

Directions of Test

Test Name	Actual CAT 2017 Slot I	Total Questions	100	Total Time	180 Mins
Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking	
Verbal Ability	34	1:0(h:m)	3	1/3	
DI & Reasoning	32	1:0(h:m)	3	1/3	
Quantitative Ability	34	1:0(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

Understanding where you are in the world is a basic survival skill, which is why we, like most species come hard-wired with specialized brain areas to create cognitive maps of our surroundings. Where humans are unique, though, with the possible exception of honeybees, is that we try to communicate this understanding the world with others. We have along history of doing this by drawing maps – the earliest version yet discovered were scrawled on cave walls 14,000 years ago. Human cultures have been drawing them on stone tablets, papyrus, paper and now computer screens ever since.

Given such a long history of human map-making, it perhaps surprising that is only within the last few hundred years that north has been consistently considered to be at the top. In fact, for much of human history, north almost never appeared at the top, according to Jerry Brotton, a map historian... "North was rarely put at the top for the simple fact that north is where darkness comes from," he says. "West is also very unlikely o be put at the top because west is where the sun disappears."

Confusingly, early Chinese maps seem to buck this trend. But, Brotton, says, even though they did have compasses at the time, that isn't the reason that they placed north at the top. Early Chinese compasses were actually oriented to point south, which was considered to be more desirable than deepest darkest north. But in Chinese maps, the emperor, who lived in the north of the country was always put at the top of the map, with everyone else, his loyal subjects, looking up towards him. "In Chinese culture the Emperor looks south because it's where the winds come from, it's a good direction. North is not very good but you are in a position of the subjection to the emperor, so you look up to him," says Brotton.

Given that each culture has a very different idea of who, or what, they should look upto it's perhaps not surprising that there is very little consistency in which way early maps pointed. In ancient Egyptian times the top of the world was east, the position of sunrise. Early Islamic maps favoured south at the top because most of the early Muslim cultures were north of Mecca, so they imagined looking up (south) towards it Christian maps from the same era (called Mappa Mundi) put east at the top, towards the Garden of Eden and with Jerusalem in the centre.

So when did everyone get together and decide that north was the top? It's tempting to put it down to European explorers like Christopher Columbus and Ferdinand Megellan who were navigating by the North Star. But Brotton argues that these early explorers didn't think of the world like that at all. "When Columbus describes the world it is in accordance with east being at the top," he says "Columbus says he is going towards paradise, so his mentality is from a medieval mappa mundi." We've got to remember, adds Brotton, that at the time, "no one knows what they are doing and where they are going."

Which one of the following best describes what the passage is trying to do?

- A) It questions on explanation about how maps are designed.
 B) It corrects a misconception about the way maps are designed. C) It critiques a methodology used to create maps
 D) It explores some myths about maps

Question No. : 2

Early maps did **NOT** put north at the top for all the following reasons EXCEPT

- A) North was the source of darkness B) South was favoured by some emperors.
- C) East and south were more important for religious reasons for some civilisations
- D) East was considered by some civilisations to be a more positive direction

Question No. : 3

According to the passage, early Chinese maps placed north at the top because Options:

- A) the Chinese invented the compass and were aware of magnetic north B) they wanted to show respect to the emperor.
- C) the Chinese emperor appreciated the winds from the south. D) north was considered the most desirable direction.

Question No. : 4

It can be inferred from the passage that European explorers like Columbus and Megellan Options:

- A) set the precedent for north-up maps. B) navigated by the compass. C) used an eastward orientation for religious reasons.
- D) navigated with the help of early maps

Question No. : 5

Which one of the following about the northern orientation of modern maps is asserted in the passage?

- A) The biggest contributory factor was the understanding of magnetic north
- B) The biggest contributory factor was the role of European explorers
- C) The biggest contributory factor was the influence of Christian maps
- D) The biggest contributory factor is not stated in the passage

Question No. : 6

The role of natural phenomena in influencing map-making conventions is seen most clearly in

- A) early Egyptian maps B) early Islamic maps C) early Chinese maps D) early Christian maps

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

Question No. : 7

I used a smartphone GPS to find my way through the cobblestoned maze of Geneva's Old Town, in search of a handmade machine that changed the world more than any other invention. Near a 13th-century cathedral in this Swiss city on the shores of a lovely lake, I found what I was looking for: a Gutenberg printing press. "This was the Internet of its day — at least as influential as the iPhone," said Gabriel de Montmollin, the director of the Museum of the Reformation, toying with the replica of Johann Gutenberg's great invention. [Before the invention of the printing press] it used to take four monks...up to a year to produce a single book. With the advance in movable type in 15th-century Europe, one press could crank out 3,000 pages a day. Before long, average people could travel to places that used to be unknown to them — with maps! Medical information passed more freely and quickly, diminishing the sway of quacks...The printing press offered the prospect that tyrants would never be able to kill a book or suppress an idea. Gutenberg's brainchild broke the monopoly that clerics had on scripture. And later, stirred by pamphlets from a version of that same press, the American colonies rose up against a king and gave birth to a nation.

So, a question in the summer of this 10th anniversary of the iPhone: has the device that is perhaps the most revolutionary of all time given us a single magnificent idea? Nearly every advancement of the written word through new technology has also advanced humankind. Sure, you can say the iPhone changed everything. By putting the world's recorded knowledge in the palm of a hand, it revolutionized work, dining, travel and socializing. It made us more narcissistic — here's more of me doing cool stuff! — and it unleashed an army of awful trolls. We no longer have the patience to sit through a baseball game without that reach to the pocket. And one more casualty of Apple selling more than a billion phones in a decade's time: daydreaming has become a lost art.

For all of that, I'm still waiting to see if the iPhone can do what the printing press did for religion and democracy...the Geneva museum makes a strong case that the printing press opened more minds than anything else...it's hard to imagine the French or American revolutions without those enlightened voices in print...

Not long after Steve Jobs introduced his iPhone, he said the bound book was probably headed for history's attic. Not so fast. After a period of rapid growth in e-books, something closer to the medium for Chaucer's volumes has made a great comeback.

The hope of the iPhone, and the Internet in general, was that it would free people in closed societies. But the failure of the Arab Spring, and the continued suppression of ideas in North Korea, China and Iran, has not borne that out... The iPhone is still young. It has certainly been "one of the most important, world-changing and successful products in history," as Apple CEO. Tim Cook said. But I'm not sure if the world changed for the better with the iPhone — as it did with the printing press — or merely, changed.

The printing press has been likened to the Internet for which one of the following reasons?

- A) It enabled rapid access to new information and the sharing of new ideas
- B) It represented new and revolutionary technology compared to the past
- C) It encouraged reading among people by giving them access to thousands of books
- D) It gave people access to pamphlets and literature in several languages

Question No. : 8

According to the passage, the invention of the printing press did all of the following EXCEPT

- A) Promoted the spread of enlightened political views across countries
- B) Gave people direct access to authentic medical information and religious texts
- C) shortened the time taken to produce books and pamphlets.
- D) enabled people to perform various tasks simultaneously.

Question No. : 9

Steve Jobs predicted which one of the following with the introduction of the iPhone?

- A) People would switch from reading on the Internet to reading on their iPhones.
- B) People would lose interest in historical and traditional classics.
- C) Reading printed books would become a thing of the past.
- D) The production of e-books would eventually fall.

Question No. : 10

"I'm still waiting to see if the iPhone can do what the printing press did for religion and democracy." The author uses which one of the following to indicate his uncertainty?

- A) The rise of religious groups in many parts of the world.
- B) The expansion in trolling and narcissism among users of the Internet
- C) The continued suppression of free speech in closed societies
- D) The decline in reading habits among those who use the device

Question No. : 11

The author attributes the French and American revolutions to the invention of the printing press because

- A) maps enabled large numbers of Europeans to travel and settle in the American continent.
- B) the rapid spread of information exposed people to new ideas on freedom and democracy
- C) it encouraged religious freedom among the people by destroying the monopoly of religious leaders on the scriptures.
- D) it made available revolutionary strategies and opinions to the people.

Question No. : 12

The main conclusion of the passage is that the new technology has

- A) some advantages, but these are outweighed by its disadvantages.
- B) so far not proved as successful as the printing press in opening people's minds
- C) been disappointing because it has changed society too rapidly
- D) been more wasteful than the printing press because people spend more time daydreaming or surfing.

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

Question No. : 13

This year alone, more than 8,600 stores could close, according to industry estimates, many of them the brand-name anchor outlets that real estate developers once stumbled over themselves to court. Already there have been 5,300 retail closings this year... Sears Holdings—which owns Kmart—said in March that there's "substantial doubt" it can stay in business altogether, and will close 300 stores this year. So far this year, nine national retail chains have filed for bankruptcy.

Local jobs are a major casualty of what analysts are calling, with only a hint of hyperbole, the retail apocalypse. Since 2002, department stores have lost 448,000 jobs, a 25% decline, while the number of store closures this year is on pace to surpass the worst depths of the Great Recession. The growth of online retailers, meanwhile, has failed to offset those losses, with the e-commerce sector adding just 178,000 jobs over the past 15 years. Some of those jobs can be found in the massive distribution centers Amazon has opened across the country, often not too far from malls the company helped shutter.

But those are workplaces, not gathering places. The mall is both. And in the 61 years since the first enclosed one opened in suburban Minneapolis, the shopping mall has been where a huge swath of middle-class America went for far more than shopping. It was the home of first jobs and blind dates, the place for family photos and ear piercings, where goths and grandmothers could somehow walk through the same doors and find something they all liked. Sure, the food was lousy for you and the oceans of parking lots encouraged car-heavy development, something now scorned by contemporary planners. But for better or worse, the mall has been America's public square for the last 60 years.

So what happens when it disappears?

Think of your mall. Or think of the one you went to as a kid. Think of the perfume clouds in the department stores. The fountains splashing below the skylights. The cinnamon wafting from the food court. As far back as ancient Greece, societies have congregated around a central marketplace. In medieval Europe, they were outside cathedrals. For half of the 20th century and almost 20 years into the new one, much of America has found their agora on the terrazzo between Orange Julius and Sbarro, Waldenbooks and the Gap, Sunglass Hut and Hot Topic.

That mall was an ecosystem unto itself, a combination of community and commercialism peddling everything you needed and everything you didn't: Magic Eye posters, wind catchers. Air Jordans. ...

A growing number of Americans, however, don't see the need to go to any Macy's at all. Our digital lives are frictionless and ruthlessly efficient, with retail and romance available at a click. Malls were designed for leisure, abundance, ambling. You parked and planned to spend some time. Today, much of that time has been given over to busier lives and second jobs and apps that let you swipe right instead of haunt the food court. ' Malls, says Harvard business professor Leonard Schlesinger, "were built for patterns of social interaction that increasingly don't exist."

The central idea of this passage is that:

- A) the closure of malls has affected the economic and social life of middle-class America
- B) the advantages of malls outweigh their disadvantages.
- C) malls used to perform a social function that has been lost
- D) malls are closing down because people have found alternate ways to shop.

Question No. : 14

Why does the author say in paragraph 2, 'the massive distribution centers Amazon has opened across the country, often not too far from malls the company helped shutter'?

- A) To highlight the irony of the situation
- B) To indicate that malls and distribution centres are located in the same area
- C) To show that Amazon is helping certain brands go online
- D) To indicate that the shopping habits of the American middle class have changed.

Question No. : 15

In paragraph 1, the phrase "real estate developers once stumbled over themselves to court" suggests that they

- A) took brand-name anchor outlets to court
- B) collaborated with one another to get brand-name anchor outlets
- C) were eager to get brand-name anchor outlets to set up shop in their mall
- D) malls are closing down because people have found alternate ways to shop.

Question No. : 16

The author calls the mall an ecosystem unto itself because

- A) people of all ages and from all walks of life went there B) people could shop as well as eat in one place
C) it was a commercial space as well as a gathering place. D) it sold things that were needed as well as those that were not.

Question No. : 17

Why does **the** author say that the mall has been America's public square?

- A) Malls did not bar anybody from entering the space
B) Malls were a great place to shop for a huge section of the middle class
C) Malls were a hangout place where families grew close to each other
D) Malls were a great place for everyone to gather and interact.

Question No. : 18

The author describes 'Perfume clouds in the department stores' in order to

- A) evoke memories by painting a picture of malls B) describe the smells and sights of malls
C) emphasise that all brands were available under one roof.
D) show that malls smelt good because of the various stores and food court.

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

Question No. : 19

Scientists have long recognised the incredible diversity within a species. But they thought it reflected evolutionary changes that unfolded imperceptibly, over millions of years. That divergence between populations within a species was enforced, according to Ernst Mayr, the great evolutionary biologist of the 1940s, when a population was separated from the rest of the species by a mountain range or a desert, preventing breeding across the divide over geologic scales of time. Without the separation, gene flow was relentless. But as the separation persisted, the isolated population grew apart and speciation occurred.

In the mid-1960s, the biologist Paul Ehrlich - author of *The Population Bomb* (1968) - and his Stanford University colleague Peter Raven challenged Mayr's ideas about speciation. They had studied checkerspot butterflies living in the Jasper Ridge Biological Preserve in California, and it soon became clear that they were not examining a single population. Through years of capturing, marking and then recapturing the butterflies, they were able to prove that within the population, spread over just 50 acres of suitable checkerspot habitat, there were three groups that rarely interacted despite their very close proximity.

Among other ideas, Ehrlich and Raven argued in a now classic paper from 1969 that gene flow was not as predictable and ubiquitous as Mayr and his cohort maintained, and thus evolutionary divergence between neighbouring groups in a population was probably common. They also asserted that isolation and gene flow were less important to evolutionary divergence than natural selection (when factors such as mate choice, weather, disease or predation cause better-adapted individuals to survive and pass on their successful genetic traits). For example, Ehrlich and Raven suggested that, without the force of natural selection, an isolated population would remain unchanged and that, in other scenarios, natural selection could be strong enough to overpower gene flow...

Which of the following best sums up Ehrlich and Raven's argument in their classic 1969 paper?

- A) Ernst Mayr was wrong in identifying physical separation as the cause of species diversity
B) Checkerspot butterflies in the 50-acre Jasper Ridge Preserve formed three groups that rarely interacted with each other
C) While a factor, isolation was not as important to speciation as natural selection
D) Gene flow is less common and more erratic than Mayr and his colleagues claimed.

Question No. : 20

All of the following statements are true according to the passage **EXCEPT**

- A) Gene flow contributes to evolutionary divergence.
B) *The Population Bomb* questioned dominant ideas about species diversity
C) Evolutionary changes unfold imperceptibly over time.
D) Checkerspot butterflies are known to exhibit speciation while living in close proximity

Question No. : 21

The author discusses Mayr, Ehrlich and Raven to demonstrate that

- A) evolution is a sensitive and controversial topic
- B) Ehrlich and Raven's ideas about evolutionary divergence are widely accepted by scientists.
- C) the causes of speciation are debated by scientists
- D) checkerspot butterflies offer the best example of Ehrlich and Raven's ideas about speciation

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

Question No. : 22

Do sports mega events like the summer Olympic Games benefit the host city economically? It depends, but the prospects are less than rosy. The trick is converting...several billion dollars in operating costs during the 17-day fiesta of the Games into a basis for long-term economic returns. These days, the summer Olympic Games themselves generate total revenue of \$4 billion to \$5 billion, but the lion's share of this goes to the International Olympics Committee, the National Olympics Committees and the International Sports Federations. Any economic benefit would have to flow from the value of the Games as an advertisement for the city, the new transportation and communications infrastructure that was created for the Games, or the ongoing use of the new facilities.

Evidence suggests that the advertising effect is far from certain. The infrastructure benefit depends on the initial condition of the city and the effectiveness of the planning. The facilities benefit is dubious at best for buildings such as velodromes or natatoriums and problematic for 100,000-seat Olympic stadiums. The latter require a conversion plan for future use, the former are usually doomed to near vacancy. Hosting the summer Games generally requires 30-plus sports venues and dozens of training centers. Today, the Bird's Nest in Beijing sits virtually empty, while the Olympic Stadium in Sydney costs some \$30 million a year to operate.

Part of the problem is that Olympics planning takes place in a frenzied and time-pressured atmosphere of intense competition with the other prospective host cities — not optimal conditions for contemplating the future shape of an urban landscape. Another part of the problem is that urban land is generally scarce and growing scarcer. The new facilities often stand for decades or longer. Even if they have future use, are they the best use of precious urban real estate?

Further, cities must consider the human cost. Residential areas often are razed and citizens relocated (without adequate preparation or compensation). Life is made more hectic and congested. There are, after all, other productive uses that can be made of vanishing fiscal resources.

The central point in the first paragraph is that the economic benefits of the Olympic Games

- A) are shared equally among the three organising committees
- B) accrue mostly through revenue from advertisements and ticket sales
- C) accrue to host cities, if at all, only in the long term
- D) are usually eroded by expenditure incurred by the host city

Question No. : 23

Sports facilities built for the Olympics are not fully utilised after the Games are over because

- A) their scale and the costs of operating them are large
- B) their location away from the city centre usually limits easy access.
- C) the authorities do not adapt them to local conditions.
- D) they become outdated having being built with little planning and under time pressure

Question No. : 24

The author feels that the Games place a burden on the host city for all of the following reasons EXCEPT that

- A) they divert scarce urban land from more productive uses
- B) they involve the demolition of residential structures to accommodate sports facilities and infrastructure
- C) the finances used to fund the Games could be better used for other purposes.
- D) the influx of visitors during the Games places a huge strain on the urban infrastructure.

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

Question No. : 25

To me, a "classic" means precisely the opposite of what my predecessors understood: a work is classical by reason of its resistance to contemporaneity and supposed universality, by reason of its capacity to indicate human particularity and difference in that past epoch. The classic is not what tells me about shared humanity—or, more truthfully put, what lets me recognize myself as already present in the past, what nourishes in me the illusion that everything has been like me and has existed only to prepare the way for me. Instead, the classic is what gives access to radically different forms of human consciousness for any given generation of readers, and thereby expands for them the range of possibilities of what it means to be a human being.

- A) A classic is able to focus on the contemporary human condition and a unified experience of human consciousness.
- B) A classical work seeks to resist particularity and temporal difference even as it focuses on a common humanity
- C) A classic is a work exploring the new., going beyond the universal, the contemporary, and the notion of a unified human consciousness
- D) A classic is a work that provides access to a universal experience of the human race as opposed to radically different forms of human consciousness

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

Question No. : 26

A translator of literary works needs a secure hold upon the two languages involved, supported by a good measure of familiarity with the two cultures. For an Indian translating works in an Indian language into English, finding satisfactory equivalents in a generalized western culture of practices and symbols in the original would be less difficult than gaining fluent control of contemporary English. When a westerner works on texts in Indian languages the interpretation of cultural elements will be the major challenge, rather than control over the grammar and essential vocabulary of the language concerned. It is much easier to remedy lapses in language in a text translated into English, than flaws of content. Since it is easier for an Indian to learn the English language than it is for a Briton or American to comprehend Indian culture, translations of Indian texts is better left to Indians.

- A) While translating, the Indian and the westerner face the same challenges but they have different skill profiles and the former has the advantage.
- B) As preserving cultural meanings is the essence of literary translation Indians' knowledge of the local culture outweighs the initial disadvantage of lower fluency in English.
- C) Indian translators should translate Indian texts into English as their work is less likely to pose cultural problems which are harder to address than the quality of language.
- D) Westerners might be good at gaining reasonable fluency in new languages, but as understanding the culture reflected in literature is crucial, Indians remain better placed.

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

Question No. : 27

For each of the past three years, temperatures have hit peaks not seen since the birth of meteorology, and probably not for more than 110,000 years. The amount of carbon dioxide in the air is at its highest level in 4 million years. This does not cause storms like Harvey - there have always been storms and hurricanes along the Gulf of Mexico - but it makes them wetter and more powerful. As the seas warm, they evaporate more easily and provide energy to storm fronts. As the air above them warms, it holds more water vapour. For every half a degree Celsius in warming, there is about a 3% increase in atmospheric moisture content. Scientists call this the Clausius-Clapeyron equation. This means the skies fill more quickly and have more to dump. The storm surge was greater because sea levels have risen 20 cm as a result of more than 100 years of human -related global warming which has melted glaciers and thermally expanded the volume of sea water.

- A) The storm Harvey is one of the regular, annual ones from the Gulf of Mexico; global warming and Harvey are unrelated phenomena.
- B) Global warming does not breed storms but makes them more destructive; the Clausius-Clapeyron equation, though it predicts potential increase in atmospheric moisture content, cannot predict the scale of damage storms might wreck.
- C) Global warming melts glaciers, resulting in sea water volume expansion; this enables more water vapour to fill the air above faster. Thus, modern storms contain more destructive energy.
- D) It is naive to think that rising sea levels and the force of tropical storms are unrelated; Harvey was destructive as global warming has armed it with more moisture content, but this may not be true of all storms.

DIRECTIONS for the question: The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.

Question No. : 28

- 1. The process of handing down implies not a passive transfer, but some contestation in defining what exactly is to be handed down.
- 2. Wherever Western scholars have worked on the Indian past, the selection is even more apparent and the inventing of a tradition much more recognizable.
- 3. Every generation selects what it requires from the past and makes its innovations, some more than others.
- 4. It is now a truism to say that traditions are not handed down unchanged, but are invented.
- 5. Just as life has death as its opposite, so is tradition by default the opposite of innovation.

A) 54132 B) C) D)

DIRECTIONS for the question: The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.

Question No. : 29

- 1. Scientists have for the first time managed to edit genes in a human embryo to repair a genetic mutation, fuelling hopes that such procedures may one day be available outside laboratory conditions.
- 2. The cardiac disease causes sudden death in otherwise healthy young athletes and affects about one in 500 people overall.
- 3. Correcting the mutation in the gene would not only ensure that the child is healthy but also prevents transmission of the mutation to future generations.
- 4. It is caused by a mutation in a particular gene and a child will suffer from the condition even if it inherits only one copy of the mutated gene.
- 5. In results announced in Nature this week, scientists fixed a mutation that thickens the heart muscle, a condition called hypertrophic cardiomyopathy.

