Directions of Test

Test Name	Actual CAT 2020 Slot I	Total Questions	76	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	26	0:40(h:m)	3	1/3
DI & Reasoning	24	0:40(h:m)	3	1/3
Quantitative Ability	26	0:40(h:m)	3	1/3

Section : Verbal Ability

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 1

In the late 1960s, while studying the northern-elephant-seal population along the coasts of Mexico and California, Burney Le Boeuf and his colleagues couldn't help but notice that the threat calls of males at some sites sounded different from those of males at other sites. . . . That was the first time dialects were documented in a nonhuman mammal. . . .

All the northern elephant seals that exist today are descendants of the small herd that survived on Isla Guadalupe [after the near extinction of the species in the nineteenth century]. As that tiny population grew, northern elephant seals started to recolonize former breeding locations. It was precisely on the more recently colonized islands where Le Boeuf found that the tempos of the male vocal displays showed stronger differences to the ones from Isla Guadalupe, the founder colony.

In order to test the reliability of these dialects over time, Le Boeuf and other researchers visited Año Nuevo Island in California —the island where males showed the slowest pulse rates in their calls—every winter from 1968 to 1972. "What we found is that the pulse rate increased, but it still remained relatively slow compared to the other colonies we had measured in the past" Le Boeuf told me.

At the individual level, the pulse of the calls stayed the same: A male would maintain his vocal signature throughout his lifetime. But the average pulse rate was changing. Immigration could have been responsible for this increase, as in the early 1970s, 43 percent of the males on Año Nuevo had come from southern rookeries that had a faster pulse rate. This led Le Boeuf and his collaborator, Lewis Petrinovich, to deduce that the dialects were, perhaps, a result of isolation over time, after the breeding sites had been recolonized. For instance, the first settlers of Año Nuevo could have had, by chance, calls with low pulse rates. At other sites, where the scientists found faster pulse rates, the opposite would have happened—seals with faster rates would have happened to arrive first.

As the population continued to expand and the islands kept on receiving immigrants from the original population, the calls in all locations would have eventually regressed to the average pulse rate of the founder colony. In the decades that followed, scientists noticed that the geographical variations reported in 1969 were not obvious anymore. . . . In the early 2010s, while studying northern elephant seals on Año Nuevo Island, [researcher Caroline] Casey noticed, too, that what Le Boeuf had heard decades ago was not what she heard now. . . . By performing more sophisticated statistical analyses on both sets of data, [Casey and Le Boeuf] confirmed that dialects existed back then but had vanished. Yet there are other differences between the males from the late 1960s and their great-great-grandsons: Modern males exhibit more individual diversity, and their calls are more complex. While 50 years ago the drumming pattern was quite simple and the dialects denoted just a change in tempo, Casey explained, the calls recorded today have more complex structures, sometimes featuring doublets or triplets. . . .

All of the following can be inferred from Le Boeuf's study as described in the passage EXCEPT that:

A) male northern elephant seals might not have exhibited dialects had they not become nearly extinct in the nineteenth century.
B) the average call pulse rate of male northern elephant seals at Año Nuevo Island increased from the early 1970s till the disappearance of dialects.
C) changes in population and migration had no effect on the call pulse rate of individual male northern elephant seals.
D) the influx of new northern elephant seals into Año Nuevo Island would have soon made the call pulse rate of its male seals exceed that of those at Isla Guadalupe..

Question No. : 2

Which one of the following conditions, if true, could have ensured that male northern elephant seal dialects did not disappear?

A) Besides Isla Guadalupe, there was one more surviving colony with the same average male call tempo from which no migration took place.
B) The call tempo of individual immigrant male seals changed to match the average tempo of resident male seals in the host colony.
C) Besides Isla Guadalupe, there was one more founder colony with the same average male call tempo from which male seals migrated to various other colonies.
D) The call tempo of individual male seals in host colonies changed to match the average call tempo of immigrant male seals.

Question No. : 3

Which one of the following best sums up the overall history of transformation of male northern elephant seal calls?

A) The calls have transformed from exhibiting simple composition, less individual variety, and great regional variety to complex composition, great individual variety, and less regional variety.
B) Owing to migrations in the aftermath of near species extinction, the calls have transformed from exhibiting complex composition, less individual variety, and great regional variety to simple composition, less individual variety, and great regional variety.
C) The calls have transformed from exhibiting simple composition, great individual variety, and less regional variety to complex composition, less individual variety, and great regional variety.
D) Owing to migrations in the aftermath of near species extinction, the average call pulse rates in the recolonised breeding locations exhibited a gradual increase until they matched the tempo at the founding colony.

Question No. : 4

From the passage it can be inferred that the call pulse rate of male northern elephant seals in the southern rookeries was faster because:

A) a large number of male northern elephant seals migrated from the southern rookeries to Año Nuevo Island in the early 1970s
B) a large number of male northern elephant seals from Año Nuevo Island might have migrated to the southern rookeries to recolonise them.
C) the male northern elephant seals of Isla Guadalupe with faster call pulse rates might have been the original settlers of the southern rookeries.
D) the calls of male northern elephant seals in the southern rookeries have more sophisticated structures, containing doublets and triplets.

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 5

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

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

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

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

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

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

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

Question No. : 6

"Take any noun, put it with any verb, and you have a sentence. It never fails. Rocks explode. Jane transmits. Mountains float." None of the following statements can be seen as similar EXCEPT:

A) A collection of people with the same sports equipment is a sports team.
B) Take any vegetable, put some spices in it, and you have a dish.
C) A group of nouns arranged in a row becomes a sentence.
D) Take an apple tree, plant it in a field, and you have an orchard

Question No. : 7

Inferring from the passage, the author could be most supportive of which one of the following practices?

A) The availability of language software that will standardise the rules of grammar as an aid to writers
B) A campaign demanding that a writer's creative license should allow the breaking of grammatical rules.
C) A Creative Writing course that focuses on how to avoid the use of rhetoric.
D) The critique of standardised rules of punctuation and capitalisation.

Question No. : 8

All of the following statements can be inferred from the passage EXCEPT that:

A) "Grammar Police" is a metaphor for critics who focus on linguistic rules.
B) sentences do not always have to be complete. C) the subject–predicate relation is the same as the noun–verb relation.
D) the primary purpose of grammar is to ensure that sentences remain simple.

Question No. : 9

Which one of the following quotes best captures the main concern of the passage?

A) "Nouns and verbs are the two indispensable parts of writing. Without one of each, no group of words can be a sentence . . ."
B) "Strunk and White caution against too many simple sentences in a row, but simple sentences provide a path you can follow when you fear getting lost in the tangles of rhetoric . . ."
C) "Bad grammar produces bad sentences." D) "The telling clause here is Unless he is certain of doing well.".

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 10

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

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

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

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

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

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

According to the passage, what is the one idea that is common to all forms of anarchism?

A) They all focus on the primacy of the power of the individual.
B) They all derive from the work of Pierre-Joseph Proudhon.
C) There is no idea common to all forms of anarchism; that is why it is anarchic.
D) They are all opposed to the centralisation of power in the state.

Question No. : 11

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

A) Revolution, State, Protection, Liberals. B) Anarchism, Betrayal, Power, State. C) Revolution, State, Strike, Egoism.
D) Anarchism, State, Individual, Freedom.

Question No. : 12

Which one of the following best expresses the similarity between American individualist anarchists and free-market liberals as well as the difference between the former and the latter?

A) Both prioritise individual autonomy; but the former also emphasise mutual dependence, while the latter do not do so.
B) Both reject the regulatory power of the state; but the former favour a people's state, while the latter favour state intervention in markets.
C) Both are sophisticated arguments for capitalism; but the former argue for a morally upright capitalism, while the latter argue that the market is the only morality.
D) Both are founded on the moral principles of altruism; but the latter conceive of the market as a force too mystical for the former to comprehend.

Question No. : 13

The author makes all of the following arguments in the passage, EXCEPT:

A) The failure of the French Revolution was because of its betrayal by the new class of politicians who emerged from it.
B) Individualist anarchism is actually constituted of many streams, all of which focus on the autonomy of the individual.
C) The popular perception of anarchism as espousing lawlessness and violence comes from a mainstream mistrust of collectivism.
D) For anarchists, the state is the enemy because all states apply violence and terror to maintain their control.

Question No. : 14

The author believes that the new ruling class of politicians betrayed the principles of the French Revolution, but does not specify in what way. In the context of the passage, which statement below is the likeliest explanation of that betrayal?

A) The new ruling class struck a deal with the old ruling class to share power between them.
B) The new ruling class rode to power on the strength of the workers' revolutionary anger, but then turned to oppress that very class.
C) The new ruling class was constituted mainly of anarchists who were against the destructive impact of the Revolution on the market.
D) The anarchists did not want a new ruling class, but were not politically strong enough to stop them.

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 15

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

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

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

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

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

According to the passage, the modern currency system shares all the following features with that of the Tang, EXCEPT that:

A) it uses different materials as currency B) it is undergoing transformation C) its currencies fluctuate in value over time
D) it uses different currencies for different situations

Question No. : 16

When discussing textiles as currency in the Tang period, the author uses the words "steady" and "stable" to indicate all of the following EXCEPT:

A) reliable quality B) reliable supply C) reliable transportation D) reliable measurements

Question No. : 17

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

A) Cutting one-eighth of the fabric from a new bolt to pay the amount.
B) Using coins issued by the government to make the payment.
C) Making the payment with the appropriate weight of grain.
D) Paying with a faded bolt of cloth that has approximately the same value.

Question No. : 18

In the context of the passage, which one of the following can be inferred with regard to the use of currency during the Tang era?

A) Copper coins were more valuable and durable than textiles.
B) Currency that deteriorated easily was not used for official work.
C) Grains were the most used currency because of government requirements.
D) Currency usage was similar to that of modern times.

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 19

1. For feminists, the question of how we read is inextricably linked with the question of what we read.
2. Elaine Showalter's critique of the literary curriculum is exemplary of this work.
3. Androcentric literature structures the reading experience differently depending on the gender of the reader.
4. The documentation of this realization was one of the earliest tasks undertaken by feminist critics.
5. More specifically, the feminist inquiry into the activity of reading begins with the realization that the literary canon is androcentric, and that this has a profoundly damaging effect on women readers.

A) 3 B) C) D)

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph.*

Question No. : 20

For years, movies and television series like Crime Scene Investigation (CSI) paint an unrealistic picture of the "science of voices." In the 1994 movie Clear and Present Danger an expert listens to a brief recorded utterance and declares that the speaker is "Cuban, aged 35 to 45, educated in the [...] eastern United States." The recording is then fed to a supercomputer that matches the voice to that of a suspect, concluding that the probability of correct identification is 90%. This sequence sums up a good number of misimpressions about forensic phonetics, which have led to errors in real-life justice. Indeed, that movie scene exemplifies the so-called "CSI effect"—the phenomenon in which judges hold unrealistic expectations of the capabilities of forensic science.

A) Movies and televisions have led to the belief that the use of forensic phonetics in legal investigations is robust and fool proof.
B) Voice recognition as used in many movies to identify criminals has been used to identify criminals in real life also.
C) Voice recognition has started to feature prominently in crime-scene intelligence investigations because of movies and television series.
D) Although voice recognition is often presented as evidence in legal cases, its scientific basis can be shaky.

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 21

1. Tensions and sometimes conflict remain an issue in and between the 11 states in South East Asia (Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste and Vietnam).
2. China's rise as a regional military power and its claims in the South China Sea have become an increasingly pressing security concern for many South East Asian states.
3. Since the 1990s, the security environment of South East Asia has seen both continuity and profound changes.
4. These concerns cause states from outside the region to take an active interest in South East Asian security.

A) 3124 B) C) D)

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 22

1. Relying on narrative structure alone, indigenous significances of nineteenth century San folktales are hard to determine.
2. Using their supernatural potency, benign shamans transcend the levels of the San cosmos in order to deal with social conflict and to protect material resources and enjoy a measure of respect that sets them apart from ordinary people.
3. Selected tales reveal that they deal with a form of spiritual conflict that has social implications and concern conflict between people and living or dead malevolent shamans.
4. Meaning can be elicited, and the tales contextualized, by probing beneath the narrative of verbatim, original-language records and exploring the connotations of highly significant words and phrases.

A) 1432 B) C) D)

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph.*

Question No. : 23

For nearly a century most psychologists have embraced one view of intelligence. Individuals are born with more or less intelligence potential (I.Q.); this potential is heavily influenced by heredity and difficult to alter; experts in measurement can determine a person's intelligence early in life, currently from paper-and-pencil measures, perhaps eventually from examining the brain in action or even scrutinizing his/her genome. Recently, criticism of this conventional wisdom has mounted. Biologists ask if speaking of a single entity called "intelligence" is coherent and question the validity of measures used to estimate heritability of a trait in humans, who, unlike plants or animals, are not conceived and bred under controlled conditions.

A) Biologists have criticised that conventional wisdom that individuals are born with more or less intelligence potential.
B) Biologists have started questioning psychologists' view of 'intelligence' as a measurable immutable characteristic of an individual.
C) Biologists have questioned the long-standing view that 'intelligence' is a single entity and the attempts to estimate it's heritability.
D) Biologists have questioned the view that 'intelligence' is a single entity and the ways in which what is inherited.

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph.*

Question No. : 24

As Soviet power declined, the world became to some extent multipolar, and Europe strove to define an independent identity. What a journey Europe has undertaken to reach this point. It had in every century changed its internal structure and invented new ways of thinking about the nature of international order. Now at the culmination of an era, Europe, in order to participate in it, felt obliged to set aside the political mechanisms through which it had conducted its affairs for three and a half centuries. Impelled also by the desire to cushion the emergent unification of Germany, the new European Union established a common currency in 2002 and a formal political structure in 2004. It proclaimed a Europe united, whole, and free, adjusting its differences by peaceful mechanisms.

A) Europe has chosen to lower political and economic heterogeneity, in order to adapt itself to an emerging multi-polar world.
B) The establishment of a formal political structure in Europe was hastened by the unification of Germany and the emergence of a multipolar world.
C) Europe has consistently changed its internal structure to successfully adapt to the changing world order.
D) Europe has consistently changed in keeping with the changing world order and that has culminated in a united Europe.

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 25

1. Talk was the most common way for enslaved men and women to subvert the rules of their bondage, to gain more agency than they were supposed to have.
2. Even in conditions of extreme violence and unfreedom, their words remained ubiquitous, ephemeral, irrepressible, and potentially transgressive.
3. Slaves came from societies in which oaths, orations, and invocations carried great potency, both between people and as a connection to the all-powerful spirit world.
4. Freedom of speech and the power to silence may have been preeminent markers of white liberty in Colonies, but at the same time, slavery depended on dialogue: slaves could never be completely muted.
5. Slave-owners obsessed over slave talk, though they could never control it, yet feared its power to bind and inspire—for, as everyone knew, oaths, whispers, and secret conversations bred conspiracy and revolt.

A) 3 B) C) D)

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 26

1. Man has used poisons for assassination purposes ever since the dawn of civilization, against individual enemies but also occasionally against armies.
2. These dangers were soon recognized, and resulted in two international declarations— in 1874 in Brussels and in 1899 in The Hague—that prohibited the use of poisoned weapons.
3. The foundation of microbiology by Louis Pasteur and Robert Koch offered new prospects for those interested in biological weapons because it allowed agents to be chosen and designed on a rational basis.
4. Though treaties were all made in good faith, they contained no means of control, and so failed to prevent interested parties from developing and using biological weapons.

A) 1324 B) C) D)

Section : DI & Reasoning

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 27

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

a. A total of 250 patients were treated with type A medicine and a total of 210 patients were treated with type C medicine.
b. 25 patients were treated with type A medicine only. 20 patients were treated with type C medicine only. 10 patients were treated with type D medicine only.
c. 35 patients were treated with type A and type D medicines only. 20 patients were treated with type A and type B medicines only. 30 patients were treated with type A and type C medicines only. 20 patients were treated with type C and type D medicines only.
d. 100 patients were treated with exactly three types of medicines.
e. 40 patients were treated with medicines of types A, B and C, but not with medicines of type D. 20 patients were treated with medicines of types A, C and D, but not with medicines of type B.
f. 50 patients were given all the four types of medicines. 75 patients were treated with exactly one type of medicine.

How many patients were treated with medicine type B?

A) 340 B) C) D)

Question No. : 28

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

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d. 100 patients were treated with exactly three types of medicines.
e. 40 patients were treated with medicines of types A, B and C, but not with medicines of type D. 20 patients were treated with medicines of types A, C and D, but not with medicines of type B.
f. 50 patients were given all the four types of medicines. 75 patients were treated with exactly one type of medicine.

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

A) 10 B) C) D)

Question No. : 29

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

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d. 100 patients were treated with exactly three types of medicines.
e. 40 patients were treated with medicines of types A, B and C, but not with medicines of type D. 20 patients were treated with medicines of types A, C and D, but not with medicines of type B.
f. 50 patients were given all the four types of medicines. 75 patients were treated with exactly one type of medicine.

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

A) 150 B) C) D)

Question No. : 30

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

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e. 40 patients were treated with medicines of types A, B and C, but not with medicines of type D. 20 patients were treated with medicines of types A, C and D, but not with medicines of type B.
f. 50 patients were given all the four types of medicines. 75 patients were treated with exactly one type of medicine.

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

A) 325 B) C) D)

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 31

Four institutes, A, B, C, and D, had contracts with four vendors W, X, Y, and Z during the ten calendar years from 2010 to 2019. The contracts were either multi-year contracts running for several consecutive years or single-year contracts. No institute had more than one contract with the same vendor. However, in a calendar year, an institute may have had contracts with multiple vendors, and a vendor may have had contracts with multiple institutes. It is known that over the decade, the institutes each got into two contracts with two of these vendors, and each vendor got into two contracts with two of these institutes.

The following facts are also known about these contracts.

I. Vendor Z had at least one contract in every year.
II. Vendor X had one or more contracts in every year up to 2015, but no contract in any year after that.
III. Vendor Y had contracts in 2010 and 2019. Vendor W had contracts only in 2012.
IV. There were five contracts in 2012.
V. There were exactly four multi-year contracts. Institute B had a 7-year contract, D had a 4- year contract, and A and C had one 3-year contract each. The other four contracts were single year contracts.
VI. Institute C had one or more contracts in 2012 but did not have any contract in 2011.
VII. Institutes B and D each had exactly one contract in 2012. Institute D did not have any contract in 2010.

In which of the following years were there two or more contracts?

A) 2015 B) 2017 C) 2018 D) 2016

Question No. : 32

Which of the following is true?

A) D had a contract with Y in 2019 B) B had a contract with Z in 2017 C) B had a contract with Y in 2019
D) D had a contract with X in 2011

Question No. : 33

In how many years during this period was there only one contract?

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

Question No. : 34

What BEST can be concluded about the number of contracts in 2010?

A) at least 3 B) at least 4 C) exactly 3 D) exactly 4

Question No. : 35

Which institutes had multiple contracts during the same year?

A) B only B) A and B only C) B and C only D) A only

Question No. : 36

Which institutes and vendors had more than one contracts in any year?

A) A, B, W, and X B) A, D, W, and Z C) B, D, W, and X D) B, W, X, and Z

DIRECTIONS for the question: *Go through the graph and the information given below and answer the question that follows.*

Question No. : 37

In a certain board examination, students were to appear for examination in five subjects: English, Hindi, Mathematics, Science and Social Science. Due to a certain emergency situation, a few of the examinations could not be conducted for some students. Hence, some students missed one examination and some others missed two examinations. Nobody missed more than two examinations.
The board adopted the following policy for awarding marks to students. If a student appeared in all five examinations, then the marks awarded in each of the examinations were on the basis of the scores obtained by them in those examinations.
If a student missed only one examination, then the marks awarded in that examination was the average of the best three among the four scores in the examinations they appeared for.
If a student missed two examinations, then the marks awarded in each of these examinations was the average of the best two among the three scores in the examinations they appeared for.
The marks obtained by six students in the examination are given in the table below. Each of them missed either one or two examinations.

	English	Hindi	Mathematics	Science	Social Science
Alva	80	75	70	75	60
Bithi	90	80	55	85	85
Carl	75	80	90	100	90
Deep	70	90	100	90	80
Esha	80	85	95	60	55
Foni	83	72	78	88	83

The following facts are also known.
I. Four of these students appeared in each of the English, Hindi, Science, and Social Science examinations.
II. The student who missed the Mathematics examination did not miss any other examination.
III. One of the students who missed the Hindi examination did not miss any other examination.
The other student who missed the Hindi examination also missed the Science examination.

Who among the following did not appear for the Mathematics examination?

A) Carl B) Alva C) Foni D) Esha

Question No. : 38

Which students did not appear for the English examination?

A) Carl and Deep B) Esha and Foni C) Alva and Bithi D) Cannot be determined

Question No. : 39

What BEST can be concluded about the students who did not appear for the Hindi examination?

A) Alva and Esha B) Alva and Deep C) Deep and Esha D) Two among Alva, Deep and Esha

Question No. : 40

What BEST can be concluded about the students who missed the Science examination?

A) Alva and Bithi B) Deep and Bithi C) Alva and Deep D) Bithi and one out of Alva and Deep

Question No. : 41

How many out of these six students missed exactly one examination?

A) 3 B) C) D)

Question No. : 42

For how many students can we be definite about which examinations they missed?

A) 4 B) C) D)

DIRECTIONS for the question: *Go through the graph and the information given below and answer the question that follows.*

Question No. : 43

The local office of the APP-CAB company evaluates the performance of five cab drivers, Arun, Barun, Chandan, Damodaran, and Eman for their monthly payment based on ratings in five different parameters (P1 to P5) as given below:
P1: timely arrival
P2: behaviour
P3: comfortable ride
P4: driver's familiarity with the route
P5: value for money

Based on feedback from the customers, the office assigns a rating from 1 to 5 in each of these parameters. Each rating is an integer from a low value of 1 to a high value of 5. The final rating of a driver is the average of his ratings in these five parameters. The monthly payment of the drivers has two parts – a fixed payment and final rating-based bonus. If a driver gets a rating of 1 in any of the parameters, he is not eligible to get bonus. To be eligible for bonus a driver also needs to get a rating of five in at least one of the parameters.

The partial information related to the ratings of the drivers in different parameters and the monthly payment structure (in rupees) is given in the table below:

	P1	P2	P3	P4	P5	Fixed Payment	Bonus
Arun				4		Rs. 1000	Rs. 250 × Final Rating
Barun	3					Rs. 1200	Rs. 200 × Final Rating
Chandan			2			Rs. 1400	Rs. 100 × Final Rating
Damodaran		3				Rs. 1300	Rs. 150 × Final Rating
Eman					2	Rs. 1100	Rs. 200 × Final Rating

The following additional facts are known.
1. Arun and Barun have got a rating of 5 in exactly one of the parameters. Chandan has got a rating of 5 in exactly two parameters.
2. None of drivers has got the same rating in three parameters.

If Damodaran does not get a bonus, what is the maximum possible value of his final rating?

A) 3.6 B) 3.8 C) 3.2 D) 3.4

Question No. : 44

If Eman gets a bonus, what is the minimum possible value of his final rating?

A) 3.4 B) 2.8 C) 3.0 D) 3.2

Question No. : 45

If all five drivers get bonus, what is the minimum possible value of the monthly payment (in rupees) that a driver gets?

A) 1700 B) 1740 C) 1750 D) 1600

Question No. : 46

If all five drivers get bonus, what is the maximum possible value of the monthly payment (in rupees) that a driver gets?

A) 1960 B) 1950 C) 2050 D) 1900

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 47

Ten musicians (A, B, C, D, E, F, G, H, I and J) are experts in at least one of the following three percussion instruments: tabla, mridangam, and ghatam. Among them, three are experts in tabla but not in mridangam or ghatam, another three are experts in mridangam but not in tabla or ghatam, and one is an expert in ghatam but not in tabla or mridangam. Further, two are experts in tabla and mridangam but not in ghatam, and one is an expert in tabla and ghatam but not in mridangam.

The following facts are known about these ten musicians.
1. Both A and B are experts in mridangam, but only one of them is also an expert in tabla.
2. D is an expert in both tabla and ghatam.
3. Both F and G are experts in tabla, but only one of them is also an expert in mridangam.
4. Neither I nor J is an expert in tabla.
5. Neither H nor I is an expert in mridangam, but only one of them is an expert in ghatam.

Who among the following is DEFINITELY an expert in tabla but not in either mridangam or ghatam?

A) C B) F C) H D) A

Question No. : 48

Ten musicians (A, B, C, D, E, F, G, H, I and J) are experts in at least one of the following three percussion instruments: tabla, mridangam, and ghatam. Among them, three are experts in tabla but not in mridangam or ghatam, another three are experts in mridangam but not in tabla or ghatam, and one is an expert in ghatam but not in tabla or mridangam. Further, two are experts in tabla and mridangam but not in ghatam, and one is an expert in tabla and ghatam but not in mridangam.

The following facts are known about these ten musicians.
1. Both A and B are experts in mridangam, but only one of them is also an expert in tabla.
2. D is an expert in both tabla and ghatam.
3. Both F and G are experts in tabla, but only one of them is also an expert in mridangam.
4. Neither I nor J is an expert in tabla.
5. Neither H nor I is an expert in mridangam, but only one of them is an expert in ghatam.

Who among the following is DEFINITELY an expert in mridangam but not in either tabla or ghatam?

A) B B) E C) J D) G

Question No. : 49

Ten musicians (A, B, C, D, E, F, G, H, I and J) are experts in at least one of the following three percussion instruments: tabla, mridangam, and ghatam. Among them, three are experts in tabla but not in mridangam or ghatam, another three are experts in mridangam but not in tabla or ghatam, and one is an expert in ghatam but not in tabla or mridangam. Further, two are experts in tabla and mridangam but not in ghatam, and one is an expert in tabla and ghatam but not in mridangam.

The following facts are known about these ten musicians.
1. Both A and B are experts in mridangam, but only one of them is also an expert in tabla.
2. D is an expert in both tabla and ghatam.
3. Both F and G are experts in tabla, but only one of them is also an expert in mridangam.
4. Neither I nor J is an expert in tabla.
5. Neither H nor I is an expert in mridangam, but only one of them is an expert in ghatam.

Which of the following pairs CANNOT have any musician who is an expert in both tabla and mridangam but not in ghatam?

A) A and B B) F and G C) C and E D) C and F

Question No. : 50

Ten musicians (A, B, C, D, E, F, G, H, I and J) are experts in at least one of the following three percussion instruments: tabla, mridangam, and ghatam. Among them, three are experts in tabla but not in mridangam or ghatam, another three are experts in mridangam but not in tabla or ghatam, and one is an expert in ghatam but not in tabla or mridangam. Further, two are experts in tabla and mridangam but not in ghatam, and one is an expert in tabla and ghatam but not in mridangam.

The following facts are known about these ten musicians.
1. Both A and B are experts in mridangam, but only one of them is also an expert in tabla.
2. D is an expert in both tabla and ghatam.
3. Both F and G are experts in tabla, but only one of them is also an expert in mridangam.
4. Neither I nor J is an expert in tabla.
5. Neither H nor I is an expert in mridangam, but only one of them is an expert in ghatam.

If C is an expert in mridangam and F is not, then which are the three musicians who are experts in tabla but not in either mridangam or ghatam?

A) E, F and H B) C, E and G C) E, G and H D) C, G and H

Section : Quantitative Ability

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 51

Among 100 students, x_1 have birthdays in January, x_2 have birthday in February, and so on. If x_0 = max (x_1, x_2,....., x_{12}), then the smallest possible value of x_0 is

A) 12 B) 9 C) 8 D) 10

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 52

A gentleman decided to treat a few children in the following manner. He gives half of his total stock of toffees and one extra to the first child, and then the half of the remaining stock along with one extra to the second and continues giving away in this fashion. His total stock exhausts after he takes care of 5 children. How many toffees were there in his stock initially?

A) 62 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 53

Veeru invested Rs 10000 at 5% simple annual interest, and exactly after two years, Joy invested Rs 8000 at 10% simple annual interest. How many years after Veeru's investment, will their balances, i.e., principal plus accumulated interest, be equal?

A) 12 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 54

If y is a negative number such that $2^{y^2 \log_5 5} = 5^{\log_2 3}$, then y equals

A) $-\log_2(1/5)$ B) $\log_2(1/5)$ C) $-\log_2(1/3)$ D) $\log_2(1/3)$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 55

Leaving home at the same time, Amal reaches office at 10:15 am if he travels at 8 km/hr, and at 9:40 am if he travels at 15 km/hr. Leaving home at 9:10, at what speed, in km/hr, must be travel so as to reach office exactly at 10 am?

1. 14 2. 11 3. 13 4. 12

A) 12 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 56

A train travelled at one-thirds of its usual speed, and hence reached the destination 30 minutes after the scheduled time. On its return journey, the train initially travelled at its usual speed for 5 minutes but then stopped for 4 minutes for an emergency. The percentage by which the train must now increase its usual speed so as to reach the destination at the scheduled time, is nearest to

A) 58 B) 61 C) 50 D) 67

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 57

The number of real-valued solutions of the equation $2^x + 2^{-x} = 2 - (x - 2)^2$ is

A) 1 B) 0 C) Infinite D) 2

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 58

A solution, of volume 40 litres, has dye and water in the proportion 2 : 3. Water is added to the solution to change this proportion to 2 : 5. If one-fourths of this diluted solution is taken out, how many litres of dye must be added to the remaining solution to bring the proportion back to 2 : 3?

A) 8 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 59

Let A, B and C be three positive integers such that the sum of A and the mean of B and C is 5. In addition, the sum of B and the mean of A and C is 7. Then the sum of A and B is

A) 5 B) 4 C) 7 D) 6

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 60

How many 3-digit numbers are there, for which the product of their digits is more than 2 but less than 7?

