

Three men - P, Q and R - working together, completes a job in 6 hours less time than P alone, in 1 hour less time than Q alone, and in one-half of the time needed by R when working alone. Let 't' be the number of hours taken by P and Q, working together, to complete the job. Find the value of 't'.

1 **3/2**

2 **4/3**

3 **5/4**

4 **3/4**

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Answer key/Solution

Q.98

If a + b = 10, where a and b are positive real numbers, then what is the maximum value of $a^2 b^3$?

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Answer key/Solution

Q.99

A tank is filled by three pipes P, Q and R. Pipe P is kept open throughout, pipe Q is kept open for the first 12 minutes and then closed. Three minutes after pipe Q is closed, pipe R is opened and is kept open till the tank is full. This whole process takes 'h' minutes to completely fill the tank and each pipe fills an equal share of the tank. It is also known that if pipes P and Q are kept open continuously, the tank would be filled completely in 'h' minutes. How long (in minutes) will pipe R alone take to fill the tank?

1 **24**

2 **72**

3 **36**

4 **27**

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Answer key/Solution

Q.100

A coin is tossed for fixed number of times. If the probability of getting 6 heads is equal to the probability of getting 9 heads, then the probability of getting 3 heads is

1 $\frac{455}{2^{15}}$

2 $\frac{89}{3(2^{16})}$

3 $\frac{85}{2(3^{14})}$

4 $\frac{99}{2^{15}}$

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Answer key/Solution