A) 15243 B) C) D)

DIRECTIONS for the question: The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.

Question No. : 30

1. The study suggests that the disease did not spread with such intensity, but that it may have driven human migrations across Europe and Asia.
2. The oldest sample came from an individual who lived in southeast Russia about 5,000 years ago.
3. The ages of the skeletons correspond to a time of mass exodus from today's Russia and Ukraine into western Europe and central Asia, suggesting that a pandemic could have driven these migrations.
4. In the analysis of fragments of DNA from 101 Bronze Age skeletons for sequences from *Yersinia pestis*, the bacterium that causes the disease, seven tested positive.
5. DNA from Bronze Age human skeletons indicate that the black plague could have emerged as early as 3,000 BCE, long before the epidemic that swept through Europe in the mid-1300s.

A) 54123 B) C) D)

DIRECTIONS for the question: The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.

Question No. : 31

1. This visual turn in social media has merely accentuated this announcing instinct of ours, enabling us with easy-to-create, easy-to-share, easy-to-store and easy-to-consume platforms, gadgets and apps.
2. There is absolutely nothing new about us framing the vision of who we are or what we want, visually or otherwise, in our Facebook page, for example.
3. Turning the pages of most family albums, which belong to a period well before the digital dissemination of self-created and self-curated moments and images, would reconfirm the basic instinct of documenting our presence in a particular space, on a significant occasion, with others who matter.
4. We are empowered to book our faces and act as celebrities within the confinement of our respective friend lists, and communicate our activities, companionship and locations with minimal clicks and touches.
5. What is unprecedented is not the desire to put out news feeds related to the self, but the ease with which this broadcast operation can now be executed, often provoking (un)anticipated responses from beyond one's immediate location.

A) 32145 B) C) D)

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. : 32

1. People who study children's language spend a lot of time watching how babies react to the speech they hear around them.
2. They make films of adults and babies interacting, and examine them very carefully to see whether the babies show any signs of understanding what the adults say.
3. They believe that babies begin to react to language from the very moment they are born.
4. Sometimes the signs are very subtle - slight movements of the baby's eyes or the head or the hands.
5. You'd never notice them if you were just sitting with the child, but by watching a recording over and over, you can spot them.

A) 3 B) C) D)

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. : 33

1. Neuroscientists have just begun studying exercise's impact within brain cells — on the genes themselves.
2. Even there, in the roots of our biology, they've found signs of the body's influence on the mind.
3. It turns out that moving our muscles produces proteins that travel through the bloodstream and into the brain, where they play pivotal roles in the mechanisms of our highest thought processes.
4. In today's technology-driven, plasma-screened-in world, it's easy to forget that we are born movers — animals, in fact — because we've engineered movement right out of our lives.
5. It's only in the past few years that neuroscientists have begun to describe these factors and how they work, and each new discovery adds awe-inspiring depth to the picture

A) 4 B) C) D)

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. : 34

1. The water that made up ancient lakes and perhaps an ocean was lost.
2. Particles from the Sun collided with molecules in the atmosphere, knocking them into space or giving them an electric charge that caused them to be swept away by the solar wind.
3. Most of the planet's remaining water is now frozen or buried, but clues over the past decade suggested that some liquid water, a presumed necessity for life, might survive in underground aquifers.
4. Data from NASA's MAVEN orbiter show that solar storms stripped away most of Mars's once-thick atmosphere.
5. A recent study reveals how Mars lost much of its early water, while another indicates that some liquid water remains.

A) 1 B) C) D)

Section : DI & Reasoning

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

Question No. : 35

Healthy Bites is a fast food joint serving three items: burgers, fries and ice cream. It has two employees Anish and Bani who prepare the items ordered by the clients. Preparation time is 10 minutes for a burger and 2 minutes for an order of ice cream. An employee can prepare only one of these items at a time. The fries are prepared in an automatic fryer which can prepare up to 3 portions of fries at a time, and takes 5 minutes irrespective of the number of portions. The fryer does not need an employee to constantly attend to it, and we can ignore the time taken by an employee to start and stop the fryer; thus, an employee can be engaged in preparing other items while the frying is on. However fries cannot be prepared in anticipation of future orders.

Healthy Bites wishes to serve the orders as early as possible. The individual items in any order are served as and when ready; however, the order is considered to be completely served only when all the items of that order are served.

The table below gives the orders of three clients and the times at which they placed their orders;

Client No.	Time	Order
1	10:0	1 burger, 3 portions of fries, 1 order of ice cream
2	10:05	2 portions of fries, 1 order of ice cream
3	10:07	1 burger, 1 portion of fries

Assume that only one client's order can be processed at any given point of time. So, Anish or Bani cannot start preparing a new order while a previous order is being prepared.

At what time is the order placed by Client 1 completely served?

- A) 10:17 B) 10:10 C) 10:15 D) 10:20

Question No. : 36

Assume that only one client's order can be processed at any given point of time. So, Anish or Bani cannot start preparing a new order while a previous order is being prepared.

At what time is the order placed by Client 3 completely served?

- A) 10:35 B) 10:22 C) 10:25 D) 10:17

Question No. : 37

Suppose the employees are allowed to process multiple orders at a time, but the preference would be to finish orders of clients who placed their orders earlier.

At what time is the order placed by Client 2 completely served?

- A) 10:10 B) 10:12 C) 10:15 D) 10:17

Question No. : 38

Suppose the employees are allowed to process multiple orders at a time, but the preference would be to finish orders of clients who placed their orders earlier.

Also assume that the fourth client came in only at 10:35. Between 10:00 and 10:30, for how many minutes is exactly one of the employees idle?

- A) 7 B) 10 C) 15 D) 23

DIRECTIONS for the question: Study the table/s given below and answer the question that follows.

Question No. : 39

A study to look at the early teaming of rural kids was carried out in a number of villages spanning three states, chosen from the North East (NE), the West (W) and the South (S). 50 four-year old kids each were sampled from each of the 150 villages from NE, 250 villages from W and 200 villages from S. It was found that of the 30000 surveyed kids 55% studied in primary schools run by government (G), 37% in private schools (P) while the remaining 8% did not go to school (O).

The kids surveyed were further divided into two groups based on whether their mothers dropped out of school before completing primary education or not. The table below gives the number of kids in different types of schools for mothers who dropped out- of school before completing primary education:

	G	P	O	Total
NE	4200	500	300	5000
W	4200	1900	1200	7300
S	5100	300	300	5700
Total	13500	2700	1800	18000

It is also known that:

1. In S, 60% of the surveyed kids were in G. Moreover, in S, all surveyed kids whose mothers had completed primary education were in school.
2. In NE, among the O kids, 50% had mothers who had dropped out before completing primary education.
3. The number of kids in G in NE was the same as the number of kids in G in W.

What percentage of kids from S were studying in P?

- A) 37% B) 6% C) 79% D) 56%

Question No. : 40

Among the kids in W whose mothers had completed primary education, how many were not in school?

- A) 300 B) 1200 C) 1050 D) 1500

Question No. : 41

In a follow up survey of the same kids two years later, it was found that all the kids were now in school. Of the kids who were not in school earlier, in one region, 25% were in G now, whereas the rest were enrolled in P; in the second region, all such kids were in G now; while in the third region, 50% of such kids had now joined G while the rest had joined P. As a result, in all three regions put together, 50% of the kids who were earlier out of school had joined G. It was also seen that no surveyed kid had changed schools.

What number of the surveyed kids now were in G in W?

- A) 6000 B) 5250 C) 6750 D) 6300

Question No. : 42

In a follow up survey of the same kids two years later, it was found that all the kids were now in school. Of the kids who were not in school earlier, in one region, 25% were in G now, whereas the rest were enrolled in P; in the second region, all such kids were in G now; while in the third region, 50% of such kids had now joined G while the rest had joined P. As a result, in all three regions put together, 50% of the kids who were earlier out of school had joined G. It was also seen that no surveyed kid had changed schools.

What percentage of the surveyed kids in S, whose mothers had dropped out before completing primary education, were in G now?

- A) 94.7% B) 89.5% C) 93.4% D) Cannot be determined from the given information

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

Question No. : 43

Applicants for the doctoral programmes of Ambi Institute of Engineering (AIE) and Bambi Institute of Engineering (BIE) have to appear for a Common Entrance Test (CET). The test has three sections: Physics (P), Chemistry (C), and Maths (M). Among those appearing for CET, those at or above the 80th percentile in at least two sections, and at or above the 90th percentile overall, are selected for Advanced Entrance Test (AET) conducted by AIE. AET is used by AIE for final selection.

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

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

BIE uses a different process for selection. If any candidate is appearing in the AET by AIE, BIE considers their AET score for final selection provided the candidate is at or above the 80th percentile in P. Any other candidate at or above the 80th percentile in P in CET, but who is not eligible for the AET, is required to appear in a separate test to be conducted by BIE for being considered for final selection. Altogether, there are 400 candidates this year who are at or above the 80th percentile in P.

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

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

Question No. : 44

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

- A) 60 B) C) D)

Question No. : 45

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

- A) 170 B) C) D)

Question No. : 46

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

- A) 299 B) 310 C) 321 D) 330

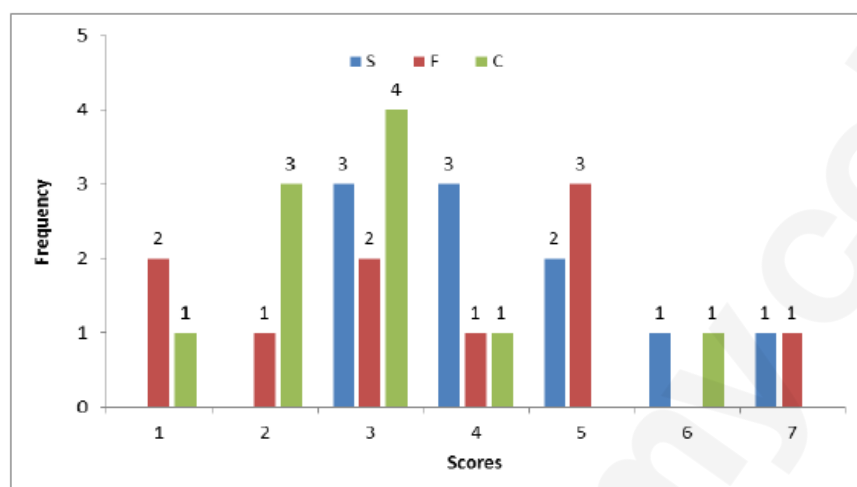
DIRECTIONS for the question: Analyse the graph/s given below and answer the question that follows.

Question No. : 47

Simple Happiness index (SHI) of a country is computed on the basis of three parameters: social support (S), freedom to life choices (F) and corruption perception (C). Each of these three parameters is measured on a scale of 0 to 8 (integers only). A country is then categorized based on the total score obtained by summing the scores of all the three parameters, as shown in the following table:

Total Score	0-4	5-8	9-13	14-19	20-24
Category	Very Unhappy	Unhappy	Neutral	Happy	Very Happy

Following diagram depicts the frequency distribution of the scores in S, F and C of 10 countries - Amda, Benga, Calla, Delma, Eppa, Varsa, Wanna, Xanda, Yanga and Zooma;



Further, the following are known:

1. Amda and Calls jointly have the lowest total score, 7, with identical scores in all the three parameters.
2. Zooma has a total score of 17.
3. All the 3 countries, which are categorised as happy, have the highest score in exactly one parameter.

What is Amda's score in F?

- A) 1 B) C) D)

Question No. : 48

What is Zooma's score in S?

- A) 6 B) C) D)

Question No. : 49

Benga and Delma, two countries categorized as happy, are tied with the same total score. What is the maximum score they can have?

- A) 14 B) 15 C) 16 D) 17

Question No. : 50

If Benga scores 16 and Delma scores 15, then what is the maximum number of countries with a score of 13?

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

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

Question No. : 51

There are 21 employees working in a division, out of whom 10 are special-skilled employees (SE) and the remaining are regular-skilled employees (RE). During the next five months, the division has to complete five projects every month. Out of the 25 projects, 5 projects are "challenging", while the remaining ones are "standard". Each of the challenging projects has to be completed in different months. Every month, five teams - T1, T2, T3, T4 and T5, work on one project each. T1, T2, T3, T4 and T5 are allotted the challenging project in the first, second, third, fourth and fifth month, respectively. The team assigned the challenging project has one more employee than the rest.

In the first month, T1 has one more SE than T2, T2 has one more SE than T3, T3 has one more SE than T4, and T4 has one more SE than T5. Between two successive months, the composition of the teams changes as follows:

- The team allotted the challenging project, gets two SE from the team which was allotted the challenging project in the previous month. In exchange, one RE is shifted from the former team to the latter team.
- After the above exchange, if T1 has any SE and T5 has any RE, then one SE is shifted from T1 to T5, and one RE is shifted from T5 to T1. Also, if T2 has any SE and T4 has any RE, then one SE is shifted from T2 to T4, and one RE is shifted from T4 to T2.

Each standard project has a total of 100 credit points, while each challenging project has 200 credit points. The credit points are equally shared between the employees included in that team.

The number of times in which the composition of team T2 and the number of times in which composition of team T4 remained unchanged in two successive months are:

- A) (2, 1) B) (1, 0) C) (0, 0) D) (1, 1)

Question No. : 52

The number of SE in T1 and T5 for the projects in the third month are, respectively:

- A) (0, 2) B) (0, 3) C) (1, 2) D) (1, 3)

Question No. : 53

Which of the following **CANNOT** be the total credit points earned by any employee from the projects?

- A) 140 B) 150 C) 170 D) 200

Question No. : 54

One of the employees named Aneek scored 185 points. Which of the following **CANNOT** be true?

- A) Aneek worked only in teams T1, T2, T3, and T4 B) Aneek worked only in teams T1, T2, T4, and T5
C) Aneek worked only in teams T2, T3, T4, and T5 D) Aneek worked only in teams T1, T3, T4, and T5

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

Question No. : 55

In a square layout of size 5m × 5m, 25 equal sized square platforms of different heights are built. The heights (in metres) of individual platforms are as shown below:

6	1	2	4	3
9	5	3	2	8
7	8	4	6	5
3	9	5	1	2
1	7	6	3	9

Individuals (all of same height) are seated on these platforms. We say an individual A can reach an individual B if all the three following conditions are met:

- (i) A and B are in the same row or column
- (ii) A is at a lower height than B
- (iii) If there is/are any individual(s) between A and B, such individual(s) must be at a height taller than that of A.

Thus in the table given above, consider the individual seated at height 8 on 3rd row and 2nd column. He can be reached by four individuals. He can be reached by the individual on his left at height 7, by the two individuals on his right at heights of 4 and 6 and by the individual above at height 5.

Rows in the layout are numbered from top to bottom and columns are numbered from left to right.

How many individuals in this layout can be reached by just one individual?

- A) 3 B) 5 C) 7 D) 8

Question No. : 56

Which of the following is true for any individual at a platform of height 1 m in this layout?

- A) They can be reached by all the individuals in their own row and column B) They can be reached by at least 4 individuals
C) They can be reached by at least one individual D) They cannot be reached by anyone

Question No. : 57

We can find two individuals who cannot be reached by anyone in

- A) the last row B) the fourth row C) the fourth column D) the middle column

Question No. : 58

Which of the following statements is true about this layout?

- A) Each row has an individual who can be reached by 5 or more individuals
B) Each row has an individual who cannot be reached by anyone
C) Each row has at least two individuals who can be reached by an equal number of individuals
D) All individuals at the height of 9 m can be reached by at least 5 individuals

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

Question No. : 59

A new airlines company is planning to start operations in a country. The company has identified ten different cities which they plan to connect through their network to start with. The flight duration between any pair of cities will be less than one hour. To start operations, the company has to decide on a daily schedule.

The underlying principle that they are working on is the following:

Any person staying in any of these 10 cities should be able to make a trip to any other city in the morning and should be able to return by the evening of the same day.

If the underlying principle is to be satisfied in such a way that the journey between any two cities can be performed using only direct (non-stop) flights, then the minimum number of direct flights to be scheduled is:

- A) 45 B) 90 C) 180 D) 135

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

Question No. : 60

A new airlines company is planning to start operations in a country. The company has identified ten different cities which they plan to connect through their network to start with. The flight duration between any pair of cities will be less than one hour. To start operations, the company has to decide on a daily schedule.

The underlying principle that they are working on is the following:

Any person staying in any of these 10 cities should be able to make a trip to any other city in the morning and should be able to return by the evening of the same day.

Suppose three of the ten cities are to be developed as hubs. A hub is a city which is connected with every other city by direct flights each way, both in the morning as well as in the evening. The only direct flights which will be scheduled are originating and/or terminating in one of the hubs. Then the minimum number of direct flights that need to be scheduled so that the underlying principle of the airline to serve all the ten cities is met without visiting more than one hub during one trip is:

- A) 54 B) 120 C) 96 D) 60

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

Question No. : 61

A new airlines company is planning to start operations in a country. The company has identified ten different cities which they plan to connect through their network to start with. The flight duration between any pair of cities will be less than one hour. To start operations, the company has to decide on a daily schedule.

The underlying principle that they are working on is the following:

Any person staying in any of these 10 cities should be able to make a trip to any other city in the morning and should be able to return by the evening of the same day.

Suppose the 10 cities are divided into 4 distinct groups 01,02,03,04 having 3, 3, 2 and 2 cities respectively and that G1 consists of cities named A, B and C. Further, suppose that direct flights are allowed only between two cities satisfying one of the following:

1. Both cities are in G1
2. Between A and any city in G2
3. Between B and any city in G3
4. Between C and any city in G4

- A) 40 B) C) D)

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

Question No. : 62

A new airlines company is planning to start operations in a country. The company has identified ten different cities which they plan to connect through their network to start with. The flight duration between any pair of cities will be less than one hour. To start operations, the company has to decide on a daily schedule.

The underlying principle that they are working on is the following:

Any person staying in any of these 10 cities should be able to make a trip to any other city in the morning and should be able to return by the evening of the same day.

Suppose the 10 cities are divided into 4 distinct groups G1, G2, G3, G4 having 3, 3, 2 and 2 cities respectively and that G1 consists of cities named A, B and C. Further, suppose that direct flights are allowed only between two cities satisfying one of the following:

1. Both cities are in G1
2. Between A and any city in G2
3. Between B and any city in G3
4. Between C and any city in G4

However, due to operational difficulties at A, it was later decided that the only flights that would operate at A would be those to and from B. Cities in G2 would have to be assigned to G3 or to G4.

What would be the maximum reduction in the number of direct flights as compared to the situation before the operational difficulties arose?

- A) 4 B) C) D)

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

Question No. : 63

Four cars need to travel from Akala (A) to Bakala (B). Two routes are available, one via Mamur (M) and the other via Nanur (N). The roads from A to M, and from N to B, are both short and narrow. In each case, one car takes 6 minutes to cover the distance, and each additional car increases the travel time per car by 3 minutes because of congestion. (For example, if only two cars drive from A to M, each car takes 9 minutes.) On the road from A to N, one car takes 20 minutes, and each additional car increases the travel time per car by 1 minute. On the road from M to B, one car takes 20 minutes, and each additional car increases the travel time per car by 0.9 minute.

The police department orders each car to take a particular route in such a manner that it is not possible for any car to reduce its travel time by not following the order, while the other cars are following the order.

How many cars would be asked to take the route A-N-B, that is Akala-Nanur-Bakala route, by the police department?

- A) 2 B) C) D)

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

Question No. : 64

Four cars need to travel from Akala (A) to Bakala (B). Two routes are available, one via Mamur (M) and the other via Nanur (N). The roads from A to M, and from N to B, are both short and narrow. In each case, one car takes 6 minutes to cover the distance, and each additional car increases the travel time per car by 3 minutes because of congestion. (For example, if only two cars drive from A to M, each car takes 9 minutes.) On the road from A to N, one car takes 20 minutes, and each additional car increases the travel time per car by 1 minute. On the road from M to B, one car takes 20 minutes, and each additional car increases the travel time per car by 0.9 minute.

The police department orders each car to take a particular route in such a manner that it is not possible for any car to reduce its travel time by not following the order, while the other cars are following the order.

If all the cars follow the police order, what is the difference in travel time (in minutes) between a car which takes the route A-N-B and a car that takes the route A-M-B?

- A) 1 B) 0.1 C) 0.2 D) 0.9

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

Question No. : 65

Four cars need to travel from Akala (A) to Bakala (B). Two routes are available, one via Mamur (M) and the other via Nanur (N). The roads from A to M, and from N to B, are both short and narrow. In each case, one car takes 6 minutes to cover the distance, and each additional car increases the travel time per car by 3 minutes because of congestion. (For example, if only two cars drive from A to M, each car takes 9 minutes.) On the road from A to N, one car takes 20 minutes, and each additional car increases the travel time per car by 1 minute. On the road from M to B, one car takes 20 minutes, and each additional car increases the travel time per car by 0.9 minute.

The police department orders each car to take a particular route in such a manner that it is not possible for any car to reduce its travel time by not following the order, while the other cars are following the order.

A new one-way road is built from M to N. Each car now has three possible routes to travel from A to B: A-M-B, A-N-B and A-M-N-B. On the road from M to N, one car takes 7 minutes and each additional car increases the travel time per car by 1 minute. Assume that any car taking the A-M-N-B route travels the A-M portion at the same time as other cars taking the A-M-B route, and the N-B portion at the same time as other cars taking the A-N-B route.

How many cars would the police department order to take the A-M-N-B route so that it is not possible for any car to reduce its travel time by not following the order while the other cars follow the order? (Assume that the police department would never order all the cars to take the same route.)

- A) 2 B) C) D)

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

Question No. : 66

Four cars need to travel from Akala (A) to Bakala (B). Two routes are available, one via Mamur (M) and the other via Nanur (N). The roads from A to M, and from N to B, are both short and narrow. In each case, one car takes 6 minutes to cover the distance, and each additional car increases the travel time per car by 3 minutes because of congestion. (For example, if only two cars drive from A to M, each car takes 9 minutes.) On the road from A to N, one car takes 20 minutes, and each additional car increases the travel time per car by 1 minute. On the road from M to B, one car takes 20 minutes, and each additional car increases the travel time per car by 0.9 minute.