A) 21 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 61

A straight road connects points A and B. Car 1 travels from A to B and Car 2 travels from B to A, both leaving at the same time. After meeting each other, they take 45 minutes and 20 minutes, respectively, to complete their journeys. If Car 1 travels at the speed of 60 km/hr, then the speed of Car 2, in km/hr, is

A) 100 B) 80 C) 90 D) 70

DIRECTIONS for the question *: Solve the following question and mark the best possible option.*

Question No. : 62

If $\log_4 5 = (\log_4 y)(\log_6 \sqrt{5})$, then y equals

A) 36 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 63

A solid right circular cone of height 27 cm is cut into pieces along a plane parallel to its base at a height of 18 cm from the base. If the difference in volume of the two pieces is 225 cc, the volume, in cc, of the original cone is

A) 243 B) 232 C) 256 D) 264

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 64

Two persons are walking beside a railway track at respective speeds of 2 and 4 km per hour in the same direction. A train came from behind them and crossed them in 90 and 100 seconds, respectively. The time, in seconds, taken by the train to cross an electric post is nearest to

A) 78 B) 87 C) 75 D) 82

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 65

A circle is inscribed in a rhombus with diagonals 12 cm and 16 cm. The ratio of the area of circle to the area of rhombus is

A) $\frac{2\pi}{15}$ B) $\frac{3\pi}{25}$ C) $\frac{6\pi}{25}$ D) $\frac{5\pi}{18}$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 66

If f(5 + x) = f(5- x) for every real x, and f(x) = 0 has four distinct real roots, then the sum of these roots is

A) 10 B) 0 C) 40 D) 20

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 67

If x = $(4096)^{7+4\sqrt{3}}$, then which of the following equals 64?

A) $\frac{x^7}{x^{2\sqrt{3}}}$ B) $\frac{x^{\frac{7}{2}}}{x^{\frac{4}{\sqrt{3}}}}$ C) $\frac{x^{\frac{7}{2}}}{x^{\frac{4}{2\sqrt{3}}}}$ D) $\frac{x^7}{x^{4\sqrt{3}}}$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 68

On a rectangular metal sheet of area 135 sq in, a circle is painted such that the circle touches two opposite sides. If the area of the sheet left unpainted is two-thirds of the painted area then the perimeter of the rectangle in inches is

A) $3\sqrt{\pi}\left(5+\frac{12}{\pi}\right)$ B) $3\sqrt{\pi}\left(\frac{5}{2}+\frac{6}{\pi}\right)$ C) $5\sqrt{\pi}\left(3+\frac{9}{\pi}\right)$ D) $4\sqrt{\pi}\left(3+\frac{9}{\pi}\right)$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 69

The number of distinct real roots of the equation $\left(x+\frac{1}{x}\right)^2-3\left(x+\frac{1}{x}\right)+2=0$ equals

A) 1 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 70

If a, b and c are positive integers such that ab = 432, bc = 96 and c < 9, then the smallest possible value of a + b + c is

A) 59 B) 49 C) 56 D) 46

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 71

The area of the region satisfying the inequalities |x| - y ≤ 1, y ≥ 0 and y ≤ 1 is

A) 3 B) C) D)

DIRECTION for the question: *Solve the following question and mark the best possible option.*

Question No. : 72

In a group of people, 28% of the members are young while the rest are old. If 65% of the members are literates, and 25% of the literates are young, then the percentage of old people among the illiterates is nearest to

A) 59 B) 55 C) 66 D) 62

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 73

The mean of all 4-digit even natural numbers of the form 'aabb', where a > 0, is

A) 5050 B) 4864 C) 5544 D) 4466

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 74

An alloy is prepared by mixing three metals A, B and c in the proportion 3 : 4 : 7 by volume. Weights of the same volume of the metals A, B and C are in the ratio 5 : 2 : 6. In 130 kg of the alloy, the weight, in kg, of the metal C is

A) 48 B) 70 C) 84 D) 96

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 75

A person spent Rs 50000 to purchase a desktop computer and a laptop computer. He sold the desktop at 20% profit and the laptop at 10% loss. If overall he made a 2% profit then the purchase price, in rupees, of the desktop is

A) 20000 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 76

How many distinct positive integer-valued solutions exist to the equation
$(x^2-7x+11)^{(x^2-13x+42)}=1$?

A) 4 B) 6 C) 8 D) 2

QNo:- 1 ,Correct Answer:- *D*

Explanation:-
Option A is supported by lines "In the late 1960s, while studying the northern-elephant-seal population along the coasts of Mexico and California, Burney Le Boeuf and his colleagues couldn't help but notice that the threat calls of males at some sites sounded different from those of males at other sites. . . . ***That was the first time dialects were documented in a nonhuman mammal. . . .***

All the northern elephant seals that exist today are descendants of the small herd that survived on Isla Guadalupe [after the near extinction of the species in the nineteenth century]. *As that tiny population grew, northern elephant seals started to recolonize former breeding locations.* ***It was precisely on the more recently colonized islands where Le Boeuf found that the tempos of the male vocal displays showed stronger differences*** *to the ones from Isla Guadalupe, the founder colony."*
Had the seals not become nearly extinct and had the descendants of the surviving herd at Isla Guadalpue not spread out and gotten isolated in the first place, the seals wouldn't have exhibited dialects.. Also the options takes this as a possible cause by use of words 'might' "male northern elephant seals ***might*** *not have exhibited dialects had they not become nearly extinct in the nineteenth century."*

OPtion B is supported by lines "But the average pulse rate was changing. Immigration could have been responsible for this increase, as in the early 1970s, ***43 percent of the males on Año Nuevo had come from southern rookeries that had a faster pulse rate.*** *This led Le Boeuf and his collaborator, Lewis Petrinovich, to deduce that the dialects were, perhaps, a result of isolation over time, after the breeding sites had been recolonized. For instance,* ***the first settlers of Año Nuevo could have had, by chance, calls with low pulse rates****. ..... As the population continued to expand and the islands kept on receiving immigrants from the original population,* ***the calls in all locations would have eventually regressed to the average pulse rate of the founder colon****y." (The last part - regression of calls in all locations -implies disappearance of dialects)*

Option C is supported by 1st lines of para 4 "At the individual level, the pulse of the calls stayed the same: A male would maintain his vocal signature throughout his lifetime."
*Option D contradicts the lines "As the population continued to expand and the islands kept on receiving immigrants from the original population, t****he calls in all locations would have eventually regressed to the average pulse rate of the founder colony.*** *"*

QNo:- 2 ,Correct Answer:- *B*

Explanation:-
Refer lines "As the population continued to expand and the islands kept on receiving immigrants from the original population, the calls in all locations would have eventually regressed to the average pulse rate of the founder colony" Option 2 talks about situation where immigrants tempo changed to become that of resident males which would have allowed the distinctive tempo of island to continue and not become extinct
Option 4 talks about opposite of option 2 hence is incorrect
Option 1 is incorrect as migration still happened from other islands even if didn't happen from one island so no migration from the other island has no effect here

QNo:- 3 ,Correct Answer:- *A*

Explanation:-
Option 1 is correct and 2 and 3 incorrect
Refer last lines of passage "Yet there are other differences between the males from the late 1960s and their great-great-grandsons: Modern males exhibit more individual diversity, and their calls are more complex. While 50 years ago the drumming pattern was quite simple and the dialects denoted just a change in tempo, Casey explained, the calls recorded today have more complex structures, sometimes featuring doublets or triplets..."
Option 4 is incorrect as it doesn't answer the Q i.e. sum up the overall history

QNo:- 4 ,Correct Answer:- *C*

Explanation:-
Option 3 Refer following lines of penultimate para "This led Le Boeuf and his collaborator, Lewis Petrinovich, to deduce that the dialects were, perhaps, a result of isolation over time, after the breeding sites had been recolonized. For instance, the first settlers of Año Nuevo could have had, by chance, calls with low pulse rates . At other sites, where the scientists found faster pulse rates, the opposite would have happened—seals with faster rates would have happened to arrive first."
Option 1 though factually correct doesn't answer the Q – why the call pulse rate of male northern elephant seals in the southern rookeries was faster

QNo:- 5 ,Correct Answer:- *D*

Explanation:-
Q is which if false supports arguments in the passage.
Option 4 is opposite of what's stated in the passage Hence is the best option here Refer lines
Of first para "Nouns and verbs are the two indispensable parts of writing."
And of last para "Take any noun, put it with any verb, and you have a sentence. It never fails."
Option 2 neither supports nor goes against the passage as women writers weren't talked about in passage.
Option 3 is true hence incorrect option here. Refer lines of para 3 ""It is an old observation," he writes, "that the best writers sometimes disregard the rules of rhetoric."

QNo:- 6 ,Correct Answer:- *B*

Explanation:- *Answer would be an option which is similar. Hence the answer clearly is 2*
Take any noun, put it with any verb, and you have a sentence.
Take any vegetable, put some spices in it, and you have a dish.
Options 1,3,4 are incorrect as nothing was added unlike in original stt

QNo:- 7 ,Correct Answer:- *A*

Explanation:- *2 and 4 are incorrect as author is not against grammar rules "Unless he is certain of doing well, [the writer] will probably do best to follow the rules.""*
3 is incorrect as author isn't against rhetoric

QNo:- 8 ,Correct Answer:- *D*

Explanation:-
Options 1 and 2 are supported by lines "Must you write complete sentences each time, every time? Perish the thought. If your work consists only of fragments and floating clauses, the Grammar Police aren't going to come and take you away. Even William Strunk, that Mussolini of rhetoric, recognized the delicious pliability of language. "It is an old observation," he writes, "that the best writers sometimes disregard the rules of rhetoric."
Option 3 is supported by line "since a sentence is, by definition, a group of words containing a subject (noun) and a predicate (verb);"

QNo:- 9 ,Correct Answer:- *C*

Explanation:- *Main focus of the passage is grammar Hence 3rd is the best option*

QNo:- 10 ,Correct Answer:- *D*

Explanation:-
Option 4 Throughout the passage and in lines of penultimate para "It differs from state socialism in opposing the concept of any central authority." And Refer line 1 "The word 'anarchy' comes from the Greek anarkhia, meaning contrary to authority or without a ruler,"
Option 2 is incorrect refer lines of last para "There are, unsurprisingly, several traditions of individualist anarchism, one of them deriving from the 'conscious egoism' of the German writer Max Stirner (1806–56), and another from a remarkable series of 19th-century American figures"

QNo:- 11 ,Correct Answer:- *D*

Explanation:- *Options 1 and 3 are easily eliminated as they leave out anarchism*
Option 2 is eliminated because of word Betrayal which can't be as easily related as 'individual' in 4

QNo:- 12 ,Correct Answer:- *A*

Explanation:- *Refer last para*

QNo:- 13 ,Correct Answer:- *C*

Explanation:-
Option 3
Option 4 is supported by last lines of para 3
Option 2 is supported by last para
*Option 1 can be inferred from lines "**anarchism arose** not only as an explanation of the gulf between the rich and the poor in any community, and of the reason why the poor have been obliged to fight for their share of a common inheritance, but **as a radical answer to the question 'What went wrong?' that followed the ultimate outcome of the French Revolution**"*

QNo:- 14 ,Correct Answer:- *B*

Explanation:- *Option 2 can be inferred from para 2 and 3*

QNo:- 15 ,Correct Answer:- *B*

Explanation:- *Refer line 1 of last para "In actuality, our own currency system today has some **similarities even as it is changing in front of our eyes**"*

QNo:- 16 ,Correct Answer:- *C*

Explanation:-
Refer to following lines of paras 3 and 4
*"But textiles had some advantages over coins. For a start, textile production was widespread and there were **fewer problems with the supply of textiles**. For large transactions, textiles weighed less than their equivalent in coins since a string of coins . . . could weigh as much as 4 kg. Furthermore, the **dimensions of a bolt of silk held remarkably steady** from the third to the tenth century: 56 cm wide and 12 m long . . . **The values of different textiles were also more stable** than the fluctuating values of coins. . . .*
The government also required the use of textiles for large transactions. Coins, on the other hand, were better suited for smaller transactions, and possibly, given the costs of transporting coins, for a more local usage. Grain, because it rotted easily, was not used nearly as much as coins and textiles, but taxpayers were required to pay grain to the government as a share of their annual tax obligations, and official salaries were expressed in weights of grain. . . ."

QNo:- 17 ,Correct Answer:- *A*

Explanation:-
Refer lines "Stained, faded and torn bolts of textiles had less value than a brand new bolt. Furthermore, a full bolt had a particular value. If consumers cut textiles into smaller pieces to buy or sell something worth less than a full bolt, that, too, greatly lessened the value of the textiles".

QNo:- 18 ,Correct Answer:- *D*

Explanation:-
Refer following line of last para "In actuality, our own currency system today has some similarities"
Option 2 is incorrect as grains, though they rotted easily, were used as currency
Option 3 is incorrect Refer following line of penultimate para 'The government also required the use of textiles for large transactions.'

QNo:- 19 ,Correct Answer:- *3*

Explanation:- *SR 1542*
1-5 are linked by 'more specifically'
*5-4 this realization' in 4 refers to "**the literary canon is androcentric**" in 5*
2 closes the para by giving an example
3 though looks related doesn't fit into the para

QNo:- 20 ,Correct Answer:- *A*

Explanation:-
Option 2 takes a positive tone while para calls the expectations from forensic phonetics unrealistic
Option 3 is incorrect as it leaves out that the expectations from forensic phonetics unrealistic
Option 4 leaves out the part where judges have unrealistic expectations because of movies and TV series

QNo:- 21 ,Correct Answer:- *3124*

Explanation:- *3 is the most generic stt so comes first.*
*3-12 'Tensions and sometimes conflict **remain an issue'** in 1 exemplifies 'continuity in 3'*
And 'China's rise' exemplifies 'profound changes' in 3
1-4 States from outside take interest because of "China's rise" in 1

QNo:- 22 ,Correct Answer:- *1432*

Explanation:-
1 is the most generic stt so comes first
1-4 4 explains how significance can be understood - by probing beneath the narrative
of verbatim
4-3 when tales are probed by method stated in 4, Selected tales reveal that they deal with a form of spiritual conflict
3-2 are linked by Shamans introduced in 3

QNo:- 23 ,Correct Answer:- *C*

Explanation:- *Option 1 captures only 1st lines of the para*
Option 2 talks about immutable but leaves out heredity
Option 4 is factually incorrect as biologists aren't questioning "ways in which that is inherited."

QNo:- 24 ,Correct Answer:- *A*

Explanation:- *Option 2 talks only of politics leaves out economics*
Option 3 is more generic as compared to option 1. Option 1 correctly captures "lower political and economic heterogeneity" instead of just ***changing*** *internal structure and "emerging multi-polar world" instead of "****changing*** *world order" in 3*
*Option 4 is too generic esp when compared to option 1. Option 1 talks of "emerging multi-polar world" instead of "****changing*** *world order" in option 4. Also, "a united Europe" gives an impression that complete Europe has united which is an inference not warranted by the para*

QNo:- 25 ,Correct Answer:- *3*

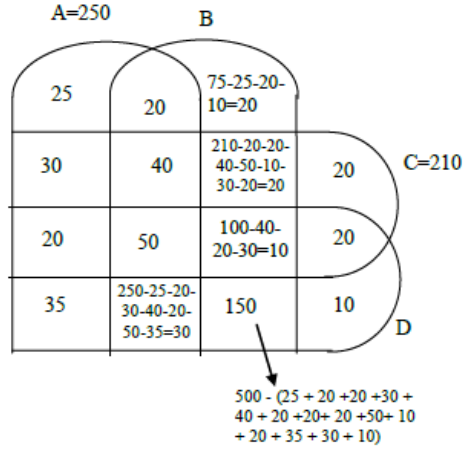
Explanation:- *3 talks about spirit world which isn't talked about in any other stt*
4215
4-2 2 exemplifies how even in the most extreme circumstances slaves couldn't be muted
1-5 1 gives reason why slave owners obsessed over slave talk because Talk was the most common way for enslaved men and women to subvert the rules of their bondage, to gain more agency than they were supposed to have.

QNo:- 26 ,Correct Answer:- *1324*

Explanation:- *1324*
The stts are arranged chronologically
1 has 'dawn of civilization' as the time frame
1 is also the most generic stt and also introduces topic under discussion – poison/biological weapons
3-2 'these dangers' in 2 is referring to stt 3
2-4 2 and 4 are linked as both talk about nations working together through declarations in 2 and 4 talks about treaties

QNo:- 27 ,Correct Answer:- *340*

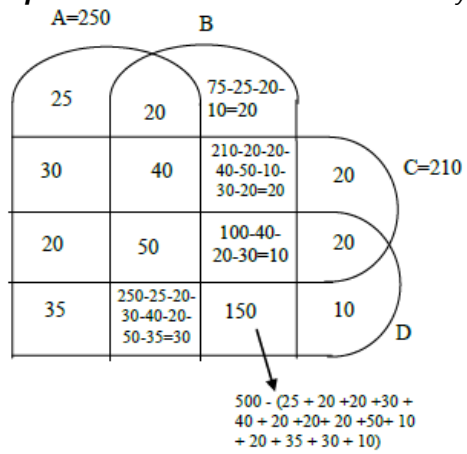
Explanation:- *From instruction we can say that these are 500 patients in treatment group and 500 patients in control group.*



20 + 20 + 40 + 20 + 50 + 10 + 30 + 150 = 340

QNo:- 28 ,Correct Answer:- *10*

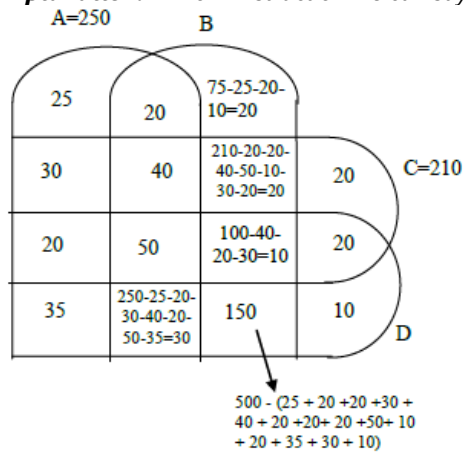
Explanation:- *From instruction we can say that these are 500 patients in treatment group and 500 patients in control group.*



10

QNo:- 29 ,Correct Answer:- *150*

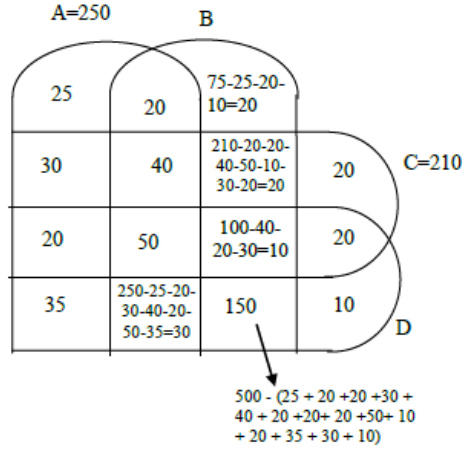
Explanation:- *From instruction we can say that these are 500 patients in treatment group and 500 patients in control group.*



150

QNo:- 30 ,Correct Answer:- *325*

Explanation:- *From instruction we can say that these are 500 patients in treatment group and 500 patients in control group.*



20 + 50 + 10 + 20 + 35 + 30 + 150 + 10 = 325

QNo:- 31 ,Correct Answer:- *A*

Explanation:- *Given that each institute have contract with two vendors*
From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y									Y
		W							
		W							

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.
∴ From 2012 to 2015, x will have a four year contract with D, as D did not have any contract in 2010.
C did not have a contract in 2011
∴ A will have contract with C from 2010 to 2012 and C must from contract with Z from 2017 to 2019 and initial 7 years contract of B with Z.

Since B and D have only one contract in 2012, ∴ W will have contract with A and C in 2012.
A and C already made contract with 2 vendors, we are left with B & D for single year contract. D didn't have contract in 2010.
∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.
Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	BZ	BZ	BZ	BZ	BZ	BZ	CZ	CZ	CZ
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW							DY
		AW							

2015 (BZ and DX)

QNo:- 32 ,Correct Answer:- *A*

Explanation:- *Given that each institute have contract with two vendors*
From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y									Y
		W							
		W							

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If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.
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A and C already made contract with 2 vendors, we are left with B & D for single year contract. D didn't have contract in 2010.
∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.
Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	BZ	BZ	BZ	BZ	BZ	BZ	CZ	CZ	CZ
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW							DY
		AW							

D had a contract with Y in 2019

QNo:- 33 ,Correct Answer:- *A*

Explanation:- *Given that each institute have contract with two vendors*
From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y									Y
		W							
		W							

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.
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A and C already made contract with 2 vendors, we are left with B & D for single year contract. D didn't have contract in 2010.
∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.
Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	BZ	BZ	BZ	BZ	BZ	BZ	CZ	CZ	CZ
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW							DY
		AW							

3 (2016, 2017, 2018)

QNo:- 34 ,Correct Answer:- *C*

Explanation:- *Given that each institute have contract with two vendors*
From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y									Y
		W							
		W							

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.
∴ From 2012 to 2015, x will have a four year contract with D, as D did not have any contract in 2010.
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∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.
Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	BZ	BZ	BZ	BZ	BZ	BZ	CZ	CZ	CZ
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW							DY
		AW							

Exactly 3

QNo:- 35 ,Correct Answer:- *B*

Explanation:- *Given that each institute have contract with two vendors*
From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y									Y
		W							
		W							

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.
∴ From 2012 to 2015, x will have a four year contract with D, as D did not have any contract in 2010.
C did not have a contract in 2011
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Since B and D have only one contract in 2012, ∴ W will have contract with A and C in 2012.
A and C already made contract with 2 vendors, we are left with B & D for single year contract. D didn't have contract in 2010.
∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.
Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	BZ	BZ	BZ	BZ	BZ	BZ	CZ	CZ	CZ
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW							DY
		AW							

A and B only (In 2010 ⇒ BZ and BY, In 2012 ⇒ AX and AW)

QNo:- 36 ,Correct Answer:- *A*

Explanation:- *Given that each institute have contract with two vendors*
From I, II, and III facts given, we have

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
X	X	X	X	X	X				
Y									Y
		W							
		W							

From the IV fact, we can say in 2012 there are five contracts. This means out of Z and X, one must be double.

If Z is double then the contract can be split into 3 years and 8 years which is not possible as given contract can be 7 years contract, 4 years contract, 3 years contract or one year contract.
∴ From 2012 to 2015, x will have a four year contract with D, as D did not have any contract in 2010.
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Since B and D have only one contract in 2012, ∴ W will have contract with A and C in 2012.
A and C already made contract with 2 vendors, we are left with B & D for single year contract. D didn't have contract in 2010.
∴ D will have contract in 2019 with Y and B will have contract with Y in 2010.
Therefore the final table,

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BZ	BZ	BZ	BZ	BZ	BZ	BZ	CZ	CZ	CZ
AX	AX	AX							
		DX	DX	DX	DX				
BY		CW							DY
		AW							

A, B, W and X

QNo:- 37 ,Correct Answer:- *A*

Explanation:- *Average cannot be maximum or minimum.*
Given that the student who missed mathematics exam didn't miss any other exam.
∴ If Alva miss mathematics then Alva's average = $\frac{80+75+75}{3}$ *that's not equal to 70*
∴ Alva eliminated, if Foni miss Mathematics, then Foni average (of best 3) = $\frac{88+83+83}{3}$
Which is not equal to 78. ∴ Foni is eliminated.
We can see that Esha got maximum marks in mathematics (which is not possible if she misses mathmatics, as the missed exam is the average of remaining subjects).
∴ Carl will be the right answer as, Carl average = $\frac{100+90+80}{3}=90$
Which is equal to mathematics score.

QNo:- 38 ,Correct Answer:- B

Explanation:-
As the marks in the missing exam in the average of the remaining marks (according to different condition) and we know average can neither be least nor maximum. ∴ Alva Bithi, Carl and Deep are eliminated. ∴ Answer will be Esha and Foni

QNo:- 39 ,Correct Answer:- B

Explanation:- Let's check for Esha only, by checking for Esha only we can eliminate all the wrong options.
There are two cases with the Hindi;
Case I ⇒ only miss Hindi exam ∴ score for Hindi for Esha = $\frac{95+80+60}{3} = 78.33$
∴ Not equal to 85. Not satisfied
Case II ⇒ miss Hindi and Science both. Not possible as score isdiffernt for Hindi and Science. ∴ Alva and Deep will be the answer

QNo:- 40 ,Correct Answer:- D

Explanation:- From the table, we can see Bithi missed the Science paper definitely but we are not sure of Alva and Deep. One out of Alva and Deep will definitely miss the Science exam

QNo:- 41 ,Correct Answer:- 3,4

Explanation:- We can see that Esha, Carl and one out of Alva or Deep missed one examination.

QNo:- 42 ,Correct Answer:- 4

Explanation:- We are definite about Bithi, Carl, Esha and Foni

QNo:- 43 ,Correct Answer:- A

Explanation:- We have to maximize the rating of Damodaran, taking care that he did not get the bonus.
∴ Damodaran = 5 +5 + 3 +4+ 1 = 18 ∴ Rating = 18/5 = 3.6

QNo:- 44 ,Correct Answer:- C

Explanation:- We have to minimize the rating of Eman, taking care that Eman will get bonus.
∴ Eman = 5 + 3 + 3 + 2 + 2 = 15 ∴ Rating = 15/5 = 3.0

QNo:- 45 ,Correct Answer:- *A*

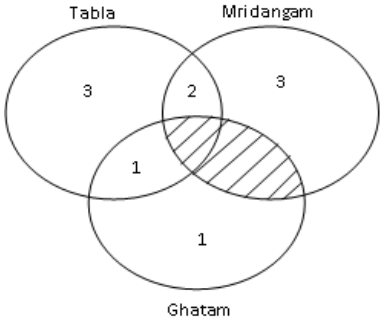
Explanation:- *As, we have to find the minimum possible value of monthly payment is mean we need to find the payment of ill the drivers, keeping their rating minimum and all drivers will get the bonus.*
Arun = 5 + 2 + 2 + 4 3 + = 16
Arun Rating = 16/5 = 3.2
∴ Arun payment = 1000 + 3.2 × 250 = 1800
Barun = 3 + 5 + 2 + 2 + 3 = 15
Barun Rating = 15/5 = 3.0
∴ Barun payment = 1200 + 200 × 3 = 1800
Chandan = 5 + 5 + 2 + 2 +3 = 17
Chandan Rating = 17/5 = 3.4
Chandan Payment = 1400+ 3.4 × 100 = 1740
Damodaran = 5 + 3 + 3 + 2 + 2
Damodaran Rating = 15/5 = 3.0
∴ Damodaran payment = 1300 + 150× 3 = 1750
Eman = 5 + 3 + 3 + 2 +2 = 15
Eman Rating = 15/5 = 3.0
∴ Eman Payment = 1100+ 200×3 = 1700
∴ Eman payment will be minimum i.e. 1700

QNo:- 46 ,Correct Answer:- *A*

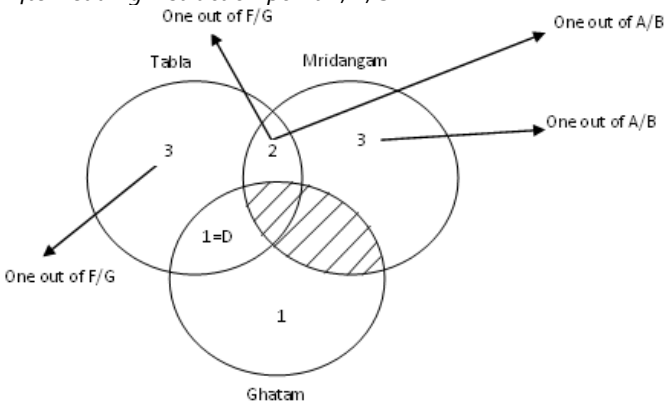
Explanation:- *Now we have to maximize the rating of all five drivers*
Arun = 5 + 4 + 3 + 4 + 3 = 19. Rating = 19/5 = 3.80
∴ Arun Payment = 1000 + 3.8 × 250 = 1950
Barun = 3 + 5 + 4 + 4 + 3. Rating = 19/5 = 3.80
∴ Barun Payment = 1200 + 200 × 3.80 = 1960
Chandan = 5 + 5 + 2 + 4 + 4 = 20. Rating = 20/5 = 4.0
∴ Chandan Payment = 1400 + 100 × 4 = 1800
Damodaran = 5 + 3 5 + 4 + 4 = 21
Rating = 21/5 = 4.2
∴ Damodaran Payment = 1300 + 150 × 4.2 = 1930
Eamn = 5 + 5 + 4 + 4 +2 = 20. Rating = 20/5 = 4.0
∴ Eman payment = 100 + 200 × 4 = 1900
∴ Barun's payment is maximum i.e. 1960

QNo:- 47 ,Correct Answer:- *C*

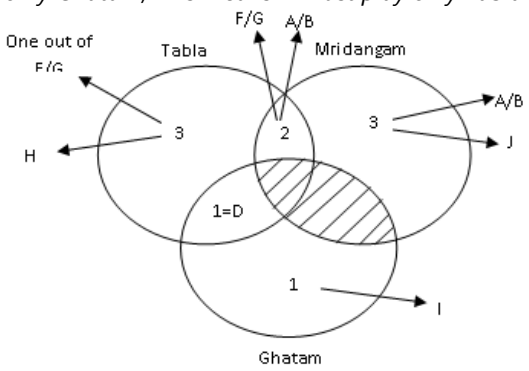
Explanation:- *After Reading the passage*



After reading instruction point 1, 2, 3



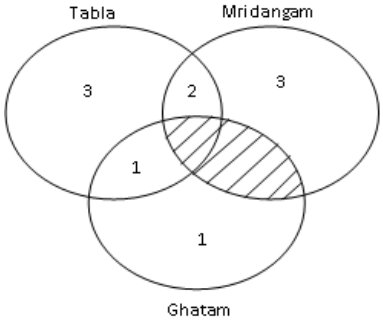
4th point says that neither I nor J is an expert in Tabla. After combing 4th and 5th point. We can definitely say that, I must play only Ghatam, This means H must play only Tabla