The police department orders each car to take a particular route in such a manner that it is not possible for any car to reduce its travel time by not following the order, while the other cars are following the order.

A new one-way road is built from M to N. Each car now has three possible routes to travel from A to B: A-M-B, A-N-B and A-M-N-B. On the road from M to N, one car takes 7 minutes and each additional car increases the travel time per car by 1 minute. Assume that any car taking the A-M-N-B route travels the A-M portion at the same time as other cars taking the A-M-B route, and the N-B portion at the same time as other cars taking the A-N-B route.

If all the cars follow the police order, what is the minimum travel time (in minutes) from A to B? (Assume that the police department would never order all the cars to take the same route.)

- A) 26 B) 32 C) 29.9 D) 30

Section : Quantitative Ability

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

Question No. : 67

Arun's present age in years is 40% of Barun's. In another few years, Arun's age will be half of Barun's. By what percentage will Barun's age increase during this period?

- A) 20 B) C) D)

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

Question No. : 68

A person can complete a job in 120 days. He works alone on Day 1. On Day 2, he is joined by another person who also can complete the job in exactly 120 days. On Day 3, they are joined by another person of equal efficiency. Like this, everyday a new person with the same efficiency joins the work. How many days are required to complete the job?

- A) 15 B) C) D)

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

Question No. : 69

An elevator has a weight limit of 630 kg. It is carrying a group of people of whom the heaviest weighs 57 kg and the lightest weighs 53 kg. What is the maximum possible number of people in the group?

- A) 11 B) C) D)

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

Question No. : 70

A man leaves his home and walks at a speed of 12 km per hour, reaching the railway station 10 minutes after the train had departed. If instead he had walked at a speed of 15 km per hour, he would have reached the station 10 minutes before the train's departure. The distance (in km) from his home to the railway station is

- A) 20 B) C) D)

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

Question No. : 71

Ravi invests 50% of his monthly savings in fixed deposits. Thirty percent of the rest of his savings is invested in stocks and the rest goes into Ravi's savings bank account. If the total amount deposited by him in the bank (for savings account and fixed deposits) is Rs 59500, then Ravi's total monthly savings (in Rs) is

- A) 70000 B) C) D)

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

Question No. : 72

If a seller gives a discount of 15% on retail price, she still makes a profit of 2%. Which of the following ensures that she makes a profit of 20%?

- A) Give a discount of 5% on retail price B) Give a discount of 2% on retail price C) Increase the retail price by 2%
D) Sell at retail price

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

Question No. : 73

A man travels by a motor boat down a river to his office and back. With the speed of the river unchanged, if he doubles the speed of his motor boat, then his total travel time gets reduced by 75%. The ratio of the original speed of the motor boat to the speed of the river is

- A) $\sqrt{6} : \sqrt{2}$ B) $\sqrt{7} : 2$ C) $2\sqrt{5} : 3$ D) 3 : 2

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

Question No. : 74

Suppose, C1, C2, C3, C4, and C5 are five companies. The profits made by C1, C2, and C3 are in the ratio 9 : 10 : 8 while the profits made by C2, C4, and C5 are in the ratio 18 : 19 : 20. If C5 has made a profit of Rs 19 crore more than C1, then the total profit (in Rs) made by all five companies is

- A) 438 crore B) 435 crore C) 348 crore D) 345 crore

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

Question No. : 75

The number of girls appearing for an admission test is twice the number of boys. If 30% of the girls and 45% of the boys get admission, the percentage of candidates who do not get admission is

- A) 35 B) 50 C) 60 D) 65

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

Question No. : 76

A stall sells popcorn and chips in packets of three sizes: large, super, and jumbo. The numbers of large, super, and jumbo packets in its stock are in the ratio 7 : 17 : 16 for popcorn and 6 : 15 : 14 for chips. If the total number of popcorn packets in its stock is the same as that of chips packets, then the numbers of jumbo popcorn packets and jumbo chips packets are in the ratio

- A) 1: 1 B) 8: 7 C) 4: 3 D) 6: 5

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

Question No. : 77

In a market, the price of medium quality mangoes is half that of good mangoes. A shopkeeper buys 80 kg good mangoes and 40 kg medium quality mangoes from the market and then sells all these at a common price which is 10% less than the price at which he bought the good ones. His overall profit is

- A) 6% B) 8% C) 10% D) 12%

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

Question No. : 78

If Fatima sells 60 identical toys at a 40% discount on the printed price, then she makes 20% profit. Ten of these toys are destroyed in fire. While selling the rest, how much discount should be given on the printed price so that she can make the same amount of profit?

- A) 30% B) 25% C) 24% D) 28%

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

Question No. : 79

If a and b are integers of opposite signs such that $(a + 3)^2 : b^2 = 9 : 1$ and $(a - 1)^2 : (b - 1)^2 = 4 : 1$, then the ratio $a : b$ is

- A) 9:4 B) 81:4 C) 1: 4 D) 25: 4

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

Question No. : 80

A class consists of 20 boys and 30 girls. In the mid-semester examination, the average score of the girls was 5 higher than that of the boys. In the final exam, however, the average score of the girls dropped by 3 while the average score of the entire class increased by 2. The increase in the average score of the boys is

- A) 9.5 B) 10 C) 4.5 D) 6

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

Question No. : 81

The area of the closed region bounded by the equation $|x| + |y| = 2$ in the two-dimensional plane is

- A) 4π B) 4 C) 8 D) 2π

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

Question No. : 82

From a triangle ABC with sides of lengths 40 ft, 25 ft and 35 ft, a triangular portion GBC is cut off where G is the centroid of ABC. The area, in sq ft, of the remaining portion of triangle ABC is

- A) $225\sqrt{3}$ B) $500 / \sqrt{3}$ C) $275 / \sqrt{3}$ D) $250 / \sqrt{3}$

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

Question No. : 83

Let ABC be a right-angled isosceles triangle with hypotenuse BC. Let BQC be a semi-circle, away from A, with diameter BC. Let BPC be an arc of a circle centered at A and lying between BC and BQC. If AB has length 6 cm then the area, in sq cm, of the region enclosed by BPC and BQC is

- A) $9\pi - 18$ B) 18 C) 9π D) 9

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

Question No. : 84

A solid metallic cube is melted to form five solid cubes whose volumes are in the ratio 1 : 1 : 8: 27: 27. The percentage by which the sum of the surface areas of these five cubes exceeds the surface area of the original cube is nearest to

- A) 10 B) 50 C) 60 D) 20

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

Question No. : 85

A ball of diameter 4 cm is kept on top of a hollow cylinder standing vertically. The height of the cylinder is 3 cm, while its volume is $9\pi \text{ cm}^3$. Then the vertical distance, in cm, of the topmost point of the ball from the base of the cylinder is

- A) 6 B) C) D)

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

Question No. : 86

Let ABC be a right-angled triangle with BC as the hypotenuse. Lengths of AB and AC are 15 km and 20 km, respectively. The minimum possible time, in minutes, required to reach the hypotenuse from A at a speed of 30 km per hour is

- A) 24 B) C) D)

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

Question No. : 87

Suppose, $\log_3 x = \log_{12} y = a$, where x, y are positive numbers. If G is the geometric mean of x and y, and $\log_6 G$ is equal to

- A) $\sqrt{a}$ B) $2a$ C) $a/2$ D) a

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

Question No. : 88

If $x + 1 = x^2$ and $x > 0$, then $2x^4$ is

- A) $6 + 4\sqrt{5}$ B) $3 + 5\sqrt{5}$ C) $5 + 3\sqrt{5}$ D) $7 + 3\sqrt{5}$

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

Question No. : 89

The value of $\log_{0.008} \sqrt{5} + \log_{\sqrt{3}} 81 - 7$ is equal to

- A) $\frac{1}{3}$ B) $\frac{2}{3}$ C) $\frac{5}{6}$ D) $\frac{7}{6}$

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

Question No. : 90

If $9^{2x-1} - 81^{x-1} = 1944$, then x is

- A) 3 B) $9/4$ C) $4/9$ D) $1/3$

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

Question No. : 91

The number of solutions (x, y, z) to the equation $x - y - z = 25$, where x, y , and z are positive integers such that $x \leq 40$, $y \leq 12$, and $z \leq 12$ is

- A) 101 B) 99 C) 87 D) 105

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

Question No. : 92

For how many integers n , will the inequality $(n - 5)(n - 10) - 3(n - 2) \leq 0$ be satisfied?

- A) 11 B) C) D)

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

Question No. : 93

If $f_1(x) = x^2 + 11x + n$ and $f_2(x) = x$, then the largest positive integer n for which the equation $f_1(x) = f_2(x)$ has two distinct real roots, is

- A) 24 B) C) D)

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

Question No. : 94

If a, b, c , and d are integers such that $a + b + c + d = 30$, then the minimum possible value of $(a - b)^2 + (a - c)^2 + (a - d)^2$ is

- A) 2 B) C) D)

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

Question No. : 95

Let AB, CD, EF, GH, and JK be five diameters of a circle with center at O. In how many ways can three points be chosen out of A, B, C, D, E, F, G, H, J, K, and O so as to form a triangle?

- A) 160 B) C) D)

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

Question No. : 96

The shortest distance of the point $\left(\frac{1}{2}, 1\right)$ from the curve $y = |x - 1| + |x + 1|$ is

- A) 1 B) 0 C) $\sqrt{2}$ D) $\sqrt{\frac{3}{2}}$

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

Question No. : 97

If the square of the 7th term of an arithmetic progression with positive common difference equals the product of the 3rd and 17th terms, then the ratio of the first term to the common difference is

- A) 2:3 B) 3:2 C) 3:4 D) 4:3

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

Question No. : 98

In how many ways can 7 identical erasers be distributed among 4 kids in such a way that each kid gets at least one eraser but nobody gets more than 3 erasers?

- A) 16 B) 20 C) 14 D) 15

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

Question No. : 99

If $f(x) = \frac{5x+2}{3x-5}$ and $g(x) = x^2 - 2x - 1$, then the value of $g(f(f(3)))$ is

- A) 2 B) $\frac{1}{3}$ C) 6 D) $\frac{2}{3}$

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

Question No. : 100

Let $a_1, a_2, \dots, a_{3n}$ be an arithmetic progression with $a_1 = 3$ and $a_2 = 7$. If $a_1 + a_2 + \dots + a_{3n} = 1830$, then what is the smallest positive integer m such that $m(a_1 + a_2 + \dots + a_n) > 1830$?

- A) 8 B) 9 C) 10 D) 11

QNo:- 1 ,Correct Answer:- B

Explanation:-

A thorough reading of the passage, with particular focus on the first sentence of the second paragraph "Given such a long period of considered to be on the top" and the second and third sentences of the last paragraph "It's tempting to.. at all" points to 2 being the correct choice; the passage corrects the misconception that Columbus and Megallan played a key role in north being decided as the top.

QNo:- 2 ,Correct Answer:- B

Explanation:-

North was not put at the top because it was the source of darkness (refer to the second paragraph). It was not put at the top because other religions like Christianity and Islam considered east and south respectively as the top (refer to the fourth paragraph). It was not put at the top because in early Christianity, east was considered sacred (refer to the third and fourth paragraphs).

QNo:- 3 ,Correct Answer:- B

Explanation:- The last three sentences of the third paragraph, particularly the phrase "look up to him", make 2 the clear choice.

QNo:- 4 ,Correct Answer:- C

Explanation:-

The last paragraph, particularly some of the last sentences "When Columbus describes the world, it is in accordance with east being at the top. Columbus says he is going towards paradise, so his mentality is from a medieval mappa mundi" clearly shows that he used an eastward orientation for religious reasons; please note from the previous paragraph that mappa mundi were Christian maps of that era.

QNo:- 5 ,Correct Answer:- D

Explanation:-

Please refer to the last paragraph, particularly the last sentence "We have got to remember that at the time, no one knows what they are doing and where they are going". This clearly shows that it is not clear as to what the biggest contributory factor to making the map north-oriented was. Choice (4)

QNo:- 6 ,Correct Answer:- A

Explanation:- After the passage, particularly the first two paragraphs, is read carefully, it is easy to arrive at 1 as the apt choice. Also, the subsequent paragraphs establish that factors like religion and deference to authority – and not natural phenomena – played a role in the map-making of the others.

QNo:- 7 ,Correct Answer:- A

Explanation:- The first part of the second paragraph points to 1 being the apt choice. The other choices are farfetched or off the mark.

QNo:- 8 ,Correct Answer:- D

Explanation:-

Please refer to the second paragraph. The sentence "The printing press offered the prospect that tyrants would never be able to kill a book or suppress an idea" (read with the second part of the fourth paragraph) means that 1 is true. The phrase "diminishing the sway of quacks" means that 2 is true. The first sentence and the last sentence of this paragraph show that books and pamphlets could now be printed much faster. This means that 3 is true.

QNo:- 9 ,Correct Answer:- C

Explanation:-

The first sentence of the fifth paragraph "Not long after Steve Jobs introduced his iPhone, he said the bound book (which means the printed book) was headed for history's attic. Clearly, he meant that reading these printed books would become a thing of the past.

QNo:- 10 ,Correct Answer:- C

Explanation:-

Although this sentence is in the fourth paragraph, elaboration of this is in the last paragraph. The sentences in this paragraph "The hope of the iPhone, and the Internet in general, was that it would free people in closed societies. But the failure of the Arab Spring, and the continued suppression of ideas in North Korea, China and Iran, has not borne this out" means that the author means to say that the iPhone has not been able to do the good that was done to religion and democracy by the printing press.

QNo:- 11 ,Correct Answer:- B

Explanation:- The part of the fourth paragraph, "... the printing press opened more minds than anything else. it is hard to imagine the French or American revolutions without those enlightened voices in print" makes 2 the clear choice.

QNo:- 12 ,Correct Answer:- B

Explanation:-

Look at the sentences of the last paragraph, "The hope of the iPhone, and the Internet in general, was that it would free people in closed societies." and "But I am not sure if the world changed for the better with the iPhone – as it did with the printing press- or merely changed". These mean that the new technology, exemplified by iPhone and the Internet, have not been as successful as the printing press in opening the closed minds of people.

QNo:- 13 ,Correct Answer:- C

Explanation:-

The central idea of the passage is summed up in the last sentence of the passage - "Malls ... were built for patterns of social interaction that increasingly don't exist". The passage signifies malls as "gathering places", "societies have congregated around a central marketplace", "mall was an ecosystem" and "a combination of community and commercialism" and so on and so forth. Moreover, malls are not missed by America today, given the all-encompassing scope of digital lives. Hence, the advantages and disadvantages of malls, as given in (2) is irrelevant. People's shopping trends are not the focus of this particular passage, so (4) is ruled out. (1) is not at all true, given that "A growing number of Americans ... don't see the need to go to any Macy's at all." Hence, (3) is the answer.

QNo:- 14 ,Correct Answer:- A

Explanation:-

(2) is suspect, would all malls and distribution centers be located in the same area? Anyway, this is beside the point. Nowhere in the passage is it indicated that Amazon is assisting brands to go online, so (3) is also suspect. The change in the shopping habits of Americans have been mentioned much later in the passage in a different context altogether, so the point is not really pertinent here. Thus, (4) is also ruled out. The sentence in question is just an ironic observation of the author ("opened shutter (closed)"), which is likewise mentioned in passing, hence there is no need to read too much into it. The answer is (1).

QNo:- 15 ,Correct Answer:- B

Explanation:-

To "court" is to pay special attention to someone in an attempt to win his/ her support or favour. The sentence, thus, suggests that real estate developers were pursuing brand-name anchor outlets once upon a time in the past ; note the word "once". Clearly, real estate developers are no longer pursuing brand-name anchor outlets.

QNo:- 16 ,Correct Answer:- C

Explanation:-

The mall as an ecosystem is qualified in the passage as a combination of community and commercialism, so there is no need to look beyond (3). (1) skips the commercial aspect. (2) is on track, but though it mentions 'eat', it does not mention 'meet'. Nor does (4) touch upon the community aspect.

QNo:- 17 ,Correct Answer:- D

Explanation:-

The passage signifies malls as gathering places, and adds that "societies have congregated around a central marketplace". That being the case, (4) is the answer. The restrictions in (1) are not mentioned in the passage. (2) is straightaway rejected, given in the third paragraph that "America went for far more than shopping". (3) is maudlin, given that families only get a passing mention as "family photos" in the third paragraph.

QNo:- 18 ,Correct Answer:- A

Explanation:-

We have to link the given quote to "Think of your mall. Or think of the one you went to as a kid". These sentences open the floodgates of memory. So (1) is the answer. (2) misses the point that malls are disappearing, hence the sense of urgency for the nostalgia trip down memory lane. (3) makes light of the ambience of malls - "fountains splashing below the skylights" and thus can be ruled out. The case in (4) – the smell of malls, and what contributes to the same, is beside the point.

QNo:- 19 ,Correct Answer:- C

Explanation:-

(1) is tricky, as it does not come to the point – if Mayr was wrong, what was 'right'? What is Ehrlich and Raven's case? Likewise (2) is evidence, where is the thesis? State your point of view on the topic directly and in one sentence! (4) gets close, refer to "gene flow was not as predictable and ubiquitous as Mayr ... maintained....". So? The answer is (3) – refer to the third paragraph again - "isolation and gene flow were less important to evolutionary divergence than natural selection". And the answer is (3).

QNo:- 20 ,Correct Answer:- B

Explanation:-

That gene flow contributes to evolutionary divergence is acknowledged by Ehrlich and Raven in the third paragraph – refer to "isolation and gene flow were less important to evolutionary divergence than natural selection", which admits that isolation and gene flow is important to evolutionary divergence to some extent. This point is also reiterated in the last sentence of the passage. Hence, (2) is correct. (3) is supported by information in the first paragraph "when a population was separated ... over geologic scales of time". (4) is supported by information in the second paragraph - "there were three groups that rarely interacted despite their very close proximity".

QNo:- 21 ,Correct Answer:- C

Explanation:- Nowhere in the passage is it suggested that evolution is a sensitive or controversial topic, so (1) is ruled out. Whether Ehrlich and Raven's thesis superseded Mayr's is not determined in the passage, so (2) is also ruled out. The merits or otherwise, of checkerspot butterflies, cannot be determined from the passage, so (4) is also ruled out. The passage mentions Mayr, Ehrlich and Raven in the context of the theories of speciation, so (3) is the answer.

QNo:- 22 ,Correct Answer:- C**Explanation:-**

Whether the "lion's share" mentioned in the first paragraph is divided equally among the three organising committees or not is beside the point as far as the passage is concerned, so (1) is ruled out. Sources of revenue, whether from 'ticket sales' or "advertisements" or both, are not even mentioned in the first paragraph, so (2) is also ruled out. The discouraging view in (4) is not reflected in the first paragraph. The passage mentions that "The trick is converting ... a basis for long-term economic returns", which is specifically found in (3).

QNo:- 23 ,Correct Answer:- A**Explanation:-**

(2) is suspect, because nowhere is it mentioned that the sports facilities in question are located away from the city centre. Indifference on the part of authorities, as suggested by (2), is not reflected in the passage, so (3) is also ruled out. The passage also does not mention that the sports facilities get outdated due to poor planning, so (4) is ruled out. The passage mentions the sports facilities in Beijing and Sydney in the context of the large scale of an Olympic stadium and the huge operating costs to maintain it. Thus, (1) is the answer. Choice (1)

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

(1) is mentioned in the third paragraph - "Even if they have future use, are they the best use of precious urban real estate?". (2) is explicitly mentioned in the fourth paragraph - "Residential areas often are razed ... citizens relocated". (3) is implied in the last sentence of the passage - "other productive uses that can be made of vanishing fiscal resources". But visitors have not been cited as an Olympic headache as such in the passage, so (4) is the answer. Choice (4)

QNo:- 25 ,Correct Answer:- C**Explanation:-**

The author of the paragraph defines a classic as giving access to very different forms of human consciousness for any reader at any time, enabling them to experience the different possibilities of being a human being. That being the case, (1) and (4) which advocate a unified experience of human consciousness are ruled out. Even (2) which refers to a common humanity is thus ruled out. Only (3) faithfully sticks to the classical experience going beyond the notion of a unified human consciousness to give access to different forms of human consciousness.

QNo:- 26 ,Correct Answer:- C**Explanation:-**

The paragraph essentially reveals that an Indian translating works in an Indian language to English would find cultural equivalents in the western world easily, whereas a Westerner would find it very difficult to interpret cultural elements into English. Hence, it is better if an Indian translates Indian texts into English, as lapses in language are easily addressed, whereas flaws of content are a strict no-no! (4) does not mention translation at all and is thus found wanting. (3) does not explicitly recommend that Indians do the said translation either, hence it is also found wanting. (1) also does not sufficiently press that Indians translate Indian texts. (3) comprehensively reframes the paragraph.

QNo:- 27 ,Correct Answer:- C

Explanation:-

The paragraph argues that global warming causes sea levels to rise and fill the skies with water vapour, thus leading to wetter and more damaging storms and hurricanes. (1) contradicts received wisdom by stating that global warming and rampaging storms are unrelated. (2) focuses on the downsides of the Clausius-Clapeyron equation, which are not mentioned in the paragraph at all. (4) is verbose, refer to 'but this may not be true of all storms', an uncertain statement anyway from the paragraph point of view. (3) faithfully captures the essence of the paragraph.

QNo:- 28 ,Correct Answer:- 54132

Explanation:-

Statement 5 introduces the paragraph stating that tradition is by default the opposite of innovation. 4 contradicts what is stated in 5 saying that it is now axiomatic to say that traditions are not handed down unchanged, but are invented. 1 follows 4 explaining what handing down means – it does not imply a passive transfer but some contention on what exactly needs to be handed down. 3 elaborates on the “contestation” on what exactly needs to be handed down, saying that every generation selects what it requires from the past and makes its innovations. 2, which says that the selection is even more apparent wherever Western scholars have worked on the Indian past, is the concluding statement. Therefore, the logical sequence is 54132.

QNo:- 29 ,Correct Answer:- 15243

Explanation:-

Statement 1 introduces the paragraph describing the achievement made by the scientists in editing genes in a human embryo to repair a genetic mutation. 1 follows 5 explaining how the mutation, which results in hypertrophic cardio myopathy, was corrected. 2 follows 5 describing the consequences of cardio myopathy. 4 follows 2 explaining how cardio myopathy is caused – by a mutation in a particular gene which will cause a child to suffer even it inherits only one copy of the mutated gene. 3 concludes the paragraph with the reassuring statement that if the mutation in the gene is corrected the child can lead a healthy life and it also prevents the transmission of the gene to the future generations. Statements 15243 form a coherent paragraph.

QNo:- 30 ,Correct Answer:- 54123

Explanation:- The opener is this case will be 5 as it introduces the topic of the discussion i.e. when black plague emerged. After this 4 will come as it furthers the result of the examination of DNA fragments. After this 1 will come as it adds to 4. After this 2 will come as it gives the evidence of what is stated in 1.3 will conclude the story as the word 'migration' can be linked together.

QNo:- 31 ,Correct Answer:- 32145

Explanation:-

3 begins the paragraph stating that turning the pages of family albums, which belonged to the pre-digital era, would reconfirm our basic instinct of documenting our presence in a particular scene on an important occasion, with those who matter to us. 2 follows 3 stating that there is nothing new in framing the vision of who we are, visually or otherwise, on social media such as our Facebook page. “This visual turn” in 1 refers to “framing the vision in our Facebook page”. Therefore, 1 follows 2 stating that “this visual turn” has accentuated “the announcing instinct of ours”. 4 carries forward the paragraph stating that framing the vision on social media empowers us to act as celebrities within the confinement of our respective friend lists. 5 concludes the paragraph talking about the ease with which the broadcast operation can be executed and how this often provokes (un)anticipated responses from beyond one's location. Therefore, statements 3, 2, 1, 4, 5 form an appropriate sequence. Ans: (32145)

QNo:- 32 ,Correct Answer:- 3**Explanation:-**

Only statement 1 can begin the paragraph as all the other statements have cross references and cannot, therefore, make sense as opening statements. 2 follows 1 describing how "they" (meaning the people who study children's language) make films and examine them carefully to see whether the babies show any signs of understanding what the adults say. 4, which says that sometimes the signs are subtle, is a continuation of 2. 5 concludes the paragraph elaborating on the "subtle signs". Therefore, statements 1, 2, 4 and 5 form a sequence and 3, which says that babies begin to react to language from the moment they are born, does not form a part of this sequence and is, therefore, the odd man out.

QNo:- 33 ,Correct Answer:- 4**Explanation:-**

1 begins the paragraph stating that neuroscientists have begun to study the impact of exercise within brain cells. 2 follows 1 reporting the findings. 3 follows 2 elaborating on the signs of the body's influence on the mind. 5, which states that each new discovery – made by the neuroscientists – adds awe-inspiring depth to the picture, forms an ideal conclusion to the paragraph. Statement 4, which is a very generalized statement conveys a different idea and does not form a part of the sequence 1, 2, 3, 5. Hence, 4 is the odd man out. Ans: (4)

QNo:- 34 ,Correct Answer:- 1

Explanation:- The opener in this case will be 4 as it some solar storm swept the atmosphere away from the mars. After this 2 will come as it explains how the event described in 4, happened. After this 5 (chrono-pairing) will come as it talks about the recent study on presence of water on mars. After this 3 will come as it tells about the status of remaining water. 1 is odd one as it gives examples of the water resources (specific).

QNo:- 35 ,Correct Answer:- B

Explanation:- As the item which take the maximum time is burger, client 1 will be completely served by 10.00
+ 10 minutes = 10.10

QNo:- 36 ,Correct Answer:- C

Explanation:- The time taken for the different clients are
Client 1 – 10.00 – 10.10 (burger)
Client 2 – 10.10 – 10.15 (fries)
Client 3 – 10.15 – 10.25 (burger)

QNo:- 37 ,Correct Answer:- A

Explanation:- When they are allowed to process multiple orders, the time taken would be
Client 1 – 10.00 – 10.10 (Anish)
Client 2 – 10.05 – 10.10 (Bani)

The second client can be served by 10.10

QNo:- 38 ,Correct Answer:- B

Explanation:- The time for which exactly one employee would be free would be
 10.02 – 10.05 – (Bani) – 3 Minutes.
 10.10 – 10.17 (Anish/Bani) – 7 minutes (depending on who prepares the order for client 3.
 After 10.17 both of them would be free.
 $\therefore$ One of them would be free for $3 + 7 = 10$ minutes.

QNo:- 39 ,Correct Answer:- A

Explanation:- With the table given for kids in different schools whose mothers had dropped out of school we will be adding another value for each value already present and the new value will represent the number of kids in different types of schools for kids whose mothers completed primary education.

G		P		O		Total	
Dropped out	Completed	Dropped out	Completed	Dropped out	Completed		
NE	4200 1050	500	1150	300	300	7500	
W	4200 1050	1900	3850	1200	300	12500	
S	5100 900	300	3400	300	0	10000	
Total	13,500 3000	2700	8400	1800	600	30000	

$300 + 3400 = 3700$ students out of 10,000 from S were studying in P, i.e., 37%

QNo:- 40 ,Correct Answer:- A

Explanation:- With the table given for kids in different schools whose mothers had dropped out of school we will be adding another value for each value already present and the new value will represent the number of kids in different types of schools for kids whose mothers completed primary education.

G		P		O		Total	
Dropped out	Completed	Dropped out	Completed	Dropped out	Completed		
NE	4200 1050	500	1150	300	300	7500	
W	4200 1050	1900	3850	1200	300	12500	
S	5100 900	300	3400	300	0	10000	
Total	13,500 3000	2700	8400	1800	600	30000	

In W, 300 kids whose mothers had completed primary education were not in school.

QNo:- 41 ,Correct Answer:- A

Explanation:-

With the table given for kids in different schools whose mothers had dropped out of school we will be adding another value for each value already present and the new value will represent the number of kids in different types of schools for kids whose mothers completed primary education.

G			P		O		Total
Dropped out	Completed		Dropped out	Completed	Dropped out	Completed	
NE	4200	1050	500	1150	300	300	7500
W	4200	1050	1900	3850	1200	300	12500
S	5100	900	300	3400	300	0	10000
Total	13,500	3000	2700	8400	1800	600	30000

As there were initially 2400 students who were not in school and now 1200 of them are in G, with the mentioned percentages the only possibility is 50% of students in W, 25% of students in NE and 100% of students in S who were not going to school shifted to G.

$$\therefore 50\% \text{ of } W = 50\% \text{ of } 1500 = 750$$

$$25\% \text{ of } NE = 25\% \text{ of } 600 = 150$$

$$100\% \text{ of } S = 100\% \text{ of } 300 = 300$$

$$\text{Total} = 1200$$

$$\therefore \text{now } 4200 + 1050 + 750 = 6000 \text{ students were in G is W.}$$

QNo:- 42 ,Correct Answer:- A

Explanation:- With the table given for kids in different schools whose mothers had dropped out of school we will be adding another value for each value already present and the new value will represent the number of kids in different types of schools for kids whose mothers completed primary education.

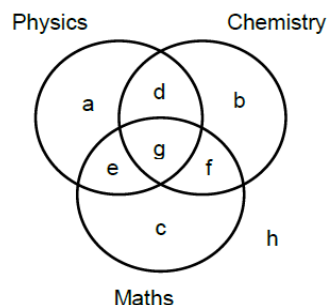
G			P		O		Total
Dropped out	Completed		Dropped out	Completed	Dropped out	Completed	
NE	4200	1050	500	1150	300	300	7500
W	4200	1050	1900	3850	1200	300	12500
S	5100	900	300	3400	300	0	10000
Total	13,500	3000	2700	8400	1800	600	30000

As explained in the previous question, all 300 in S who were not going to school, now shifted to G. Now of the 5700 students whose mothers had dropped out in S regions, 5400 are in G.

$$\text{The required percentage} = \frac{5400}{5700} \times 100 = 94.7\%$$

QNo:- 43 ,Correct Answer:- A

Explanation:- It is given that 200 candidates scored above 90th percentile overall in CET. Let the following Venn diagram represent the number of persons who scored above 80 percentile in CET in each of the three sections:



From 1, $h = 0$.

From 2, $d + e + f = 150$

From 3, $a = b = c$

Since there are a total of 200 candidates,

$$3a + g = 200 - 150 = 50$$

From 4, $(2a + f) : (2a + e) : (2a + d) = 4 : 2 : 1$

Therefore, $6a + (d + e + f)$ is divisible by $4 + 2 + 1 = 7$.

Since $d + e + f = 150$, $6a + 150$ is divisible by 7, i.e.,

$6a + 3$ is divisible by 7.

Hence, $a = 3, 10, 17, \dots$

Further, since $3a + g = 50$, a must be less than 17. Therefore, only two cases are possible for the value of a , i.e., 3 or 10.

We can calculate the values of the other variables for the two cases.

$$a = 3 \text{ or } 10$$

$$d = 18 \text{ or } 10$$

$$e = 42 \text{ or } 40$$

$$f = 90 \text{ or } 100$$

$$g = 41 \text{ or } 20$$

Among the candidates who are at or above 90th percentile, the candidates who are at or above 80th percentile in at least two sections are selected for AET. Hence, the candidates represented by d , e , f and g are selected for AET.

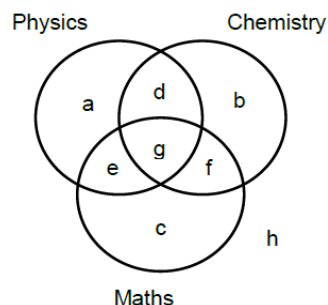
BIE will consider the candidates who are appearing for AET and are at or above 80th percentile in P. Hence, BIE will consider the candidates represented by d , e and g , which can be 104 or 80.

BIE will conduct a separate test for the other students who are at or above 80th percentile in P. Given that there are a total of 400 candidates at or above 80th percentile in P, and since there are 104 or 80 candidates at or above 80th percentile in P and are at or above 90th percentile overall, there must be 296 or 320 candidates at or above 80th percentile in P who scored less than 90th percentile overall.

The number of candidates sitting for separate test for BIE who were at or above 90th percentile in CET (a) is either 3 or 10.

QNo:- 44 ,Correct Answer:- 60

Explanation:- It is given that 200 candidates scored above 90th percentile overall in CET. Let the following Venn diagram represent the number of persons who scored above 80 percentile in CET in each of the three sections:



From 1, $h = 0$.

From 2, $d + e + f = 150$

From 3, $a = b = c$

Since there are a total of 200 candidates,

$$3a + g = 200 - 150 = 50$$

From 4, $(2a + f) : (2a + e) : (2a + d) = 4 : 2 : 1$

Therefore, $6a + (d + e + f)$ is divisible by $4 + 2 + 1 = 7$.

Since $d + e + f = 150$, $6a + 150$ is divisible by 7, i.e.,

$6a + 3$ is divisible by 7.

Hence, $a = 3, 10, 17, \dots$

Further, since $3a + g = 50$, a must be less than 17. Therefore, only two cases are possible for the value of a , i.e., 3 or 10.

We can calculate the values of the other variables for the two cases.

$$a = 3 \text{ or } 10$$

$$d = 18 \text{ or } 10$$

$$e = 42 \text{ or } 40$$

$$f = 90 \text{ or } 100$$

$$g = 41 \text{ or } 20$$

Among the candidates who are at or above 90th percentile, the candidates who are at or above 80th percentile in at least two sections are selected for AET. Hence, the candidates represented by d , e , f and g are selected for AET.

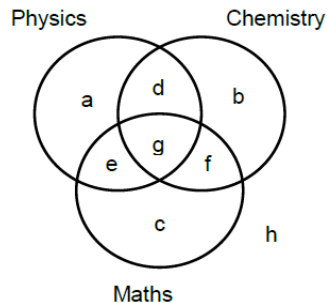
BIE will consider the candidates who are appearing for AET and are at or above 80th percentile in P. Hence, BIE will consider the candidates represented by d , e and g , which can be 104 or 80.

BIE will conduct a separate test for the other students who are at or above 80th percentile in P. Given that there are a total of 400 candidates at or above 80th percentile in P, and since there are 104 or 80 candidates at or above 80th percentile in P and are at or above 90th percentile overall, there must be 296 or 320 candidates at or above 80th percentile in P who scored less than 90th percentile overall.

From the given condition, g is a multiple of 5. Hence, $g = 20$. The number of candidates at or above 90th percentile overall and at or above 80th percentile in both P and M = $e + g = 60$.

QNo:- 45 ,Correct Answer:- 170

Explanation:- It is given that 200 candidates scored above 90th percentile overall in CET. Let the following Venn diagram represent the number of persons who scored above 80 percentile in CET in each of the three sections:



From 1, $h = 0$.

From 2, $d + e + f = 150$

From 3, $a = b = c$

Since there are a total of 200 candidates,

$$3a + g = 200 - 150 = 50$$

From 4, $(2a + f) : (2a + e) : (2a + d) = 4 : 2 : 1$

Therefore, $6a + (d + e + f)$ is divisible by $4 + 2 + 1 = 7$.

Since $d + e + f = 150$, $6a + 150$ is divisible by 7, i.e.,

$6a + 3$ is divisible by 7.

Hence, $a = 3, 10, 17, \dots$

Further, since $3a + g = 50$, a must be less than 17. Therefore, only two cases are possible for the value of a , i.e., 3 or 10.

We can calculate the values of the other variables for the two cases.

$$a = 3 \text{ or } 10$$

$$d = 18 \text{ or } 10$$

$$e = 42 \text{ or } 40$$

$$f = 90 \text{ or } 100$$

$$g = 41 \text{ or } 20$$

Among the candidates who are at or above 90th percentile, the candidates who are at or above 80th percentile in at least two sections are selected for AET. Hence, the candidates represented by d , e , f and g are selected for AET.

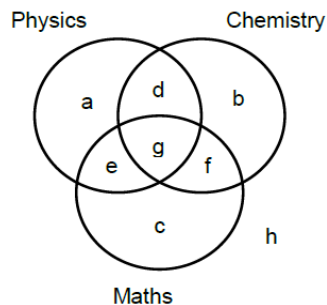
BIE will consider the candidates who are appearing for AET and are at or above 80th percentile in P. Hence, BIE will consider the candidates represented by d , e and g , which can be 104 or 80.

BIE will conduct a separate test for the other students who are at or above 80th percentile in P. Given that there are a total of 400 candidates at or above 80th percentile in P, and since there are 104 or 80 candidates at or above 80th percentile in P and are at or above 90th percentile overall, there must be 296 or 320 candidates at or above 80th percentile in P who scored less than 90th percentile overall.

In this case, $g = 20$. Number of candidates shortlisted for AET $= d + e + f + g = 10 + 40 + 100 + 20 = 170$

QNo:- 46 ,Correct Answer:- A

Explanation:- It is given that 200 candidates scored above 90th percentile overall in CET. Let the following Venn diagram represent the number of persons who scored above 80 percentile in CET in each of the three sections:



From 1, $h = 0$.

From 2, $d + e + f = 150$

From 3, $a = b = c$

Since there are a total of 200 candidates,

$$3a + g = 200 - 150 = 50$$

From 4, $(2a + f) : (2a + e) : (2a + d) = 4 : 2 : 1$

Therefore, $6a + (d + e + f)$ is divisible by $4 + 2 + 1 = 7$.

Since $d + e + f = 150$, $6a + 150$ is divisible by 7, i.e.,

$6a + 3$ is divisible by 7.

Hence, $a = 3, 10, 17, \dots$

Further, since $3a + g = 50$, a must be less than 17. Therefore, only two cases are possible for the value of a , i.e., 3 or 10.

We can calculate the values of the other variables for the two cases.

$$a = 3 \text{ or } 10$$

$$d = 18 \text{ or } 10$$

$$e = 42 \text{ or } 40$$

$$f = 90 \text{ or } 100$$

$$g = 41 \text{ or } 20$$

Among the candidates who are at or above 90th percentile, the candidates who are at or above 80th percentile in at least two sections are selected for AET. Hence, the candidates represented by d, e, f and g are selected for AET.

BIE will consider the candidates who are appearing for AET and are at or above 80th percentile in P. Hence, BIE will consider the candidates represented by d, e and g , which can be 104 or 80.

BIE will conduct a separate test for the other students who are at or above 80th percentile in P. Given that there are a total of 400 candidates at or above 80th percentile in P, and since there are 104 or 80 candidates at or above 80th percentile in P and are at or above 90th percentile overall, there must be 296 or 320 candidates at or above 80th percentile in P who scored less than 90th percentile overall.

From the given condition, the number of candidates at or above 90th percentile overall and at or above 80th percentile in P in CET = 104. The number of candidates who have to sit for separate test = $296 + 3 = 299$

QNo:- 47 ,Correct Answer:- 1

Explanation:- The given data can be represented in a table as follows.

Scores	S	F	C
0			
1		2	1
2		1	3
3	3	2	4
4	3	1	1
5	2	3	
6	1		1
7	1	1	
Total	10	10	10

A and C had a total score of 7, with identical scores in all these parameters. So it can only be 1, 2 and 4 or 3, 3 and 1. As Zooma has a score of 17, and all three countries in the happy category had the highest score in exactly one parameter, he can only have a 7 in F, 6 in S and 4 in C as a score of 7 in S and 6 in C would be the scores of the other two countries and he cannot have a 7, 7 and 5 as there is no country which scored a 5 in C.

Amda can have a distribution of 3, 3, 1 or 4, 2, 1. In either case the only possible score of F is 1 as no other parameter has a score of 1 for two countries.

QNo:- 48 ,Correct Answer:- 6

Explanation:- The given data can be represented in a table as follows.

Scores	S	F	C
0			
1		2	1
2		1	3
3	3	2	4
4	3	1	1
5	2	3	
6	1		1
7	1	1	
Total	10	10	10

A and C had a total score of 7, with identical scores in all these parameters. So it can only be 1, 2 and 4 or 3, 3 and 1. As Zooma has a score of 17, and all three countries in the happy category had the highest score in exactly one parameter, he can only have a 7 in F, 6 in S and 4 in C as a score of 7 in S and 6 in C would be the scores of the other two countries and he cannot have a 7, 7 and 5 as there is no country which scored a 5 in C.

As explained before Zooma's score in C has to be 6.

QNo:- 49 ,Correct Answer:- B

Explanation:- The given data can be represented in a table as follows.

Scores	S	F	C
0			
1		2	1
2		1	3
3	3	2	4
4	3	1	1
5	2	3	
6	1		1
7	1	1	
Total	10	10	10

A and C had a total score of 7, with identical scores in all these parameters. So it can only be 1, 2 and 4 or 3, 3 and 1. As Zooma has a score of 17, and all three countries in the happy category had the highest score in exactly one parameter, he can only have a 7 in F, 6 in S and 4 in C as a score of 7 in S and 6 in C would be the scores of the other two countries and he cannot have a 7, 7 and 5 as there is no country which scored a 5 in C.

In the table given, among the highest scores, a score of 7 in F, 6 in S and 4 in S were the score of Zoom. The best possible scores remaining for Benga and Dalma would be

Benga	Dalma
S – 5	S – 7
C – 6	C – 3
F – 5	F – 5
16	15

As it is given that both had the same total score it can only be 15 for both, i.e. Benga's score in S or F was one less than the maximum possible.

QNo:- 50 ,Correct Answer:- B

Explanation:- The given data can be represented in a table as follows.

Scores	S	F	C
0			
1		2	1
2		1	3
3	3	2	4
4	3	1	1
5	2	3	
6	1		1
7	1	1	
Total	10	10	10

A and C had a total score of 7, with identical scores in all these parameters. So it can only be 1, 2 and 4 or 3, 3 and 1. As Zooma has a score of 17, and all three countries in the happy category had the highest score in exactly one parameter, he can only have a 7 in F, 6 in S and 4 in C as a score of 7 in S and 6 in C would be the scores of the other two countries and he cannot have a 7, 7 and 5 as there is no country which scored a 5 in C.

Considering the score of Zoom, Benga and Delma as 17, 16 and 15, we get

	S	F	C	Total
Zoom	6	7	4	17
Benga	5	5	6	16
Delma	7	5	3	15

If Benga score 16 and Dalma score 15 (as illustrated in the previous solution) the maximum possible values remaining are

Score	S	F	C
3	3	2	3
4	3	1	0
5	1	1	0

QNo:- 51 ,Correct Answer:- B

Explanation:-

Given that there are 10 SE and 11 RE.

In the first month, since T1 has one more SE than T2, who in turn has one more SE than T3, ... till T5, the number of SEs in T1, T2, T3, T4 and T5 must be 4, 3, 2, 1 and 0.

Also, the team that is assigned the challenging project has one more employee than the rest. Hence, the team that is assigned the challenging project will have 5 employees, while the other teams will have 4 employees.

Since T1 is assigned the Challenging project in the first month, T1 will have 5 employees, and the other teams will have 4 employees each.

The following table provides the composition of the teams in the first month:

Team	SE	RE	Total
T1	4	1	5
T2	3	1	4

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T3	2	2	4
T4	1	3	4
T5	0	4	4

In the second month, T2 will be allotted the challenging project.

From a, two SEs will be transferred from T1 to T2. One RE is transferred from T2 to T1.

From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1. Similar transfers will happen between T2 and T4.

The following table provides the number of employees in each team in the second month:

Team	SE	RE	Total
T1	1	3	4
T2	4	1	5
T3	2	2	4
T4	2	2	4
T5	1	3	4

In the third month, T3 will be allotted the challenging project.

From a, two SEs will be transferred from T2 to T3. One RE is transferred from T3 to T2.

From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1.

Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.

The following table provides the number of employees in each team in the third month:

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	4	1	5
T4	3	1	4
T5	2	2	4

In the fourth month, T4 will be allotted the challenging project.