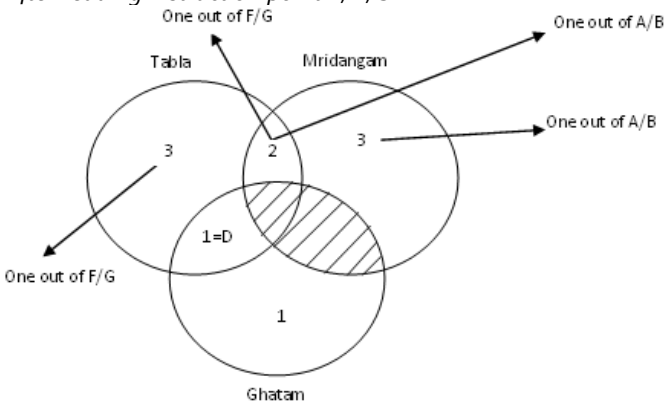
H

QNo:- 48 ,Correct Answer:- *C*

Explanation:- *After Reading the passage*



After reading instruction point 1, 2, 3



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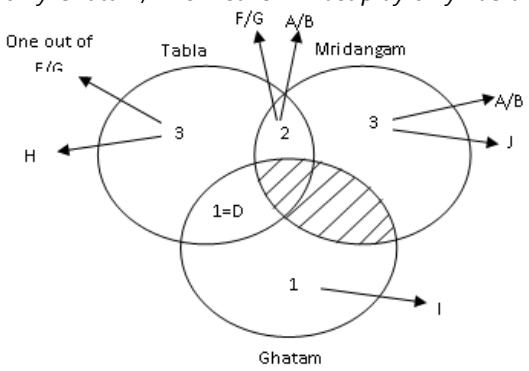
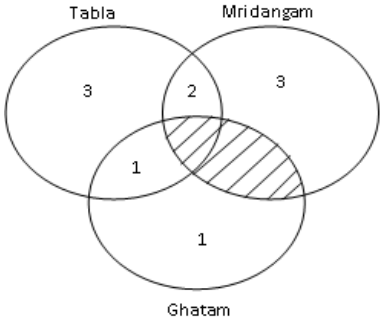


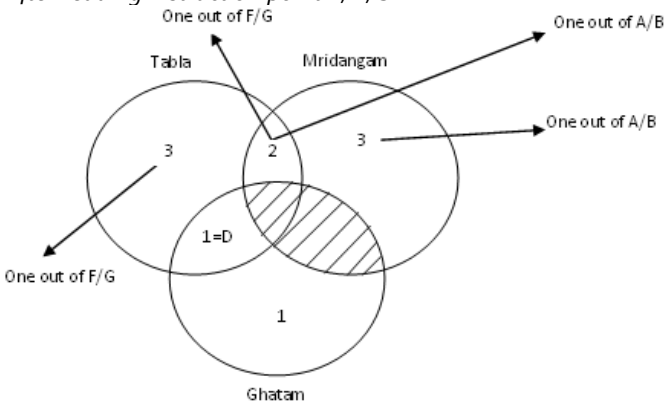
J

QNo:- 49 ,Correct Answer:- *C*

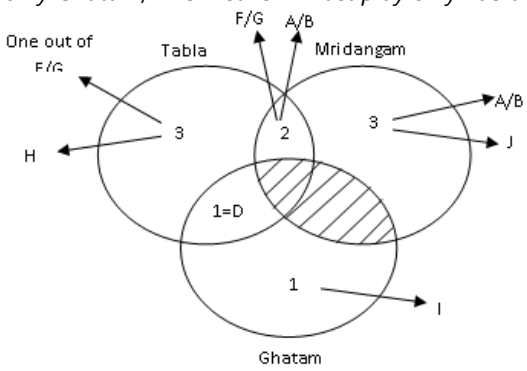
Explanation:- *After Reading the passage*



After reading instruction point 1, 2, 3



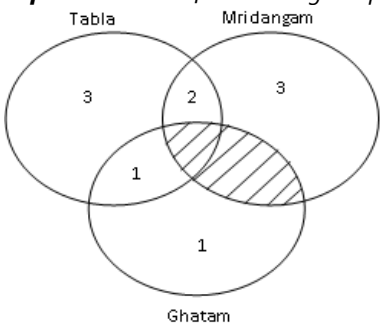
4th point says that neither I nor J is an expert in Tabla. After combing 4th and 5th point. We can definitely say that, I must play only Ghatam, This means H must play only Tabla



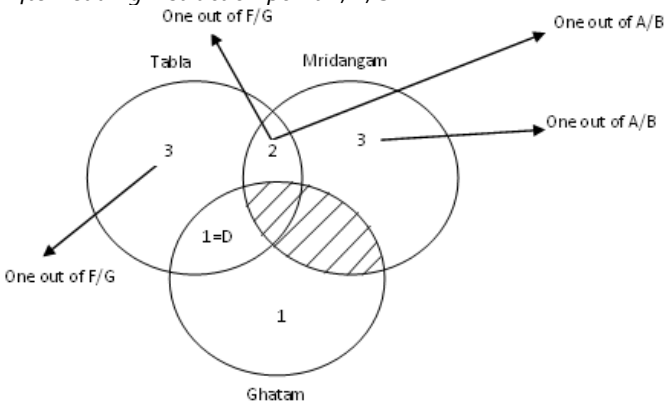
It can only be from A/B, F/G
∴ C and F is the correct options

QNo:- 50 ,Correct Answer:- *A*

Explanation:- *After Reading the passage*



After reading instruction point 1, 2, 3



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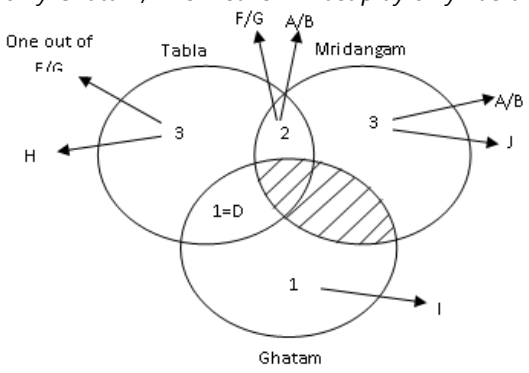
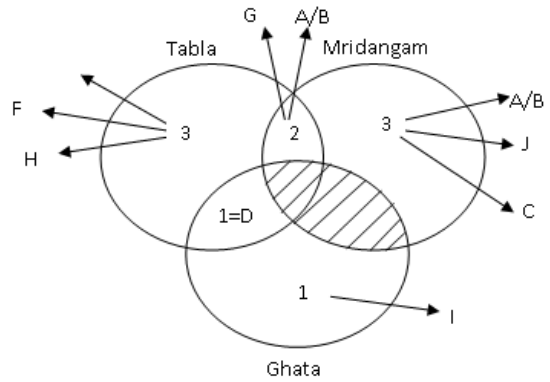




∴ E, F & H are expert in Tabla only

QNo:- 51 ,Correct Answer:- B

Explanation:- We want the least value of the maximum function, which is possible when the values inside the brackets are as close as possible. As number of students must be integer, therefore values of x_1, x_2.....x_{12} can be 8 or 9 (i.e 8,8,8,8,8,8,8,8,9,9,9,9).
Therefore max value of x_0 is 9.

QNo:- 52 ,Correct Answer:- 62

Explanation:- Let the number of toffees be x.
Toffees Given to first child = (x/2)+1
Toffees given to second child= (1/2) (x- (x/2) -1) + 1 = (x/4)+(1/2)
We find the symmetry in the pattern of toffees distribution,
Therefore toffees distribution done [(x/2)+1] ,[(x/4)+(1/2)] ,[(x/8)+(1/4)] ,[(x/16)+(1/8)] ,[(x/32)+(1/16)]
⇒ [(x/2)+1] + [(x/4)+(1/2)] + [(x/8)+(1/4)] + [(x/16)+(1/8)] + [(x/32)+(1/16)] = x
⇒ (62/32) = x – (31/32)x
⇒ x=62

QNo:- 53 ,Correct Answer:- 12

Explanation:- Let x be the number of year after which veeru amount will be equal to Joy amount.
So, (principle + Interest) for Veeru after x year = 10,000 + 10,000$\left(\frac{5x}{100}\right)$and (principle + Interest) for Joy after (x – 2) years = 8000 + 8000$\left(\frac{10(x-2}{100}\right)$
Accroding to given condtion,
$\Rightarrow 10000+10000\left(\frac{5x}{100}\right)=8000+8000\left(\frac{10(x-2}{100}\right)$
⇒ 10000 + 500x = 800 + 800x – 1600 ⇒ x = 12

QNo:- 54 ,Correct Answer:- D

Explanation:- $2^{y^2\log_3 5}=5^{\log_2 3}$
$\Rightarrow \log\left(2^{y^2\log_3 5}\right)=\log\left(5^{\log_2 3}\right)$
$\Rightarrow y^2\frac{\log 5}{\log 3}\times\log 2=\frac{\log 3}{\log 2}\times\log 5$
$\Rightarrow y^2=\left(\frac{\log 3}{\log 2}\right)^2 \Rightarrow y=-\left(\frac{\log 3}{\log 2}\right)$ [$\because y$ is negative]
$y=-\log_2 3=\log_2\frac{1}{3}$

QNo:- 55 ,Correct Answer:- 12

Explanation:- As, distance covered is same with both the speed,
$\therefore D=S\times T\Rightarrow\frac{8}{60}\times t=\frac{15}{60}\times(t-35)$
(where, t is the time taken in minutes by Amal when his speed is 8km/hr)
$\Rightarrow t=75$ minutes $\therefore D=\frac{8}{60}\times 75$
This means, Amal started from his house at 9:00 AM and taken 75 minutes to reach office with the speed of 8 km/hr.
Now, Amal starts at 9:10 Am and wanted to reach office at 10:00 AM, i.e. is 50 minutes.
We know, $S=\frac{Distance}{Time}=\frac{8\times 60\times 75}{50\times 60}=12$ km/hr

QNo:- 56 ,Correct Answer:- D

Explanation:- Let usual speed is x and time is t
If speed becomes 1/3 time will become 3 times so, time taken is 3t
Given that 3t –t = 30. So t is 15 min.
On return journey, in 5 minutes, it will cover 1/3rd return journey, in 5 minutes, it will cover 1/3rd distance, Ti cover the remaining distance, it has 10 minutes at usual speed but as it stopped for 4 minutes, remaining time is 6 minutes.
Ratio of normal time to new time is 5:3.
Ratio of normal speed to new speed is 3:5.
So speed increased by 2/3 or 66.77%

QNo:- 57 ,Correct Answer:- B

Explanation:-
$2^x + 2^{-x} = 2 - (x-2)^2$
LHS equation will always be greater than or equal to 2, whereas RHS equation will always be less than or equal to 2.
This means this can only be equal when LHS and RHS both are 2, which is not possible as they will be equal to 2 at two different values of x.

QNo:- 58 ,Correct Answer:- 8

Explanation:- Dye Water
40L ⇒ 2 : 3
⇒ 16 24

Now, water is added and ratio becomes 2:5 but dye volume in the solution is same
Let, x L ⇒ 2 : 5
⇒ 16 ?
$\therefore \frac{2}{7} \times x = 16 \Rightarrow x = 56$
⇒ 16 40
Now, one fourth of solution taken out
⇒ 12 30
Now, dye is added but water volume remain same and ratio become 2:3
Let y^2 ⇒ 2 : 3
? 30
$\Rightarrow \frac{3}{5} \times y = 30 \Rightarrow y = 50$
∴ 50L ⇒ 2 : 3
⇒ 20 30
This means 8L dye is added.

QNo:- 59 ,Correct Answer:- D

Explanation:- $A + \frac{B+C}{2} = 5 \Rightarrow 2A + B + C = 10 \ldots\ldots\ldots\ldots (1)$
$B + \frac{A+C}{2} = 7 \Rightarrow 2B + A + C = 14 \ldots\ldots\ldots\ldots (2)$
(2) – (1) ⇒ B – A = 4
This means sum of A and B must be greater than 4 and it should also be even because if the sum of A and B will be odd then value of A and B will not be integer.
Therefore, only one option ⇒ A + B = 6

QNo:- 60 ,Correct Answer:- *21*

Explanation:- *113, 114, 115, 116, 122*
$\frac{3!}{2!} = 3$ *cases for each number. 123 ⇒ 3! = 6 cases for 123. ∴ Total = 15 + 6 = 21*

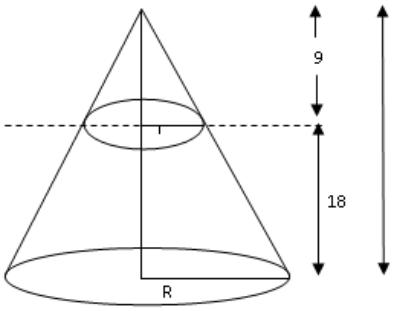
QNo:- 61 ,Correct Answer:- *C*

Explanation:- *Time taken to meet together will be the square root of the product of time taken to reach their destination after the meeting point.*
i.e., $t = \sqrt{45 \times 20} = 30$ minutes
Distance = Speed × time
$\Rightarrow \frac{60}{60} \times (30+45) = \frac{S_2}{60} \times (30+20) \Rightarrow S_2 = \frac{60}{50} \times 75 \Rightarrow S_2 = 90$ km/hr

QNo:- 62 ,Correct Answer:- *36*

Explanation:- $\text{Log}_4 5 = (\log_4 y)(\log_6 \sqrt{5})$
$\Rightarrow \frac{\log 5}{\log y} = \log_6 \sqrt{5}$
$\Rightarrow \log_y 5 = \log_6 \sqrt{5} \Rightarrow \log_y 5 = 2\log_6^2 \sqrt{5}$
$\Rightarrow \log_y 5 = \log_{36} 5$
$\Rightarrow y = 36$

QNo:- 63 ,Correct Answer:- *A*



Explanation:-
We know, $\frac{27}{R} = \frac{9}{r}$
$\Rightarrow r = \frac{R}{3}$. Given,
$\frac{1}{3}\pi\left[R^2 \times 27 - r^2 \times 9\right] - \frac{1}{3}\pi[r^2 \times 9] = 225$
$\Rightarrow \frac{1}{3}\pi R^2[25] = 225$
$\Rightarrow \frac{1}{3}\pi R^2 \times 27 = \frac{225}{25} \times 27$
⇒ *Volume of cone = 243*

QNo:- 64 ,Correct Answer:- D

Explanation:- Time taken Relative speed

Length of train → 90 → S - 2

Length of train → 100 → S - 4

Length of train → ? → S

$\therefore \frac{S-2}{S-4}=\frac{100}{90}$

⇒ 9S - 18 = 10S - 40

⇒ S = 22

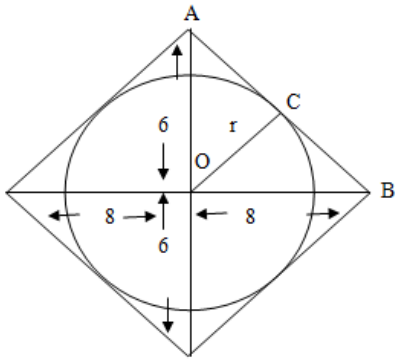
$\therefore \text{time taken} = \frac{\text{Distance}}{\text{Speed}}$

$= \frac{90\times 20}{22}$

$= 81.81$

≈ 82

QNo:- 65 ,Correct Answer:- C



Explanation:-

By Pythagoras, AB will be = 10 cm

Now, area of Δ AOB = ½ × 6 / 8

Also ΔAOB = ½ × 10 × OC

⇒ ½ × 6 × 8 = ½ × 10 × OC

⇒ 4.8cm = r .

$\frac{\text{Area of circle}}{\text{Area of Rhombus}}=\frac{\pi(4.8)^2}{\frac{1}{2}\times 12\times 16}=\frac{6}{25}\pi$

QNo:- 66 ,Correct Answer:- D

Explanation:- f(5 + x) = f(5- x)

x → x - 5

⇒ f(5 + x - 5) = f(5- x + 5)

⇒ f (x) = f (10 - x)

Given, f (x) = 0

∴ Also, f (10 - x) = 0

Given that these are four distinct solutions

⇒ f (α) = 0, f (β) = 0

⇒ f (10 - α) = 0, f (10 - β) = 0

Sum of these roots = α + β + 10 - α + 10 - β = 20

QNo:- 67 ,Correct Answer:- C

Explanation:- $x = (4096)^{7+4\sqrt{2}}$

$\Rightarrow x = (2^6)^{2(7+4\sqrt{3})}$

$\Rightarrow x = (64)^{14+8\sqrt{3}}$

$\Rightarrow (x)^{\frac{1}{14+8\sqrt{3}}} = 64$

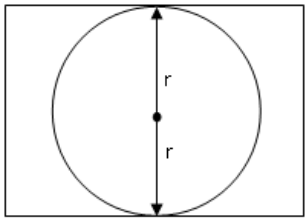
$\Rightarrow (x)^{\frac{14-8\sqrt{3}}{4}} = 64$

$\Rightarrow x^{\left(\frac{7}{2}-2\sqrt{3}\right)} = 64$

$\Rightarrow \frac{x^{\frac{7}{2}}}{x^{2\sqrt{3}}} = 64$

QNo:- 68 ,Correct Answer:- A

Explanation:-



Let the area of circle be x

$\Rightarrow x + \frac{2}{3}x = 135$

$\frac{2}{2}$

$\Rightarrow x = \frac{135 \times 3}{5} \Rightarrow x = 81 \Rightarrow \pi r^2 = 81$ (where, r is radius of circle)

$\Rightarrow r = \frac{9}{\sqrt{\pi}}$

$\Rightarrow 2r = \frac{18}{\sqrt{\pi}} \Rightarrow (2r)$. (other side of rectangle $= 135$

(let, ℓ be the other side of rectangle)

$\ell = \frac{135}{18}\sqrt{\pi}$

$\ell = \frac{15\sqrt{\pi}}{2}$

Perimeter = $2(\ell + b)$

$= 2\left(\frac{15}{2}\sqrt{\pi} + \frac{18}{\sqrt{\pi}}\right)$

$= 3\pi\left(5 + \frac{12}{\pi}\right)$

QNo:- 69 ,Correct Answer:- 1

Explanation:- Let, $x + \frac{1}{x} = y$

$\Rightarrow y^2 - 3y + 2 = 0$

$\Rightarrow y = \frac{3 \pm \sqrt{9 - 4.1.2}}{2}$

$= 2, 1$

$\therefore x + \frac{1}{x} = 2$ $\quad$ $x + \frac{1}{x} = 1$

$\Rightarrow x^2 + 1 - 2x = 0$ $\quad$ $\Rightarrow x^2 + 1 - x = 0$

$\Rightarrow x = \frac{2 \pm \sqrt{4 - 4.1.1}}{2}$ $\quad$ $\Rightarrow x = \frac{1 \pm \sqrt{1 - 4.1.1}}{2}$

$= 1$ $\quad$ Imaginary root

$\therefore x = 1$. Only one real root

QNo:- 70 ,Correct Answer:- D

Explanation:- Case I $\Rightarrow$ when C = 8

$\Rightarrow bc = 96 \Rightarrow b = 12$

$\therefore ab = 432$

$\Rightarrow a = 36$

$\Rightarrow a + b + c = 8 + 12 + 36 = 56$

Case II $\Rightarrow$ when C = 7

$\Rightarrow bc = 96 \Rightarrow b$ will not be integer

$\therefore c = 7$ not possible

Case III $\Rightarrow$ when C = 6

$\Rightarrow bc = 96 \Rightarrow b = 16$

$\therefore ab = 432$

$\Rightarrow a = 432/16 = 27$

$\Rightarrow a + b + c = 49$

Case IV $\Rightarrow$ C = 5 (not possible) because b will not be integer

Case V $\Rightarrow$ C = 4

$\therefore bc = 96 \Rightarrow b = 24$

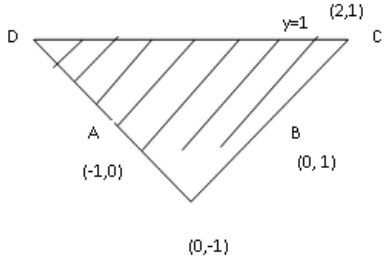
$\therefore ab = 432 \Rightarrow a = 432/24 = 18$

$\therefore a + b + c = 46$

No, need to check further, of 46 is the least option given

QNo:- 71 ,Correct Answer:- *3*

Explanation:- *x| - y ≤ 1, y ≥ 0, y ≤ 1*
If x > 0 ⇒ x – y = 1 ..... (1)
And x < 0 ⇒ x – y = 1
Or x + y = -1 ..... (2)
Put x = 0 in (1), y = -1
Put y = 0 in (1) x = 1
Put y = 1 in (1), x = 2
Put x = 0 in (2), y = -1
Y = 0 in (2), x = -1
Y = 1 in (2), x = -2
Shaded area is trapezium = ½ [2 + 4] × 1 = 35q.units



QNo:- 72 ,Correct Answer:- *C*

Explanation:- *65% lit. 35% Illiterates*
↓
25%
16.25% young
Given, 28% are young in which 16.25% are literates (from above) and 11.75% are illiterates. ∴ out of 35% illiterates 23.25% are old, that means
$\left(\frac{23.25}{35}\times 100\right)^{\%}$
⇒ 66.428% old illiterates

QNo:- 73 ,Correct Answer:- *C*

Explanation:- *aa bb a > 0*
So, numbers are
1100 2200
1122 2222
1144 2244
1166 2266
1188 2288
↓ ↓
Mean Mean and so on
1144 2244
Average of 1144, 2244, 3344, 4444, 5544, 6644, 7744, 8844, 9944 is 5544

QNo:- 74 ,Correct Answer:- *C*

Explanation:-

	A	B	C
Volume	3	4	7
Weight of volume	5	2	6
Weight	15	8	42

$$\therefore \text{C's weight} = \frac{42}{(15+8+42)} \times 130 = 84 \text{ kg}$$

QNo:- 75 ,Correct Answer:- *20000*

Explanation:- *Let the purchase price of develop be x ∴ 1.2x + 0.9 (50000-x) = 1.02 × 50000*

$$\Rightarrow 0.3x + 45000 = 51000 \Rightarrow x = \frac{6000}{3} \times 10 \Rightarrow x = 20{,}000$$

QNo:- 76 ,Correct Answer:- *B*

Explanation:- $\left(x^2 - 7x + 11\right)^{x^2+3x+42} = 1$

As $a^0 = 1$

$\Rightarrow x^2 - 13x + 42 = 0$

$\Rightarrow x = 6, 7$

Also, $x^2 - 7x + 11 = 1$, $x^2 - 7x + 10 = 0$

$\Rightarrow x = 2, 5$

Also, $x^2 - 7x + 11 = -1$, $x^2 - 7x + 12 = 0$

$\Rightarrow x = 3, 4$

Directions of Test

Test Name	Actual CAT 2020 Slot II	Total Questions	76	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	26	0:40(h:m)	3	1/3
DI & Reasoning	24	0:40(h:m)	3	1/3
Quantitative Ability	26	0:40(h:m)	3	1/3

Section : Verbal Ability

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 1

174 incidents of piracy were reported to the International Maritime Bureau last year, with Somali pirates responsible for only three. The rest ranged from the discreet theft of coils of rope in the Yellow Sea to the notoriously ferocious Nigerian gunmen attacking and hijacking oil tankers in the Gulf of Guinea, as well as armed robbery off Singapore and the Venezuelan coast and kidnapping in the Sundarbans in the Bay of Bengal. For [Dr. Peter] Lehr, an expert on modern-day piracy, the phenomenon's history should be a source of instruction rather than entertainment, piracy past offering lessons for piracy present. . . .

But . . . where does piracy begin or end? According to St Augustine, a corsair captain once told Alexander the Great that in the forceful acquisition of power and wealth at sea, the difference between an emperor and a pirate was simply one of scale. By this logic, European empire-builders were the most successful pirates of all time. A more eclectic history might have included the conquistadors, Vasco da Gama and the East India Company. But Lehr sticks to the disorganised small fry, making comparisons with the renegades of today possible.

The main motive for piracy has always been a combination of need and greed. Why toil away as a starving peasant in the 16th century when a successful pirate made up to £4,000 on each raid? Anyone could turn to freebooting if the rewards were worth the risk . . . .

Increased globalisation has done more to encourage piracy than suppress it. European colonialism weakened delicate balances of power, leading to an influx of opportunists on the high seas. A rise in global shipping has meant rich pickings for freebooters. Lehr writes: "It quickly becomes clear that in those parts of the world that have not profited from globalization and modernisation, and where abject poverty and the daily struggle for survival are still a reality, the root causes of piracy are still the same as they were a couple of hundred years ago." . . .

Modern pirate prevention has failed. After the French yacht Le Gonant was ransomed for $2million in 2008, opportunists from all over Somalia flocked to the coast for a piece of the action. . . . A consistent rule, even today, is there are never enough warships to patrol pirate-infested waters. Such ships are costly and only solve the problem temporarily; Somali piracy is bound to return as soon as the warships are withdrawn. Robot shipping, eliminating hostages, has been proposed as a possible solution; but as Lehr points out, this will only make pirates switch their targets to smaller carriers unable to afford the technology.

His advice isn't new. Proposals to end illegal fishing are often advanced but they are difficult to enforce. Investment in local welfare put a halt to Malaysian piracy in the 1970s, but was dependent on money somehow filtering through a corrupt bureaucracy to the poor on the periphery. Diplomatic initiatives against piracy are plagued by mutual distrust: the Russians execute pirates, while the EU and US are reluctant to capture them for fear they'll claim asylum.

The author ascribes the rise in piracy today to all of the following factors EXCEPT:

A) decreased surveillance of the high seas. B) the growth in international shipping with globalisation.
C) the high rewards via ransoms for successful piracy attempts. D) colonialism's disruption of historic ties among countries.

Question No. : 2

"Why toil away as a starving peasant in the 16th century when a successful pirate made up to £4,000 on each raid?" In this sentence, the author's tone can best be described as being:

A) indignant, at the scale of wealth successful pirates could amass in medieval times.
B) ironic, about the reasons why so many took to piracy in medieval times.
C) analytical, to explain the contrasts between peasant and pirate life in medieval England.
D) facetious, about the hardships of peasant life in medieval England.

Question No. : 3

"A more eclectic history might have included the conquistadors, Vasco da Gama and the East India Company. But Lehr sticks to the disorganised small fry . . ." From this statement we can infer that the author believes that:

A) Vasco da Gama and the East India Company laid the ground for modern piracy.
B) Lehr does not assign adequate blame to empire builders for their past deeds.
C) the disorganised piracy of today is no match for the organised piracy of the past.
D) colonialism should be considered an organised form of piracy.

Question No. : 4

We can deduce that the author believes that piracy can best be controlled in the longrun:

A) through the extensive deployment of technology to track ships and cargo
B) through lucrative welfare schemes to improve the lives of people in affected regions.
C) if we eliminate poverty and income disparities in affected regions.
D) through international cooperation in enforcing stringent deterrents

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 5

In a low-carbon world, renewable energy technologies are hot business. For investors looking to redirect funds, wind turbines and solar panels, among other technologies, seem a straightforward choice. But renewables need to be further scrutinized before being championed as forging a path toward a low-carbon future. Both the direct and indirect impacts of renewable energy must be examined to ensure that a climate-smart future does not intensify social and environmental harm. As renewable energy production requires land, water, and labor, among other inputs, it imposes costs on people and the environment. Hydropower projects, for instance, have led to community dispossession and exclusion . . .Renewable energy supply chains are also intertwined with mining, and their technologies contribute to growing levels of electronic waste . . . Furthermore, although renewable energy can be produced and distributed through small-scale, local systems, such an approach might not generate the high returns on investment needed to attract capital.

Although an emerging sector, renewables are enmeshed in long-standing resource extraction through their dependence on minerals and metals . . . Scholars document the negative consequences of mining . . . even for mining operations that commit to socially responsible practices[:] "many of the world's largest reservoirs of minerals like cobalt, copper, lithium,[and] rare earth minerals"—the ones needed for renewable technologies—"are found in fragile states and under communities of marginalized peoples in Africa, Asia, and Latin America. "Since the demand for metals and minerals will increase substantially in a renewable-powered future . . . this intensification could exacerbate the existing consequences of extractive activities.

Among the connections between climate change and waste, O'Neill . . . highlights that "devices developed to reduce our carbon footprint, such as lithium batteries for hybrid and electric cars or solar panels[,] become potentially dangerous electronic waste at the end of their productive life." The disposal of toxic waste has long perpetuated social injustice through the flows of waste to the Global South and to marginalized communities in the Global North . ..

While renewable energy is a more recent addition to financial portfolios, investments in the sector must be considered in light of our understanding of capital accumulation. As agricultural finance reveals, the concentration of control of corporate activity facilitates profit generation. For some climate activists, the promise of renewables rests on their ability not only to reduce emissions but also to provide distributed, democratized access to energy . . .But Burke and Stephens . . . caution that "renewable energy systems offer a possibility but nota certainty for more democratic energy futures." Small-scale, distributed forms of energy are only highly profitable to institutional investors if control is consolidated somewhere in the financial chain. Renewable energy can be produced at the household or neighborhood level. However, such small-scale, localized production is unlikely to generate high returns for investors. For financial growth to be sustained and expanded by the renewable sector, production and trade in renewable energy technologies will need to be highly concentrated, and large asset management firms will likely drive those developments.

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

A) Renewable energy systems have little or no environmental impact.
B) Renewable energy systems are as expensive as non-renewable energy systems.
C) Renewable energy systems are not as profitable as non-renewable energy systems.
D) The production and distribution of renewable energy through small-scale, local systems is not economically sustainable.

Question No. : 6

All of the following statements, if true, could be seen as supporting the arguments in the passage, EXCEPT:

A) One reason for the perpetuation of social injustice lies in the problem of the disposal of toxic waste.
B) Marginalised people in Africa, Asia and Latin America have often been the main sufferers of corporate mineral extraction projects.
C) The example of agricultural finance helps us to see how to concentrate corporate activity in the renewable energy sector.
D) The possible negative impacts of renewable energy

Question No. : 7

Which one of the following statements, if true, could be an accurate inference from the first paragraph of the passage?

A) The author has reservations about the consequences of non-renewable energy systems.
B) The author does not think renewable energy systems can be as efficient as non-renewable energy systems
C) The author's only reservation is about the profitability of renewable energy systems.
D) The author has reservations about the consequences of renewable energy systems.

Question No. : 8

Which one of the following statements best captures the main argument of the last paragraph of the passage?

A) Renewable energy systems are not democratic unless they are corporate-controlled.
B) The development of the renewable energy sector is a double-edged sword.
C) Renewable energy produced at the household or neighbourhood level is more efficient than mass-produced forms of energy.
D) Most forms of renewable energy are not profitable investments for institutional investors.

Question No. : 9

Based on the passage, we can infer that the author would be most supportive of which one of the following practices?