From a, two SEs will be transferred from T3 to T4. One RE is transferred from T4 to T3.

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	2	2	4
T4	5	0	5
T5	2	2	4

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.

Also, one SE must be transferred from T2 to T4 and one RE must be transferred from T4 to T2. However, there are no REs in T4.

Hence, this transfer will not happen.

The following table provides the number of employees in each team in the fourth month:

In the fifth month, T5 will be allotted the challenging project.

From a, two SEs will be transferred from T4 to T5. One RE is transferred from T5 to T4.

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.

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Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.
The following table provides the number of employees in each team in the fifth month:

Team	SE	RE	Total
T1	0	4	4
T2	0	4	4
T3	2	2	4
T4	4	0	4
T5	4	1	5

The composition of T2 did not change once between the third and the fourth months.
The composition of T4 changed between any two successive months.
Hence, the answer is (1, 0).

QNo:- 52 ,Correct Answer:- A

Explanation:-

Given that there are 10 SE and 11 RE.

In the first month, since T1 has one more SE than T2, who in turn has one more SE than T3, ... till T5, the number of SEs in T1, T2, T3, T4 and T5 must be 4, 3, 2, 1 and 0.

Also, the team that is assigned the challenging project has one more employee than the rest. Hence, the team that is assigned the challenging project will have 5 employees, while the other teams will have 4 employees.

Since T1 is assigned the Challenging project in the first month, T1 will have 5 employees, and the other teams will have 4 employees each.

The following table provides the composition of the teams in the first month:

Team	SE	RE	Total
T1	4	1	5
T2	3	1	4
T3	2	2	4
T4	1	3	4
T5	0	4	4

In the second month, T2 will be allotted the challenging project.

From a, two SEs will be transferred from T1 to T2. One RE is transferred from T2 to T1.

From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1. Similar transfers will happen between T2 and T4.

The following table provides the number of employees in each team in the second month:

Team	SE	RE	Total
T1	1	3	4
T2	4	1	5
T3	2	2	4
T4	2	2	4
T5	1	3	4

In the third month, T3 will be allotted the challenging project.

From a, two SEs will be transferred from T2 to T3. One RE is transferred from T3 to T2.

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From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1. Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2. The following table provides the number of employees in each team in the third month:

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	4	1	5
T4	3	1	4
T5	2	2	4

In the fourth month, T4 will be allotted the challenging project. From a, two SEs will be transferred from T3 to T4. One RE is transferred from T4 to T3.

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	2	2	4
T4	5	0	5
T5	2	2	4

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen. Also, one SE must be transferred from T2 to T4 and one RE must be transferred from T4 to T2. However, there are no REs in T4. Hence, this transfer will not happen. The following table provides the number of employees in each team in the fourth month:

In the fifth month, T5 will be allotted the challenging project. From a, two SEs will be transferred from T4 to T5. One RE is transferred from T5 to T4. From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen. Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2. The following table provides the number of employees in each team in the fifth month:

Team	SE	RE	Total
T1	0	4	4
T2	0	4	4
T3	2	2	4
T4	4	0	4
T5	4	1	5

Number of SE in T1 in third month = 0
 Number of SE in T5 in third month = 2
 Hence, the answer is (0, 2)

QNo:- 53 ,Correct Answer:- B

Explanation:-

Given that there are 10 SE and 11 RE.

In the first month, since T1 has one more SE than T2, who in turn has one more SE than T3, ... till T5, the number of SEs in T1, T2, T3, T4 and T5 must be 4, 3, 2, 1 and 0.

Also, the team that is assigned the challenging project has one more employee than the rest. Hence, the team that is assigned the

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challenging project will have 5 employees, while the other teams will have 4 employees.

Since T1 is assigned the Challenging project in the first month, T1 will have 5 employees, and the other teams will have 4 employees each.

The following table provides the composition of the teams in the first month:

Team	SE	RE	Total
T1	4	1	5
T2	3	1	4
T3	2	2	4
T4	1	3	4
T5	0	4	4

In the second month, T2 will be allotted the challenging project.

From a, two SEs will be transferred from T1 to T2. One RE is transferred from T2 to T1.

From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1. Similar transfers will happen between T2 and T4.

The following table provides the number of employees in each team in the second month:

Team	SE	RE	Total
T1	1	3	4
T2	4	1	5
T3	2	2	4
T4	2	2	4
T5	1	3	4

In the third month, T3 will be allotted the challenging project.

From a, two SEs will be transferred from T2 to T3. One RE is transferred from T3 to T2.

From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1.

Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.

The following table provides the number of employees in each team in the third month:

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	4	1	5
T4	3	1	4
T5	2	2	4

In the fourth month, T4 will be allotted the challenging project.

From a, two SEs will be transferred from T3 to T4. One RE is transferred from T4 to T3.

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	2	2	4
T4	5	0	5
T5	2	2	4

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.

Also, one SE must be transferred from T2 to T4 and one RE must be transferred from T4 to T2. However, there are no REs in T4. Hence, this transfer will not happen.

The following table provides the number of employees in each team in the fourth month:

In the fifth month, T5 will be allotted the challenging project.

From a, two SEs will be transferred from T4 to T5. One RE is transferred from T5 to T4.

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.

Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.

The following table provides the number of employees in each team in the fifth month:

Team	SE	RE	Total
T1	0	4	4
T2	0	4	4
T3	2	2	4
T4	4	0	4
T5	4	1	5

Given that challenging projects has 200 credits and standard projects have 100 credits.

In each type of project, the credits are equally shared by the employees in the team.

Hence, for a challenging project an employee earns $200/5 = 40$ credits

For a standard project, an employee earns $100/4 = 25$ credits.

For the five months, an employee can work in five challenging projects OR four challenging projects and one standard project OR three challenging projects and two standard projects OR two challenging projects and three challenging projects OR one challenging project and four standard projects OR five standard projects.

In each case, an employee will earn 200 or 185 or 170 or 155 or 140 or 125 credits.

Hence, it is not possible for an employee to earn 150 credits.

QNo:- 54 ,Correct Answer:- D

Explanation:-

Given that there are 10 SE and 11 RE.

In the first month, since T1 has one more SE than T2, who in turn has one more SE than T3, ... till T5, the number of SEs in T1, T2, T3, T4 and T5 must be 4, 3, 2, 1 and 0.

Also, the team that is assigned the challenging project has one more employee than the rest. Hence, the team that is assigned the challenging project will have 5 employees, while the other teams will have 4 employees.

Since T1 is assigned the Challenging project in the first month, T1 will have 5 employees, and the other teams will have 4 employees each.

The following table provides the composition of the teams in the first month:

Team	SE	RE	Total
T1	4	1	5
T2	3	1	4
T3	2	2	4
T4	1	3	4
T5	0	4	4

In the second month, T2 will be allotted the challenging project.

From a, two SEs will be transferred from T1 to T2. One RE is transferred from T2 to T1.

From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1. Similar transfers will happen between T2 and T4.

The following table provides the number of employees in each team in the second month:

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Team	SE	RE	Total
T1	1	3	4
T2	4	1	5
T3	2	2	4
T4	2	2	4
T5	1	3	4

In the third month, T3 will be allotted the challenging project.

From a, two SEs will be transferred from T2 to T3. One RE is transferred from T3 to T2.

From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1.

Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.

The following table provides the number of employees in each team in the third month:

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	4	1	5
T4	3	1	4
T5	2	2	4

In the fourth month, T4 will be allotted the challenging project.

From a, two SEs will be transferred from T3 to T4. One RE is transferred from T4 to T3.

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	2	2	4
T4	5	0	5
T5	2	2	4

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.

Also, one SE must be transferred from T2 to T4 and one RE must be transferred from T4 to T2. However, there are no REs in T4.

Hence, this transfer will not happen.

The following table provides the number of employees in each team in the fourth month:

In the fifth month, T5 will be allotted the challenging project.

From a, two SEs will be transferred from T4 to T5. One RE is transferred from T5 to T4.

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.

Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.

The following table provides the number of employees in each team in the fifth month:

Team	SE	RE	Total
T1	0	4	4
T2	0	4	4
T3	2	2	4
T4	4	0	4
T5	4	1	5

Since Aneek secured 185 credits, he worked in four challenging projects and one standard project. Option A: Aneek could have worked in T1 in first month (in challenging project), T2 in second month (in challenging project), T3 in third month (in challenging project), T4 in fourth month (in challenging project) and fifth month (in standard project). Hence, this is possible.

Option B: Aneek could have worked in T1 in first month (in challenging project), T2 in second month (in challenging project), T4 in third month (in standard project), T4 in fourth month (in challenging project) and T5 in fifth month (in challenging project). Hence, this is possible.

Option C: Aneek could have worked in T2 in first month (in standard project), T2 in second month (in challenging project), T3 in third month (in challenging project), T4 in fourth month (in challenging project) and T5 in fifth month (in challenging project). Hence, this is possible.

Option D: Aneek could have worked in T1 in first month (in challenging project). He can work in T1 or T5 in the second month. In either case, he cannot work in T3 without working in T2 first. If we assume, he worked in T3 in the first month, he could not have worked in four teams in the five months. Similarly, we can rule out the other possibilities for this option. Hence, this is the answer.

QNo:- 55 ,Correct Answer:- C

Explanation:- The heights of the platforms given is as below

6	1	2	4	3
9	5	3	2	8
7	8	4	6	5
3	9	5	1	2
1	7	6	3	9

The number of persons who can be reached by just one individual is circled

6	1	②	4	3
9	5	3	2	8
⑦	8	④	6	⑤
③	9	5	1	②
1	7	6	③	9

A total of 7 persons can be reached by just one individual.

QNo:- 56 ,Correct Answer:- D

Explanation:- The heights of the platforms given is as below

6	1	2	4	3
9	5	3	2	8
7	8	4	6	5
3	9	5	1	2
1	7	6	3	9

For individual at a platform of height 1, they cannot be reached by anyone as condition (II) will be violated.

QNo:- 57 ,Correct Answer:- C

Explanation:- The heights of the platforms given is as below

6	1	2	4	3
9	5	3	2	8
7	8	4	6	5
3	9	5	1	2
1	7	6	3	9

Only in the fourth column can we find two individuals who cannot be reached by anyone. In the fourth column the individual at height 2 and the individual at height 1 cannot be reached by anyone.

QNo:- 58 ,Correct Answer:- C

Explanation:- The heights of the platforms given is as below

6	1	2	4	3
9	5	3	2	8
7	8	4	6	5
3	9	5	1	2
1	7	6	3	9

Statement 1 is wrong as no individual in row 1 can be reached by 5 or more individuals. Statement 2 is wrong as row 3 has no individual who cannot be reached by anyone.

Statement 4 is wrong as the individual at height 9 in column 1 can be reached by only 4 individuals.

∴ Only statement 3 is correct.

QNo:- 59 ,Correct Answer:- C

Explanation:- For any pair of cities, say A and B, to satisfy the underlying principle, there must be a morning flight from A to B, an evening flight from B to A and a morning flight from B to A and an evening flight from A to B. Only then can a person from A or B

travel to B or A and return the same day. Hence, there must be four flights between any pair of cities.

Number of ways of selecting two cities from ten cities

$$= \frac{10 \times 9}{2} = 45.$$

Hence, the minimum number of flights that must be scheduled = $45 \times 4 = 180$.

QNo:- 60 ,Correct Answer:- C

Explanation:-

Let the ten cities be represented by A through J. Among these ten cities, consider A, B and C to be hubs and the other seven cities to be non-hub cities. It is given that any direct flight should originate and/or terminate at a hub.

Consider city D, which not a hub. D should be connected to each of A, B and C. Between D and each of A, B and C, there must be four flights (from the above solution). Hence, from D, there must be $4 \times 3 = 12$ flights to the three hubs, A, B and C. Similarly, for each of the other six non-hub cities, there must be 12 flights connecting each non-hub city with the three hubs. Hence, a total of $12 \times 7 = 84$ flights will connect a non-hub city with a hub. In addition to this, the three hubs must be connected amongst themselves. Since there must be four flights between any pair of cities, there must be a total of $4 \times 3 = 12$ flights connecting any pair of hubs. Hence, the total minimum number of flights that should be scheduled = $84 + 12 = 96$.

QNo:- 61 ,Correct Answer:- 40

Explanation:-

Given that G1 has the cities A, B and C. G2, G3 and G4 have 3, 2 and 2 cities respectively. From the given conditions, we can see that a city in G2 cannot be connected by a direct flight to a city in G3 or G4. Hence, for a person to travel from a city in G2 to a city in G3 or G4, all the cities in G2 must be connected to A and from A, he can travel to B or C to travel to a city G3 or G4 respectively.

Hence, the 3 cities in G2 must be connected to A. Between each pair of cities there must be four flights. Hence, there must be $4 \times 3 = 12$ flights between cities in G2 and A.

Since there are 2 cities in G3, there must be $2 \times 4 = 8$ flights between cities in G3 and B.

Since there are 2 cities in G4, there must be $2 \times 4 = 8$ flights between cities in G4 and C.

Also, the cities in G1, i.e., A, B and C must be connected to each other. Hence, there must be an additional $4 \times 3 = 12$ flights between these three cities.

Therefore, the total minimum number of direct flights that must be scheduled = $12 + 8 + 8 + 12 = 40$

QNo:- 62 ,Correct Answer:- 4

Explanation:- It is given that the cities in G2 will be assigned to G3 or G4. However, this, by itself, will not result in any reduction in the number of flights because the cities in G2 will still have to be connected to either B or C.

However, it is also given that there are now no flights between A and C. Hence, the 4 flights that would have been scheduled in the previous case, will now not be scheduled.

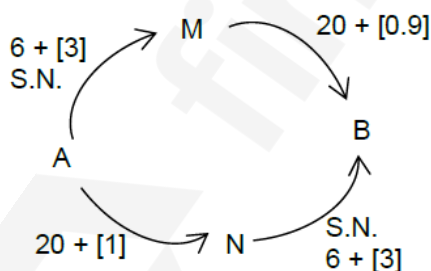
Hence, the reduction in the number of flights can be a maximum of 4.

QNo:- 63 ,Correct Answer:- 2

Explanation:-

As there are four cars and as the time through each route is nearly the same, two cars should go through A-M-B and the other two through A-N-B. In case three cars are directed to go through any of the routes, one of the three cars can break the police order and reduce its travel time.

QNo:- 64 ,Correct Answer:- B



Explanation:-

According to the police order 2 cars each would pass through A – M – B and A – N – B.

Then time taken through A – M – B = 29.9 and time taken through A – N – B = 30.0

∴ Difference = 0.1

QNo:- 65 ,Correct Answer:- 2

Explanation:- No car should be able to reduce its travel time by not following the order and all the cars cannot take the same route. So either two or three cars should go through A-M. If two cars go through M-B, one car can break the police order and go through M-N and reach B in $9 + 7 + 12 = 28$ minutes as compared to 29.9 minutes had both gone through A-M-B. If two cars go through A-M and one is directed to go through M-N, one of the cars which was directed to go through A-N can break the police order and go through A-M-B and save time as follows:

Original time (A-N-B) = $21 + 12 =$ (three cars) = 33

New time = 12 (3 cars) + $20.9 = 32.9$

The police department cannot direct both cars to go through M-N as in that case all four cars would go through N-B

In case three cars are directed to go through A-M, either one car can be directed through M-N or two cars can be directed through M-N.

If one car is directed through M-N, one of the two cars directed through M-B, can break the police order and go through M-N, and save time as shown.

Original time (A-M-B) = 12 (3 cars) + $20.9 = 32.9$

New time (A-M-N-B) = $12 + 8 + 12 = 32$ minutes.

$\therefore$ two cars must be directed through M-N such that any car breaking the police order cannot reduce the travel time.

QNo:- 66 ,Correct Answer:- B

Explanation:- When all cars follow the police order the time taken would be A-M-B (1 car) = $12 + 20 = 32$ minutes.

A-M-N-B (2cars) = $12 + 8 + 12 = 32$ minutes.

A-N-B (1 car) = $20 + 12 = 32$ minutes.

QNo:- 67 ,Correct Answer:- 20

Explanation:- Let Barun's age be $10x$. Arun's age is $4x$. The difference of these ages is $6x$, a constant. When Arun's age is 50% of Barun's age, this difference also would be 50% ie Barun's age, at that stage would be $12x$. It would be increase by 20%.

QNo:- 68 ,Correct Answer:- 15

Explanation:- Let the number of days required to complete the job be n .

1 person works on day 1, 2 on day 2, 3 on day 3, n on day n .

Each person has the same efficiency.

$$\text{Work} = 1\left(\frac{1}{120}\right) + 2\left(\frac{1}{120}\right) + 3\left(\frac{1}{120}\right) + \dots + n\left(\frac{1}{120}\right).$$

This is also equal to 1.

$$\frac{1}{120} + \frac{2}{120} + \frac{3}{120} + \dots + \frac{n}{120} = 1$$

$$\Sigma n = 120$$

$$n = 15.$$

QNo:- 69 ,Correct Answer:- 11

Explanation:- Number of people in the group cannot exceed $\frac{630}{53}$ i.e., 11.8.

Maximum possible number of people in the group = 11.

QNo:- 70 ,Correct Answer:- 20

Explanation:- The speed in the second case is $5/4$ times the speed in the first case. Therefore, the time would be $4/5$ times the time, i.e., $1/5$ less. This one fifth is 20 min. Therefore, the time taken in the first case is 100 min.

$$\text{The distance} = (12)\left(\frac{5}{3}\right) \text{ km} = 20 \text{ km}$$

QNo:- 71 ,Correct Answer:- 70000

Explanation:- Let the total monthly savings be S .

$$\text{Investment in FD} = \frac{50}{100}S.$$

$$\text{Investment in stocks} = \frac{30}{100} \left(S - \frac{50}{100}S \right) = \frac{15}{100}S$$

$$\text{Investment in savings bank account} = \frac{35}{100}S$$

$$\frac{35}{100}S + \frac{50}{100}S = 59500$$

$$S = 70000$$

QNo:- 72 ,Correct Answer:- D

Explanation:- Let the retail price be 100.

Discount = 15

Selling price = 85

$$\text{Cost price} = \frac{85}{1.02} = \frac{500}{6}$$

In order to make a profit of 20%, the selling price

$$= \frac{500}{6}(1.2) = 100$$

The seller must sell at the retail price

QNo:- 73 ,Correct Answer:- B

Explanation:- Let the speed of the boat in still water and the speed of the river be u and v respectively.

$$\frac{d}{2x+y} + \frac{d}{2x-y} = \frac{1}{4} \left(\frac{d}{x+y} + \frac{d}{x-y} \right)$$

$$\frac{d(4x)}{4x^2 - y^2} = \frac{1}{4} \left(\frac{d(2x)}{x^2 - y^2} \right)$$

$$8(x^2 - y^2) = 4x^2 - y^2$$

$$\frac{x^2}{y^2} = \frac{7}{4}$$

$$\frac{x}{y} = \frac{\sqrt{7}}{2}$$

QNo:- 74 ,Correct Answer:- A

Explanation:- The data is given below

C1	C2	C3	C4	C5
9	10	8		
	18		19	
81	90	72	95	100

$C5 - C1 = 19$. The numbers above are the actual profits (and not just the ratio). The total profit = 438 crore.

QNo:- 75 ,Correct Answer:- D

Explanation:- Let the number of boys appearing for the admission test be b .

Percentage of candidates who get admission =

$$\frac{\frac{30}{100}(2b) + \frac{45}{100}b}{2b + b} (100)\% = 35\%$$

65% of the candidates do not get admission.

QNo:- 76 ,Correct Answer:- A

Explanation:- Let the total number of popcorn packets in stock be T .

Total number of chips packets in stock = T

$$\text{Required ratio} = \frac{16}{40}T : \frac{14}{35}T = 1:1$$

QNo:- 77 ,Correct Answer:- B

Explanation:- Let the price of each good mango be g .

Price of each medium quality mango = $\frac{g}{2}$.

$$\text{Total cost price} = 80g + 40\left(\frac{g}{2}\right) = 100g$$

$$\text{Total selling price} = 120(0.9g) = 108g$$

Overall profit = 8%

QNo:- 78 ,Correct Answer:- D

Explanation:- Let the printed price be p .

If 40% discount is given, selling price = $0.6(60p) = 36p$

In order to make a profit of 20%, the selling price

Total cost price

$$=> 36p / 1.2 = 30p$$

Ten toys are destroyed in the fire.

The remaining toys are sold at a price such that the same amount of profit is made as in the conditional case.

Profit made on remaining toys = $6p$

Total selling price of remaining toys = $36p$

Discount that should be given = $50p - 36p = 14p$

Discount% = 28%

QNo:- 79 ,Correct Answer:- D

Explanation:- $\left(\frac{a+3}{b}\right)^2 = 9$ and $\left(\frac{a-1}{b-1}\right)^2 = 4$.

We get 4 cases

$a + 3 = 3b$	$a + 3 = 3b$
$a - 1 = 2b - 2$	$a - 1 = -2b + 2$
$a + 3 = -3b$	$a + 3 = -3b$
$a - 1 = 2b - 2$	$a - 1 = -2b + 2$

Subtracting the second equation from the first we get,

	I	II	III	IV
	4	b+2	5b-2	-5b+2
				-b-2

$I \Rightarrow b = 2, a = 3$ Rejected

$II, III \Rightarrow b$ is not an integer. Rejected

$IV \Rightarrow b = -6, a = 15$

$$\therefore \frac{a^2}{b^2} = \left(\frac{15}{-6}\right)^2 = \frac{25}{4}$$

QNo:- 80 ,Correct Answer:- A

Explanation:- Let the average score of the boys in the midsemester examination be b .

Average score of the girls = $b + 5$

In the final exam, average score of the girls = $b + 5 - 3 = b + 2$.

Average score of the entire class increased by 2

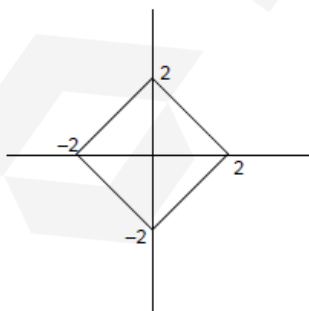
and is hence $\frac{20b + 30(b+5)}{50} + 2$ i.e. $b + 5$

Average score of the boys

$$\frac{50(b+5) - 30(b+2)}{20} = b + 9.5$$

Increases in the average of boys is 9.5.

QNo:- 81 ,Correct Answer:- C



Explanation:-

The closed region bounded by $|ax| + |by| = c$ in the two-dimensional plane has x-intercepts of

$\pm \frac{c}{|a|}$ and y-intercepts of $\pm \frac{c}{|b|}$.

This is in general a rhombus. In the given question, we have a square which has each of its diagonals as 4.

$$\text{Area} = \frac{1}{2}(4)(4) = 8$$

QNo:- 82 ,Correct Answer:- B

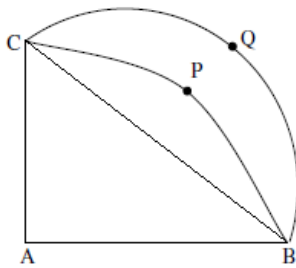
Explanation:- The medians of a triangle divide the triangle into six parts of equal area.

$$\text{Area of GBC} = \frac{1}{3} (\text{Area of the triangle})$$

$$= \frac{1}{3} \sqrt{5(5-a)(s-b)(s-c)} = \frac{250}{\sqrt{3}}$$

$$\text{Area of the remaining portion} = 2 \left(\frac{250}{\sqrt{3}} \right) = \frac{500}{\sqrt{3}}$$

QNo:- 83 ,Correct Answer:- B



Explanation:-

Let $AB = a$ ($a = 6$)

CQB is a semicircle of radius $\frac{a}{\sqrt{2}}$

CPB is a quarter circle (quadrant) of radius a

$$\therefore \text{Area of semicircle} = \frac{\pi a^2}{4}$$

$$\text{Area of quadrant} = \frac{\pi a^2}{4}$$

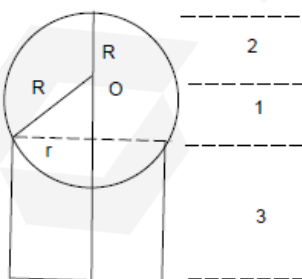
$\therefore$ Area of region enclosed by BPC, BQC = Area of $\triangle ABC = 18$.

QNo:- 84 ,Correct Answer:- B

Explanation:-

The volumes of the 5 smaller cubes and the original big one are in the ratio $1 : 1 : 8 : 27 : 27 : 64$. Therefore, the sides are in the ratio $1 : 1 : 2 : 3 : 3 : 4$ while the areas are in the ratio $1 : 1 : 4 : 9 : 9 : 16$. The sum of the areas of the 5 smaller cubes is 24 parts while that of the big cube is 16 parts. The sum is 50% greater.

QNo:- 85 ,Correct Answer:- 6



Explanation:-

The height of the cylinder (h) = 3

The volume = 9π

$$\pi r^2 h = 9\pi \Rightarrow r = \sqrt{3}$$

The radius of the ball (R) = 2

The height of O, the centre of the ball, above the line representing the top of the cylinder is say a .

($a = 1$)

$\therefore$ The height of the topmost point of the ball from the base of the cylinder is $h + a + R = 3 + 1 + 2 = 6$

QNo:- 86 ,Correct Answer:- 24

Explanation:- In a 3, 4, 5 triangle, the length of the altitude to the hypotenuse = $3(4)/5 = 2.4$. Therefore, in a 15, 20, 25 triangle, it is 12. This is the shortest distance from A to BC. At 60 km/hr, i.e., 1 km/min, it would take 24 min to cover 24 km.

QNo:- 87 ,Correct Answer:- D

Explanation:- $\log_3 x = a \Rightarrow x = 3^a$

$\log_{12} y = a \Rightarrow y = 12^a$

$\therefore xy = 36^a$ and $xy = G = 6^a$

$\therefore \log_6 G = a$

QNo:- 88 ,Correct Answer:- D

Explanation:- $x + 1 = x^2 \Rightarrow x^2 - x - 1 = 0 \Rightarrow x = \frac{1+\sqrt{5}}{2} (\because x > 0)$

Also, $x^2 = x + 1 \Rightarrow x^4 = x^2 + 2x + 1 = 3x + 2$

$\Rightarrow 2x^4 = 6x + 4 = 3 + 3\sqrt{5} + 4 = 7 + 3\sqrt{5}$

QNo:- 89 ,Correct Answer:- C

Explanation:- $0.008 = \frac{8}{1000} = 5^{-3}$

$\therefore \log_{0.008} \sqrt{5} = \frac{1/2}{-3} = \frac{-1}{6}$ and $\log_{\sqrt{5}} 81 = \frac{4}{1/2} = 8$

$\therefore$ The given expression is $\frac{5}{6}$

QNo:- 90 ,Correct Answer:- B

Explanation:- $9^{2x-1} - 9^{2x-2} = 9^{2x-2}(9-1) = 1944 = 8(243) = 8(9^{2.5})$

$\therefore 2x-2 = 2.5 \Rightarrow x = \frac{4.5}{2} = \frac{9}{4}$

QNo:- 91 ,Correct Answer:- B

Explanation:- $x = 25 + y + z$. The possible values of x, y, z and the corresponding number of values of y, z are tabulated below (x, y, z are positive integers). We see that $27 \leq x \leq 40$

x	y	z	No of values of (x, y)
27	1	1	1
28	1,2	2,1	2
-	-	-	-
38	1, ..., 2	12, ... 1	12
39	2, ..., 12,	12, ... 2	11
40	3, ..., 12	12, ..., 3	10

The number of solutions is $1 + 2 + \dots + 12 + 11 + 10 = 78 + 21 = 99$

QNo:- 92 ,Correct Answer:- 11

Explanation:- $(n - 5)(n - 10) - 3(n - 2) \leq 0$

$$\Rightarrow n^2 - 18n + 56 \leq 0$$

$$\Rightarrow (n - 4)(n - 14) \leq 0$$

As n is an integer, n can be 4, 5, 614, i.e. it can have 11 values.

QNo:- 93 ,Correct Answer:- 24

Explanation:- $x^2 + 11x + n = x \Rightarrow x^2 + 10x + n = 0$

$x^2 + 10x + 25 = 0$ has real and equal roots

$x^2 + 10x + n = 0$ where $n > 25$ has complex roots.

The maximum value of n for which the equation has two distinct real roots is 24.

QNo:- 94 ,Correct Answer:- 2

Explanation:- $a + b + c + d = 30$, a, b, c, d are integers.

$(a - b)^2 + (a - c)^2 + (a - d)^2$ would have its maximum value when each bracket has the least possible value.

Let $(a, b, c, d) = (8, 8, 7, 7)$

The given expression would be 2. It cannot have a smaller value.

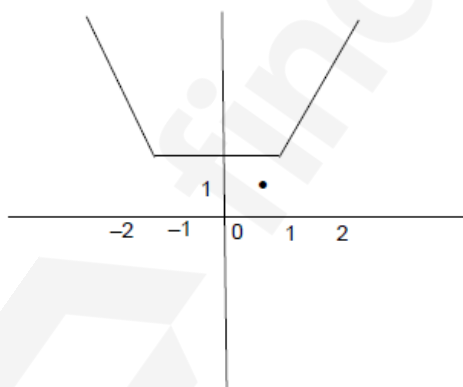
QNo:- 95 ,Correct Answer:- 160

Explanation:- There are 5 pairs of diametrically opposite points and the centre O .

If O is not selected, the number of triangles = ${}^{10}C_3 = 120$.

If O is selected, the other two points can be selected in $10(8)/2$, i.e., 40 ways. The number of triangles is 160.

QNo:- 96 ,Correct Answer:- A



Explanation:-

The graph of $y = |x - 1| + |x + 1|$ is shown above.

The shortest distance of $\left(\frac{1}{2}, 1\right)$ from the graph is 1.

QNo:- 97 ,Correct Answer:- A

Explanation:- Let the first term be a and the common difference be d .

$$(a + 6d)^2 = (a + 2d)(a + 16d)$$

$$\Rightarrow a^2 + 12ad + 36d^2 = a^2 + 18ad + 32d^2$$

$$\Rightarrow 4d^2 = 6ad$$

$$\Rightarrow \frac{a}{d} = \frac{2}{3}$$

QNo:- 98 ,Correct Answer:- A

Explanation:- After giving one eraser to each of the 4 kids, there are 3 left.

They can split 2, 1 or 1, 1, 1. (No kid can get 4)

There are ${}^4P_2 + {}^4C_3$, i.e., 16 ways of distributing the erasers.

QNo:- 99 ,Correct Answer:- A

Explanation:- $f(x) = \frac{5x+2}{3x-5}$, $g(x) = x^2 - 2x - 1$

$$f(3) = \frac{5(3)+2}{3(3)-5} = \frac{17}{4}$$

$$f(17) = \frac{5\left(\frac{17}{4}\right)+2}{3\left(\frac{17}{4}\right)-5} = \frac{85+8}{51-20} = \frac{93}{31} = 3$$

$$g(3) = 3^2 - 2(3) - 1 = 2.$$

QNo:- 100 ,Correct Answer:- B

Explanation:- $a_1 = 3, a_2 = 7, \dots, a_n = 4n - 1, \dots, a_{3n} = 4(3n) - 1$

$$a_1 + a_2 + \dots + a_{3n} = \frac{3n(12n+2)}{2} = 1830$$

$$\Rightarrow n(6n+1) = 610$$

$$\Rightarrow 6n^2 + n - 610 = 0$$

$$\Rightarrow (6n+61)(n-10) = 0$$

$$\Rightarrow n = 10 (\because n \text{ is an integer})$$

$$\therefore a_1 + a_2 + \dots + a_n = 3 + 7 + \dots + [4(10) - 1]$$

$$= \frac{4(10)(11)}{2} - 10 = 210$$

$$210 \leq m < 1830 = n > \frac{1830}{210} = 8.7$$

The minimum integral value of m is 9

Directions of Test

Test Name	Actual CAT 2017 Slot II	Total Questions	100	Total Time	180 Mins
Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking	
Verbal Ability	34	1:0(h:m)	3	1/3	
DI & Reasoning	32	1:0(h:m)	3	1/3	
Quantitative Ability	34	1:0(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

Creativity is at once our most precious resource and our most inexhaustible one. As anyone who has ever spent any time with children knows, every single human being is born creative; every human being is innately endowed with the ability to combine and recombine data, perceptions, materials and ideas, and devise new ways of thinking and doing. What fosters creativity? More than anything else: the presence of other creative people. The big myth is that creativity is the province of great individual geniuses. In fact creativity is a social process. Our biggest creative breakthroughs come when people learn from, compete with, and collaborate with other people.

Cities are the true fonts of creativity... With their diverse populations, dense social networks, and public spaces where people can meet spontaneously and serendipitously, they spark and catalyze new ideas. With their infrastructure for finance, organization and trade, they allow those ideas to be swiftly actualized.

As for what stanches creativity, that's easy, if ironic. It's the very institutions that we build to manage, exploit and perpetuate the fruits of creativity — our big bureaucracies, and sad to say, too many of our schools. Creativity is disruptive; schools and organizations are regimented, standardized and stultifying.

The education expert Sir Ken Robinson points to a 1968 study reporting on a group of 1,600 children who were tested over time for their ability to think in out-of-the-box ways. When the children were between 3 and 5 years old, 98 percent achieved positive scores. When they were 8 to 10, only 32 percent passed the same test, and only 10 percent at 13 to 15. When 280,000 25-year-olds took the test, just 2 percent passed. By the time we are adults, our creativity has been wrung out of us.

I once asked the great urbanist Jane Jacobs what makes some places more creative than others. She said, essentially, that the question was an easy one. All cities, she said, were filled with creative people; that's our default state as people. But some cities had more than their shares of leaders, people and institutions that blocked out that creativity. She called them "squelchers."

Creativity (or the lack of it) follows the same general contours of the great socio-economic divide - our rising inequality - that plagues us. According to my own estimates, roughly a third of us across the United States, and perhaps as much as half of us in our most creative cities - are able to do work which engages our creative faculties to some extent, whether as artists, musicians, writers, techies, innovators, entrepreneurs, doctors, lawyers, journalists or educators - those of us who work with our minds. That leaves a group that I term "the other 66 percent," who toil in low-wage rote and rotten jobs — if they have jobs at all — in which their creativity is subjugated, ignored or wasted.

Creativity itself is not in danger. It's flourishing is all around us - in science and technology, arts and culture, in our rapidly revitalizing cities. But we still have a long way to go if we want to build a truly creative society that supports and rewards the creativity of each and every one of us.

In the author's view, cities promote human creativity for all the following reasons EXCEPT that they

- A) contain spaces that enable people to meet and share new ideas.
- B) expose people to different and novel ideas, because they are home to varied groups of people.
- C) provide the financial and institutional networks that enable ideas to become reality.
- D) provide access to cultural activities that promote new and creative ways of thinking.

Question No. : 2

The author uses 'ironic' in the third paragraph to point out that

- A) people need social contact rather than isolation to nurture their creativity
- B) institutions created to promote creativity eventually stifle it
- C) the larger the creative population in a city, the more likely it is to be stifled
- D) large bureaucracies and institutions are the inevitable outcome of successful cities

Question No. : 3

The central idea of this passage is that

- A) social interaction is necessary to nurture creativity
- B) creativity and ideas are gradually declining in all societies
- C) the creativity divide is widening in societies in line with socio-economic trends
- D) more people should work in jobs that engage their creative faculties

Question No. : 4

Jane Jacobs believed that cities that are more creative

- A) have to struggle to retain their creativity
- B) have to 'squench' unproductive people and promote creative ones
- C) have leaders and institutions that do not block creativity
- D) typically do not start off as creative hubs

Question No. : 5

The 1968 study is used here to show that

- A) as they get older, children usually learn to be more creative
- B) schooling today does not encourage creative thinking in children
- C) the more children learn, the less creative they become
- D) technology today prevents children from being creative.

Question No. : 6

The author's conclusions about the most 'creative cities' in the US (paragraph 6) are based on his assumption that

- A) people who work with their hands are not doing creative work.
- B) more than half the population works in non-creative jobs.
- C) only artists, musicians, writers, and so on should be valued in a society.
- D) most cities ignore or waste the creativity of low-wage workers

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

Question No. : 7

During the frigid season...it's often necessary to nestle under a blanket to try to stay warm. The temperature difference between the blanket and the air outside is so palpable that we often have trouble leaving our warm refuge. Many plants and animals similarly hunker down, relying on snow cover for safety from winter's harsh conditions. The small area between the snowpack and the ground, called the subnivium...might be the most important ecosystem that you have never heard of.

The subnivium is so well-insulated and stable that its temperature holds steady at around 32 degree Fahrenheit (0 degree Celsius). Although that might still sound cold, a constant temperature of 32 degree Fahrenheit can often be 30 to 40 degrees warmer than the air temperature during the peak of winter. Because of this large temperature difference, a wide variety of species...depend on the subnivium for winter protection.

For many organisms living in temperate and Arctic regions, the difference between being under the snow or outside it is a matter of life and death. Consequently, disruptions to the subnivium brought about by climate change will affect everything from population dynamics to nutrient cycling through the ecosystem.

The formation and stability of the subnivium requires more than a few flurries. Winter ecologists have suggested that eight inches of snow is necessary to develop a stable layer of insulation. Depth is not the only factor, however. More accurately, the stability of the subnivium depends on the interaction between snow depth and snow density. Imagine being under a stack of blankets that are all flattened and pressed together. When compressed, the blankets essentially form one compacted layer. In contrast, when they are lightly placed on top of one another, their insulative capacity increases because the air pockets between them trap heat. Greater depths of low-density snow are therefore better at insulating the ground.

Both depth and density of snow are sensitive to temperature. Scientists are now beginning to explore how climate change will affect the subnivium, as well as the species that depend on it. At first glance, warmer winters seem beneficial for species that have difficulty surviving subzero temperatures; however, as with most ecological phenomena, the consequences are not so straightforward. Research has shown that the snow season (the period when snow is more likely than rain) has become shorter since 1970. When rain falls on snow, it increases the density of the snow and reduces its insulative capacity. Therefore, even though winters are expected to become warmer overall from future climate change, the subnivium will tend to become colder and more variable with less protection from the above-ground temperatures.

The effects of a colder subnivium are complex...For example, shrubs such as crowberry and alpine a2alea that grow along the forest floor tend to block the wind and so retain higher depths of snow around them. This captured snow helps to keep soils insulated and in turn increases plant decomposition and nutrient release. In field experiments, researchers removed a portion of the snow cover to investigate the importance of the subnivium's insulation. They found that soil frost in the snow-free area resulted in damage to plant roots and sometimes even the death of the plant.

The purpose of this passage is to

- A) introduce readers to a relatively unknown ecosystem: the subnivium
- B) explain how the subnivium works to provide shelter and food to several species.
- C) outline the effects of climate change on the subnivium.
- D) draw an analogy between the effect of blankets on humans and of snow cover on species living in the subnivium.

Question No. : 8

All of the following statements are true EXCEPT

- A) Snow depth and snow density both influence the stability of the subnivium.
- B) Climate change has some positive effects on the subnivium.
- C) The subnivium maintains a steady temperature that can be 30 to 40 degrees warmer than the winter air temperature.
- D) Researchers have established the adverse effects of dwindling snow cover on the subnivium.

Question No. : 9

Based on this extract, the author would support which one of the following actions?

- A) The use of snow machines in .winter to ensure snow cover of at least eight inches.
- B) Government action to curb climate change.
- C) Adding nutrients to the soil in winter.
- D) Planting more shrubs in areas of short snow season.

Question No. : 10

In paragraph 6, the author provides the examples of crowberry and alpine azalea to demonstrate that

- A) Despite frigid temperatures, several species survive in temperate and Arctic regions.
- B) Due to frigid temperatures in the temperate and Arctic regions, plant species that survive tend to be shrubs rather than trees.
- C) The crowberry and alpine azalea are abundant in temperate and Arctic regions.
- D) The stability of the subnivium depends on several interrelated factors, including shrubs on the forest floor.

Question No. : 11

Which one of the following statements can be inferred from the passage?

- A) In an ecosystem, altering any one element has a ripple effect on all others.
- B) Climate change affects temperate and Arctic regions more than equatorial or arid ones.
- C) A compact layer of wool is warmer than a similarly compact layer of goose down.
- D) The loss of the subnivium, while tragic, will affect only temperate and Arctic regions.

Question No. : 12

In paragraph 1, the author uses blankets as a device to

- A) evoke the bitter cold of winter in the minds of readers.
- B) explain how blankets work to keep us warm.
- C) draw an analogy between blankets and the snowpack.
- D) alert readers to the fatal effects of excessive exposure to the cold.

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

Question No. : 13

The end of the age of the internal combustion engine is in sight. There are small signs everywhere: the shift to hybrid vehicles is already under way among manufacturers. Volvo has announced it will make no purely petrol-engined cars after 2019...and Tesla has just started selling its first electric car aimed squarely at the middle classes: the Tesla 3 sells for \$35,000 in the US, and 400,000 people have put down a small, refundable deposit towards one. Several thousand have already taken delivery, and the company hopes to sell half a million more next year. This is a remarkable figure for a machine with a fairly short range and a very limited number of specialised charging stations.

Some of it reflects the remarkable abilities of Elon Musk, the company's founder, as a salesman, engineer, and a man able to get the most out of his factory workers and the governments he deals with...Mr Musk is selling a dream that the world wants to believe in.

This last may be the most important factor in the story. The private car is...a device of immense practical help and economic significance, but at the same time a theatre for myths of unattainable self-fulfilment. The one thing you will never see in a car advertisement is traffic, even though that is the element in which drivers spend their lives. Every single driver in a traffic jam is trying to escape from it, yet it is the inevitable consequence of mass car ownership.

The sleek and swift electric car is at one level merely the most contemporary fantasy of autonomy and power. But it might also disrupt our exterior landscapes nearly as much as the fossil fuel-engined car did in the last century. Electrical cars would of course pollute far less than fossil fuel-driven ones; instead of oil reserves, the rarest materials for batteries would make undeserving despots and their dynasties fantastically rich. Petrol stations would disappear. The air in cities would once more be breathable and their streets as quiet as those of Venice. This isn't an unmixed good. Cars that were as silent as bicycles would still be as dangerous as they are now to anyone they hit without audible warning.

The dream goes further than that. The electric cars of the future will be so thoroughly equipped with sensors and reaction mechanisms that they will never hit anyone. Just as brakes don't let you skid today, the steering wheel of tomorrow will swerve you away from danger before you have even noticed it...

This is where the fantasy of autonomy comes full circle. The logical outcome of cars which need no driver is that they will become cars which need no owner either. Instead, they will work as taxis do, summoned at will but only for the journeys we actually need. This the future towards which Uber...is working. The ultimate development of the private car will be to reinvent public transport. Traffic jams will be abolished only when the private car becomes a public utility. What then will happen to our fantasies of independence? We'll all have to take to electrically powered bicycles.

Which of the following statements best reflects the author's argument?

- A) Hybrid and electric vehicles signal the end of the age of internal combustion engines.
- B) Elon Musk is a remarkably gifted salesman.
- C) The private car represents an unattainable myth of independence.
- D) The future Uber car will be environmentally friendlier than even the Tesla.

Question No. : 14

The author points out all of the following about electric cars EXCEPT

- A) Their reliance on rare materials for batteries will support despotic rule.
- B) They will reduce air and noise pollution.
- C) They will not decrease the number of traffic jams.
- D) They will ultimately undermine rather than further driver autonomy.

Question No. : 15

According to the author, the main reason for Tesla's remarkable sales is that

- A) in the long run, the Tesla is more cost effective than fossil fuel-driven cars.
- B) the US government has announced a tax subsidy for Tesla buyers.
- C) the company is rapidly upscaling the number of specialised charging stations for customer convenience.
- D) people believe in the autonomy represented by private cars.