A) The study of the coexistence of marginalised people with their environments.
B) Encouragement for the development of more environment-friendly carbon-based fuels.
C) More stringent global policies and regulations to ensure a more just system of toxic waste disposal.
D) The localised, small-scale development of renewable energy systems

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 10

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

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

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

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

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

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

"No amount of social analysis can account fully for the existence of Michelangelo or Leonardo." In light of the passage, which one of the following interpretations of this sentence is the most accurate?

A) Socially existing beings cannot be analysed, unlike the art of Michelangelo or Leonardo which can.
B) Michelangelo or Leonardo cannot be subjected to social analysis because of their genius.
C) Social analytical accounts of people like Michelangelo or Leonardo cannot explain their genius.
D) No analyses exist of Michelangelo's or Leonardo's social accounts

Question No. : 11

All of the following statements may be considered valid inferences from the passage, EXCEPT:

A) visual culture is not just about how we see, but also about how our visual practice scan impact and change the world.
B) artifacts are meaningful precisely because they help to construct the meanings of the world for us.
C) understanding the structures of perception is an important part of understanding how visual cultures work.
D) studying visual culture requires institutional structures without which the structures of perception cannot be analysed

Question No. : 12

"Seeing . . . operates on the foundation of covenants with images that establish the conditions for meaningful visual experience." In light of the passage, which one of the following statements best conveys the meaning of this sentence?

A) Images are meaningful visual experiences when they have a foundation of covenants seeing them.
B) Sight becomes a meaningful visual experience because of covenants of meaningfulness that we establish with the images we see.
C) The way we experience sight is through images operated on by meaningful covenants.
D) Sight as a meaningful visual experience is possible when there is a foundational condition established in images of covenants.

Question No. : 13

Which set of keywords below most closely captures the arguments of the passage?

A) Imagery, Visual Practices, Life worlds, Structures of Perception.
B) Visual Construction of Reality, Work of Genius, Ethnography, Epiphenomena
C) Scholars, Social Analysis, Michelangelo and Leonardo, Interpretive Devices
D) Visual Culture, Aesthetic Value, Lay Audience, Visual Experience.

Question No. : 14

Which one of the following best describes the word "epiphenomena" in the last sentence of the passage?

A) Phenomena amenable to analysis. B) Visual phenomena of epic proportions. C) Overarching collections of images
D) Phenomena supplemental to the evidence

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 15

Aggression is any behavior that is directed toward injuring, harming, or inflicting pain on another living being or group of beings. Generally, the victim(s) of aggression must wish to avoid such behavior in order for it to be considered true aggression. Aggression is also categorized according to its ultimate intent. Hostile aggression is an aggressive act that results from anger, and is intended to inflict pain or injury because of that anger. Instrumental aggression is an aggressive act that is regarded as a means to an end other than pain or injury. For example, an enemy combatant may be subjected to torture in order to extract useful intelligence, though those inflicting the torture may have no real feelings of anger or animosity toward their subject. The concept of aggression is very broad, and includes many categories of behavior (e.g., verbal aggression, street crime, child abuse, spouse abuse, group conflict, war, etc.). A number of theories and models of aggression have arisen to explain these diverse forms of behavior, and these theories/models tend to be categorized according to their specific focus. The most common system of categorization groups the various approaches to aggression into three separate areas, based upon the three key variables that are present whenever any aggressive act or set of acts is committed. The first variable is the aggressor him/herself. The second is the social situation or circumstance in which the aggressive act(s) occur. The third variable is the target or victim of aggression.

Regarding theories and research on the aggressor, the fundamental focus is on the factors that lead an individual (or group) to commit aggressive acts. At the most basic level, some argue that aggressive urges and actions are the result of inborn, biological factors. Sigmund Freud (1930) proposed that all individuals are born with a death instinct that predisposes us toa variety of aggressive behaviors, including suicide (self-directed aggression) and mental illness (possibly due to an unhealthy or unnatural suppression of aggressive urges). Other influential perspectives supporting a biological basis for aggression conclude that humans evolved with an abnormally low neural inhibition of aggressive impulses (in comparison toother species), and that humans possess a powerful instinct for property accumulation and territorialism. It is proposed that this instinct accounts for hostile behaviors ranging from minor street crime to world wars. Hormonal factors also appear to play a significant role in fostering aggressive tendencies. For example, the hormone testosterone has been shown to increase aggressive behaviors when injected into animals. Men and women convicted of violent crimes also possess significantly higher levels of testosterone than men and women convicted of nonviolent crimes. Numerous studies comparing different age groups, racial/ethnic groups, and cultures also indicate that men, overall, are more likely to engage in a variety of aggressive behaviors (e.g., sexual assault, aggravated assault, etc.) than women. One explanation for higher levels of aggression in men is based on the assumption that, on average, men have higher levels of testosterone than women.

All of the following statements can be seen as logically implied by the arguments of the passage EXCEPT:

A) if the alleged aggressive act is not sought to be avoided, it cannot really be considered aggression
B) Freud's theory of aggression proposes that aggression results from the suppression of aggressive urges.
C) Freudian theory of suicide as self-inflicted aggression implies that an aggressive act need not be sought to be avoided in order for it to be considered aggression.
D) a common theory of aggression is that it is the result of an abnormally low neural regulation of testosterone.

Question No. : 16

The author identifies three essential factors according to which theories of aggression are most commonly categorized. Which of the following options is closest to the factors identified by the author?

A) Hostile – Instrumental – Hormonal B) Extreme – Moderate – Mild C) Psychologically – Sociologically – Medically.
D) Aggressor – Circumstances of aggression – Victim

Question No. : 17

The author discusses all of the following arguments in the passage EXCEPT that:

A) the nature of aggression can vary depending on several factors, including intent.
B) several studies indicate that aggression may have roots in the biological condition of humanity.
C) men in general are believed to be more hormonally driven to exhibit violence than women.
D) aggression in most societies is kept under control through moderating the death instinct identified by Freud.

Question No. : 18

"An enemy combatant may be subjected to torture in order to extract useful intelligence, though those inflicting the torture may have no real feelings of anger or animosity toward their subject." Which one of the following best explicates the larger point being made by the author here?

A) In certain kinds of aggression, inflicting pain is not the objective, and is no more than a utilitarian means to achieve another end.
B) The use of torture to extract information is most effective when the torturer is not emotionally involved in the torture.
C) Information revealed by subjecting an enemy combatant to torture is not always reliable because of the animosity involved.
D) When an enemy combatant refuses to reveal information, the use of torture can sometimes involve real feelings of hostility.

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 19

1. But the attention of the layman, not surprisingly, has been captured by the atom bomb, although there is at least a chance that it may never be used again.
2. Of all the changes introduced by man into the household of nature, [controlled] large-scale nuclear fission is undoubtedly the most dangerous and most profound.
3. The danger to humanity created by the so-called peaceful uses of atomic energy may, however, be much greater.
4. The resultant ionizing radiation has become the most serious agent of pollution of the environment and the greatest threat to man's survival on earth.

A) 2413 B) C) D)

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 20

1. The victim's trauma after assault rarely gets the attention that we lavish on the moment of damage that divided the survivor from a less encumbered past.
2. One thing we often do with narratives of sexual assault is sort their respective parties into different temporalities: it seems we are interested in perpetrators' futures and victims' pasts.
3. One result is that we don't have much of a vocabulary for what happens in a victim's life after the painful past has been excavated, even when our shared language gestures toward the future, as the term "survivor" does.
4. Even the most charitable questions asked about the victims seem to focus on the past, in pursuit of understanding or of corroboration of painful details.
5. As more and more stories of sexual assault have been made public in the last two years, the genre of their telling has exploded --- crimes have a tendency to become not just stories but genres.

A) 4 B) C) D)

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 21

1. It also has four movable auxiliary telescopes 1.8 m in diameter.
2. Completed in 2006, the Very Large Telescope (VLT) has four reflecting telescopes,8.2 m in diameter that can observe objects 4 billion times weaker than can normally be seen with the naked eye.
3. This configuration enables one to distinguish an astronaut on the Moon.
4. When these are combined with the large telescopes, they produce what is called interferometry: a simulation of the power of a mirror 16 m in diameter and the resolution of a telescope of 200 m.

A) 2143 B) C) D)

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 22

1. While you might think that you see or are aware of all the changes that happen in your immediate environment, there is simply too much information for your brain to fully process everything.
2. Psychologists use the term 'change blindness' to describe this tendency of people to be blind to changes though they are in the immediate environment.
3. It cannot be aware of every single thing that happens in the world around you.
4. Sometimes big shifts happen in front of your eyes and you are not at all aware of these changes.

A) 1342 B) C) D)

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph.*

Question No. : 23

All humans make decisions based on one or a combination of two factors. This is either intuition or information. Decisions made through intuition are usually fast, people don't even think about the problem. It is quite philosophical, meaning that someone who made a decision based on intuition will have difficulty explaining the reasoning behind it. The decision-maker would often utilize her senses in drawing conclusions, which again is based on some experience in the field of study. On the other side of the spectrum, we have decisions made based on information. These decisions are rational — it is based on facts and figures, which unfortunately also means that it can be quite slow. The decision-maker would frequently use reports, analyses, and indicators to form her conclusion. This methodology results in accurate, quantifiable decisions, meaning that a person can clearly explain the rationale behind it.

A) While decisions based on intuition can be made fast, the reasons that led to these cannot be spelt out.
B) It is better to make decisions based on information because it is more accurate, and the rationale behind it can be explained.
C) Decisions based on intuition and information result in differential speed and ability to provide a rationale.
D) We make decisions based on intuition or information on the basis of the time available.

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph.*

Question No. : 24

With the Treaty of Westphalia, the papacy had been confined to ecclesiastical functions, and the doctrine of sovereign equality reigned. What political theory could then explain the origin and justify the functions of secular political order? In his Leviathan, published in 1651, three years after the Peace of Westphalia, Thomas Hobbes provided such a theory. He imagined a "state of nature" in the past when the absence of authority produced a "war of all against all." To escape such intolerable insecurity, he theorized, people delivered their rights to a sovereign power in return forthe sovereign's provision of security for all within the state's border. The sovereign state's monopoly on power was established as the only way to overcome the perpetual fear of violent death and war.

A) Thomas Hobbes theorized that sovereign states emerged out of people's voluntary desire to overcome the sense of insecurity and establish the doctrine of sovereign equality.
B) Thomas Hobbes theorized the emergence of sovereign states as a form of transactional governance to limit the power of the papacy.
C) Thomas Hobbes theorized the voluntary surrender of rights by people as essential for emergence of sovereign states.
D) Thomas Hobbes theorized the emergence of sovereign states based on a transactional relationship between people and sovereign state that was necessitated by a sense of insecurity of the people.

DIRECTIONS for the question: *Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

Question No. : 25

1. You can observe the truth of this in every e-business model ever constructed: monopolise and protect data.
2. Economists and technologists believe that a new kind of capitalism is being created - different from industrial capitalism as was merchant capitalism.
3. In 1962, Kenneth Arrow, the guru of mainstream economics, said that in a free market economy the purpose of inventing things is to create intellectual property rights.
4. There is, alongside the world of monopolized information and surveillance, a different dynamic growing up: information as a social good, incapable of being owned or exploited or priced.
5. Yet information is abundant. Information goods are freely replicable. Once a thing is made, it can be copied and pasted infinitely.

A) 2 B) C) D)

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph.*

Question No. : 26

The rural-urban continuum and the heterogeneity of urban settings pose an obvious challenge to identifying urban areas and measuring urbanization rates in a consistent way within and across countries. An objective methodology for distinguishing between urban and rural areas that is based on one or two metrics with fixed thresholds may not adequately capture the wide diversity of places. A richer combination of criteria would better describe the multifaceted nature of a city's function and its environment, but the joint interpretation of these criteria may require an element of human judgment.

A) The difficulty of accurately identifying urban areas means that we need to create a rich combination of criteria that can be applied to all urban areas.
B) With the diversity of urban landscapes, measurable criteria for defining urban areas may need to be supplemented with human judgement.
C) Current methodologies used to define urban and rural areas are no longer relevant to our being able to study trends in urbanisation.
D) Distinguishing between urban and rural areas might call for some judgement on the objective methodology being used to define a city's functions.

Section : DI & Reasoning

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 27

Twenty five coloured beads are to be arranged in a grid comprising of five rows and five columns. Each cell in the grid must contain exactly one bead. Each bead is coloured either Red, Blue or Green.

While arranging the beads along any of the five rows or along any of the five columns, the rules given below are to be followed:
1. Two adjacent beads along the same row or column are always of different colours.
2. There is at least one Green bead between any two Blue beads along the same row or column.
3. There is at least one Blue and at least one Green bead between any two Red beads along the same row or column.

Every unique, complete arrangement of twenty five beads is called a configuration.

The total number of possible configurations using beads of only two colors is:

A) 2 B) C) D)

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 28

Twenty five coloured beads are to be arranged in a grid comprising of five rows and five columns. Each cell in the grid must contain exactly one bead. Each bead is coloured either Red, Blue or Green.

While arranging the beads along any of the five rows or along any of the five columns, the rules given below are to be followed:
1. Two adjacent beads along the same row or column are always of different colours.
2. There is at least one Green bead between any two Blue beads along the same row or column.
3. There is at least one Blue and at least one Green bead between any two Red beads along the same row or column.

Every unique, complete arrangement of twenty five beads is called a configuration.

What is the maximum possible number of Red beads that can appear in any configuration?

A) 9 B) C) D)

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 29

Twenty five coloured beads are to be arranged in a grid comprising of five rows and five columns. Each cell in the grid must contain exactly one bead. Each bead is coloured either Red, Blue or Green.

While arranging the beads along any of the five rows or along any of the five columns, the rules given below are to be followed:
1. Two adjacent beads along the same row or column are always of different colours.
2. There is at least one Green bead between any two Blue beads along the same row or column.
3. There is at least one Blue and at least one Green bead between any two Red beads along the same row or column.

Every unique, complete arrangement of twenty five beads is called a configuration.

What is the minimum number of Blue beads in any configuration?

A) 6 B) C) D)

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 30

Twenty five coloured beads are to be arranged in a grid comprising of five rows and five columns. Each cell in the grid must contain exactly one bead. Each bead is coloured either Red, Blue or Green.

While arranging the beads along any of the five rows or along any of the five columns, the rules given below are to be followed:
1. Two adjacent beads along the same row or column are always of different colours.
2. There is at least one Green bead between any two Blue beads along the same row or column.
3. There is at least one Blue and at least one Green bead between any two Red beads along the same row or column.

Every unique, complete arrangement of twenty five beads is called a configuration.

Two Red beads have been placed in 'second row, third column' and 'third row, second column'. How many more Red beads can be placed so as to maximise the number of Red beads used in the configuration?

A) 6 B) C) D)

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 31

The Humanities department of a college is planning to organize eight seminars, one for each of the eight doctoral students - A, B, C, D, E, F, G and H. Four of them are from Economics, three from Sociology and one from Anthropology department. Each student is guided by one among P, Q, R, S and T. Two students are guided by each of P, R and T, while one student is guided by each of Q and S. Each student is guided by a guide belonging to their department.

Each seminar is to be scheduled in one of four consecutive 30-minute slots starting at 9:00am, 9:30 am, 10:00 am and 10:30 am on the same day. More than one seminars can be scheduled in a slot, provided the guide is free. Only three rooms are available and hence at the most three seminars can be Scheduled in a slot. Students who are guided by the same guide must be scheduled in consecutive slots.

The following additional facts are also known.
1. Seminars by students from Economics are scheduled in each of the four slots.
2. A's is the only seminar that is scheduled at 10:00 am. A is guided by R.
3. F is an Anthropology student whose seminar is scheduled at 10:30 am.
4. The seminar of a Sociology student is scheduled at 9:00 am.
5. B and G are both Sociology students, whose seminars are scheduled in the same slot. The seminar of an Economics student, who is guided by T, is also scheduled in the same slot.
6. P, who is guiding both B and C, has students scheduled in the first two slots.
7. A and G are scheduled in two consecutive slots.

Which one of the following statements is true?

A) Three seminars are scheduled in the first slot. B) Two seminars are scheduled in the first slot.
C) Only one seminar is scheduled in the second slot. D) Three seminars are scheduled in the last slot.

Question No. : 32

Who all are NOT guiding any Economics students?

A) P, Q and S B) P, R and S C) Q, R and S D) P, Q and R

Question No. : 33

Which of the following statements is necessarily true?

A) B is scheduled in the first slot. B) H is an Economics student. C) Q is guiding G D) S is guiding F.

Question No. : 34

If D is scheduled in a slot later than Q's, then which of the following two statement(s) is (are) true?

(i) E and H are guided by T.
(ii) G is guided by Q.

A) Only (i) B) Both (i) and (ii) C) Only (ii) D) Neither (i) nor (ii)

Question No. : 35

If E and Q are both scheduled in the same slot, then which of the following statements BEST describes the relationship between D, H, and T?

A) At least one of D and H is guided by T. B) Neither D nor H is guided by T. C) Both D and H are guided by T.
D) Exactly one of D and H is guided by T.

Question No. : 36

If D is scheduled in the slot immediately before Q's, then which of the following is NOT necessarily true?

A) D is guided by T. B) G is guided by Q. C) F is guided by S. D) E is guided by R.

DIRECTIONS for the question: *Go through the graph and the information given below and answer the question that follows.*

Question No. : 37

In an election several candidates contested for a constituency. In any constituency, the winning candidate was the one who polled the highest number of votes, the first runner up was the one who polled the second highest number of votes, the second runner up was the one who polled the third highest number of votes, and so on. There were no ties (in terms of number of votes polled by the candidates) in any of the constituencies in this election.

In an electoral system, a security deposit is the sum of money that a candidate is required to pay to the election commission before he or she is permitted to contest. Only the defeated candidates (i.e., one who is not the winning candidate) who fail to secure more than one sixth of the valid votes polled in the constituency, lose their security deposits.

The following table provides some incomplete information about votes polled in four constituencies: A,B, C and D, in this election.

	Constituency			
	A	B	C	D
No. of candidates contesting	10	12	5	8
Total No. of valid votes polled	5,00,000	3,25,000	6,00,030	
No. of votes polled by the winning candidate	2,75,000	48,750		
No. of votes polled by the first runner up	95,000			37,500
No. of votes polled by the second runner up				30,000
% of valid votes polled by the third runner up				10%

The following additional facts are known:
1. The first runner up polled 10,000 more votes than the second runner up in constituency A.
2. None of the candidates who contested in constituency C lost their security deposit. The difference in votes polled by any pair of candidates in this constituency was at least 10,000.
3. The winning candidate in constituency D polled 5% of valid votes more than that of the first runner up. All the candidates who lost their security deposits while contesting for this constituency, put together, polled 35% of the valid votes.

What is the percentage of votes polled in total by all the candidates who lost their security deposits while contesting for constituency A?

A) 9 B) C) D)

Question No. : 38

How many candidates who contested in constituency B lost their security deposit?

A) 11 B) C) D)

Question No. : 39

What BEST can be concluded about the number of votes polled by the winning candidate in constituency C?

A) less than 2,00,010 B) 1,40,010 C) between 1,40,005 and 1,40,010 D) 1,40,006

Question No. : 40

What was the number of valid votes polled in constituency D?

A) 1,75,000 B) 1,50,000 C) 62,500 D) 1,25,000

Question No. : 41

The winning margin of a constituency is defined as the difference of votes polled by the winner and that of the first runner up. Which of the following CANNOT be the list of constituencies, in increasing order of winning margin?

A) B, C, D, A B) D, B, C, A C) B, D, C, A D) D, C, B, A

Question No. : 42

For all the four constituencies taken together, what was the approximate number of votes polled by all the candidates who lost their security deposit expressed as a percentage of the total valid votes from these four constituencies?

A) 23.91% B) 23.54% C) 32.00% D) 38.25%

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 43

A chain of departmental stores has outlets in Delhi, Mumbai, Bengaluru and Kolkata. The sales are categorized by its three departments – 'Apparel', 'Electronics', and 'HomeDecor'. An Accountant has been asked to prepare a summary of the 2018 and 2019 sales amounts for an internal report. He has collated partial information and prepared the following table.

Sales Amounts (Crore Rupees)								
	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	-	-	-	-	-	-	-	54
Electronics	78	98	82	102	90	70	80	100
HomeDecor	-	100	-	72	-	80	-	54

The following additional information is known.

1. The sales amounts in the Apparel departments were the same for Delhi and Kolkata in2018.
2. The sales amounts in the Apparel departments were the same for Mumbai and Bengaluru in 2018. This sales amount matched the sales amount in the Apparel department for Delhi in2019.
3. The sales amounts in the Home Decor departments were the same for Mumbai and Kolkata in 2018.
4. The sum of the sales amounts of four Electronics departments increased by the same amount as the sum of the sales amounts of four Apparel departments from 2018 to 2019.
5. The total sales amounts of the four Home Decor departments increased by Rs 70 Crores from 2018 to 2019.
6. The sales amounts in the Home Decor departments of Delhi and Bengaluru each increased by Rs 20 Crores from 2018 to 2019.
7. The sales amounts in the Apparel departments of Delhi and Bengaluru each increased by the same amount in 2019 from 2018. The sales amounts in the Apparel departments of Mumbai and Kolkata also each increased by the same amount in 2019 from 2018.
8. The sales amounts in the Apparel departments of Delhi, Kolkata and Bengaluru in 2019 followed an Arithmetic Progression.

In HomeDecor departments of which cities were the sales amounts the highest in 2018and 2019, respectively?

A) Mumbai and Mumbai B) Delhi and Delhi C) Bengaluru and Delhi D) Mumbai and Delhi

Question No. : 44

What was the increase in sales amount, in Crore Rupees, in the Apparel department of Mumbai from 2018 to 2019?

A) 10 B) 5 C) 8 D) 12

Question No. : 45

Among all the 12 departments (i.e., the 3 departments in each of the 4 cities), what was the maximum percentage increase in sales amount from 2018 to 2019?

A) 75 B) 50 C) 28 D) 25

Question No. : 46

What was the total sales amount, in Crore Rupees, in 2019 for the chain of departmental stores?

A) 600 B) 150 C) 750 D) 900

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 47

A shopping mall has a large basement parking lot with parking slots painted in it along a single row. These slots are quite narrow; a compact car can fit in a single slot but an SUV requires two slots. When a car arrives, the parking attendant guides the car to the first available slot from the beginning of the row into which the car can fit.

For our purpose, cars are numbered according to the order in which they arrive at the lot. For example, the first car to arrive is given a number 1, the second a number 2, and so on. This numbering does not indicate whether a car is a compact or an SUV. The configuration of a parking lot is a sequence of the car numbers in each slot. Each single vacant slot is represented by letter V.

For instance, suppose cars numbered 1 through 5 arrive and park, where cars 1, 3 and 5 are compact cars and 2 and 4 are SUVs. At this point, the parking lot would be described by the sequence 1, 2, 3, 4, 5. If cars 2 and 5 now vacate their slots, the parking lot would now be described as 1, V, V, 3, 4. If a compact car (numbered 6) arrives subsequently followed by an SUV (numbered 7), the parking lot would be described by the sequence 1, 6, V, 3, 4, 7.

Answer the following questions INDEPENDENTLY of each other.

Initially cars numbered 1, 2, 3, and 4 arrive among which 1 and 4 are SUVs while 2 and3 are compact cars. Car 1 then leaves, followed by the arrivals of car 5 (a compact car) and car 6 (an SUV). Car 4 then leaves. Then car 7 (an SUV) and car 8 (a compact car)arrive. At this moment, which among the following numbered car is parked next to car3?

A) 8 B) 5 C) 7 D) 6

Question No. : 48

Suppose eight cars have arrived, of which two have left. Also suppose that car 4 is a compact and car 7 is an SUV. Which of the following is a POSSIBLE current configuration of the parking lot?

A) 8, 2, 3, V, 5, 6, 7 B) 8, 2, 3, V, 6, 5, 7 C) V, 2, 3, 7, 5, 6, 8 D) 8, 2, 3, V, 5, 7, 6

Question No. : 49

Suppose the sequence at some point of time is 4, 5, 6, V, 3. Which of the following is NOT necessarily true?

A) Car 3 is an SUV B) Car 5 is a compact C) Car 4 is a compact D) Car 1 is an SUV

Question No. : 50

Suppose that car 4 is not the first car to leave and that the sequence at a time between the arrival of the car 7 and car 8 is V, 7, 3, 6, 5. Then which of the following statements MUST be false?

A) Car 4 is an SUV B) Car 2 is a compact C) Car 6 is a compact D) Car 7 is a compact

Section : Quantitative Ability

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 51

A sum of money is split among Amal, Sunil and Mita so that the ratio of the shares of Amal and Sunil is 3:2, while the ratio of the shares of Sunil and Mita is 4:5. If the difference between the largest and the smallest of these three shares is Rs 400, then Sunil's share, in rupees, is

A) 800 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 52

The number of pairs of integers (x, y) satisfy $x \geq y \geq -20$ and $2x + 5y = 99$ is

A) 17 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 53

The number of integers that satisfy the equality $(x^2 - 5x + 7)^{x+1} = 1$ is

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

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 54

For the same principal amount, the compound interest for two years at 5% per annum exceeds the simple interest for three years at 3% per annum by Rs. 1125.Then the principal amount in rupees is

A) 90000 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 55

Aron bought some pencils and sharpeners. Spending the same amount of money as Aron, Aditya bought twice as many pencils and 10 less sharpeners. If the cost of one sharpener is Rs. 2 more than the cost of a pencil, then the minimum possible number of pencils bought by Aron and Aditya together is

A) 36 B) 33 C) 30 D) 27

DIRECTION for the question: *Solve the following question and mark the best possible option.*

Question No. : 56

In May, John bought the same amount of rice and the same amount of wheat as he had bought in April, but spent Rs. 150 more due to price increase of rice and wheat by 20%and 12%, respectively. If John had spent Rs. 450 on rice in April, then how much did he spend on wheat in May?

A) Rs. 560 B) Rs. 570 C) Rs. 580 D) Rs. 590

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 57

How many 4-digit numbers, each greater than 1000 and each having all four digits distinct, are there with 7 coming before 3?

A) 315 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 58

If x and y are positive real numbers satisfying x + y = 102, then the minimum possible value of

$$2601\left(1+\frac{1}{x}\right)\left(1+\frac{1}{y}\right)$$

A) 2704 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 59

In how many ways can a pair of integers (x, a) be chosen such that $x^2 - 2|x| + |a - 2| = 0$?

A) 5 B) 4 C) 7 D) 6

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 60

Two circular tracks T1 and T2 of radii 100 m and 20 m, respectively touch at a point A. Starting from A at the same time, Ram and Rahim are walking on track T1 and track T2at speeds 15 km/hr and 5 km/hr respectively. The number of full rounds that Ram will make before he meets Rahim again for the first time is

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

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 61

Let $f(x) = x^2 + ax + b$ and $g(x) = f(x + 1) - f(x-1)$. If $f(x) \geq 0$ for all real x, and $g(20) = 72$, then the smallest possible value of b is

A) 4 B) 1 C) 16 D) 0

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 62

Let C1and C2 be concentric circles such that the diameter of C1 is 2cm longer than that of C2. If a chord of C1 has length 6cm and is a tangent of C2, then the diameter, in cm, of C1 is

A) 10 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 63

The sum of the perimeters of an equlateral triangle and a rectangle is 90 cm the area, T, of the triangle and the area, R, of the rectangle, both in sq cm, satisfy the relationship $R = T^2$. If the sides of the rectangle are in the ratio 1:3, then the length, in cm, of the longer side of the rectangle, is

A) 21 B) 18 C) 24 D) 27

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 64

The distance from B to C is thrice that from A to B. Two trains travel from A to C via B. The speed of train 2 is double that of train 1 while traveling from A to B and their speeds are interchanged while traveling from B to C. The ratio of the time taken by train 1 to that taken by train 2 in travelling from A to C is

A) 7:5 B) 1:4 C) 5:7 D) 4:1

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 65

In a group of 10 students, the mean of the lowest 9 scores is 42 while the mean of the highest 9 scores is 47. For the entire group of 10 students, the maximum possible mean exceeds the minimum possible mean by

A) 3 B) 5 C) 4 D) 6

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 66

Let the m-th and n-th terms of a geometric progression be 3/4 and 12, respectively, where m < n. If the common ratio of the progression is an integer r, then the smallest possible value of r + n - m is

A) -2 B) 6 C) 2 D) -4

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 67

A and B are two points on a straight line. Ram runs from A to B while Rahim runs from B to A. After crossing each other, Ram and Rahim reach their destinations in one minute and four minutes, respectively. If they start at the same time, then the ratio of Ram's speed to Rahim's speed is

A) $2\sqrt{2}$ B) 2 C) $\frac{1}{2}$ D) $\sqrt{2}$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 68

In a car race, car A beats car B by 45 km, car B beats car C by 50km, and car A beats C by 90 km. the distance (in km) over which the race has been conducted is

A) 550 B) 500 C) 475 D) 450

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 69

From an interior point of an equilateral triangle, perpendiculars are drawn on all three sides. The sum of the lengths of the three perpendiculars is s. Then the area of triangle is

A) $\frac{2s^2}{\sqrt{3}}$ B) $\frac{s^2}{2\sqrt{3}}$ C) $\frac{\sqrt{3}s^2}{2}$ D) $\frac{s^2}{\sqrt{3}}$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 70

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

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

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 71

Anil buys 12 toys and labels each with the same selling price. He sells 8 toys initially at 20% discount on the labeled price. Then he sells the remaining 4 toys at an additional 25% discount on the discounted price. Thus, he gets a total of Rs 2112, and makes a 10% profit. With no discounts, his percentage of profit would have been

A) 60 B) 54 C) 55 D) 50

DIRECTION for the question: *Solve the following question and mark the best possible option.*

Question No. : 72

For real x, the maximum possible value of $\frac{x}{\sqrt{1+x^4}}$ is

A) $\frac{1}{\sqrt{2}}$ B) $\frac{1}{2}$ C) $\frac{1}{\sqrt{3}}$ D) 1

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 73

John takes twice as much time as Jack to finish a job. Jack and Jim together take one-thirds of the time to finish the job than John takes working alone. Moreover, in order to finish the job, John takes three days more than that taken by three of them working together. In how many days will Jim finish the job working alone?