Question No. : 16

The author comes to the conclusion that

- A) car drivers will no longer own cars but will have to use public transport.
- B) cars will be controlled by technology that is more efficient than car drivers.
- C) car drivers dream of autonomy but the future may be public transport.
- D) electrically powered bicycles are the only way to achieve autonomy in transportation.

Question No. : 17

In paragraphs 5 and 6, the author provides the example of Uber to argue that

- A) in the future, electric cars will be equipped with mechanisms that prevent collisions.
- B) in the future, traffic jams will not exist.
- C) in the future, the private car will be transformed into a form of public transport.
- D) in the future, Uber rides will outstrip Tesla sales.

Question No. : 18

In paragraph 6, the author mentions electrically powered bicycles to argue that

- A) if Elon Musk were a true visionary, he would invest funds in developing electric bicycles.
- B) our fantasies of autonomy might unexpectedly require us to consider electric bicycles.
- C) in terms of environmental friendliness and safety, electric bicycles rather than electric cars are the future.
- D) electric buses are the best form of public transport.

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

Question No. : 19

Typewriters are the epitome of a technology that has been comprehensively rendered obsolete by the digital age. The ink comes off the ribbon, they weigh a ton, and second thoughts are a disaster. But they are also personal, portable and, above all, private. Type a document and lock it away and more or less the only way anyone else can get it is if you give it to them. That is why the Russians have decided to go back to typewriters in some government offices, and why in the US, some departments have never abandoned them. Yet it is not just their resistance to algorithms and secret surveillance that keeps typewriter production lines - well one, at least - in business (the last British one closed a year ago). Nor is it only the nostalgic appeal of the metal body and the stout well-defined keys that make them popular on eBay. A typewriter demands something particular: attentiveness. By the time the paper is loaded, the ribbon tightened, the carriage returned, the spacing and the margins set, there's a big premium on hitting the right key. That means sorting out ideas, pulling together a kind of order and organising details before actually striking off. There can be no thinking on screen with a typewriter. Nor are there any easy distractions. No online shopping. No urgent emails. No Twitter. No need even for electricity - perfect for writing in a remote hideaway. The thinking process is accompanied by the encouraging clack of keys, and the ratchet of the carriage return. Ping!

Which one of the following best describes what the passage is trying to do?

- A) It describes why people continue to use typewriters even in the digital age.
- B) It argues that typewriters will continue to be used even though they are an obsolete technology.
- C) It highlights the personal benefits of using typewriters.
- D) It shows that computers offer fewer options than typewriters.

Question No. : 20

According to the passage, some governments still use typewriters because:

- A) they do not want to abandon old technologies that may be useful in the future.
- B) they want to ensure that typewriter production lines remain in business.
- C) they like the nostalgic appeal of typewriter.
- D) they can control who reads the document.

Question No. : 21

The writer praises typewriters for all the following reasons EXCEPT

- A) Unlike computers, they can only be used for typing. B) You cannot revise what you have typed on a typewriter.
C) Typewriters are noisier than computers. D) Typewriters are messier to use than computers.

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

Question No. : 22

Despite their fierce reputation, Vikings may not have always been the plunderers and pillagers popular culture imagines them to be. In fact, they got their start trading in northern European markets, researchers suggest.

Combs carved from animal antlers, as well as comb manufacturing waste and raw antler material has turned up at three archaeological sites in Denmark, including a medieval marketplace in the city of Ribe. A team of researchers from Denmark and the U.K. hoped to identify the species of animal to which the antlers once belonged by analyzing collagen proteins in the samples and comparing them across the animal kingdom, Laura Geggel reports for LiveScience. Somewhat surprisingly, molecular analysis of the artifacts revealed that some combs and other material had been carved from reindeer antlers.... Given that reindeer (*Rangifer tarandus*) don't live in Denmark, the researchers posit that it arrived on Viking ships from Norway. Antler craftsmanship, in the form of decorative combs, was part of Viking culture. Such combs served as symbols of good health, Geggel writes. The fact that the animals shed their antlers also made them easy to collect from the large herds that inhabited Norway.

Since the artifacts were found in marketplace areas at each site it's more likely that the Norsemen came to trade rather than pillage. Most of the artifacts also date to the 780s, but some are as old as 725. That predates the beginning of Viking raids on Great Britain by about 70 years. (Traditionally, the so-called "Viking Age" began with these raids in 793 and ended with the Norman conquest of Great Britain in 1066.) Archaeologists had suspected that the Vikings had experience with long maritime voyages [that] might have preceded their raiding days. Beyond Norway, these combs would have been a popular industry in Scandinavia as well. It's possible that the antler combs represent a larger trade network, where the Norsemen supplied raw material to craftsmen in Denmark and elsewhere.

The primary purpose of the passage is:

- A) to explain the presence of reindeer antler combs in Denmark.
B) to contradict the widely-accepted beginning date for the Viking Age in Britain, and propose an alternate one.
C) to challenge the popular perception of Vikings as raiders by using evidence that suggests their early trade relations with Europe.
D) to argue that besides being violent pillagers, Vikings were also skilled craftsmen and efficient traders.

Question No. : 23

The evidence - "Most of the artifacts also date to the 780s, but some are as old as 725" - has been used in the passage to argue that:

- A) the beginning date of the Viking Age should be changed from 793 to 725. B) the Viking raids started as early as 725.
C) some of the antler artifacts found in Denmark and Great Britain could have come from Scandinavia.
D) the Vikings' trade relations with Europe pre-dates the Viking raids.

Question No. : 24

All of the following hold true for Vikings EXCEPT

- A) Vikings brought reindeer from Norway to Denmark for trade purposes.
B) Before becoming the raiders of northern Europe, Vikings had trade relations with European nations.
C) Antler combs, regarded by the Vikings as a symbol of good health, were part of the Viking culture.
D) Vikings, once upon a time, had trade relations with Denmark and Scandinavia.

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

Question No. : 25

North American walnut sphinx moth caterpillars (*Amorpha juglandis*) look like easy meals for birds, but they have a trick up their sleeves—they produce whistles that sound like bird alarm calls, scaring potential predators away. At first, scientists suspected birds were simply startled by the loud noise. But a new study suggests a more sophisticated mechanism: the caterpillar's whistle appears to mimic a bird alarm call, sending avian predators scrambling for cover. When pecked by a bird, the caterpillars whistle by compressing their bodies like an accordion and forcing air out through specialized holes in their sides. The whistles are impressively loud - they have been measured at over 80 dB from 5 cm away from the caterpillar - considering they are made by a two-inch long insect.

- A) North American walnut sphinx moth caterpillars will whistle periodically to ward off predator birds - they have a specialized vocal tract that helps them whistle.
- B) North American walnut sphinx moth caterpillars can whistle very loudly; the loudness of their whistles is shocking as they are very small insects.
- C) North American walnut sphinx moth caterpillars, in a case of acoustic deception, produce whistles that mimic bird alarm calls to defend themselves.
- D) North American walnut sphinx moth caterpillars, in a case of deception and camouflage, produce whistles that mimic bird alarm calls to defend themselves.

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

Question No. : 26

Both Socrates and Bacon were very good at asking useful questions. In fact, Socrates is largely credited with coming up with a way of asking questions, 'the Socratic method/ which itself is at the core of the 'scientific method, 'popularised by Bacon. The Socratic method disproves arguments by finding exceptions to them, and can therefore lead your opponent to a point where they admit something that contradicts their original position. In common with Socrates, Bacon stressed it was as important to disprove a theory as it was to prove one - and real-world observation and experimentation were key to achieving both aims. Bacon also saw science as a collaborative affair, with scientists working together, challenging each other.

- A) Both Socrates and Bacon advocated clever questioning of the opponents to disprove their arguments and theories.
- B) Both Socrates and Bacon advocated challenging arguments and theories by observation and experimentation.
- C) Both Socrates and Bacon advocated confirming arguments and theories by finding exceptions.
- D) Both Socrates and Bacon advocated examining arguments and theories from both sides to prove them.

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

Question No. : 27

A fundamental property of language is that it is slippery and messy and more liquid than solid, a gelatinous mass that changes shape to fit. As Wittgenstein would remind us, "usage has no sharp boundary." Oftentimes, the only way to determine the meaning of a word is to examine how it is used. This insight is often described as the "meaning is use" doctrine. There are differences between the "meaning is use" doctrine and a dictionary-first theory of meaning. "The dictionary's careful fixing of words to definitions, like butterflies pinned under glass, can suggest that this is how language works. The definitions can seem to ensure and fix the meaning of words, just as the gold standard can back a country's currency." What Wittgenstein found in the circulation of ordinary language, however, was a free-floating currency of meaning. The value of each word arises out of the exchange. The lexicographer abstracts a meaning from that exchange, which is then set within the conventions of the dictionary definition.

- A) Dictionary definitions are like 'gold standards' - artificial, theoretical and dogmatic. Actual meaning of words is their free-exchange value.
- B) Language is already slippery; given this, accounting for 'meaning in use' will only exasperate the problem. That is why lexicographers 'fix' meanings
- C) Meaning is dynamic; definitions are static. The 'meaning in use' theory helps us understand that definitions of words are culled from their meaning in exchange and use and not vice versa.
- D) The meaning of words in dictionaries is clear, fixed and less dangerous and ambiguous than the meaning that arises when words are exchanged between people.

DIRECTIONS for the question: The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.

Question No. : 28

1. The implications of retelling of Indian stories, hence, takes on new meaning in a modern India.
2. The stories we tell reflect the world around us.
3. We cannot help but retell the stories that we value - after all, they are never quite right for us - in our time.
4. And even if we manage to get them quite right, they are only right for us - other people living around us will have different reasons for telling similar stories.
5. As soon as we capture a story, the world we were trying to capture has changed.

A) 25341 B) C) D)

DIRECTIONS for the question: The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.

Question No. : 29

1. Before plants can take life from atmosphere, nitrogen must undergo transformations similar to ones that food undergoes in our digestive machinery.
2. In its aerial form nitrogen is insoluble, unusable and is in need of transformation.
3. Lightning starts the series of chemical reactions that need to happen to nitrogen, ultimately helping it nourish our earth.
4. Nitrogen - an essential food for plants - is an abundant resource, with about 22 million tons of it floating over each square mile of earth.
5. One of the most dramatic examples in nature of ill wind that blows goodness is lightning.

A) 53421 B) C) D)

DIRECTION for the question: The six sentences (labelled 1,2,3,4,5 and 6) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of six numbers as your answer.

Question No. : 30

1. This has huge implications for the health care system as it operates today, where depleted resources and time lead to patients rotating in and out of doctor's offices, oftentimes receiving minimal care or concern (what is commonly referred to as "bed side manner") from doctors.
2. The placebo effect is when an individual's medical condition or pain shows signs of improvement based on a fake intervention that has been presented to them as a real one and used to be regularly dismissed by researchers as a psychological effect.
3. The placebo effect is not solely based on believing in treatment, however, as the clinical setting in which treatments are administered is also paramount.
4. That the mind has the power to trigger biochemical changes because the individual believes that a given drug or intervention will be effective could empower chronic patients through the notion of our bodies' capacity for self-healing.
5. Placebo effects are now studied not just as foils for "real" interventions but as a potential portal into the self-healing powers of the body.

A) 25431 B) C) D)

DIRECTIONS for the question: The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.

Question No. : 31

1. Johnson treated English very practically, as a living language, with many different shades of meaning and adopted his definitions on the principle of English common law - according to precedent.
2. Masking a profound inner torment, Johnson found solace in compiling the words of a language that was, in its coarse complexity and comprehensive genius, the precise analogue of his character.
3. Samuel Johnson was a pioneer who raised common sense to heights of genius, and a man of robust popular instincts whose watchwords were clarity, precision and simplicity.
4. The 18th century English reader, in the new world of global trade and global warfare, needed a dictionary with authoritative acts of definition of words of a language that was becoming seeded throughout the first British empire by a vigorous and practical champion.
5. The Johnson who challenged Bishop Berkeley's solipsist theory of the nonexistence of matter by kicking a large stone ("I refute it thus") is the same Johnson for whom language must have a daily practical use.

A) 43512 B) C) D)

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. : 32

1. Although we are born with the gift of language, research shows that we are surprisingly unskilled when it comes to communicating with others.
2. We must carefully orchestrate our speech if we want to achieve our goals and bring our dreams to fruition.
3. We often choose our words without thought, oblivious of the emotional effects they can have on others.
4. We talk more than we need to, ignoring the effect we are having on those listening to us.
5. We listen poorly, without realizing it, and we often fail to pay attention to the subtle meanings conveyed by facial expressions, body gestures, and the tone and cadence of our voice.

A) 2 B) C) D)

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. : 33

1. Over the past fortnight, one of its finest champions managed to pull off a similar impression.
2. Wimbledon's greatest illusion is the sense of timelessness it evokes.
3. At 35 years and 342 days, Roger Federer became the oldest man to win the singles title in the Open Era - a full 14 years after he first claimed the title as a scruffy, pony-tailed upstart.
4. Once he had survived the opening week, the second week witnessed the range of a rested Federer's genius.
5. Given that his method isn't reliant on explosive athleticism or muscular ball-striking, both vulnerable to decay, there is cause to believe that Federer will continue to enchant for a while longer.

A) 4 B) C) D)

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. : 34

1. Those geometric symbols and aerodynamic swooshes are more than just skin deep.
2. The Commonwealth Bank logo - a yellow diamond, with a black chunk sliced out in one corner - is so recognisable that the bank doesn't even use its full name in its advertising.
3. It's not just logos with hidden shapes; sometimes brands will have meanings or stories within them that are deliberately vague or lost in time, urging you to delve deeper to solve the riddle.
4. Graphic designers embed cryptic references because it adds a story to the brand; they want people to spend more time with a brand and have that idea that they are an insider if they can understand the hidden message.
5. But the Comm Bank logo has more to it than meets the eye, as squirrelled away in that diamond is the Southern Cross constellation.

A) 1 B) C) D)

Section : DI & Reasoning

DIRECTIONS for the question: Study the following information carefully and answer the given question.

Question No. : 35

Funky Pizzeria was required to supply pizzas to three different parties. The total number of pizzas it had to deliver was 800, 70% of which were to be delivered to Party 3 and the rest equally divided between Party 1 and Party 2.

Pizzas could be of Thin Crust (T) or Deep Dish (D) variety and come in either Normal Cheese (NC) or Extra Cheese (EC) versions. Hence, there are four types of pizzas: T-NC, T-EC, D-NC and D-EC. Partial information about proportions of T and NC pizzas ordered by the three parties is given below:

	Thin Crust (T)	Normal Cheese (NC)
Party 1	0.6	
Party 2	0.55	0.3
Party 3		0.65
Total	0.375	0.52

How many Thin Crust pizzas were to be delivered to Party 3?

A) 398 B) 162 C) 196 D) 364

Question No. : 36

How many Normal Cheese pizzas were required to be delivered to Party 1?

A) 104 B) 84 C) 16 D) 196

Question No. : 37

For Party 2, if 50% of the Normal Cheese pizzas were of Thin Crust variety, what was the difference between the numbers of T-EC and D-EC pizzas to be delivered to Party 2?

A) 18 B) 12 C) 30 D) 24

Question No. : 38

Suppose that a T-NC pizza cost as much as a D-NC pizza, but $\frac{3}{5}$ th of the price of a D-EC pizza. A D-EC pizza costs Rs. 50 more than a T-EC pizza, and the latter costs Rs. 500.

If 25% of the Normal Cheese pizzas delivered to Party 1 were of Deep Dish variety, what was the total bill for Party 1?

- A) Rs. 59480 B) Rs. 59840 C) Rs. 42520 D) Rs. 45240

DIRECTIONS for the question: Study the following information carefully and answer the given question.

Question No. : 39

There were seven elective courses - E1 to E7 - running in a specific term in a college. Each of the 300 students enrolled had chosen just one elective from among these seven. However, before the start of the term, E7 was withdrawn as the instructor concerned had left the college. The students who had opted for E7 were allowed to join any of the remaining electives. Also, the students who had chosen other electives were given one chance to change their choice. The table below captures the movement of the students from one elective to another during this process. Movement from one elective to the same elective simply means no movement. Some numbers in the table got accidentally erased; however, it is known that these were either 0 or 1.

	To Elective						
	E1	E2	E3	E4	E5	E6	
From Elective	E1	9	5	10	1	4	2
	E2		34	8		2	2
	E3	2	6	25			2
	E4		3	2	14		4
	E5		5		30		
	E6		7	3		2	9
	E7	4	16	30	5	5	41

Further, the following are known:

- Before the change process there were 6 more students in E1 than in E4, but after the reshuffle, the number of students in E4 was 3 more than that in E1.
- The number of students in E2 increased by 30 after the change process.
- Before the change process, E4 had 2 more students than E6, while E2 had 10 more students than E3.

How many elective courses among E1 to E6 had a decrease in their enrollments after the change process?

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

Question No. : 40

After the change process, which of the following is the correct sequence of number of students in the six electives E1 to E6?

- A) 19, 76, 79, 21, 45, 60 B) 19, 76, 78, 22, 45, 60 C) 18, 76, 79, 23, 43, 61 D) 18, 76, 79, 21, 45, 61

Question No. : 41

After the change process, which course among E1 to E6 had the largest change in its enrollment as a percentage of its original enrollment?

- A) E1 B) E2 C) E3 D) E6

Question No. : 42

Later, the college imposed a condition that if after the change of electives, the enrollment in any elective (other than E7) dropped to less than 20 students, all the students who had left that course will be required to re-enroll for that elective.

Which of the following is a correct sequence of electives in decreasing order of their final enrollments?

- A) E2, E3, E6, E5, E1, E4 B) E3, E2, E6, E5, E4, E1 C) E2, E5, E3, E1, E4, E6 D) E2, E3, E5, E6, E1, E3

DIRECTIONS for the question: Study the following information carefully and answer the given question.

Question No. : 43

An old woman had the following assets:

- (a) Rs. 70 lakh in bank deposits
- (b) 1 house worth Rs. 50 lakh
- (c) 3 flats, each worth Rs. 30 lakh
- (d) Certain number of gold coins, each worth Rs. 1 lakh

She wanted to distribute her assets among her three children; Neeta, Seeta and Geeta.

The house, any of the flats or any of the coins were not to be split. That is, the house went entirely to one child; a flat went to one child and similarly, a gold coin went to one child.

Among the three, Neeta received the least amount in bank deposits, while Geeta received the highest. The value of the assets was distributed equally among the children, as were the gold coins.

How much did Seeta receive in bank deposits (in lakhs of rupees)?

- A) 30 B) 40 C) 20 D) 10

DIRECTIONS for the question: Study the following information carefully and answer the given question.

Question No. : 44

An old woman had the following assets:

- (a) Rs. 70 lakh in bank deposits
- (b) 1 house worth Rs. 50 lakh
- (c) 3 flats, each worth Rs. 30 lakh
- (d) Certain number of gold coins, each worth Rs. 1 lakh

She wanted to distribute her assets among her three children; Neeta, Seeta and Geeta.

The house, any of the flats or any of the coins were not to be split. That is, the house went entirely to one child; a flat went to one child and similarly, a gold coin went to one child.

Among the three, Neeta received the least amount in bank deposits, while Geeta received the highest. The value of the assets was distributed equally among the children, as were the gold coins.

How many flats did Neeta receive?

- A) 2 B) C) D)

DIRECTIONS for the question: Study the following information carefully and answer the given question.

Question No. : 45

An old woman had the following assets:

- (a) Rs. 70 lakh in bank deposits
- (b) 1 house worth Rs. 50 lakh
- (c) 3 flats, each worth Rs. 30 lakh
- (d) Certain number of gold coins, each worth Rs. 1 lakh

She wanted to distribute her assets among her three children; Neeta, Seeta and Geeta.

The house, any of the flats or any of the coins were not to be split. That is, the house went entirely to one child; a flat went to one child and similarly, a gold coin went to one child.

The value of the assets distributed among Neeta, Seeta and Geeta was in the ratio of 1:2:3, while the gold coins were distributed among them in the ratio of 2:3:4. One child got all three flats and she did not get the house. One child, other than Geeta, got Rs. 30 lakh in bank deposits.

How many gold coins did the old woman have?

- A) 72 B) 90 C) 180 D) 216

DIRECTIONS for the question: Study the following information carefully and answer the given question.

Question No. : 46

An old woman had the following assets:

- (a) Rs. 70 lakh in bank deposits
- (b) 1 house worth Rs. 50 lakh
- (c) 3 flats, each worth Rs. 30 lakh
- (d) Certain number of gold coins, each worth Rs. 1 lakh

She wanted to distribute her assets among her three children; Neeta, Seeta and Geeta.

The house, any of the flats or any of the coins were not to be split. That is, the house went entirely to one child; a flat went to one child and similarly, a gold coin went to one child.

The value of the assets distributed among Neeta, Seeta and Geeta was in the ratio of 1:2:3, while the gold coins were distributed among them in the ratio of 2:3:4. One child got all three flats and she did not get the house. One child, other than Geeta, got Rs. 30 lakh in bank deposits.

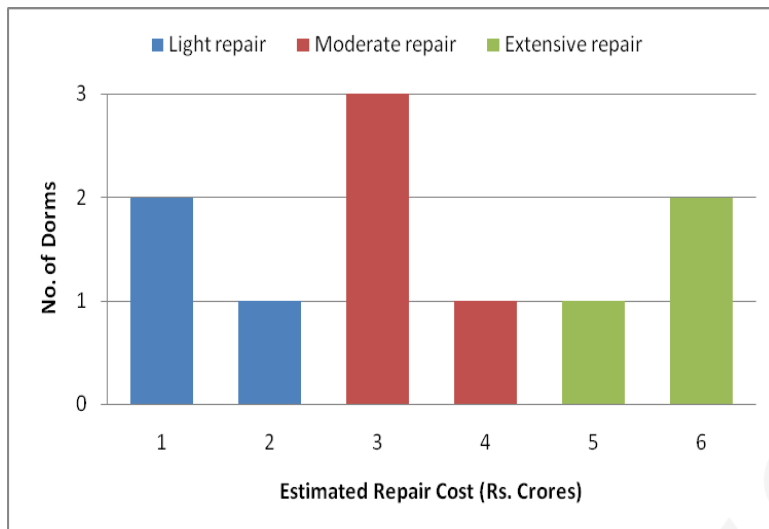
How much did Geeta get in bank deposits (in lakhs of rupees)?