A) 4 B) C) D)

DIRECTIONS for the question *: Solve the following question and mark the best possible option.*

Question No. : 74

The value of $\log_a\left(\frac{a}{b}\right)+\log_b\left(\frac{b}{a}\right)$, for $1 < a \leq b$ cannot be equal to

A) -0.5 B) 1 C) 0 D) -1

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 75

If x and y are non-negative integers such that x + 9 = z, y + 1 = z and x + y < z + 5,then the maximum possible value of

A) 23 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 76

Let C be a circle of radius 5 meters having center at O. Let PQ be a chord of C that passes through points A and B where A is located 4 meters north of O and B is located3 meters east of O. Then, the length of PQ, in meters, is nearest to

A) 8.8 B) 7.2 C) 7.8 D) 6.6

QNo:- 1 ,Correct Answer:- *A*

Explanation:- *Options B, C and D find support in paragraph 4, 3 and 1 respectively. Only option A does not find mention in the passage.*

QNo:- 2 ,Correct Answer:- *B*

Explanation:- *Indignant means showing anger or annoyance*
Analytical means logical
Facetious meaning sarcasm.
The author's views in the given sentence do not support any of the above.
Rather he is giving reasons to why the people indulge I piracy, so IRONIC is appropriate.

QNo:- 3 ,Correct Answer:- *D*

Explanation:- *Option A is rejected because he has just mentioned them as examples and not those who laid foundation of piracy.*
Option B is rejected as it is opposite to what is mentioned in 2nd paragraph.
Option C is eliminated as the paragraph talks about disorganised people and not piracy.
Only option D brings in the meaning of the sentence(i.e. acquisition of wealth)

QNo:- 4 ,Correct Answer:- *C*

Explanation:- *Everything else is rejected by the author (refer penultimate paragraph) and only option C could help to bring piracy under control in the long run*

QNo:- 5 ,Correct Answer:- *A*

Explanation:- *Refer to the line "for some climate activists------- access to energy". So option A is correct.*

QNo:- 6 ,Correct Answer:- *D*

Explanation:- *Negative impacts of renewable energy need to be studied to ensure no social or environmental harm. Hence option D is the answer.*

QNo:- 7 ,Correct Answer:- *D*

Explanation:- *The author's reservation is about different consequences of renewable energy systems on environment, profitability etc. hence option D is the answer.*

QNo:- 8 ,Correct Answer:- *B*

Explanation:- *According to the last paragraph, there are pros as well as con to look after before going ahead with the development of renewable energy, hence option B is correct.*

QNo:- 9 ,Correct Answer:- *C*

Explanation:- *Throughout the passage, the author is majorly concerned about developing renewable systems o energy to reduce carbon footprint and the disposal of toxic waste globally, hence option C is correct.*

QNo:- 10 ,Correct Answer:- *C*

Explanation:- *Options A, B and D are illogical, only C can be interpreted.*

QNo:- 11 ,Correct Answer:- *D*

Explanation:- *Options A, B and C find support in paragraph 1, 4 and last respectively. Only option D cannot be inferred because not only institutional structure, but a number of other factors need to be considered that help to study visual culture.*

QNo:- 12 ,Correct Answer:- *B*

Explanation:- *Only option B conveys the correct interpretation of the given sentence. The idea is sight or vision becomes the meaningful visual experience. Rest of the options distort the main idea by putting focus on images , meaningful convenants or images of convenants being the base of visual experience which is wrong.*

QNo:- 13 ,Correct Answer:- *A*

Explanation:- *If we scan the passage from paragraph, 2 till the end, we can find the proper order of the words. First is IMAGERY, second is VISUAL PRACTICES, third is LIFEWORLDS, fourth is STRUCTURES OF PERCEPTION. Hence option A.*

QNo:- 14 ,Correct Answer:- *D*

Explanation:- ***EPIPHENOMENA*** *means a secondary effect or by-product of some event or condition, so option D is bringing the correct meaning.*

QNo:- 15 ,Correct Answer:- *D*

Explanation:- *2^{nd} line of para 1 supports option A*
6^{th} line of para 2 supports option B
5^{th} line of para 2 supports option C
Whatever is mentioned as option D is opposite to the contents of the passage, hence the answer.

QNo:- 16 ,Correct Answer:- *D*

Explanation:- *The answer is clearly mentioned in the last lines of 1st para. Hence option D.*

QNo:- 17 ,Correct Answer:- *D*

Explanation:- *Options A, B and C find mention in 2nd paragraph. But option D states opposite to the 4th line of 2nd para, hence the answer.*

QNo:- 18 ,Correct Answer:- *A*

Explanation:- *The example is used by the author to explain a different type of aggression and not the type of torture inflicted on the enemy with the motive to extract any information as depicted in options B, C and D.*
The best explanation is given in option A.

QNo:- 19 ,Correct Answer:- *2413*

Explanation:- *Sentence 2 opens the paragraph as it introduces the topic.*
Sentence 4 gives further explanation to 2 and its contrast is given in 1.
The paragraph concludes with 3.
So the sequence is ***2413***

QNo:- 20 ,Correct Answer:- *4*

Explanation:- *The sentences 5231 seem to form a sequence.*
The 'questions' that arose in 4 seem to be from the same article but a link is missing to put 4 in the above sequence because we can't identify how the 'charitable questions' came up.
Hence ***sentence 4*** *is the misfit*

QNo:- 21 ,Correct Answer:- *2143*

Explanation:- *Sentence 2 introduces the topic VLT.*
The pronoun 'it' in 1 pairs with 2 (noun-pronoun pair)
4 describes further the functioning of VLT (key word 'these')
Finally 3 closes the paragraph.
So the sequence is ***2143***

QNo:- 22 ,Correct Answer:- *1342*

Explanation:- *Sentence 1opens the paragraph by introducing the topic (your brain is aware of all changes going around)*
Sentence 3 comes next in sequence (keyword "it" referring to brain)
Sentence 4 further explains 3
Sentence 2concludes the paragraph.
The final sequence is ***1342***

QNo:- 23 ,Correct Answer:- *C*

Explanation:- *We can conveniently eliminate options A and B as they focus on single aspect of the paragraph.*
Option D, though specifies both aspects , is eliminated because it is not the matter of time that is considered to differentiate between both types of decision- making.
Only ***option C*** *accurately captures the essence of the paragraph.*

QNo:- 24 ,Correct Answer:- *D*

Explanation:- *Options A and C are rejected because of the usage of 'voluntary desires' or 'voluntary surrender of rights' of people, rather it was a transactional relationship between people and sovereign state an the same is aptly presented in* ***option D.***
Option B is opposite to the contents of the paragraph, hence eliminated.

QNo:- 25 ,Correct Answer:- *2*

Explanation:- *The correct sequence is 3154*
Whereas in 2, altogether a different aspect(merchant capitalism) is taken which finds reference in none of the other sentences. Although the other sentence talk about the beginning of the end of capitalism and also discuss new ways of working and sharing economy, but merchant capitalism is misfit here.
Hence ***sentence 2*** *is the misfit.*

QNo:- 26 ,Correct Answer:- *B*

Explanation:- *Option C is eliminated because the paragraph does not mention that current methodologies are irrelevant.*
Option D is rejected as combination of criteria is also important for interpretation of city's functions.
Option A seems close but missed the aspect of human judgement, hence rejected.
Option B *captures the summarized essence of the paragraph.*

QNo:- 27 ,Correct Answer:- *2,9*

Explanation:- *If we have to use 2 colors, then those two colors have to be Blue and Green only, because if red color is used, then there has to be at least one green and one blue between any two beads. There are two possible configurations if exactly 2 colors are used. Diagrams are shown below:*
A

BLUE	GREEN	BLUE	GREEN	BLUE
GREEN	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	BLUE
GREEN	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	BLUE

B

GREEN	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	BLUE
GREEN	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	BLUE
GREEN	BLUE	GREEN	BLUE	GREEN

QNo:- 28 ,Correct Answer:- *9,6*

Explanation:- *Maximum number of red beads can appear only when we minimize Blue and Green colored beads. The arrangement is as given below:*

RED	GREEN	BLUE	RED	GREEN
GREEN	RED	GREEN	BLUE	RED
BLUE	GREEN	RED	GREEN	BLUE
RED	BLUE	GREEN	RED	GREEN
GREEN	RED	BLUE	GREEN	RED

So we can see that there are 9 Red colored beads in the above arrangement.

QNo:- 29 ,Correct Answer:- *6,6*

Explanation:- *Minimum number of blue beads can appear only when we maximize Red and Green colored beads. The arrangement is as given below:*

RED	GREEN	BLUE	RED	GREEN
GREEN	RED	GREEN	BLUE	RED
BLUE	GREEN	RED	GREEN	BLUE
RED	BLUE	GREEN	RED	GREEN
GREEN	RED	BLUE	GREEN	RED

So we can see that there are 6 Blue colored beads in the above arrangement.

QNo:- 30 ,Correct Answer:- *6*

Explanation:- *We will make the arrangement as given in the question:*

RED			RED	
		RED		
	RED			RED
RED			RED	
		RED		

Now we can see that there will be maximum 6 red colored beads which satisfy the given arrangement.

QNo:- 31 ,Correct Answer:- *B*

Explanation:- *From 1, Economics is at scheduled at each slot*
From 2, Only A is scheduled at 10 so it has to be Economics and guided by R
From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.
From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

From the above information only two would be in 1st slot

QNo:- 32 ,Correct Answer:- *A*

Explanation:- *From 1, Economics is at scheduled at each slot*
From 2, Only A is scheduled at 10 so it has to be Economics and guided by R
From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.
From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

Economics are guided by R and T. So ans. is Option 1

QNo:- 33 ,Correct Answer:- *B*

Explanation:- *From 1, Economics is at scheduled at each slot*
From 2, Only A is scheduled at 10 so it has to be Economics and guided by R
From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.
From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

From the above information H is an Economics student.

QNo:- 34 ,Correct Answer:- *B*

Explanation:- *From 1, Economics is at scheduled at each slot*
From 2, Only A is scheduled at 10 so it has to be Economics and guided by R
From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.
From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

If D is scheduled later than Q then, Q will be at 9:30 and He will guide G and S will guide F. R will guide D at 10:30. E and H will be guided by T. So ans is option 2

QNo:- 35 ,Correct Answer:- *A*

Explanation:- *From 1, Economics is at scheduled at each slot*
From 2, Only A is scheduled at 10 so it has to be Economics and guided by R
From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.
From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

If E and Q are in same slot then it will be 9:30 or at 10:30
If E will be guided by R then D and H will be guided by T, and if E will be guided by T then one of D and H will be guided by T
So At least one of D and H is guided by T
So ans. will be 1st option

QNo:- 36 ,Correct Answer:- *D*

Explanation:- *From 1, Economics is at scheduled at each slot*
From 2, Only A is scheduled at 10 so it has to be Economics and guided by R
From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.
From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

If D is immediately before Q then Q is at 9:30 and D is at 9 that means F if guided by S at 10:30, G is guided by Q, D and E can be guided by R/T
So ans is option 4

QNo:- 37 ,Correct Answer:- *9,11*

Explanation:-

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000			37500
Second runner up	(85000)			30000
% of votes by Third runner up				10%

Votes got by Second runner up from A= 95000-10000= 85000
Votes got by the candidates who lost their security deposits= 500000-275000-95000-85000= 45000

$$\text{Required } \% = \frac{45000}{500000} \times 100 = 9\%$$

QNo:- 38 ,Correct Answer:- *11*

Explanation:-

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000			37500
Second runner up	(85000)			30000
% of votes by Third runner up				10%

$$\text{In constituency B winner got} = \frac{48750}{325000} \times 100 = 15\%$$

So all the candidates except the winner lose their security deposit because they got less than 1/6 of the total valid votes.
So ans is 12-1= 11

QNo:- 39 ,Correct Answer:- *D*

Explanation:-

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000			37500
Second runner up	(85000)			30000
% of votes by Third runner up				10%

All candidates should got more than 1/6th of the total valid votes which is

$\frac{600030}{6} = 100005$

Suppose winner got = x votes, and if we assume that each candidate got 10000 less votes than previous candidate
Then A.T.Q
= x+ x-10000+ x-20000+ x- 30000 + x-40000= 600030
Then x= 140006
So ans is option 4

QNo:- 40 ,Correct Answer:- *A*

Explanation:-

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000			37500
Second runner up	(85000)			30000
% of votes by Third runner up				10%

Let the valid votes in constituency D= x
1st runner up got = 37500
Winner got 37500+.05x
2nd runner up got 30000 votes and the remaining candidates loose their security so A.T.Q
37500+ .05x+ 37500+30000= 0.65x
So x= 175000
So ans is 1st option

QNo:- 41 ,Correct Answer:- *A*

Explanation:-

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000			37500
Second runner up	(85000)			30000
% of votes by Third runner up				10%

Winning margin in constituency D = .05 x 175000= 8750
Winning margin of C is atleast 10000 that means margin of C is greater than D
So option 1 is wrong.

QNo:- 42 ,Correct Answer:- *A*

Explanation:-

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000			37500
Second runner up	(85000)			30000
% of votes by Third runner up				10%

Total votes = 500000 + 325000 + 600030 + 175000= 1600030
In A (500000-275000-95000-85000) = 45000 votes were polled to the candidates who lost their security
In B, All candidates except the winner lost their security which is equal to 325000- 48750= 276250
In C, no one lost the security
In D, 35% of 175000= 61250 votes are polled to the candidates who lost their security
Total votes polled to the candidates who lost their security = 45000+276250+61250= 382500

$$\text{Required } \% = \frac{382500}{1600030} \times 100 = 23.91\%$$

So answer is option 1

QNo:- 43 ,Correct Answer:- *B*

Explanation:- *We have the following incomplete table which can be filled with different letters as per the condition given.*

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	x	y	y	c	y	b	x	54
Electronics	78	98	82	102	90	70	80	100
Home decor		100	a	72		80	a	54

In last point it is given that y, 54 and b are A. P. ⇒ bb + y = 108 ----(1)
The total of electronics dept. In 2018 = 330cr
Total of electronics dept. in 2019 = 370cr
Incase are in sales in 2019 as compare to 2018 is 40 cr
As per the point 4, we have
(y + c + b + 54) - (x + y + y + x) = 40
⇒ b + c + 54 - y - 2x = 40
⇒ 2x + y - b - c = 14 ---(2)
From 7, we have y - x = b - y
⇒ b = 2y - x -----(3)
& c - y = 54 - x
⇒ c = 54 + y - x ---(4)
Using (3) & (4) in (2) we get 2x + y - 2y + x - 54 - y + x = 14
⇒ 4x - 2y = 68
⇒ 2x - y = 34 ---(5)
Using (3) in (1), we get, 3y - x = 108 --(6)
Solve (5) & 6, to get y = 50, x = 42
∴ (3) ⇒ b = 58
(4) ⇒ c = 62
Total sale of Home décor increased by Rs 70 cr. Using point 6, we can say that sale of Home décor in Delhi in 2018 is Rs 80 cr & in Bengaluru in 2018 is Rs 60 Cr.
Now 72 - a + 54 - a = 30
⇒ 2a = 96 ⇒ a = 48
Hence the final table is as below

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	42	50	50	62	50	58	42	54
Electronics	78	98	82	102	90	70	80	100
Home decor	80	100	48	72	60	80	48	54

In Home décor, Delhi has maximum sales in 2018 & 2019.

QNo:- 44 ,Correct Answer:- *D*

Explanation:- *We have the following incomplete table which can be filled with different letters as per the condition given.*

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	x	y	y	c	y	b	x	54
Electronics	78	98	82	102	90	70	80	100
Home decor		100	a	72		80	a	54

In last point it is given that y, 54 and b are A. P. ⇒ bb + y = 108 ----(1)
The total of electronics dept. In 2018 = 330cr
Total of electronics dept. in 2019 = 370cr
Incase are in sales in 2019 as compare to 2018 is 40 cr
As per the point 4, we have
(y + c + b + 54) - (x + y + y + x) = 40
⇒ b + c + 54 - y - 2x = 40
⇒ 2x + y - b - c = 14 ---(2)
From 7, we have y - x = b - y
⇒ b = 2y - x -----(3)
& c - y = 54 - x
⇒ c = 54 + y - x ---(4)
Using (3) & (4) in (2) we get 2x + y - 2y + x - 54 - y + x = 14
⇒ 4x - 2y = 68
⇒ 2x - y = 34 ---(5)
Using (3) in (1), we get, 3y - x = 108 --(6)
Solve (5) & 6, to get y = 50, x = 42
∴ (3) ⇒ b = 58
(4) ⇒ c = 62
Total sale of Home décor increased by Rs 70 cr. Using point 6, we can say that sale of Home décor in Delhi in 2018 is Rs 80 cr & in Bengaluru in 2018 is Rs 60 Cr.
Now 72 - a + 54 - a = 30
⇒ 2a = 96 ⇒ a = 48
Hence the final table is as below

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	42	50	50	62	50	58	42	54
Electronics	78	98	82	102	90	70	80	100
Home decor	80	100	48	72	60	80	48	54

In Mumbai, the sales of Apparel dept. Increased by Rs. 12 cr.

QNo:- 45 ,Correct Answer:- *B*

Explanation:- *We have the following incomplete table which can be filled with different letters as per the condition given.*

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	x	y	y	c	y	b	x	54
Electronics	78	98	82	102	90	70	80	100
Home decor		100	a	72		80	a	54

In last point it is given that y, 54 and b are A. P. ⇒ bb + y = 108 ----(1)
The total of electronics dept. In 2018 = 330cr
Total of electronics dept. in 2019 = 370cr
Incase are in sales in 2019 as compare to 2018 is 40 cr
As per the point 4, we have
(y + c + b + 54) - (x + y + y + x) = 40
⇒ b + c + 54 - y - 2x = 40
⇒ 2x + y - b - c = 14 ---(2)
From 7, we have y - x = b - y
⇒ b = 2y - x -----(3)
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Total sale of Home décor increased by Rs 70 cr. Using point 6, we can say that sale of Home décor in Delhi in 2018 is Rs 80 cr & in Bengaluru in 2018 is Rs 60 Cr.
Now 72 - a + 54 - a = 30
⇒ 2a = 96 ⇒ a = 48
Hence the final table is as below

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	42	50	50	62	50	58	42	54
Electronics	78	98	82	102	90	70	80	100
Home decor	80	100	48	72	60	80	48	54

The max % increase is 50% for Mumbai in Home décor dept.

QNo:- 46 ,Correct Answer:- *D*

Explanation:- *We have the following incomplete table which can be filled with different letters as per the condition given.*

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	x	y	y	c	y	b	x	54
Electronics	78	98	82	102	90	70	80	100
Home decor		100	a	72		80	a	54

In last point it is given that y, 54 and b are A. P. ⇒ bb + y = 108 ----(1)
The total of electronics dept. In 2018 = 330cr
Total of electronics dept. in 2019 = 370cr
Incase are in sales in 2019 as compare to 2018 is 40 cr
As per the point 4, we have
(y + c + b + 54) - (x + y + y + x) = 40
⇒ b + c + 54 - y - 2x = 40
⇒ 2x + y - b - c = 14 ---(2)
From 7, we have y - x = b - y
⇒ b = 2y - x -----(3)
& c - y = 54 - x
⇒ c = 54 + y - x ---(4)
Using (3) & (4) in (2) we get 2x + y - 2y + x - 54 - y + x = 14
⇒ 4x - 2y = 68
⇒ 2x - y = 34 ---(5)
Using (3) in (1), we get, 3y - x = 108 --(6)
Solve (5) & 6, to get y = 50, x = 42
∴ (3) ⇒ b = 58
(4) ⇒ c = 62
Total sale of Home décor increased by Rs 70 cr. Using point 6, we can say that sale of Home décor in Delhi in 2018 is Rs 80 cr & in Bengaluru in 2018 is Rs 60 Cr.
Now 72 - a + 54 - a = 30
⇒ 2a = 96 ⇒ a = 48
Hence the final table is as below

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	42	50	50	62	50	58	42	54
Electronics	78	98	82	102	90	70	80	100
Home decor	80	100	48	72	60	80	48	54

The total sales of all dept. In 2019 is Rs. 900 crore

QNo:- 47 ,Correct Answer:- *C*

Explanation:- *The initial cars are 1, 2, 3, 4, when can 1 leaves, we have the arrangement*
V V 2 3 4
Now car 5 (a compact car) and car 6 (an SUV) came. So arrangement is
5 V 2 3 4 6
Now care 4 left, we have the arrangement
5 V 2 3 V V 6
Now car 7 (an S U V) and car 8 (a compact car) arrived, so final arrangement is 5, 8, 2, 3, 7, 6. Hence car number 7 is parked next to car 3.

QNo:- 48 ,Correct Answer:- *A*

Explanation:- *As per the options, car 1 & car 4 left as Car 8 is the last car to arrive, so it should be either at 1st position or the last position. So option 3 is wrong.*
In option 2, the position of car 4 is vacant. If car 5 arrived after car 4 left, then it should have been next to car 3. If car 4 left after the car 5 arrived, then car 5 should be next to V. in any case, car 5 cannot be after car 6. Hence option 2 is wrong.
In option 4, it is clear that car 4 left after car 5 arrived. So car next to car 5 should be car 6. Hence it is wrong.
Only option 1 is true where car 4 left after car 5 arrived.

QNo:- 49 ,Correct Answer:- *A*

Explanation:- *Total cars arrived here are 6 and car 3 is placed in the end. It is possible it cars 1 & 2 are S UV, then we have the arrangement 1 2 3*
Now cars 1 & 2 left, then the arrangement is V V V V 3
After that the cars 4, 5, 6 arrived in order so that the final arrangement is. 4 5 6 V 3
Hence cars 4 & 5 are compact & car 1 is an S U V. but we cannot say about car 3, whether it is an S U V or a compact car.

QNo:- 50 ,Correct Answer:- *C*

Explanation:- *The original order is 1 2 3 4 5. Now car 6 is at the place of car 4 and car 4 is not the first one to leave. So either car 1 & car 2 will leave first.*
If we assume that the first car left is car 1, them as car 2 is also leaving, so car 7 will take the first position. So first position cannot be empty.
Hence car 2 is the one which left at the first place and after it car 4 left.
So we have following possibilities.
1 V 3 V 5 or 1 V 3 V V 5
Car 2 is not an S U V because in that case, car 6 will be next to car 1.
Also car 6 is not compact otherwise, it will be again next to car 1. So car 6 is an S U V and we have the order 1 V 3 6 5
Now car 7 came which is compact and order is 1 7 3 6 5. After that the car 1 left to give the final order as V 7 3 6 5

QNo:- 51 ,Correct Answer:- *800*

Explanation:- *Given that Amal : Sunil = 3 : 2.*
Also, Sunil : Mita = 4 : 5
On combining the ratio we get Amal : Sunil : Mita = 6 : 4 : 5
So, let their shares be 6x, 4x and 5x
According to the question 6x – 4x = 400
2x = 400
x = 200
So, Sunil's share = 4x = 4 × 200 = 800

QNo:- 52 ,Correct Answer:- *17,17*

Explanation:- *2x + 5y = 99 also it is given that x ≥ y ≥ -20*
So, possible cases are

x	y	x	y
47	1	52	-1
42	3	57	-3
37	5	62	-5
32	7	67	-7
27	9	72	-9
22	11	77	-11
17	13	82	-13
		87	-15
		92	-17
		97	-19

So, total 17 cases are there

QNo:- 53 ,Correct Answer:- *C*

Explanation:- $(x^2 - 5x + 7)^{x+1} = 1$
For R.H.S to be 1, we must have $x^2 - 5x = -6$
$x^2 - 5x + 6 = 0$
On solving, we get x = 2, 3 (2 values)
Also, we must have $a^0 = 1$
So, x + 1 = 0 i.e. x = -1 (1 value) also satisfies.
Hence answer is 3.

QNo:- 54 ,Correct Answer:- *90000*

Explanation:- *Let the principal = 8000*
So, simple interest for 3 years @ 3% per annum = Rs.720
Compound interest for 2 years @ 5% per annum = Rs.820
Difference = Rs.100
So, using unitary method
When difference is 100 principal is 8000
When difference is 1125 principal is 90000

QNo:- 55 ,Correct Answer:- *B*

Explanation:- *Let the cost of pencil is Rs. x and of sharpener is Rs.(x+2)*
Let Aron bought 'a' pencils & 'b' sharpeners.
Aditya bought '2a' pencils & 'b – 10' sharpeners.
Now, ax + b(x + 2) = 2ax + (b – 10)(x + 2)
ax + bx + 2b = 2ax + bx + 2b – 10x – 20
ax – 10x = 20
a – 10 = 20/x
a = 20/x + 10
Now 'a' is minimum when 'x' is maximum i.e. x = 20
Minimum 'a' = 20/20 + 10 = 11
Total pencils = 3a = 3 × 11 = 33

QNo:- 56 ,Correct Answer:- *A*

Explanation:- *Given that John had spent Rs.450 in April and it is being given that in May price of rice is increased by 20%. So, price of rice is increased by 90 (20% of 450). And it is given that in May he had Rs.150 more out of which 90 is for rice. So, for wheat he had spend Rs.60 more (150 – 90).*
12% of original price in April = 60
100% of original price in April = 500.
So, he spend on wheat in may = 500 + 12% of 500 = 560

QNo:- 57 ,Correct Answer:- *315,2704*

Explanation:- *Case I: When 7 is at first place then 3 can be any of the three places*
= 1 × 1 × 8 × 7 + 1 × 8 × 1 × 7 + 1 × 8 × 7 × 1 = 168
Case II: When 3 is at the last place
= 7 × 1 × 7 × 1 + 7 × 7 × 1 × 1 = 98
Case III: When both 7 and 3 are in middle places
= 7 × 1 × 1 × 7 = 49
So, total cases = 168 + 98 + 49 = 315

QNo:- 58 ,Correct Answer:- *2704*

Explanation:- *Since we need to find the minimum value and as we know that minimum value will occur when we have symmetry. So, as x + y = 102. We have x = 51 and y = 51.*
So, the minimum possible value of 2601 (1 + 1/x) (1 + 1/y) = 2704

QNo:- 59 ,Correct Answer:- *C*

Explanation:- $x^2 - 2|x| + |a-2| = 0$ _____(1)

Case I: $x \geq 0$ & $a \geq 2$

$x^2 - 2x + a - 2 = 0$

For $D \geq 0 \Rightarrow 4 - 4(a-2) \geq 0 \Rightarrow 1 - (a-2) \geq 0$

$\Rightarrow 1 - a + 2 \geq 0 \Rightarrow a \leq 3$

Therefore a = 2, 3

If a = 2, eq''(1) becomes

$x^2 - 2x = 0 \Rightarrow x = 0, 2$

Therefore, (0, 2), (2, 0) are possible pairs.

If a = 3, eq''(1) becomes $x^2 - 2x + 1 = 0 \Rightarrow x = 1$

So (1, 3) is possible pair.

Case II: $x \geq 0$, $a < 2$

$x^2 - 2x - (a-2) = 0$

For $D \geq 0 \Rightarrow 4 + 4(a-2) \geq 0$

$\Rightarrow 1 + a - 2 \geq 0$

$\Rightarrow a - 1 \geq 0 \Rightarrow a \geq 1$

$\Rightarrow a = 1$

When a = 1, eq''(1) becomes $x^2 - 2x + 1 = 0 \Rightarrow x = 1$

Therefore (1,1) is possible pair.

Case III: If $x < 0$, $a \geq 2$

$x^2 + 2x + a - 2 = 0$

For $D \geq 0 \Rightarrow 4 - 4(a-2) \geq 0$

$1 - a + 2 \geq 0 \Rightarrow a \leq 3$

$\Rightarrow a = 2, 3$

If a = 2, eq''(1) becomes $x^2 + 2x = 0 \Rightarrow x = 0, -2$

Therefore (0, 2) and (-2, 2) is pair

If a = 3, eq''(1) becomes $x^2 + 2x + 1 = 0 \Rightarrow (x+1)^2 = 0 \Rightarrow x = -1$

Therefore (-1, 3) is possible pair.

Case IV: If $x < 0$, $a < 2$

$x^2 + 2x - (a-2) = 0$

For $D \geq 0 \Rightarrow 4 + 4(a-2) \geq 0$

$1 + a - 2 \geq 0 \Rightarrow a \geq 1$

Therefore, a = 1

Eq''(1) becomes $x^2 + 2x + 1 = 0 \Rightarrow x = -1$

Therefore (-1, 1) is possible pair.

There are 7 such pairs of integers as follows

(0, 2)
(2, 2)
(1, 3)
(1, 1)
(-2, 2)
(-1, 3)
(-1, 1)

QNo:- 60 ,Correct Answer:- C

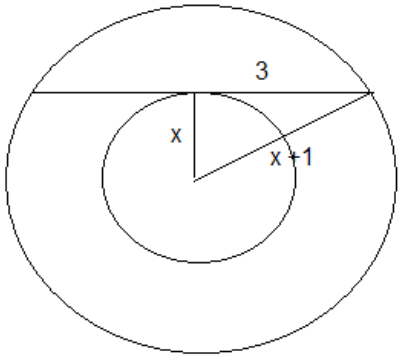
Explanation:- Ratio of time taken by Ram and Rahim is
$= 2\pi \times 100 \times 18/15 \times 5 : 2\pi \times 20 \times 18/5 \times 5$
$= 5:3$
So, ratio of distance = 3:5
So, answer is 3.

QNo:- 61 ,Correct Answer:- A

Explanation:- $f(x) = x^2 + ax + b$ and $g(x) = f(x + 1) - f(x - 1)$
$g(x) = (x + 1)^2 + a(x + 1) + b - [(x - 1)^2 + a(x - 1) + b]$
$g(x) = x^2 + 2x + 1 + ax + a + b - [x^2 - 2x + 1 + ax - a + b]$
$g(x) = x^2 + 2x + 1 + ax + a + b - x^2 + 2x - 1 - ax + a - b$
$g(x) = 4x + 2a$
Now, $g(20) = 72 \Rightarrow 4(20) + 2a = 72$
$\Rightarrow 2a = -8$
$\Rightarrow a = -4$
$\therefore f(x) = x^2 - 4x + b$
As $f(x) \geq 0 \Rightarrow D \leq 0$
$16 - 4b \leq 0$
$\Rightarrow b \geq 4$
Therefore smallest value of b is 4.

QNo:- 62 ,Correct Answer:- 10

Explanation:- If the diameter of circle C_1 is 2 more than the diameter of circle C_2 so we can say that radius of C_1 is 1 more than the radius of circle C_2. As shown below in the figure,



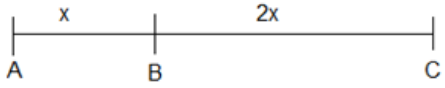
Now, we can say that it must satisfy Pythagoras property
So, x will be 4 and x + 1 will be 5 i.e. radius of circle C_1 is 5 cm.
So, diameter of circle C_1 is 10 cm.

QNo:- 63 ,Correct Answer:- D

Explanation:- Let the ratio be x. So, the dimensions of rectangle is x and 3x and let the side of equilateral triangle be 'a'
Perimeter of rectangle = 2 (x + 3x) = 8x
Perimeter of equilateral triangle = 3a
According to the question:
$3a + 8x = 90$ _____ (1)
Also, given that relation $R = T^2$, where R is area of rectangle and T is area of equilateral triangle
So, we have
$3x^2 = (\sqrt{3}/4\ a^2)^2$
$x = a^2/4$
Substituting x in eq"(1), we have
$2a^2 + 3a - 90 = 0$
On solving, we get a = 6
Hence, x = 9
So, longer side of rectangle = 3x = 3 × 9 = 27

QNo:- 64 ,Correct Answer:- C

Explanation:- Let the distance between AB = x and BC = 3x



Let speed of train 1 be 'y' and speed of train 2 be '2y'
As we know, Time = Distance/Speed
For A to B:
For Train 1 time = x/y and For Train 2 time = 3x/2y
For B to C:
For Train 1 time = x/2y and For Train 2 time = 3x/y
So, total time = [x/y + 3x/2y]/[x/2y + 3x/y] = 5x/7x
So, time taken by train1 to that taken by train 2 in travelling from A to C is 5:7

QNo:- 65 ,Correct Answer:- C

Explanation:- Difference between highest number – Lowest number = 9 × 47 – 9 × 42 = 45
Maximum possible value of highest number = 42 + 45 = 87
Minimum possible value of lowest number = 47 – 45 = 2
So, Maximum possible mean = [42 × 9 + 87]/10 = 46.5
Minimum possible mean = [47 × 9 + 2]/10 = 42.5
Required difference = 46.5 – 42.5 = 4

QNo:- 66 ,Correct Answer:- A

Explanation:- Let 'a', 'r' be the first term and common ratio respectively.
Given that m^{th} term = ¾
$a\ r^{m-1} = ¾$ _____ (1)
Also, n^{th} term = 12
$a\ r^{n-1} = 12$ _____(2)
Dividing (2) by (1), we have
$a\ r^{n-1} / a\ r^{m-1} = 12/(3/4)$
$r^{n-m} = 16$
Now, for minimum value of r + n – m, we have
r = - 4 and n – m = 2
Smallest possible value of r + n – m = - 4 + 2 = - 2

QNo:- 67 ,Correct Answer:- *B*

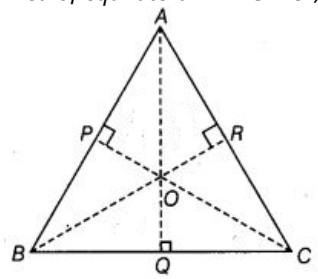
Explanation:- *As we know that if two objects P and Q start at the same time in opposite direction from point A and B respectively. After passing each other, P reaches B in x seconds and Q reaches A in y seconds then,*
Speed of P: Speed of Q = √b : √a
So, Ram's speed : Rahim's speed = √4 : √1 = 2 : 1

QNo:- 68 ,Correct Answer:- *D*

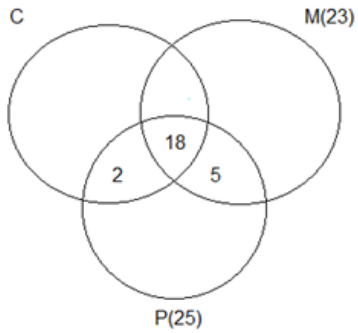
Explanation:- *Let A travels = x*
B travels = x – 45
C travels = x – 90
So, when B covers (x – 45) then C covers (x – 90)
When B covers x = (x – 90)/(x – 45) × x = (x – 50)
On solving, we get x = 450

QNo:- 69 ,Correct Answer:- *D*

Explanation:- *Let the side of equilateral triangle = 'a'*
As we know area of equilateral triangle ΔABC
= √3/4 (Side)^2 = √3/4 (a)^2 _____ (1)
Also, we have PO + OQ + OR = s (Given)
Area of ΔOAB = ½ × AB × OP = ½ × a × OP
Area of ΔOBC = ½ × BC × OQ = ½ × a × OQ
Area of Δ OAC = ½ × AC × OR = ½ × a × OR
Area of ΔABC = Area of ΔOAB + Area of ΔOBC + Area of Δ OAC
= ½ × a × OP + ½ × a × OQ + ½ × a × OR
= ½ × a × (OP + OQ + OR)
= ½ × a × s _____ (2)
Equating (1) and (2), we have
√3/4 a^2 = ½ × a × s
a = 2s/√3
Substituting, value of 'a' in equation (1), we have
Area of equilateral ΔABC = s^2/√3



QNo:- 70 ,Correct Answer:- C



Explanation:-

As the no. of students who have chemistry is minimum, so let 5 students have both Maths and Physics only. So, 2 students with physics will have chemistry also.
Therefore, minimum students with chemistry = 18 + 2 = 20

QNo:- 71 ,Correct Answer:- D

Explanation:- *Let x be the total purchase price of all articles and y be the marked price of one article.*
So, according to the question:
$8 \times 0.8 \times y + 4 \times 0.75 \times 0.8 \times y = 2112$
On solving, we get y = 240
Given, 2112 = 1.10x
x = 1920
If no discount is given, then 12 × 240 = 2880
Required % = 2880 – 1920/1920 = 50%

QNo:- 72 ,Correct Answer:- A

Explanation:- *As we know the minimum value of x + 1/x = 2. So, the answer will be 1/√2.*

QNo:- 73 ,Correct Answer:- 4

Explanation:- *Since John takes twice as much as Jack to finish a job. So, efficiency of John and jack is 1:2. Also, Jack and Jim together take one-third of the time to finish the job than John. So, efficiency of Jack + Jim and John is 3:1.*
So, efficiency of John, Jack and Jim is 1:2:1 respectively.
Now, let all of them together took 'x' days so John alone take x + 3 days.
So, x (1 + 2 + 1) = x + 3
On solving, we get x = 1
So, John takes = 4 days, Jack = 4/2 = 2 days and Jim = 4 days

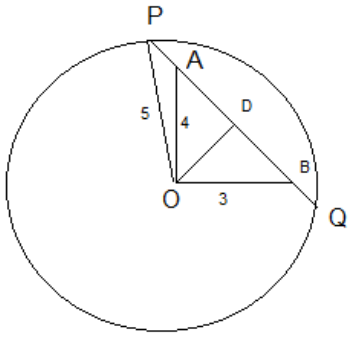
QNo:- 74 ,Correct Answer:- B

Explanation:- *Let* $A = \log_a (a/b) + \log_b (b/a)$
$A = \log_a a - \log_a b + \log_b b - \log_b a$
$A = 2 - [\log_a b + \log_b a]$
$A = 2 - [\log_a b + 1/\log_a b]$
Now, $[\log_a b + 1/\log_a b]$ *has minimum value 2.*
Therefore, maximum value of A = 2 – 2 = 0
⇒ *A cannot take value as 1.*

QNo:- 75 ,Correct Answer:- 23

Explanation:- $x + 9 = z$ _____ (1)
$y + 1 = z$ _____ (2)
Adding (1) and (2), we get
$x + y + 10 = 2z$
$\Rightarrow x + y = 2z - 10$
Now, $x + y < z + 5$
$2z - 10 < z + 5$
$z < 15$
Therefore, Maximum $z = 14$
From eq"(1), Maximum $x = z - 9 = 5$
From eq"(2), Maximum $y = z - 1 = 13$
Max.$(2x + y) = 2 \times 5 + 13 = 23$

QNo:- 76 ,Correct Answer:- A



Explanation:-
Here OD perpendicular to PQ
$OA = 4, OB = 3$
$\Rightarrow AB = 5$
Now in ΔOAB
$1/3 \times 3 \times 4 = ½ \times OD \times 5$
$OD = 12/5 = 2.4$
Now, join OP, ΔODP is right angled triangle & $OP = 5$
$PD = \sqrt{(OP)^2 - (OD)^2} = \sqrt{25 - (2.4)^2} = \sqrt{19.24} = 4.4$
$PD = 4.4$
$PB = 4.4 \times 2 = 8.8$ m

Directions of Test

Test Name	Actual CAT 2020 Slot III	Total Questions	76	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	26	0:40(h:m)	3	1/3
DI & Reasoning	24	0:40(h:m)	3	1/3
Quantitative Ability	26	0:40(h:m)	3	1/3

Section : Verbal Ability

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 1

Mode of transportation affects the travel experience and thus can produce new types of travel writing and perhaps even new "identities." Modes of transportation determine the types and duration of social encounters; affect the organization and passage of space and time; . . . and also affect perception and knowledge—how and what the traveler comes to know and write about. The completion of the first U.S. transcontinental highway during the 1920s . . . for example, inaugurated a new genre of travel literature about the United States—the automotive or road narrative. Such narratives highlight the experiences of mostly male protagonists "discovering themselves" on their journeys, emphasizing the independence of road travel and the value of rural folk traditions.

Travel writing's relationship to empire building— as a type of "colonialist discourse"—has drawn the most attention from academicians. Close connections have been observed between European (and American) political, economic, and administrative goals for the colonies and their manifestations in the cultural practice of writing travel books. Travel writers' descriptions of foreign places have been analyzed as attempts to validate, promote, or challenge the ideologies and practices of colonial or imperial domination and expansion. Mary Louise Pratt's study of the genres and conventions of 18th- and 19th-century exploration narratives about South America and Africa (e.g., the "monarch of all I survey" trope) offered ways of thinking about travel writing as embedded within relations of power between metropole and periphery, as did Edward Said's theories of representation and cultural imperialism. Particularly Said's book, Orientalism, helped scholars understand ways in which representations of people in travel texts were intimately bound up with notions of self, in this case, that the Occident defined itself through essentialist, ethnocentric, and racist representations of the Orient. Said's work became a model for demonstrating cultural forms of imperialism in travel texts, showing how the political, economic, or administrative fact of dominance relies on legitimating discourses such as those articulated through travel writing.

Feminist geographers' studies of travel writing challenge the masculinist history of geography by questioning who and what are relevant subjects of geographic study and, indeed, what counts as geographic knowledge itself. Such questions are worked through ideological constructs that posit men as explorers and women as travelers—or, conversely, men as travelers and women as tied to the home. Studies of Victorian women who were professional travel writers, tourists, wives of colonial administrators, and other (mostly) elite women who wrote narratives about their experiences abroad during the 19th century have been particularly revealing. From a "liberal" feminist perspective, travel presented one means toward female liberation for middle- and upper-class Victorian women. Many studies from the 1970s onward demonstrated the ways in which women's gendered identities were negotiated differently "at home" than they were "away," thereby showing women's self-development through travel. The more recent poststructural turn in studies of Victorian travel writing has focused attention on women's diverse and fragmented identities as they narrated their travel experiences, emphasizing women's sense of themselves as women in new locations, but only as they worked through their ties to nation, class, whiteness, and colonial and imperial power structures.

According to the passage, Said's book, "Orientalism":

A) explained the difference between the representation of people and the actual fact.
B) illustrated how narrow minded and racist westerners were.
C) argued that cultural imperialism was more significant than colonial domination.
D) demonstrated how cultural imperialism was used to justify colonial domination

Question No. : 2

From the passage, it can be inferred that scholars argue that Victorian women experienced self-development through their travels because:

A) their identity was redefined when they were away from home.
B) they were on a quest to discover their diverse identities.
C) they were from the progressive middle- and upper-classes of society.
D) they developed a feminist perspective of the world

Question No. : 3

From the passage, we can infer that feminist scholars' understanding of the experiences of Victorian women travellers is influenced by all of the following EXCEPT scholars':

A) awareness of gender issues in Victorian society B) awareness of the ways in which identity is formed
C) perspective that they bring to their research D) knowledge of class tensions in Victorian society

Question No. : 4

American travel literature of the 1920s:

A) developed the male protagonists' desire for independence. B) showed participation in local traditions.
C) presented travellers' discovery of their identity as different from others. D) celebrated the freedom that travel gives.

Question No. : 5

From the passage, we can infer that travel writing is most similar to:

A) historical fiction B) political journalism C) feminist writing D) autobiographical writing

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 6

Although one of the most contested concepts in political philosophy, human nature is something on which most people seem to agree. By and large, according to Rutger Bregman in his new book Humankind, we have a rather pessimistic view – not of ourselves exactly, but of everyone else. We see other people as selfish, untrustworthy and dangerous and therefore we behave towards them with defensiveness and suspicion. This was how the 17th-century philosopher Thomas Hobbes conceived our natural state to be, believing that all that stood between us and violent anarchy was a strong state and firm leadership.

But in following Hobbes, argues Bregman, we ensure that the negative view we have of human nature is reflected back at us. He instead puts his faith in Jean-Jacques Rousseau, the 18th-century French thinker, who famously declared that man was born free and it was civilisation – with its coercive powers, social classes and restrictive laws – that put him in chains.

Hobbes and Rousseau are seen as the two poles of the human nature argument and it's no surprise that Bregman strongly sides with the Frenchman. He takes Rousseau's intuition and paints a picture of a prelapsarian idyll in which, for the better part of 300,000 years, Homo sapiens lived a fulfilling life in harmony with nature . . . Then we discovered agriculture and for the next 10,000 years it was all property, war, greed and injustice. . . .

It was abandoning our nomadic lifestyle and then domesticating animals, says Bregman, that brought about infectious diseases such as measles, smallpox, tuberculosis, syphilis, malaria, cholera and plague. This may be true, but what Bregman never really seems to get to grips with is that pathogens were not the only things that grew with agriculture – so did the number of humans. It's one thing to maintain friendly relations and a property-less mode of living when you're 30 or 40 hunter-gatherers following the food. But life becomes a great deal more complex and knowledge far more extensive when there are settlements of many thousands.

"Civilisation has become synonymous with peace and progress and wilderness with war and decline," writes Bregman. "In reality, for most of human existence, it was the other way around." Whereas traditional history depicts the collapse of civilisations as "dark ages" in which everything gets worse, modern scholars, he claims, see them more as a reprieve, in which the enslaved gain their freedom and culture flourishes. Like much else in this book, the truth is probably somewhere between the two stated positions.

In any case, the fear of civilisational collapse, Bregman believes, is unfounded. It's the result of what the Dutch biologist Frans de Waal calls "veneer theory" – the idea that just below the surface, our bestial nature is waiting to break out. There's a great deal of reassuring human decency to be taken from this bold and thought-provoking book and a wealth of evidence in support of the contention that the sense of who we are as a species has been deleteriously distorted. But it seems equally misleading to offer the false choice of Rousseau and Hobbes when, clearly, humanity encompasses both.

The author has differing views from Bregman regarding:

A) a civilised society being coercive and unjust. B) a property-less mode of living being socially harmonious.
C) the role of agriculture in the advancement of knowledge. D) the role of pathogens in the spread of infectious diseases.

Question No. : 7

According to the author, the main reason why Bregman contrasts life in pre- agricultural societies with agricultural societies is to:

A) make the argument that an environmentally conscious lifestyle is a more harmonious way of living.
B) bolster his argument that people are basically decent, but progress as we know it can make them selfish.
C) advocate the promotion of less complex societies as a basis for greater security and prosperity.
D) highlight the enormous impact that settled farming had on population growth.

Question No. : 8

According to the passage, the "collapse of civilisations" is viewed by Bregman as:

A) a time that enables changes in societies and cultures. B) a sign of regression in society's trajectory.
C) a temporary phase which can be rectified by social action.
D) resulting from a breakdown in the veneer of human nature.

Question No. : 9

None of the following views is expressed in the passage EXCEPT that:

A) Bregman agrees with Hobbes that firm leadership is needed to ensure property rights and regulate strife.
B) Hobbes and Rousseau disagreed on the fundamental nature of humans, but both believed in the need for a strong state.
C) the author of the review believes in the veneer theory of human nature.
D) most people agree with Hobbes' pessimistic view of human nature as being intrinsically untrustworthy and selfish.

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 10

[There is] a curious new reality: Human contact is becoming a luxury good. As more screens appear in the lives of the poor, screens are disappearing from the lives of the rich. The richer you are, the more you spend to be off-screen. . . .

The joy — at least at first — of the internet revolution was its democratic nature. Facebook is the same Facebook whether you are rich or poor. Gmail is the same Gmail. And it's all free. There is something mass market and unappealing about that. And as studies show that time on these advertisement-support platforms is unhealthy, it all starts to seem déclassé, like drinking soda or smoking cigarettes, which wealthy people do less than poor people. The wealthy can afford to opt out of having their data and their attention sold as a product. The poor and middle class don't have the same kind of resources to make that happen.

Screen exposure starts young. And children who spent more than two hours a day looking at a screen got lower scores on thinking and language tests, according to early results of a landmark study on brain development of more than 11,000 children that the National Institutes of Health is supporting. Most disturbingly, the study is finding that the brains of children who spend a lot of time on screens are different. For some kids, there is premature thinning of their cerebral cortex. In adults, one study found an association between screen time and depression. . . .

Tech companies worked hard to get public schools to buy into programs that required schools to have one laptop per student, arguing that it would better prepare children for their screen- based future. But this idea isn't how the people who actually build the screen-based future raise their own children. In Silicon Valley, time on screens is increasingly seen as unhealthy. Here, the popular elementary school is the local Waldorf School, which promises a back-to- nature, nearly screen-free education. So as wealthy kids are growing up with less screen time, poor kids are growing up with more. How comfortable someone is with human engagement could become a new class marker.

Human contact is, of course, not exactly like organic food But with screen time, there has been a concerted effort on the part of Silicon Valley behemoths to confuse the public. The poor and the middle class are told that screens are good and important for them and their children. There are fleets of psychologists and neuroscientists on staff at big tech companies working to hook eyes and minds to the screen as fast as possible and for as long as possible. And so human contact is rare. . . .

There is a small movement to pass a "right to disconnect" bill, which would allow workers to turn their phones off, but for now a worker can be punished for going offline and not being available. There is also the reality that in our culture of increasing isolation, in which so many of the traditional gathering places and social structures have disappeared, screens are filling a crucial void.

Which of the following statements about the negative effects of screen time is the author least likely to endorse?

A) It can cause depression in viewers. B) It is designed to be addictive.
C) It increases human contact as it fills an isolation void.
D) It is shown to have adverse effects on young children's learning.

Question No. : 11

The author is least likely to agree with the view that the increase in screen-time is fuelled by the fact that:

A) screens provide social contact in an increasingly isolating world.
B) with falling costs, people are streaming more content on their devices.
C) some workers face punitive action if they are not online.
D) there is a growth in computer-based teaching in public schools

Question No. : 12

The author claims that Silicon Valley tech companies have tried to "confuse the public" by:

A) promoting screen time in public schools while opting for a screen-free education for their own children.
B) developing new work-efficiency programmes while lobbying for the "right to disconnect" bill.
C) concealing the findings of psychologists and neuroscientists on screen-time use from the public.
D) pushing for greater privacy while working with advertisement-support platforms to mine data.

Question No. : 13

The statement "The richer you are, the more you spend to be off-screen" is supported by which other line from the passage?

A) "How comfortable someone is with human engagement could become a new class marker."
B) screens are filling a crucial void." C) . . studies show that time on these advertisement-support platforms is unhealthy .
D) "Gmail is the same Gmail. And it's all free."

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 14

I've been following the economic crisis for more than two years now. I began working on the subject as part of the background to a novel, and soon realized that I had stumbled across the most interesting story I've ever found. While I was beginning to work on it, the British bank Northern Rock blew up, and it became clear that, as I wrote at the time, "If our laws are not extended to control the new kinds of super-powerful, super-complex, and potentially super- risky investment vehicles, they will one day cause a financial disaster of global-systemic proportions." . . . I was both right and too late, because all the groundwork for the crisis had already been done—though the sluggishness of the world's governments, in not preparing for the great unraveling of autumn 2008, was then and still is stupefying. But this is the first reason why I wrote this book: because what's happened is extraordinarily interesting. It is an absolutely amazing story, full of human interest and drama, one whose byways of mathematics, economics, and psychology are both central to the story of the last decades and mysteriously unknown to the general public. We have heard a lot about "the two cultures" of science and the arts—we heard a particularly large amount about it in 2009, because it was the fiftieth anniversary of the speech during which C. P. Snow first used the phrase. But I'm not sure the idea of a huge gap between science and the arts is as true as it was half a century ago—it's certainly true, for instance, that a general reader who wants to pick up an education in the fundamentals of science will find it easier than ever before. It seems to me that there is a much bigger gap between the world of finance and that of the general public and that there is a need to narrow that gap, if the financial industry is not to be a kind of priesthood, administering to its own mysteries and feared and resented by the rest of us. Many bright, literate people have no idea about all sorts of economic basics, of a type that financial insiders take as elementary facts of how the world works. I am an outsider to finance and economics, and my hope is that I can talk across that gulf.

My need to understand is the same as yours, whoever you are. That's one of the strangest ironies of this story: after decades in which the ideology of the Western world was personally and economically individualistic, we've suddenly been hit by a crisis which shows in the starkest terms that whether we like it or not—and there are large parts of it that you would have to be crazy to like—we're all in this together. The aftermath of the crisis is going to dominate the economics and politics of our societies for at least a decade to come and perhaps longer.

Which one of the following best captures the main argument of the last paragraph of the passage?

A) Whoever you are, you would be crazy to think that there is no crisis.
B) The aftermath of the crisis will strengthen the central ideology of individualism in the Western world.
C) The ideology of individualism must be set aside in order to deal with the crisis.
D) In the decades to come, other ideologies will emerge in the aftermath of the crisis.

Question No. : 15

Which one of the following, if true, would be an accurate inference from the first sentence of the passage?

A) The author's preoccupation with the economic crisis is not less than two years old.
B) The economic crisis outlasted the author's preoccupation with it.
C) The author has witnessed many economic crises by travelling a lot for two years.
D) The author is preoccupied with the economic crisis because he is being followed.

Question No. : 16

Which one of the following, if false, could be seen as supporting the author's claims?

A) Most people are yet to gain any real understanding of the workings of the financial world.
B) The global economic crisis lasted for more than two years.
C) The huge gap between science and the arts has steadily narrowed over time.
D) The economic crisis was not a failure of collective action to rectify economic problems.

Question No. : 17

All of the following, if true, could be seen as supporting the arguments in the passage, EXCEPT:

A) The difficulty with understanding financial matters is that they have become so arcane.
B) Economic crises could be averted by changing prevailing ideologies and beliefs.
C) The story of the economic crisis is also one about international relations, global financial security, and mass psychology.
D) The failure of economic systems does not necessarily mean the failure of their ideologies.

Question No. : 18

According to the passage, the author is likely to be supportive of which one of the following programmes?

A) An educational curriculum that promotes economic research.
B) Economic policies that are more sensitively calibrated to the fluctuations of the market.
C) An educational curriculum that promotes developing financial literacy in the masses.
D) The complete nationalisation of all financial institutions.

DIRECTIONS for the question: *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. Choose its number as your answer and key it in.*

Question No. : 19

1. Machine learning models are prone to learning human-like biases from the training data that feeds these algorithms.
2. Hate speech detection is part of the on-going effort against oppressive and abusive language on social media.
3. The current automatic detection models miss out on something vital: context.
4. It uses complex algorithms to flag racist or violent speech faster and better than human beings alone.
5. For instance, algorithms struggle to determine if group identifiers like "gay" or "black" are used in offensive or prejudiced ways because they're trained on imbalanced datasets with unusually high rates of hate speech.

A) 3 B) C) D)

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph and write the key for most appropriate option.*

Question No. : 20

Aesthetic political representation urges us to realize that 'the representative has autonomy with regard to the people represented' but autonomy then is not an excuse to abandon one's responsibility. Aesthetic autonomy requires cultivation of 'disinterestedness' on the part of actors which is not indifference. To have disinterestedness, that is, to have comportment towards the beautiful that is devoid of all ulterior references to use – requires a kind of aesthetic commitment; it is the liberation of ourselves for the release of what has proper worth only in itself.

A) Aesthetic political representation advocates autonomy for the representatives drawing from disinterestedness, which itself is different from indifference.
B) Aesthetic political representation advocates autonomy for the representatives manifested through disinterestedness which itself is different from indifference.
C) Disinterestedness is different from indifference as the former means a non-subjective evaluation of things which is what constitutes aesthetic political representation.
D) Disinterestedness, as distinct from indifference, is the basis of political representation.

DIRECTIONS for the question: *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. Choose its number as your answer and key it in.*

Question No. : 21

1. The logic of displaying one's inner qualities through outward appearance was based on a distinction between being a woman and being feminine.
2. 'Appearance' became a signifier of conduct - to look was to be and conformity to the feminine ideal was measured by how well women could use the tools of the fashion and beauty industries.
3. The makeover-centric media sets out subtly and not-so-subtly, 'good' and 'bad' ways to be a woman, layering these over inequalities of race and class.
4. The denigration of working-class women and women of colour often centres on their perceived failure to embody feminine beauty.
5. 'Woman' was considered a biological category, but femininity was a 'process' by which women became specific kinds of women.

A) 3 B) C) D)

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

Question No. : 22

1. Each one personified a different aspect of good fortune.
2. The others were versions of popular Buddhist gods, Hindu gods and Daoist gods.
3. Seven popular Japanese deities, the Shichi Fukujin, were considered to bring good luck and happiness.
4. Although they were included in the Shinto pantheon, only two of them, Daikoku and Ebisu, were indigenous Japanese gods.

A) 3142 B) C) D)

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

Question No. : 23

1. Complex computational elements of the CNS are organized according to a "nested" hierarchic criterion; the organization is not permanent and can change dynamically from moment to moment as they carry out a computational task.
2. Echolocation in bats exemplifies adaptation produced by natural selection; a function not produced by natural selection for its current use is exaptation -- feathers might have originally arisen in the context of selection for insulation.
3. From a structural standpoint, consistent with exaptation, the living organism is organized as a complex of "Russian Matryoshka Dolls" -- smaller structures are contained within larger ones in multiple layers.
4. The exaptation concept, and the Russian-doll organization concept of living beings deduced from studies on evolution of the various apparatuses in mammals, can be applied for the most complex human organ: the central nervous system (CNS).

A) 2431 B) C) D)

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph and write the key for most appropriate option.*

Question No. : 24

The dominant hypotheses in modern science believe that language evolved to allow humans to exchange factual information about the physical world. But an alternative view is that language evolved, in modern humans at least, to facilitate social bonding. It increased our ancestors' chances of survival by enabling them to hunt more successfully or to cooperate more extensively. Language meant that things could be explained and that plans and past experiences could be shared efficiently.

A) Most believe that language originated from a need to articulate facts, but others think it emerged from the need to promote social cohesion and cooperation, thus enabling human survival.
B) From the belief that humans invented language to process factual information, scholars now think that language was the outcome of the need to ensure social cohesion and thus human survival.
C) Since its origin, language has been continuously evolving to higher forms, from being used to identify objects to ensuring human survival by enabling our ancestors to bond and cooperate.
D) Experts are challenging the narrow view of the origin of language, as being merely used to describe facts and label objects, to being necessary to promote more complex interactions among humans.

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph and write the key for most appropriate option.*

Question No. : 25

Brown et al. (2001) suggest that 'metabolic theory may provide a conceptual foundation for much of ecology just as genetic theory provides a foundation for much of evolutionary biology'. One of the successes of genetic theory is the diversity of theoretical approaches and models that have been developed and applied. A Web of Science (v. 5.9. Thomson Reuters) search on genetic* + theor* + evol* identifies more than 12000 publications between 2005 and 2012. Considering only the 10 most-cited papers within this 12000 publication set, genetic theory can be seen to focus on genome dynamics, phylogenetic inference, game theory and the regulation of gene expression. There is no one fundamental genetic equation, but rather a wide array of genetic models, ranging from simple to complex, with differing inputs and outputs, and divergent areas of application, loosely connected to each other through the shared conceptual foundation of heritable variation.

A) Genetic theory has a wide range of theoretical approaches and applications and Metabolic theory must have the same in the field of ecology.
B) Genetic theory has evolved to spawn a wide range of theoretical models and applications but Metabolic theory need not evolve in a similar manner in the field of ecology.
C) Genetic theory has a wide range of theoretical approaches and application and is foundational to evolutionary biology and Metabolic theory has the potential to do the same for ecology.
D) Genetic theory provides an example of how a range of theoretical approaches and applications can make a theory successful.

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

Question No. : 26

1. It advocated a conservative approach to antitrust enforcement that espouses faith in efficient markets and voiced suspicion regarding the merits of judicial intervention to correct anticompetitive practices.
2. Many industries have consistently gained market share, the lion's share - without any official concern; the most successful technology companies have grown into veritable titans, on the premise that they advance 'public interest'.
3. That the new anticompetitive risks posed by tech giants like Google, Facebook, and Amazon, necessitate new legal solutions could be attributed to the dearth of enforcement actions against monopolies and the few cases challenging mergers in the USA.
4. The criterion of 'consumer welfare standard' and the principle that antitrust law should serve consumer interests and that it should protect competition rather than individual competitors was an antitrust law introduced by, and named after, the 'Chicago school'.

A) 4123 B) C) D)

Section : DI & Reasoning

DIRECTIONS for the question: *Study the following information carefully and answer the given question.*

Question No. : 27

Sixteen patients in a hospital must undergo a blood test for a disease. It is known that exactly one of them has the disease. The hospital has only eight testing kits and has decided to pool blood samples of patients into eight vials for the tests. The patients are numbered 1 through 16, and the vials are labelled A, B, C, D, E, F, G, and H. The following table shows the vials into which each patient's blood sample is distributed.

Patient	Vials	Patient	Vials
1	B, D, F, H	**9**	A, D, F, H
2	B, D, F, G	**10**	A, D, F, G
3	B, D, E, H	**11**	A, D, E, H
4	B, D, E, G	**12**	A, D, E, G
5	B, C, F, H	**13**	A, C, F, H
6	B, C, F, G	**14**	A, C, F, G
7	B, C, E, H	**15**	A, C, E, H
8	B, C, E, G	**16**	A, C, E, G

If a patient has the disease, then each vial containing his/her blood sample will test positive. If a vial tests positive, one of the patients whose blood samples were mixed in the vial has the disease. If a vial tests negative, then none of the patients whose blood samples were mixed in the vial has the disease.

Suppose vial C tests positive and vials A, E and H test negative. Which patient has the disease?

A) Patient 2 B) Patient 6 C) Patient 14 D) Patient 8

Question No. : 28

Suppose vial A tests positive and vials D and G test negative. Which of the following vials should we test next to identify the patient with the disease?

A) Vial C B) Vial H C) Vial B D) Vial E

Question No. : 29

Which of the following combinations of test results is NOT possible?

A) Vial B positive, vials C, F and H negative B) Vials B and D positive, vials F and H negative
C) Vials A and E positive, vials C and D negative D) Vials A and G positive, vials D and E negative

Question No. : 30

Suppose one of the lab assistants accidentally mixed two patients' blood samples before they were distributed to the vials. Which of the following correctly represents the set of all possible numbers of positive test results out of the eight vials?

A) {5,6,7,8} B) {4,5} C) {4,5,6,7,8} D) {4,5,6,7}

DIRECTIONS for the question: *Study the following information carefully and answer the given question.*

Question No. : 31

The Hi-Lo game is a four-player game played in six rounds. In every round, each player chooses to bid Hi or Lo. The bids are made simultaneously. If all four bid Hi, then all four lose 1 point each. If three players bid Hi and one bids Lo, then the players bidding Hi gain 1 point each and the player bidding Lo loses 3 points. If two players bid Hi and two bid Lo, then the players bidding Hi gain 2 points each and the players bidding Lo lose 2 points each. If one player bids Hi and three bid Lo, then the player bidding Hi gains 3 points and the players bidding Lo lose 1 point each. If all four bid Lo, then all four gain 1 point each.

Four players Arun, Bankim, Charu, and Dipak played the Hi-Lo game. The following facts are known about their game:

1. At the end of three rounds, Arun had scored 6 points, Dipak had scored 2 points, Bankim and Charu had scored -2 points each.
2. At the end of six rounds, Arun had scored 7 points, Bankim and Dipak had scored -1 point each, and Charu had scored -5 points.
3. Dipak's score in the third round was less than his score in the first round but was more than his score in the second round.
4. In exactly two out of the six rounds, Arun was the only player who bid Hi.

What were the bids by Arun, Bankim, Charu and Dipak, respectively in the first round?

A) Lo, Lo, Lo, Hi B) Hi, Lo, Lo, Hi C) Hi, Hi, Lo, Lo D) Hi, Lo, Lo, Lo

Question No. : 32

In how many rounds did Arun bid Hi? (in numerical value)

A) 4 B) C) D)

Question No. : 33

In how many rounds did Bankim bid Lo? (in numerical value)

A) 4 B) C) D)

Question No. : 34

In how many rounds did all four players make identical bids? (in numerical value)

A) 2 B) C) D)

Question No. : 35

In how many rounds did Dipak gain exactly 1 point? (in numerical value)

A) 1 B) C) D)

Question No. : 36

In which of the following rounds, was Arun DEFINITELY the only player to bid Hi?

A) Second B) Fourth C) Third D) First

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 37

A survey of 600 schools in India was conducted to gather information about their online teaching learning processes (OTLP). The following four facilities were studied.
F1: Own software for OTLP
F2: Trained teachers for OTLP
F3: Training materials for OTLP
F4: All students having Laptops

The following observations were summarized from the survey.

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

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

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

Question No. : 38

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

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

Question No. : 39

What was the number of schools having only facilities F1 and F3? (in numerical value)

A) 42 B) C) D)

Question No. : 40

What was the number of schools having only facilities F1 and F4? (in numerical value)

A) 20 B) C) D)

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 41

XYZ organization got into the business of delivering groceries to home at the beginning of the last month. They have a two-day delivery promise. However, their deliveries are unreliable. An order booked on a particular day may be delivered the next day or the day after. If the order is not delivered at the end of two days, then the order is declared as lost at the end of the second day. XYZ then does not deliver the order, but informs the customer, marks the order as lost, returns the payment and pays a penalty for non-delivery.

The following table provides details about the operations of XYZ for a week of the last month. The first column gives the date, the second gives the cumulative number of orders that were booked up to and including that day. The third column represents the number of orders delivered on that day. The last column gives the cumulative number of orders that were lost up to and including that day.

It is known that the numbers of orders that were booked on the 11th, 12th, and 13th of the last month that took two days to deliver were 4, 6, and 8 respectively.

Day	Cumulative orders booked	Orders delivered on day	Cumulative orders lost
13th	219	11	91
14th	249	27	92
15th	277	23	94
16th	302	11	106
17th	327	21	118
18th	332	13	120
19th	337	14	129

Among the following days, the largest fraction of orders booked on which day was lost?

A) 13th B) 16th C) 15th D) 14th

Question No. : 42

On which of the following days was the number of orders booked the highest?

A) 15th B) 13th C) 14th D) 12th

Question No. : 43

The delivery ratio for a given day is defined as the ratio of the number of orders booked on that day which are delivered on the next day to the number of orders booked on that day which are delivered on the second day after booking. On which of the following days, was the delivery ratio the highest?

A) 13th B) 15th C) 14th D) 16th

Question No. : 44

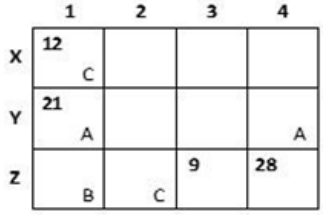
The average time taken to deliver orders booked on a particular day is computed as follows. Let the number of orders delivered the next day be x and the number of orders delivered the day after be y. Then the average time to deliver order is (x+2y)/(x+y). On which of the following days was the average time taken to deliver orders booked the least?

A) 16th B) 15th C) 13th D) 14th

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 45

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



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

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

How many mango trees were there in total?

A) 49 B) 98 C) 126 D) 84

Question No. : 46

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

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

Question No. : 47

How many pine trees did Chitra receive?

A) 18 B) 15 C) 21 D) 30

Question No. : 48

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

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

Question No. : 49

Which of the following statements is NOT true?

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

Question No. : 50

Which column had the highest number of trees?

A) 2 B) 4 C) 3 D) Cannot be determined

Section : Quantitative Ability

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 51

Two alcohol solutions, A and B, are mixed in the proportion 1:3 by volume. The volume of the mixture is then doubled by adding solution A such that the resulting mixture has 72% alcohol. If solution A has 60% alcohol, then the percentage of alcohol in solution B is

A) 90% B) 92% C) 94% D) 89%

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 52

Anil, Sunil, and Ravi run along a circular path of length 3 km, starting from the same point at the same time, and going in the clockwise direction. If they run at speeds of 15 km/hr, 10 km/hr, and 8 km/hr, respectively, how much distance in km will Ravi have run when Anil and Sunil meet again for the first time at the starting point?

A) 5.2 B) 4.6 C) 4.8 D) 4.2

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 53

The area, in sq. units, enclosed by the lines x = 2, y = |x - 2| + 4, the X-axis and the Y-axis is equal to

A) 10 B) 8 C) 6 D) 12

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 54

A and B are two railway stations 90 km apart. A train leaves A at 9:00 am, heading towards B at a speed of 40 km/hr. Another train leaves B at 10:30 am, heading towards A at a speed of 20 km/hr. The trains meet each other at

A) 11 : 45 am B) 10 : 45 am C) 11 : 00 am D) 11 : 20 am

DIRECTION for the question: *Solve the following question and mark the best possible option.*

Question No. : 55

In the final examination, Bishnu scored 52% and Asha scored 64%. The marks obtained by Bishnu is 23 less, and that by Asha is 34 more than the marks obtained by Ramesh. The marks obtained by Geeta, who scored 84%, is

A) 399 B) 417 C) 439 D) 357

DIRECTIONS for the question *: Solve the following question and mark the best possible option.*

Question No. : 56

If $\log_a 30$ = A, $\log_a(5/3)$ = - B and $\log_2 a$ = 1 /3, then $\log_3$ a equals

A) $\frac{2}{A+B}-3$ B) $\frac{2}{A+B-3}$ C) $\frac{A+B}{2}-3$ D) $\frac{A+B-3}{2}$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 57

In a trapezium ABCD, AB is parallel to DC, BC is perpendicular to DC and ∠BAD = 45°. If DC = 5 cm, BC = 4cm, the area of the trapezium in sq cm is (in numerical value)

A) 28 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 58

If f(x + y) = f (x) f (y) and f(5) = 4, then f (10) - f (-10) is equal to

A) 14.0625 B) 3 C) 0 D) 15.9375

DIRECTIONS for the question *: Solve the following question and mark the best possible option.*

Question No. : 59

$\frac{2\times4\times8\times16}{(\log_2 4)^2(\log_4 8)^3(\log_8 16)^4}$ equals 63/66 (in numerical value)

A) 24 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 60

Let N, x and y be positive integers such that N = x + y, 2 < x < 10 and 14 < y < 23. If N > 25, then how many distinct values are possible for N? (in numerical value)

A) 6 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 61

A man buys 35 kg of sugar and sets a marked price in order to make a 20% profit. He sells 5 kg at this price, and 15 kg at a 10% discount. Accidentally, 3 kg of sugar is wasted. He sells the remaining sugar by raising the marked price by p percent so as to make an overall profit of 15%. Then p is nearest to

A) 25 B) 22 C) 31 D) 35

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 62

Vimla starts for office every day at 9 am and reaches exactly on time if she drives at her usual speed of 40 km/hr. She is late by 6 minutes if she drives at 35 km/hr. One day, she covers two-thirds of her distance to office in one-thirds of her usual time to reach office, and then stops for 8 minutes. The speed, in km/hr, at which she should drive the remaining distance to reach office exactly on time is

A) 27 B) 28 C) 26 D) 29

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 63

How many integers in the set {100, 101, 102, ..., 999} have at least one digit repeated? (in numerical value)

A) 252 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 64

A batsman played n + 2 innings and got out on all occasions. His average score in these n + 2 innings was 29 runs and he scored 38 and 15 runs in the last two innings. The batsman scored less than 38 runs in each of the first n innings. In these n innings, his average score was 30 runs and lowest score was x runs. The smallest possible value of x is

A) 1 B) 2 C) 3 D) 4

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 65

Let k be a constant. The equations kx + y = 3 and 4x + ky = 4 have a unique solution if and only if

A) $k \neq 2$ B) $|k| = 2$ C) $k = 2$ D) $|k| \neq 2$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 66

Dick is thrice as old as Tom and Harry is twice as old as Dick. If Dick's age is 1 year less than the average age of all three, then Harry's age, in years, is (in numerical value)

A) 18 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 67

The vertices of a triangle are (0, 0), and (4, 0) and (3, 9). The area of the circle passing through these three points is

A) $\frac{12\pi}{5}$ B) $\frac{14\pi}{5}$ C) $\frac{205\pi}{9}$ D) $\frac{123\pi}{7}$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 68

A person invested a certain amount of money at 10% annual interest, compounded half-yearly. After one and a half years, the interest and principal together became Rs 18522. The amount, in rupees, that the person had invested is (in numerical value)

A) 1600 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 69

If a, b, c are non-zero and $14^a = 36^b = 84^c$, then $6b\left(\frac{1}{c} - \frac{1}{a}\right)$ is equal to (in numerical value)

A) 3 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 70

The points (2, 1) and (-3, -4) are opposite vertices of a parallelogram. If the other two vertices lie on the line x + 9y + c = 0, then c is

A) 14 B) 15 C) 12 D) 13

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 71

Let m and n be natural numbers such that n is even and $0.2 < \frac{m}{20}, \frac{n}{m}, \frac{n}{11} < 0.5$.

Then m - 2n equals

A) 2 B) 4 C) 3 D) 1

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 72

If $x_1 = -1$ and $x_m = x_{m+1} + (m + 1)$ for every positive integer m, then x_{100} equals

A) -5150 B) -5051 C) -5050 D) -5151

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 73

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

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

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 74

A contractor agreed to construct a 6 km road in 200 days. He employed 140 persons for the work. After 60 days, he realized that only 1.5 km road has been completed. How many additional people would he need to employ in order to finish the work exactly on time? (in numerical value)

A) 40 B) C) D)

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 75

How many pairs (a, b) of positive integers are there such that $a \leq b$ and $ab = 4^{2017}$?

A) 2017 B) 2019 C) 2018 D) 2020

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 76

Let m and n be positive integers, If $x^2 + mx + 2n = 0$ and $x^2 + 2nx + m = 0$ have real roots, then the smallest possible value of m + n is

A) 5 B) 8 C) 7 D) 6

QNo:- 1 ,Correct Answer:- *D*

Explanation:- *Refer to this line of the second paragraph - that the Occident defined itself through essentialist, ethnocentric, and* ***racist representations of the Orient.***
Orientalism means style, artefacts, or traits considered characteristic of the peoples and cultures of Asia. The representation of Asia in a stereotyped way that is regarded as embodying a ***colonialist attitude****.*

QNo:- 2 ,Correct Answer:- *A*

Explanation:-
Refer to this line of the last paragraph – Many studies from the 1970s onward demonstrated the ways in which women's gendered identities were negotiated differently "at home" than they were "away,"

QNo:- 3 ,Correct Answer:- *D*

Explanation:- *There isn't any significant mention or stress laid upon the class conflict or class tensions in the passage.*

QNo:- 4 ,Correct Answer:- *D*

Explanation:-
Refer to the last line of the first paragraph – "male protagonists "discovering themselves" on their journeys, emphasizing the ***independence of road travel*** *and the value of rural folk traditions."*
So travel literature of the 1920s may or may not have developed the male protagonists' desire for independence but they definitely enjoyed the freedom that it gave. Also they did discover themselves, similar or different than others is not mentioned in the passage. To participate and to value something are different things.

QNo:- 5 ,Correct Answer:- *D*

Explanation:-
As travel writing is what travelers wrote about their experiences hence Option 4 is the correct answer.

QNo:- 6 ,Correct Answer:- *A*

Explanation:-
This line of the last paragraph reflects the author's viewpoit – "In any case, the fear of civilisational collapse, Bregman believes, is unfounded. It's the result of what the Dutch biologist Frans de Waal calls "veneer theory" – the idea that just below the surface, our bestial nature is waiting to break out."
This line of first paragraph reflects the thought process of Bregman - "By and large, according to Rutger Bregman in his new book Humankind, we have a rather pessimistic view – not of ourselves exactly, but of everyone else."

QNo:- 7 ,Correct Answer:- *B*

Explanation:-
Refer to this line of the third paragraph – "Then we discovered agriculture and for the next 10,000 years it was all property, war, ***greed*** *and injustice. . . ."*

QNo:- 8 ,Correct Answer:- *A*

Explanation:-
Refer to this line of the second last paragraph – "he claims, see them more as a reprieve, in which the enslaved gain their freedom and culture flourishes."

QNo:- 9 ,Correct Answer:- *D*

Explanation:-
This question is asking to point out something which is mentioned in the passage. Option 4 finds reference in this line of the first paragraph – "By and large, according to Rutger Bregman in his new book Humankind, we have a rather pessimistic view – not of ourselves exactly, but of everyone else."

QNo:- 10 ,Correct Answer:- *C*

Explanation:-
The question asks which the negative effects of screen time are the author least likely to endorse i.e. it is asking for a positive effect, which is presented in Option 3 only.

QNo:- 11 ,Correct Answer:- *B*

Explanation:-
There is no mention of the 'cost' factor playing any role for increased screen time, mentioned in the passage.

QNo:- 12 ,Correct Answer:- *A*

Explanation:-
Confusion would happen only when one says or does two different things, which is reflected only in option 1.

QNo:- 13 ,Correct Answer:- *A*

Explanation:-
Refer to the first line of the passage – "[There is] a curious new reality: Human contact is becoming a luxury good"

QNo:- 14 ,Correct Answer:- *C*

Explanation:-
Refer to the last line of the paragraph – "we've suddenly been hit by a crisis which shows in the starkest terms that whether we like it or not—and there are large parts of it that you would have to be crazy to like—we're all in this together." All the information stated before by the author is to lead the discussion to this end.

QNo:- 15 ,Correct Answer:- *A*

Explanation:-
As the author has been occupied with the economic crisis for more than two years, so it cannot definitely be less than 2 years.

QNo:- 16 ,Correct Answer:- *D*

Explanation:-
Refer to this line of the first paragraph – "—though the sluggishness of the world's governments, in not preparing for the great unraveling of autumn 2008, was then and still is stupefying". Negating Option 4 will strengthen author's viewpoint.

QNo:- 17 ,Correct Answer:- *D*

Explanation:-
Option 1 is supported by this line of the passage – "Many bright, literate people have no idea about all sorts of economic basic"
Option 2 is supported by "after decades in which the ideology of the Western world was personally and economically individualistic.....we're all in this together."
Option 3 is supported by this line of the passage – "It is an absolutely amazing story, full of human interest and drama, one whose byways of mathematics, economics, and psychology ....."

QNo:- 18 ,Correct Answer:- *C*

Explanation:-
Option 1 points to research whereas a generic program would serve the purpose.
Option 2 does not mention anything about raising awareness among masses.
Option 4 is too extreme.

QNo:- 19 ,Correct Answer:- *3,3,3142,2431*

Explanation:-
The context is about the software (AI) to detect hate speech and to stop the spread of abusive language on social media. One sentence tells that what exactly it is based on. The flip side is that this machine learning models are prone to biases as seen in data fed to them. An example is also given to substantiate the same. 3 is odd one out as it talks about the 'context' which is nowhere mentioned i.e. machine cannot understand the context in which the word or the language has been used.

QNo:- 20 ,Correct Answer:- *A*

Explanation:-
The context moves around 'political representatives should have disinterested approach along with responsibility towards job and people. Also being 'disinterested 'does not mean 'being indifferent.

QNo:- 21 ,Correct Answer:- *3*

Explanation:-
The context moves around the distinction between being a woman and 'being feminine' To signify this difference, 'appearance' became the standard and ability to use the tools of fashion and beauty industries gained significance. Those who were not able to use them effectively to enhance feminine grace were denigrated. 3 talks about the role played by the media to fuel this thought process. Hence odd one out.

QNo:- 22 ,Correct Answer:- *3142*

Explanation:-
The opener is this case is 3 as it introduces the idea of seven popular Japanese deities. 'Each one' is linked to 3 as it is telling us 'what each signifies'. Then 4 will come as it tells that only two are Japanese and 'others' are popular Buddhist or Hindu gods.

QNo:- 23 ,Correct Answer:- *2431,4123*

Explanation:-
The context moves around the result of 'adaptation' and 'exaptation'. That is a few of the features shown by animals may not have basis in natural selection. Hence the sentence 2 will be an opener. After this 4 will come as it further explains the basis of 'The exaptation concept, and the Russian-doll organization concept' can be applied to understand CNS. 3 explain another way of looking at these two processes. 1 will conclude as it tells that how CNS is not permanent in structural set up but changes from moment to moment.

QNo:- 24 ,Correct Answer:- *A*

Explanation:-
The paragraph has highlighted two definitions of 'how language evolved and its underlying purpose. Both the aspects have been captured well by option 1

QNo:- 25 ,Correct Answer:- *C*

Explanation:-
The key line is 'metabolic theory may provide a conceptual foundation for much of ecology just as genetic theory provides a foundation for much of evolutionary biology' Another important line ', genetic theory can be seen to focus on genome dynamics, phylogenetic inference, game theory and the regulation of gene expression.

QNo:- 26 ,Correct Answer:- *4123*

Explanation:-
The context talks about 'antitrust law' and how it has not served its purpose. After this 1 will come as it explains the approach adopted by this law. 2 shows the consequences. And finally new regulations are required to curb the tendencies to use loopholes in the existing system , which is evident from 'the dearth of enforcement actions against monopolies and the few cases challenging mergers in the USA'.

QNo:- 27 ,Correct Answer:- *B*

Explanation:- *Since vial C tests positive so the patient who has the disease has to be one of the following:- 5, 6, 7, 8, 13, 14, 15, 16, but as vial E tests negative so patients 15, 16, 7 and 8 are ruled out, similarly as vial H tests negative so patients 5 and 13 are also ruled out. Also as vial A tests negative so patients 13, 14, 15,16 are ruled out. Hence we are only left with patient 6 who has the disease.*

QNo:- 28 ,Correct Answer:- *D*

Explanation:- *Since vial A tests positive and vials D and G test negative so from the given table the only possible patients with the disease can be 13 or 15. To eliminate between 13 and 15 numbered patients vial E or F can be tested as they both have vials A, C and H, as common vials. So answer is 4^{th} option*

QNo:- 29 ,Correct Answer:- *C*

Explanation:- *Going by options, 1^{st} option is possible and it will result into patient 4 being diseased.*
2^{nd} option is possible and it will result into patient 4, 8 or 12 being diseased
3^{rd} option is not possible is not possible as it will result into making all the patients free from disease. 4^{th} option is possible as it will result into patient 14 being diseased.
So, 3^{rd} option is the correct answer.

QNo:- 30 ,Correct Answer:- *C*

Explanation:- *Since every patient's blood sample is there in 4 vials so with a mixing of two non-diseased patient's blood samples there will be 4 vials with positive test result. If the mixing of samples includes the sample of the patient suffering from disease then the number of vials testing positive can increase and become 5, 6, 7 or 8 depending upon the number of vials further testing positive because of the mix-up being 1, 2, 3 or 4 whish were earlier testing negative in case of no mix up. So the correct answer is 3^{rd} option*

QNo:- 31 ,Correct Answer:- *B*

Explanation:- *As per the given conditions the table of first three rounds is given below*

Table - I

	Arun	**Bankim**	**Charu**	**Dipak**
Round 1	Hi (+2)	Lo (-2)	Lo (-2)	Hi (+2)
Round 2	Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Round 3	Lo (+1)	Lo (+1)	Lo (+1)	Lo (+1)
Total	6	-2	-2	2

So, at the end of three rounds, Arun had scored 6 points, Dipak had scored 2 points, Bankim and Charu had scored -2 points each. Now with the further condition being given that at the end of six rounds, Arun had scored 7 points. Bankim and Dipak had scored 7 points, also with the condition that there has to be one more round after the first three rounds in which Arun was the only player who bid Hi, we can have the following combinations for Rounds 4, 5 & 6.

Table - II

Arun	**Bankim**	**Charu**	**Dipak**
Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Hi (-1)	Hi (-1)	Hi (-1)	Hi (-1)
Lo (-1)	Hi (+1)	Lo (-1)	Lo (-1)

Refer to table I.

QNo:- 32 ,Correct Answer:- *4,4,4,2,1*

Explanation:- *As per the given conditions the table of first three rounds is given below*

Table - I

	Arun	Bankim	Charu	Dipak
Round 1	Hi (+2)	Lo (-2)	Lo (-2)	Hi (+2)
Round 2	Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Round 3	Lo (+1)	Lo (+1)	Lo (+1)	Lo (+1)
Total	6	-2	-2	2

So, at the end of three rounds, Arun had scored 6 points, Dipak had scored 2 points, Bankim and Charu had scored -2 points each. Now with the further condition being given that at the end of six rounds, Arun had scored 7 points. Bankim and Dipak had scored 7 points, also with the condition that there has to be one more round after the first three rounds in which Arun was the only player who bid Hi, we can have the following combinations for Rounds 4, 5 & 6.

Table - II

Arun	Bankim	Charu	Dipak
Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Hi (-1)	Hi (-1)	Hi (-1)	Hi (-1)
Lo (-1)	Hi (+1)	Lo (-1)	Lo (-1)

Arun bid Hi in 4 rounds.

QNo:- 33 ,Correct Answer:- *4*

Explanation:- *As per the given conditions the table of first three rounds is given below*

Table - I

	Arun	Bankim	Charu	Dipak
Round 1	Hi (+2)	Lo (-2)	Lo (-2)	Hi (+2)
Round 2	Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Round 3	Lo (+1)	Lo (+1)	Lo (+1)	Lo (+1)
Total	6	-2	-2	2

So, at the end of three rounds, Arun had scored 6 points, Dipak had scored 2 points, Bankim and Charu had scored -2 points each. Now with the further condition being given that at the end of six rounds, Arun had scored 7 points. Bankim and Dipak had scored 7 points, also with the condition that there has to be one more round after the first three rounds in which Arun was the only player who bid Hi, we can have the following combinations for Rounds 4, 5 & 6.

Table - II

Arun	Bankim	Charu	Dipak
Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Hi (-1)	Hi (-1)	Hi (-1)	Hi (-1)
Lo (-1)	Hi (+1)	Lo (-1)	Lo (-1)

Bankim bid Lo in 4 rounds

QNo:- 34 ,Correct Answer:- *2*

Explanation:- *As per the given conditions the table of first three rounds is given below*

Table - I

	Arun	Bankim	Charu	Dipak
Round 1	Hi (+2)	Lo (-2)	Lo (-2)	Hi (+2)
Round 2	Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Round 3	Lo (+1)	Lo (+1)	Lo (+1)	Lo (+1)
Total	6	-2	-2	2

So, at the end of three rounds, Arun had scored 6 points, Dipak had scored 2 points, Bankim and Charu had scored -2 points each. Now with the further condition being given that at the end of six rounds, Arun had scored 7 points. Bankim and Dipak had scored 7 points, also with the condition that there has to be one more round after the first three rounds in which Arun was the only player who bid Hi, we can have the following combinations for Rounds 4, 5 & 6.

Table - II

Arun	Bankim	Charu	Dipak
Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Hi (-1)	Hi (-1)	Hi (-1)	Hi (-1)
Lo (-1)	Hi (+1)	Lo (-1)	Lo (-1)

All four players made identical bids in Round 3 and once again in one of rounds 4, 5 or 6. So this happened in 2 rounds.

QNo:- 35 ,Correct Answer:- *1*

Explanation:- *As per the given conditions the table of first three rounds is given below*

Table - I

	Arun	Bankim	Charu	Dipak
Round 1	Hi (+2)	Lo (-2)	Lo (-2)	Hi (+2)
Round 2	Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Round 3	Lo (+1)	Lo (+1)	Lo (+1)	Lo (+1)
Total	6	-2	-2	2

So, at the end of three rounds, Arun had scored 6 points, Dipak had scored 2 points, Bankim and Charu had scored -2 points each. Now with the further condition being given that at the end of six rounds, Arun had scored 7 points. Bankim and Dipak had scored 7 points, also with the condition that there has to be one more round after the first three rounds in which Arun was the only player who bid Hi, we can have the following combinations for Rounds 4, 5 & 6.

Table - II

Arun	Bankim	Charu	Dipak
Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Hi (-1)	Hi (-1)	Hi (-1)	Hi (-1)
Lo (-1)	Hi (+1)	Lo (-1)	Lo (-1)

Dipak gained exactly 1 point only in round 3. So this happened only in one of the rounds.

QNo:- 36 ,Correct Answer:- *A*

Explanation:- *As per the given conditions the table of first three rounds is given below*

Table - I

	Arun	Bankim	Charu	Dipak
Round 1	Hi (+2)	Lo (-2)	Lo (-2)	Hi (+2)
Round 2	Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Round 3	Lo (+1)	Lo (+1)	Lo (+1)	Lo (+1)
Total	6	-2	-2	2

So, at the end of three rounds, Arun had scored 6 points, Dipak had scored 2 points, Bankim and Charu had scored -2 points each. Now with the further condition being given that at the end of six rounds, Arun had scored 7 points. Bankim and Dipak had scored 7 points, also with the condition that there has to be one more round after the first three rounds in which Arun was the only player who bid Hi, we can have the following combinations for Rounds 4, 5 & 6.

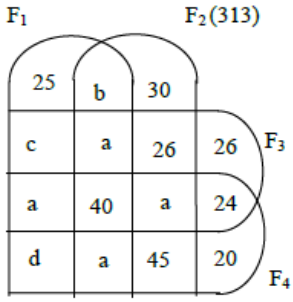
Table - II

Arun	Bankim	Charu	Dipak
Hi (+3)	Lo (-1)	Lo (-1)	Lo (-1)
Hi (-1)	Hi (-1)	Hi (-1)	Hi (-1)
Lo (-1)	Hi (+1)	Lo (-1)	Lo (-1)

The only round we are sure about Arun being the only player to bid Hi so answer is 1^{st} option.

QNo:- 37 ,Correct Answer:- *A*

Explanation:-

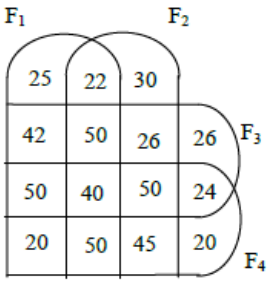


Number of schools who do not have any of these 4 facilities = 80

2a + 40 + b = 162.....(1)
162 + 30 + 26 + a + 45 = 313.....(2). So a = 50.
Putting this value of a in equation (1), we get b = 22.

As the number of schools having F1 was the same as the number of schools having F4, so 25 + c + a + d + b + a + 40 + a = a + 40 + a + 24 + d + a + 45 + 20
Þ25 + c + 22 + 40 = 129 Þ c = 42.
Also 25 + c + a + d + 162 + 30 + 26 + a + 45 + 26 + 24 + 20 + 80 = 600
⇒ 25 + 42 + 50 + d + 162 + 30 + 26 + 50 + 45 + 26 + 24 + 20 + 20 + 80 = 600 ⇒ d = 20

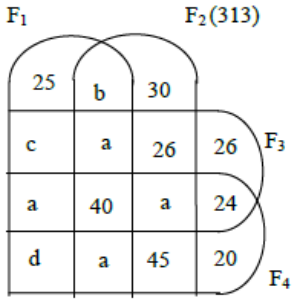
So we get the final diagram as follows:



Number of schools having exactly three of the four facilities = 50 + 50 + 50 + 50 = 200

QNo:- 38 ,Correct Answer:- *D*

Explanation:-

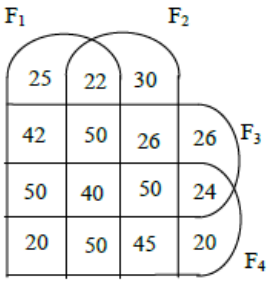


Number of schools who do not have any of these 4 facilities = 80

2a + 40 + b = 162.....(1)
162 + 30 + 26 + a + 45 = 313.....(2). So a = 50.
Putting this value of a in equation (1), we get b = 22.

As the number of schools having F1 was the same as the number of schools having F4, so 25 + c + a + d + b + a + 40 + a = a + 40 + a + 24 + d + a + 45 + 20
Þ25 + c + 22 + 40 = 129 Þ c = 42.
Also 25 + c + a + d + 162 + 30 + 26 + a + 45 + 26 + 24 + 20 + 80 = 600
⇒ 25 + 42 + 50 + d + 162 + 30 + 26 + 50 + 45 + 26 + 24 + 20 + 20 + 80 = 600 ⇒ d = 20

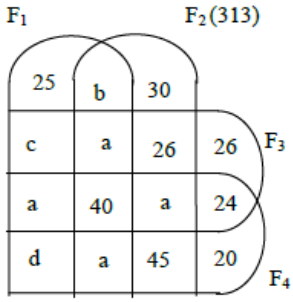
So we get the final diagram as follows:



Number of schools having facilities F_2 and F_4 = 40 + 50 + 50 + 45 = 185

QNo:- 39 ,Correct Answer:- *42,20*

Explanation:-

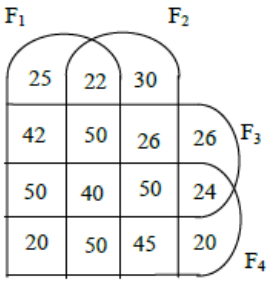


Number of schools who do not have any of these 4 facilities = 80

2a + 40 + b = 162.....(1)
162 + 30 + 26 + a + 45 = 313.....(2). So a = 50.
Putting this value of a in equation (1), we get b = 22.

As the number of schools having F1 was the same as the number of schools having F4, so 25 + c + a + d + b + a + 40 + a = a + 40 + a + 24 + d + a + 45 + 20
Þ25 + c + 22 + 40 = 129 Þ c = 42.
Also 25 + c + a + d + 162 + 30 + 26 + a + 45 + 26 + 24 + 20 + 80 = 600
⇒ 25 + 42 + 50 + d + 162 + 30 + 26 + 50 + 45 + 26 + 24 + 20 + 20 + 80 = 600 ⇒ d = 20

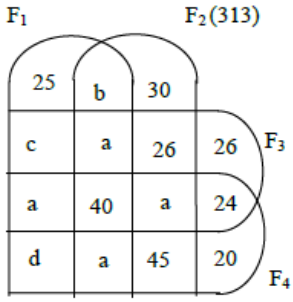
So we get the final diagram as follows:



Number of schools having only facilities F_1 and F_3 = 42

QNo:- 40 ,Correct Answer:- *20*

Explanation:-

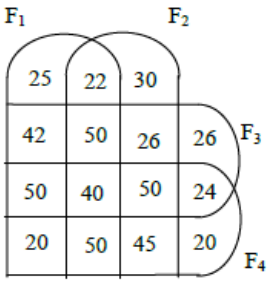


Number of schools who do not have any of these 4 facilities = 80

2a + 40 + b = 162.....(1)
162 + 30 + 26 + a + 45 = 313.....(2). So a = 50.
Putting this value of a in equation (1), we get b = 22.

As the number of schools having F1 was the same as the number of schools having F4, so 25 + c + a + d + b + a + 40 + a = a + 40 + a + 24 + d + a + 45 + 20
Þ25 + c + 22 + 40 = 129 Þ c = 42.
Also 25 + c + a + d + 162 + 30 + 26 + a + 45 + 26 + 24 + 20 + 80 = 600
⇒ 25 + 42 + 50 + d + 162 + 30 + 26 + 50 + 45 + 26 + 24 + 20 + 20 + 80 = 600 ⇒ d = 20

So we get the final diagram as follows:



Number of schools having only facilities F_1 and F_4 = 20

QNo:- 41 ,Correct Answer:- *C*

Explanation:- *Firstly we will convert the cumulative values to normal frequency model. So the new table becomes*

Day	Orders Booked	Orders Delivered	Orders Lost
13^{th}		11	
14^{th}	30	27	1
15^{th}	28	23	2
16^{th}	25	11	12
17^{th}	25	21	12
18^{th}	5	13	2
19^{th}	5	14	9

As is given that number of orders that were booked on 11^{th}, 12^{th} and 13^{th} of the last month that took 2 days to deliver were 4, 6 and 8 respectively, so we can say that on the 13^{th} day, the breakup of 11 orders which were delivered will be 4 + 7. Hence the remaining 7 orders must have been booked on 12^{th} day.

Similarly, we can get the breakup of 27 orders which were delivered on 14^{th} day will be 6 + 21. Hence the remaining 21 orders must have been booked on 13^{th} day.

Similarly, we can get the breakup of 23 orders which were delivered on 15^{th} day will be 8 + 15. Hence the remaining 15 orders must have been booked on 14^{th} day.

But we can see that there are 2 orders which are lost on 15^{th} day. These must have been booked on 13^{th} day.

As 12 orders on 16^{th} day are lost, so they must have been booked on 14^{th} day. So we can say that breakup of 11 orders on day 16 will be 3 + 8. Hence 3 orders delivered on 16^{th} day must have been ordered on 14^{th} day and remaining 8 orders must have been booked on 15^{th} day.

Moving in this pattern, we can find the breakup of 17^{th}, 18^{th} and 19^{th} day and we can get the final table as follows::

Day	Orders Booked	Orders Delivered (Day wise)	Orders Lost
13^{th}		4 (11^{th} day) + 7 (12^{th} day)	
14^{th}	30	6 (12^{th} day) + 21 (13^{th} day)	1
15^{th}	28	8 (13^{th} day) + 15 (14^{th} day)	2 (13^{th} day)
16^{th}	25	3 (14^{th} day) + 8 (15^{th} day)	12 (14^{th} day)
17^{th}	25	8 (15^{th} day) + 13 (16^{th} day)	12 (15^{th} day)
18^{th}	5	10 (16^{th} day) + 3 (17^{th} day)	2 (16^{th} day)
19^{th}	5	13 (17^{th} day) + 1 (18^{th} day)	9 (17^{th} day)

Now we can find the number of orders booked on 13^{th} day = 21 + 8 + 2 = 31. Now we can find all the answers:

Orders lost as a fraction of orders booked was maximum on 15^{th} day which is equal to 12/28.

QNo:- 42 ,Correct Answer:- *B*

Explanation:- *Firstly we will convert the cumulative values to normal frequency model. So the new table becomes*

Day	Orders Booked	Orders Delivered	Orders Lost
13^{th}		11	
14^{th}	30	27	1
15^{th}	28	23	2
16^{th}	25	11	12
17^{th}	25	21	12
18^{th}	5	13	2
19^{th}	5	14	9

As is given that number of orders that were booked on 11^{th}, 12^{th} and 13^{th} of the last month that took 2 days to deliver were 4, 6 and 8 respectively, so we can say that on the 13^{th} day, the breakup of 11 orders which were delivered will be 4 + 7. Hence the remaining 7 orders must have been booked on 12^{th} day.

Similarly, we can get the breakup of 27 orders which were delivered on 14^{th} day will be 6 + 21. Hence the remaining 21 orders must have been booked on 13^{th} day.

Similarly, we can get the breakup of 23 orders which were delivered on 15^{th} day will be 8 + 15. Hence the remaining 15 orders must have been booked on 14^{th} day.

But we can see that there are 2 orders which are lost on 15^{th} day. These must have been booked on 13^{th} day.

As 12 orders on 16^{th} day are lost, so they must have been booked on 14^{th} day. So we can say that breakup of 11 orders on day 16 will be 3 + 8. Hence 3 orders delivered on 16^{th} day must have been ordered on 14^{th} day and remaining 8 orders must have been booked on 15^{th} day.

Moving in this pattern, we can find the breakup of 17^{th}, 18^{th} and 19^{th} day and we can get the final table as follows::

Day	Orders Booked	Orders Delivered (Day wise)	Orders Lost
13^{th}		4 (11^{th} day) + 7 (12^{th} day)	
14^{th}	30	6 (12^{th} day) + 21 (13^{th} day)	1
15^{th}	28	8 (13^{th} day) + 15 (14^{th} day)	2 (13^{th} day)
16^{th}	25	3 (14^{th} day) + 8 (15^{th} day)	12 (14^{th} day)
17^{th}	25	8 (15^{th} day) + 13 (16^{th} day)	12 (15^{th} day)
18^{th}	5	10 (16^{th} day) + 3 (17^{th} day)	2 (16^{th} day)
19^{th}	5	13 (17^{th} day) + 1 (18^{th} day)	9 (17^{th} day)

Now we can find the number of orders booked on 13^{th} day = 21 + 8 + 2 = 31. Now we can find all the answers:

We can see that highest number of orders were booked on 13^{th} day i.e 31.

QNo:- 43 ,Correct Answer:- *C*

Explanation:- *Firstly we will convert the cumulative values to normal frequency model. So the new table becomes*

Day	Orders Booked	Orders Delivered	Orders Lost
13^{th}		11	
14^{th}	30	27	1
15^{th}	28	23	2
16^{th}	25	11	12
17^{th}	25	21	12
18^{th}	5	13	2
19^{th}	5	14	9

As is given that number of orders that were booked on 11^{th}, 12^{th} and 13^{th} of the last month that took 2 days to deliver were 4, 6 and 8 respectively, so we can say that on the 13^{th} day, the breakup of 11 orders which were delivered will be 4 + 7. Hence the remaining 7 orders must have been booked on 12^{th} day.

Similarly, we can get the breakup of 27 orders which were delivered on 14^{th} day will be 6 + 21. Hence the remaining 21 orders must have been booked on 13^{th} day.

Similarly, we can get the breakup of 23 orders which were delivered on 15^{th} day will be 8 + 15. Hence the remaining 15 orders must have been booked on 14^{th} day.

But we can see that there are 2 orders which are lost on 15^{th} day. These must have been booked on 13^{th} day.

As 12 orders on 16^{th} day are lost, so they must have been booked on 14^{th} day. So we can say that breakup of 11 orders on day 16 will be 3 + 8. Hence 3 orders delivered on 16^{th} day must have been ordered on 14^{th} day and remaining 8 orders must have been booked on 15^{th} day.

Moving in this pattern, we can find the breakup of 17^{th}, 18^{th} and 19^{th} day and we can get the final table as follows::

Day	Orders Booked	Orders Delivered (Day wise)	Orders Lost
13^{th}		4 (11^{th} day) + 7 (12^{th} day)	
14^{th}	30	6 (12^{th} day) + 21 (13^{th} day)	1
15^{th}	28	8 (13^{th} day) + 15 (14^{th} day)	2 (13^{th} day)
16^{th}	25	3 (14^{th} day) + 8 (15^{th} day)	12 (14^{th} day)
17^{th}	25	8 (15^{th} day) + 13 (16^{th} day)	12 (15^{th} day)
18^{th}	5	10 (16^{th} day) + 3 (17^{th} day)	2 (16^{th} day)
19^{th}	5	13 (17^{th} day) + 1 (18^{th} day)	9 (17^{th} day)

Now we can find the number of orders booked on 13^{th} day = 21 + 8 + 2 = 31. Now we can find all the answers:

Delivery Ratio is highest for 14^{th} day which is equal to 15 : 3 Þ 5 : 1. Hence 3^{rd} option.

QNo:- 44 ,Correct Answer:- *D*

Explanation:- *Firstly we will convert the cumulative values to normal frequency model. So the new table becomes*

Day	Orders Booked	Orders Delivered	Orders Lost
13^{th}		11	
14^{th}	30	27	1
15^{th}	28	23	2
16^{th}	25	11	12
17^{th}	25	21	12
18^{th}	5	13	2
19^{th}	5	14	9

As is given that number of orders that were booked on 11^{th}, 12^{th} and 13^{th} of the last month that took 2 days to deliver were 4, 6 and 8 respectively, so we can say that on the 13^{th} day, the breakup of 11 orders which were delivered will be 4 + 7. Hence the remaining 7 orders must have been booked on 12^{th} day.

Similarly, we can get the breakup of 27 orders which were delivered on 14^{th} day will be 6 + 21. Hence the remaining 21 orders must have been booked on 13^{th} day.

Similarly, we can get the breakup of 23 orders which were delivered on 15^{th} day will be 8 + 15. Hence the remaining 15 orders must have been booked on 14^{th} day.

But we can see that there are 2 orders which are lost on 15^{th} day. These must have been booked on 13^{th} day.

As 12 orders on 16^{th} day are lost, so they must have been booked on 14^{th} day. So we can say that breakup of 11 orders on day 16 will be 3 + 8. Hence 3 orders delivered on 16^{th} day must have been ordered on 14^{th} day and remaining 8 orders must have been booked on 15^{th} day.

Moving in this pattern, we can find the breakup of 17^{th}, 18^{th} and 19^{th} day and we can get the final table as follows::

Day	Orders Booked	Orders Delivered (Day wise)	Orders Lost
13^{th}		4 (11^{th} day) + 7 (12^{th} day)	
14^{th}	30	6 (12^{th} day) + 21 (13^{th} day)	1
15^{th}	28	8 (13^{th} day) + 15 (14^{th} day)	2 (13^{th} day)
16^{th}	25	3 (14^{th} day) + 8 (15^{th} day)	12 (14^{th} day)
17^{th}	25	8 (15^{th} day) + 13 (16^{th} day)	12 (15^{th} day)
18^{th}	5	10 (16^{th} day) + 3 (17^{th} day)	2 (16^{th} day)
19^{th}	5	13 (17^{th} day) + 1 (18^{th} day)	9 (17^{th} day)

Now we can find the number of orders booked on 13^{th} day = 21 + 8 + 2 = 31. Now we can find all the answers:

Average time taken as given in the question is least for 14^{th} day which is equal to

$$\frac{15+2(3)}{15+3}=\frac{21}{18}$$

QNo:- 45 ,Correct Answer:- *B*

Explanation:-

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

Given
Total number of trees = 205
A – C = 20 and D – A = 6 (from condition 1)
Let number of teak trees in column 2,3 and 4 is x, 2x and 4x respectively (from condition 3)
From condition 6 and 8, only possible plots for D is Row 1, column 3 and 4
From condition 7, plots for Bina are Row 1 column 2, Row 3 column 4 and Row 2 column 3. So Bina got 4 plots.
From condition 4 Abha and Dipti got 4 and 2 plots respectively.
(as each daughter got an even number of plots)
Using all conditions we get, number of plots as A = 4, B = 4, C = 2 and D = 2

	1	2	3	4	
X	12 C	B	D	D	M(2a)
Y	21 A	A	B	A	T(a)
Z	B	C	9 A	28 B	P
		x	2x	4x	

Now as each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees. So we cannot take x as 3 or 6.

If x = 4 then 2x = 8 and 4x = 16

	1	2	3	4	
X	12 C	B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)
Z	B	C	9 A	28 B	P
		x	2x	4x	

So we have A = 50
From condition 1, C = 30 and D = 56 Þ B = 69

So we have

	1	2	3	4	
X	12 C	30 B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)
Z	3 B	18 C	9 A	28 B	P

There are 98 mango trees in total

QNo:- 46 ,Correct Answer:- *B*

Explanation:-

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

Given
Total number of trees = 205
A – C = 20 and D – A = 6 (from condition 1)
Let number of teak trees in column 2,3 and 4 is x, 2x and 4x respectively (from condition 3)
From condition 6 and 8, only possible plots for D is Row 1, column 3 and 4
From condition 7, plots for Bina are Row 1 column 2, Row 3 column 4 and Row 2 column 3. So Bina got 4 plots.
From condition 4 Abha and Dipti got 4 and 2 plots respectively.
(as each daughter got an even number of plots)
Using all conditions we get, number of plots as A = 4, B = 4, C = 2 and D = 2

	1	2	3	4	
X	12 C	B	D	D	M(2a)
Y	21 A	A	B	A	T(a)
Z	 B	 C	9 A	28 B	P
		x	2x	4x	

Now as each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees. So we cannot take x as 3 or 6.

If x = 4 then 2x = 8 and 4x = 16

	1	2	3	4	
X	12 C	B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)
Z	 B	 C	9 A	28 B	P
		x	2x	4x	

So we have A = 50
From condition 1, C = 30 and D = 56 Þ B = 69

So we have

	1	2	3	4	
X	12 C	30 B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)
Z	3 B	18 C	9 A	28 B	P

50, 69, 30, 56 is the correct sequence of trees received by Abha, Bina, Chitra and Dipti.

QNo:- 47 ,Correct Answer:- *A*

Explanation:-

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

Given
Total number of trees = 205
A – C = 20 and D – A = 6 (from condition 1)
Let number of teak trees in column 2,3 and 4 is x, 2x and 4x respectively (from condition 3)
From condition 6 and 8, only possible plots for D is Row 1, column 3 and 4
From condition 7, plots for Bina are Row 1 column 2, Row 3 column 4 and Row 2 column 3. So Bina got 4 plots.
From condition 4 Abha and Dipti got 4 and 2 plots respectively.
(as each daughter got an even number of plots)
Using all conditions we get, number of plots as A = 4, B = 4, C = 2 and D = 2

	1	2	3	4	
X	12 C	B	D	D	M(2a)
Y	21 A	A	B	A	T(a)
Z	 B	 C	9 A	28 B	P
		x	2x	4x	

Now as each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees. So we cannot take x as 3 or 6.

If x = 4 then 2x = 8 and 4x = 16

	1	2	3	4	
X	12 C	B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)
Z	 B	 C	9 A	28 B	P
		x	2x	4x	

So we have A = 50
From condition 1, C = 30 and D = 56 Þ B = 69

So we have

	1	2	3	4	
X	12 C	30 B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)
Z	3 B	18 C	9 A	28 B	P

Chitra receives 18 pine trees.

QNo:- 48 ,Correct Answer:- *A*

Explanation:-

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

Given
Total number of trees = 205
A – C = 20 and D – A = 6 (from condition 1)
Let number of teak trees in column 2,3 and 4 is x, 2x and 4x respectively (from condition 3)
From condition 6 and 8, only possible plots for D is Row 1, column 3 and 4
From condition 7, plots for Bina are Row 1 column 2, Row 3 column 4 and Row 2 column 3. So Bina got 4 plots.
From condition 4 Abha and Dipti got 4 and 2 plots respectively.
(as each daughter got an even number of plots)
Using all conditions we get, number of plots as A = 4, B = 4, C = 2 and D = 2

	1	2	3	4	
X	12 C	B	D	D	M(2a)
Y	21 A	A	B	A	T(a)
Z	B	C	9 A	28 B	P
		x	2x	4x	

Now as each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees. So we cannot take x as 3 or 6.

If x = 4 then 2x = 8 and 4x = 16

	1	2	3	4	
X	12 C	B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)
Z	B	C	9 A	28 B	P
		x	2x	4x	

So we have A = 50
From condition 1, C = 30 and D = 56 Þ B = 69

So we have

	1	2	3	4	
X	12 C	30 B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)

Z	3 B	18 C	9 A	28 B	P

Bina got the plot with smallest number of trees i.e. 3.

QNo:- 49 ,Correct Answer:- *A*

Explanation:-

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

Given
Total number of trees = 205
A – C = 20 and D – A = 6 (from condition 1)
Let number of teak trees in column 2,3 and 4 is x, 2x and 4x respectively (from condition 3)
From condition 6 and 8, only possible plots for D is Row 1, column 3 and 4
From condition 7, plots for Bina are Row 1 column 2, Row 3 column 4 and Row 2 column 3. So Bina got 4 plots.
From condition 4 Abha and Dipti got 4 and 2 plots respectively.
(as each daughter got an even number of plots)
Using all conditions we get, number of plots as A = 4, B = 4, C = 2 and D = 2

	1	2	3	4	
X	12 C	B	D	D	M(2a)
Y	21 A	A	B	A	T(a)
Z	B	C	9 A	28 B	P
		x	2x	4x	

Now as each plot had trees in non-zero multiples of 3 or 4 and none of the plots had the same number of trees. So we cannot take x as 3 or 6.

If x = 4 then 2x = 8 and 4x = 16

	1	2	3	4	
X	12 C	B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)
Z	B	C	9 A	28 B	P
		x	2x	4x	

So we have A = 50
From condition 1, C = 30 and D = 56 Þ B = 69

So we have

	1	2	3	4	
X	12 C	30 B	D	D	M(98)

Y	21 A	4 A	8 B	16 A	T(49)
Z	3 B	18 C	9 A	28 B	P

Statement 1 is wrong as Bina got 3 pine trees.

QNo:- 50 ,Correct Answer:- *B*

Explanation:-

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

Given
Total number of trees = 205
A – C = 20 and D – A = 6 (from condition 1)
Let number of teak trees in column 2,3 and 4 is x, 2x and 4x respectively (from condition 3)
From condition 6 and 8, only possible plots for D is Row 1, column 3 and 4
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So we have

	1	2	3	4

X	12 C	30 B	D	D	M(98)
Y	21 A	4 A	8 B	16 A	T(49)
Z	3 B	18 C	9 A	28 B	P

Total trees in column 1 = 36
Total trees in column 2 = 52
As Dipti got 32 trees in one of her plots. We can see taking 32 trees in either column 3 or 4, number of trees in column 4 is always more than all other columns. So column 4 is the answer.

QNo:- 51 ,Correct Answer:- *B*

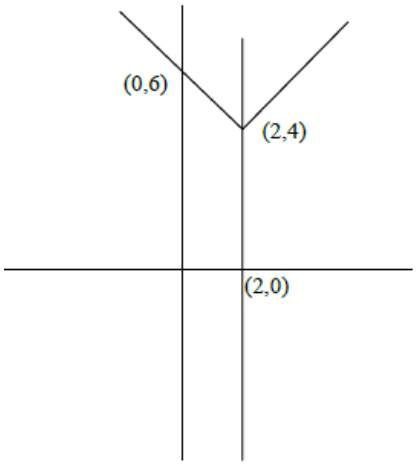
Explanation:- *Let initial volume of A and B be 1 lt and 3 lt. Now 4lt of A is added. Now A = 5 lt and B = 3lt.*
Let % of alcohol in B is p%. So according to the question:
8×72/100 = (5 × 60/100) + (3 × p/100)
On solving this we get p= 92

QNo:- 52 ,Correct Answer:- *C*

Explanation:- *Time taken by Anil to complete one round = 3/15*
Time taken by Sunil to complete one round = 3/10
Time taken by Anil and Sunil to meet at the starting point first time = 3/5 hrs
Distance travelled by Ravi in 3/5 hrs = 8×3/5 = 4.8 kms

QNo:- 53 ,Correct Answer:- *A*

Explanation:- *The figure is a trapezium*
Area = ½ x (4 + 6) × 2 = 10



QNo:- 54 ,Correct Answer:- *C*

Explanation:- *Distance covered by Train from point A till 10:30 = 40 × 1.5 = 60 km*
So remaining distance = 90 – 60 = 30 km
Time = 30/(40+20) = ½ hrs
So trains meet each other at 11:00 am

QNo:- 55 ,Correct Answer:- *A*

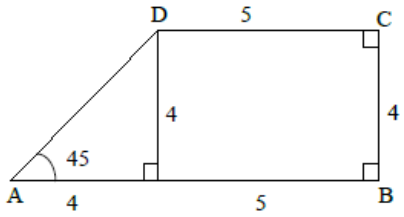
Explanation:- *Bishnu scored 52% and Asha scored 64%. Difference between their actual marks = 23 + 34 =57*
Difference in their percentages = 12%
So 12% of Total = 57
Total = 57×100/12
Score of Geeta = (57 × 100/12) × 84/100 = 399

QNo:- 56 ,Correct Answer:- *B*

Explanation:- $A+B = \log_a 5 + \log_a 6 - \log_a 5 + \log_a 3 = \log_a 18$
$\log_a 2 = 3$
So $\log_a 18 = \log_a 2 + 2\log_a 3$
So $A+B = 3 + 2\log_a 3$
$\log_a 3 = (A+B-3)/2$
So $\log_3 a = 2/(A+B-3)$

QNo:- 57 ,Correct Answer:- *28*

Explanation:- *Required Area = (5 × 4) + ½ x 4 x 4 = 28*



QNo:- 58 ,Correct Answer:- *D*

Explanation:- $F(5 + 5) = F(5)^2 = 16$
similarly F(-5)= 1/4 , So F(-10) = 1/16
So 16 - 1/16 = 15.9375

QNo:- 59 ,Correct Answer:- *24,6*

Explanation:- *(2 × 4 × 8 × 16) / (4 × 27/8 × 256/81) = 24*

QNo:- 60 ,Correct Answer:- *6,252,18*

Explanation:- *N=x + y*
Minimum of x + y = 3 + 15 =18
Maximum value of x + y = 9 + 22 = 31
Now as N > 25, so all values from 26 to 31 are possible.
6 values are possible

QNo:- 61 ,Correct Answer:- A

Explanation:- Let cost per kg = 1
Mark Price = 1.2/kg
Total cost = 35
Total selling price = 35x 1.15 = 40.25
[(5x1.2)+ (15x 1.2 x 0.9)+ (3× 0) + (12×1.2× (1 + p/100))] = 40.25
p= 25

QNo:- 62 ,Correct Answer:- B

Explanation:- Let usual time taken is t
40 x t = 35 x (t + 6)
So t = 42 mins
Distance = 40 x 42/60 = 28kms
So 28 x 2/3 = 56/3 kms are covered in 42/3 = 14 mins
Vimla stops for 8 mins.
Time left = 42 – 14 – 8 = 20 mins
So 28/3 kms are to be covered in 20 mins.
Speed = (28/3)/(20/60) = 28kmph

QNo:- 63 ,Correct Answer:- 252

Explanation:- Three digit numbers without repetition = 9 × 9 × 8 = 648
So three digit numbers with at least one digit repeated = 900 – 648 = 252

QNo:- 64 ,Correct Answer:- B

Explanation:- Total score of (n+2) innings = 29x(n+2) = 29n + 58
Total score of n innings = 29n + 58 – 38 – 15 = 30n
So n=5
So total score in 5 innings = 30 × 5 = 150
Maximum score in any inning = 37
So 150 – (37× 4) = 2

QNo:- 65 ,Correct Answer:- D

Explanation:- K/4 = 1/K
So K^2 = 4
|K| = 2

QNo:- 66 ,Correct Answer:- 18,1600,3

Explanation:- Let age of Tom = x
So age of Dick = 3x and Harry = 6x
So (x + 3x + 6x)/3 - 3x = 1
x = 3
So Harry's age = 18

QNo:- 67 ,Correct Answer:- C

Explanation:- Let coordinates of the circumcenter be (x, y)
Now just equating the distance of this point from the vertices of the triangle.
$x^2 + y^2 = (x-4)^2 + y^2$
$x^2 + y^2 = (x-3)^2 + (y-9)^2$
On solving these two equations we get x=2 and y= 13/3
So $R^2 = (2^2 + (13/3)^2) = 205\pi/9$

QNo:- 68 ,Correct Answer:- 1600

Explanation:- $P(1 + 5/100)^3 = 18522$
$P = 16000$

QNo:- 69 ,Correct Answer:- 3

Explanation:- $14^a = 36^b = 84^c = K$
$14 = k^{1/a}$
$84 = k^{1/c}$
$36 = k^{1/b}$
$(84/14)^2 = 36$
$K^{(2/c - 2/a)} = K^{1/b}$
$2(1/c - 1/a) = 1/b$
$2b(1/c - 1/a) = 1$
So $6b(1/c - 1/a) = 3$

QNo:- 70 ,Correct Answer:- A

Explanation:- The diagonals will intersect at the midpoint of the line joining (2,1) and (-3,-4). This point will be (-1/2 , -3/2).
The line x+9y +c =0 will also pass through (-1/2 , -3/2)
so -1/2 + 9x-3/2 + c = 0
c = 14

QNo:- 71 ,Correct Answer:- D

Explanation:- As N is even and N/11 lies between 0.2 and 0.5, So N has to be 4.
N/M is less than 0.5, So M has to be greater than 8 but has to be less than 10 as M/20 is also less than 0.5
So M = 9
M – 2N = 9 – 8= 1

QNo:- 72 ,Correct Answer:- C

Explanation:- $X_1 = -1, X_2 = -3, X_3 = -6, X_4 = -10$
So you can observe the pattern $X_n = -n(n+1)/2$
$X_{100} = -100x101/2 = -5050$

QNo:- 73 ,Correct Answer:- C

Explanation:- Numbers divisible by 2 = 120/2 = 60
Numbers divisible by 5 = 120/5 = 24
Numbers divisible by 7 = 120/7 = 17
Numbers divisible by 2 and 5 = 120/10 = 12
Numbers divisible by 5 and 7 = 120/35 = 3
Numbers divisible by 2 and 7 = 120/14 = 8
Numbers divisible by 2, 5 and 7 = 120/70 = 1
Numbers divisible by either 2, 5 or 7 = 60+24+17 – 12 – 3 – 8 + 1 = 79
Numbers divisible by none of 2, 5 or 7 = 120 – 79 = 41

QNo:- 74 ,Correct Answer:- 40

Explanation:- To complete 1.5 km, 140 persons took 60 days
So to complete the remaining 4.5 km, 140 persons would have taken = 60×3 = 180 days
Now to complete 180 days work in (200 – 60) = 140 days:
Number of persons required = 140 × 180/140 = 180
Additional persons = 180 – 140 = 40

QNo:- 75 ,Correct Answer:- C

Explanation:- $A \times B = 4^{2017}$
$A \times B = 2^{4034}$
Now A and B are factors of 2^{4034}
Total factors of the above number are 4035
So there are 4035 cases possible
So there will be one case where A= B.
(4035 – 1)/2 = 2017 cases will be there A>B, these cases are invalid.
So 4035 – 2017 = 2018 cases

QNo:- 76 ,Correct Answer:- D

Explanation:- $m^2 - 8n >= 0$ and $4n^2 - 4m >= 0$
Now the smallest value m can take for the first equation is m=3 and n =1, but this will not satisfy the second equation.
If m= 4 then n= 2
So m + n = 6