- A) 20 B) C) D)

DIRECTIONS for the question: Analyse the graph/s given below and answer the question that follows.

Question No. : 47

At a management school, the oldest 10 dorms, numbered 1 to 10, need to be repaired urgently. The following diagram represents the estimated repair costs (in Rs. Crores) for the 10 dorms. For any dorm, the estimated repair cost (in Rs. Crores) is an integer. Repairs with estimated cost Rs. 1 or 2 Crores are considered light repairs, repairs with estimated cost Rs. 3 or 4 are considered moderate repairs and repairs with estimated cost Rs. 5 or 6 Crores are considered extensive repairs.



Further, the following are known:

1. Odd-numbered dorms do not need light repair; even-numbered dorms do not need moderate repair and dorms, whose numbers are divisible by 3, do not need extensive repair.
2. Dorms 4 to 9 all need different repair costs, with Dorm 7 needing the maximum and Dorm 8 needing the minimum

Which of the following is NOT necessarily true?

- A) Dorm 1 needs a moderate repair B) Dorm 5 repair will cost no more than Rs. 4 Crores
C) Dorm 7 needs an extensive repair D) Dorm 10 repair will cost no more than Rs. 4 Crores

Question No. : 48

What is the total cost of repairing the odd-numbered dorms (in Rs. Crores)?

- A) 19 B) C) D)

Question No. : 49

Suppose further that:

1. 4 of the 10 dorms needing repair are women's dorms and need a total of Rs. 20 Crores for repair.
2. Only one of Dorms 1 to 5 is a women's dorm.

What is the cost for repairing Dorm 9 (in Rs. Crores)?

- A) 3 B) C) D)

Question No. : 50

Suppose further that:

1. 4 of the 10 dorms needing repair are women's dorms and need a total of Rs. 20 Crores for repair.
2. Only one of Dorms 1 to 5 is a women's dorm.

Which of the following is a women's dorm?

- A) Dorm 2 B) Dorm 5 C) Dorm 8 D) Dorm 10

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

Question No. : 51

A tea taster was assigned to rate teas from six different locations - Munnar, Wayanad, Ooty, Darjeeling, Assam and Himachal. These teas were placed in six cups, numbered 1 to 6, not necessarily in the same order. The tea taster was asked to rate these teas on the strength of their flavour on a scale of 1 to 10. He gave a unique integer rating to each tea. Some other information is given below:

1. Cup 6 contained tea from Himachal.
2. Tea from Ooty got the highest rating, but it was not in Cup 3.
3. The rating of tea in Cup 3 was double the rating of the tea in Cup 5.
4. Only two cups got ratings in even numbers.
5. Cup 2 got the minimum rating and this rating was an even number.
6. Tea in Cup 3 got a higher rating than that in Cup 1.
7. The rating of tea from Wayanad was more than the rating of tea from Munnar, but less than that from Assam.

What was the second highest rating given?

- A) 7 B) C) D)

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

Question No. : 52

A tea taster was assigned to rate teas from six different locations - Munnar, Wayanad, Ooty, Darjeeling, Assam and Himachal. These teas were placed in six cups, numbered 1 to 6, not necessarily in the same order. The tea taster was asked to rate these teas on the strength of their flavour on a scale of 1 to 10. He gave a unique integer rating to each tea. Some other information is given below:

1. Cup 6 contained tea from Himachal.
2. Tea from Ooty got the highest rating, but it was not in Cup 3.
3. The rating of tea in Cup 3 was double the rating of the tea in Cup 5.
4. Only two cups got ratings in even numbers.
5. Cup 2 got the minimum rating and this rating was an even number.
6. Tea in Cup 3 got a higher rating than that in Cup 1.
7. The rating of tea from Wayanad was more than the rating of tea from Munnar, but less than that from Assam.

What was the number of the cup that contained tea from Ooty?

- A) 4 B) C) D)

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

Question No. : 53

A tea taster was assigned to rate teas from six different locations - Munnar, Wayanad, Ooty, Darjeeling, Assam and Himachal. These teas were placed in six cups, numbered 1 to 6, not necessarily in the same order. The tea taster was asked to rate these teas on the strength of their flavour on a scale of 1 to 10. He gave a unique integer rating to each tea. Some other information is given below:

1. Cup 6 contained tea from Himachal.
2. Tea from Ooty got the highest rating, but it was not in Cup 3.
3. The rating of tea in Cup 3 was double the rating of the tea in Cup 5.
4. Only two cups got ratings in even numbers.
5. Cup 2 got the minimum rating and this rating was an even number.
6. Tea in Cup 3 got a higher rating than that in Cup 1.
7. The rating of tea from Wayanad was more than the rating of tea from Munnar, but less than that from Assam.

If the tea from Munnar did not get the minimum rating, what was the rating of the tea from Wayanad?

- A) 3 B) 5 C) 1 D) 6

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

Question No. : 54

A tea taster was assigned to rate teas from six different locations - Munnar, Wayanad, Ooty, Darjeeling, Assam and Himachal. These teas were placed in six cups, numbered 1 to 6, not necessarily in the same order. The tea taster was asked to rate these teas on the strength of their flavour on a scale of 1 to 10. He gave a unique integer rating to each tea. Some other information is given below:

1. Cup 6 contained tea from Himachal.
2. Tea from Ooty got the highest rating, but it was not in Cup 3.
3. The rating of tea in Cup 3 was double the rating of the tea in Cup 5.
4. Only two cups got ratings in even numbers.
5. Cup 2 got the minimum rating and this rating was an even number.
6. Tea in Cup 3 got a higher rating than that in Cup 1.
7. The rating of tea from Wayanad was more than the rating of tea from Munnar, but less than that from Assam.

If cups containing teas from Wayanad and Ooty had consecutive numbers, which of the following statements may be true?

- A) Cup 5 contains tea from Assam B) Cup 1 contains tea from Darjeeling C) Tea from Wayanad has got a rating of 6
D) Tea from Darjeeling got the minimum rating

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

Question No. : 55

In an 8 X 8 chessboard a queen placed anywhere can attack another piece if the piece is present in the same row, or in the same column or in any diagonal position in any possible 4 directions, provided there is no other piece in between in the path from the queen to that piece.

The columns are labelled a to h (left to right) and the rows are numbered 1 to 8 (bottom to top). The position of a piece is given by the combination of column and row labels. For example, position c5 means that the piece is in cth column and 5th row.

If the queen is at c5, and the other pieces at positions c2, g1, g3, g5 and a3, how many are under attack by the queen? There are no other pieces on the board.

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

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

Question No. : 56

In an 8 X 8 chessboard a queen placed anywhere can attack another piece if the piece is present in the same row, or in the same column or in any diagonal position in any possible 4 directions, provided there is no other piece in between in the path from the queen to that piece.

The columns are labelled a to h (left to right) and the rows are numbered 1 to 8 (bottom to top). The position of a piece is given by the combination of column and row labels. For example, position c5 means that the piece is in cth column and 5th row.

If the other pieces are only at positions a1, a3, b4, d7, h7 and h8, then which of the following positions of the queen results in the maximum number of pieces being under attack?

- A) f8 B) a7 C) c1 D) d3

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

Question No. : 57

In an 8 X 8 chessboard a queen placed anywhere can attack another piece if the piece is present in the same row, or in the same column or in any diagonal position in any possible 4 directions, provided there is no other piece in between in the path from the queen to that piece.

The columns are labelled a to h (left to right) and the rows are numbered 1 to 8 (bottom to top). The position of a piece is given by the combination of column and row labels. For example, position c5 means that the piece is in cth column and 5th row.

If the other pieces are only at positions a1, a3, b4, d7, h7 and h8, then from how many positions the queen cannot attack any of the pieces?

- A) 0 B) 3 C) 4 D) 6

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

Question No. : 58

In an 8 X 8 chessboard a queen placed anywhere can attack another piece if the piece is present in the same row, or in the same column or in any diagonal position in any possible 4 directions, provided there is no other piece in between in the path from the queen to that piece.

The columns are labelled a to h (left to right) and the rows are numbered 1 to 8 (bottom to top). The position of a piece is given by the combination of column and row labels. For example, position c5 means that the piece is in cth column and 5th row.

Suppose the queen is the only piece on the board and it is at position d5. In how many positions can another piece be placed on the board such that it is safe from attack from the queen?

- A) 32 B) 35 C) 36 D) 37

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

Question No. : 59

Eight friends: Ajit, Byomkesh, Gargi, Jayanta, Kikira, Manik, Prodosh and Tapeshe are going to Delhi from Kolkata by a flight operated by Cheap Air. In the flight, sitting is arranged in 30 rows, numbered 1 to 30, each consisting of 6 seats, marked by letters A to F from left to right, respectively. Seats A to C are to the left of the aisle (the passage running from the front of the aircraft to the back), and seats D to F are to the right of the aisle. Seats A and F are by the windows and referred to as Window seats, C and D are by the aisle and are referred to as Aisle seats while B and E are referred to as Middle seats. Seats marked by consecutive letters are called consecutive seats (or seats next to each other). A seat number is a combination of the row number, followed by the letter indicating the position in the row; e.g., 1A is the left window seat in the first row, while 12E is the right middle seat in the 12th row.

Cheap Air charges Rs. 1000 extra for any seats in Rows 1, 12 and 13 as those have extra legroom. For Rows 2-10, it charges Rs. 300 extra for Window seats and Rs. 500 extra for Aisle seats. For Rows 11 and 14 to 20, it charges Rs. 200 extra for Window seats and Rs. 400 extra for Aisle seats. All other seats are available at no extra charge.

The following are known:

1. The eight friends were seated in six different rows.
2. They occupied 3 Window seats, 4 Aisle seats and 1 Middle seat.
3. Seven of them had to pay extra amounts, totaling to Rs. 4600, for their choices of seat. One of them did not pay any additional amount for his/her choice of seat.
4. Jayanta, Ajit and Byomkesh were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but all of them paid different amounts for their choices of seat. One of these amounts may be zero.
5. Gargi was sitting next to Kikira, and Manik was sitting next to Jayanta.
6. Prodosh and Tapeshe were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but they paid different amounts for their choices of seat. One of these amounts may be zero.

In which row was Manik sitting?

- A) 10 B) 11 C) 12 D) 13

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

Question No. : 60

Eight friends: Ajit, Byomkesh, Gargi, Jayanta, Kikira, Manik, Prodosh and Tapeshe are going to Delhi from Kolkata by a flight operated by Cheap Air. In the flight, sitting is arranged in 30 rows, numbered 1 to 30, each consisting of 6 seats, marked by letters A to F from left to right, respectively. Seats A to C are to the left of the aisle (the passage running from the front of the aircraft to the back), and seats D to F are to the right of the aisle. Seats A and F are by the windows and referred to as Window seats, C and D are by the aisle and are referred to as Aisle seats while B and E are referred to as Middle seats. Seats marked by consecutive letters are called consecutive seats (or seats next to each other). A seat number is a combination of the row number, followed by the letter indicating the position in the row; e.g., 1A is the left window seat in the first row, while 12E is the right middle seat in the 12th row.

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The following are known:

1. The eight friends were seated in six different rows.
2. They occupied 3 Window seats, 4 Aisle seats and 1 Middle seat.
3. Seven of them had to pay extra amounts, totaling to Rs. 4600, for their choices of seat. One of them did not pay any additional amount for his/her choice of seat.
4. Jayanta, Ajit and Byomkesh were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but all of them paid different amounts for their choices of seat. One of these amounts may be zero.
5. Gargi was sitting next to Kikira, and Manik was sitting next to Jayanta.
6. Prodosh and Tapeshe were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but they paid different amounts for their choices of seat. One of these amounts may be zero.

How much extra did Jayanta pay for his choice of seat?

- A) Rs. 300 B) Rs. 400 C) Rs. 500 D) Rs. 1000

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

Question No. : 61

Eight friends: Ajit, Byomkesh, Gargi, Jayanta, Kikira, Manik, Prodosh and Tapeshe are going to Delhi from Kolkata by a flight operated by Cheap Air. In the flight, sitting is arranged in 30 rows, numbered 1 to 30, each consisting of 6 seats, marked by letters A to F from left to right, respectively. Seats A to C are to the left of the aisle (the passage running from the front of the aircraft to the back), and seats D to F are to the right of the aisle. Seats A and F are by the windows and referred to as Window seats, C and D are by the aisle and are referred to as Aisle seats while B and E are referred to as Middle seats. Seats marked by consecutive letters are called consecutive seats (or seats next to each other). A seat number is a combination of the row number, followed by the letter indicating the position in the row; e.g., 1A is the left window seat in the first row, while 12E is the right middle seat in the 12th row.

Cheap Air charges Rs. 1000 extra for any seats in Rows 1, 12 and 13 as those have extra legroom. For Rows 2-10, it charges Rs. 300 extra for Window seats and Rs. 500 extra for Aisle seats. For Rows 11 and 14 to 20, it charges Rs. 200 extra for Window seats and Rs. 400 extra for Aisle seats. All other seats are available at no extra charge.

The following are known:

1. The eight friends were seated in six different rows.
2. They occupied 3 Window seats, 4 Aisle seats and 1 Middle seat.
3. Seven of them had to pay extra amounts, totaling to Rs. 4600, for their choices of seat. One of them did not pay any additional amount for his/her choice of seat.
4. Jayanta, Ajit and Byomkesh were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but all of them paid different amounts for their choices of seat. One of these amounts may be zero.
5. Gargi was sitting next to Kikira, and Manik was sitting next to Jayanta.
6. Prodosh and Tapeshe were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but they paid different amounts for their choices of seat. One of these amounts may be zero.

How much extra did Gargi pay for her choice of seat?

- A) 0 B) Rs. 300 C) Rs. 500 D) Rs. 1000

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

Question No. : 62

Eight friends: Ajit, Byomkesh, Gargi, Jayanta, Kikira, Manik, Prodosh and Tapesesh are going to Delhi from Kolkata by a flight operated by Cheap Air. In the flight, sitting is arranged in 30 rows, numbered 1 to 30, each consisting of 6 seats, marked by letters A to F from left to right, respectively. Seats A to C are to the left of the aisle (the passage running from the front of the aircraft to the back), and seats D to F are to the right of the aisle. Seats A and F are by the windows and referred to as Window seats, C and D are by the aisle and are referred to as Aisle seats while B and E are referred to as Middle seats. Seats marked by consecutive letters are called consecutive seats (or seats next to each other). A seat number is a combination of the row number, followed by the letter indicating the position in the row; e.g., 1A is the left window seat in the first row, while 12E is the right middle seat in the 12th row.

Cheap Air charges Rs. 1000 extra for any seats in Rows 1, 12 and 13 as those have extra legroom. For Rows 2-10, it charges Rs. 300 extra for Window seats and Rs. 500 extra for Aisle seats. For Rows 11 and 14 to 20, it charges Rs. 200 extra for Window seats and Rs. 400 extra for Aisle seats. All other seats are available at no extra charge.

The following are known:

1. The eight friends were seated in six different rows.
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4. Jayanta, Ajit and Byomkesh were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but all of them paid different amounts for their choices of seat. One of these amounts may be zero.
5. Gargi was sitting next to Kikira, and Manik was sitting next to Jayanta.
6. Prodosh and Tapesesh were sitting in seats marked by the same letter, in consecutive rows in increasing order of row numbers; but they paid different amounts for their choices of seat. One of these amounts may be zero.

Who among the following did not pay any extra amount for his/her choice of seat?

- A) Kikira B) Manik C) Gargi D) Tapesesh

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

Question No. : 63

A high security research lab requires the researchers to set a pass key sequence based on the scan of the five fingers of their left hands. When an employee first joins the lab, her fingers are scanned in an order of her choice, and then when she wants to re-enter the facility, she has to scan the five fingers in the same sequence.

The lab authorities are considering some relaxations of the scan order requirements, since it is observed that some employees often get locked-out because they forget the sequence.

The lab has decided to allow a variation in the sequence of scans of the five fingers so that at most two scans (out of five) are out of place. For example, if the original sequence is Thumb (T), index finger (I), middle finger (M), ring finger (R) and little finger (L) then TLMRI is also allowed, but TMRLI is not.

How many different sequences of scans are allowed for any given person's original scan?

- A) 11 B) C) D)

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

Question No. : 64

A high security research lab requires the researchers to set a pass key sequence based on the scan of the five fingers of their left hands. When an employee first joins the lab, her fingers are scanned in an order of her choice, and then when she wants to re-enter the facility, she has to scan the five fingers in the same sequence.

The lab authorities are considering some relaxations of the scan order requirements, since it is observed that some employees often get locked-out because they forget the sequence.

The lab has decided to allow variations of the original sequence so that input of the scanned sequence of five fingers is allowed to vary from the original sequence by one place for any of the fingers. Thus, for example, if TIMRL is the original sequence, then ITRML is also allowed, but LIMRT is not.

How many different sequences are allowed for any given person's original scan?

- A) 7 B) 5 C) 8 D) 13

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

Question No. : 65

A high security research lab requires the researchers to set a pass key sequence based on the scan of the five fingers of their left hands. When an employee first joins the lab, her fingers are scanned in an order of her choice, and then when she wants to re-enter the facility, she has to scan the five fingers in the same sequence.

The lab authorities are considering some relaxations of the scan order requirements, since it is observed that some employees often get locked-out because they forget the sequence.

The lab has now decided to require six scans in the pass key sequence, where exactly one finger is scanned twice, and the other fingers are scanned exactly once, which can be done in any order. For example, a possible sequence is TIMTRL.

Suppose the lab allows a variation of the original sequence (of six inputs) where at most two scans (out of six) are out of place, as long as the finger originally scanned twice is scanned twice and other fingers are scanned once.

How many different sequences of scans are allowed for any given person's original scan?

- A) 15 B) C) D)

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

Question No. : 66

A high security research lab requires the researchers to set a pass key sequence based on the scan of the five fingers of their left hands. When an employee first joins the lab, her fingers are scanned in an order of her choice, and then when she wants to re-enter the facility, she has to scan the five fingers in the same sequence.

The lab authorities are considering some relaxations of the scan order requirements, since it is observed that some employees often get locked-out because they forget the sequence.

The lab has now decided to require six scans in the pass key sequence, where exactly one finger is scanned twice, and the other fingers are scanned exactly once, which can be done in any order. For example, a possible sequence is TIMTRL.

Suppose the lab allows a variation of the original sequence (of six inputs) so that input in the form of scanned sequence of six fingers is allowed to vary from the original sequence by one place for any of the fingers, as long as the finger originally scanned twice is scanned twice and other fingers are scanned once.

How many different sequences of scans are allowed if the original scan sequence is LRLTIM?

- A) 8 B) 11 C) 13 D) 14

Section : Quantitative Ability

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

Question No. : 67

The numbers 1, 2,..., 9 are arranged in a 3 X 3 square grid in such a way that each number occurs once and the entries along each column, each row, and each of the two diagonals add up to the same value.

If the top left and the top right entries of the grid are 6 and 2, respectively, then the bottom middle entry is

- A) 3 B) C) D)

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

Question No. : 68

In a 10 km race, A, B, and C, each running at uniform speed, get the gold, silver, and bronze medals, respectively. If A beats B by 1 km and B beats C by 1 km, then by how many metres does A beat C?

- A) 1900 B) C) D)

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

Question No. : 69

Bottle 1 contains a mixture of milk and water in 7 : 2 ratio and Bottle 2 contains a mixture of milk and water in 9 : 4 ratio. In what ratio of volumes should the liquids in Bottle 1 and Bottle 2 be combined to obtain a mixture of milk and water in 3 : 1 ratio?

- A) 27 : 14 B) 27 : 13 C) 27 : 16 D) 27 : 18

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

Question No. : 70

Arun drove from home to his hostel at 60 miles per hour. While returning home he drove half way along the same route at a speed of 25 miles per hour and then took a bypass road which increased his driving distance by 5 miles, but allowed him to drive at 50 miles per hour along this bypass road. If his return journey took 30 minutes more than his onward journey, then the total distance traveled by him is

- A) 55 miles B) 60 miles C) 65 miles D) 70 miles

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

Question No. : 71

Out of the shirts produced in a factory, 15% are defective, while 20% of the rest are sold in the domestic market. If the remaining 8840 shirts are left for export, then the number of shirts produced in the factory is

- A) 13600 B) 13000 C) 13400 D) 14000

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

Question No. : 72

The average height of 22 toddlers increases by 2 inches when two of them leave this group. If the average height of these two toddlers is one-third the average height of the original 22, then the average height, in inches, of the remaining 20 toddlers is

- A) 30 B) 28 C) 32 D) 26

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

Question No. : 73

The manufacturer of a table sells it to a wholesale dealer at a profit of 10%. The wholesale dealer sells the table to a retailer at a profit of 30%. Finally, the retailer sells it to a customer at a profit of 50%. If the customer pays Rs 4290 for the table, then its manufacturing cost (in Rs) is

- A) 1500 B) 2000 C) 2500 D) 3000

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

Question No. : 74

A tank has an inlet pipe and an outlet pipe. If the outlet pipe is closed then the inlet pipe fills the empty tank in 8 hours. If the outlet pipe is open then the inlet pipe fills the empty tank in 10 hours. If only the outlet pipe is open then in how many hours the full tank becomes half-full?

- A) 20 B) 30 C) 40 D) 45

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

Question No. : 75

Mayank buys some candies for Rs 15 a dozen and an equal number of different candies for Rs 12 a dozen. He sells all for Rs 16.50 a dozen and makes a profit of Rs 150. How many dozens of candies did he buy altogether?

- A) 50 B) 30 C) 25 D) 45

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

Question No. : 76

In a village, the production of food grains increased by 40% and the per capita production of food grains increased by 27% during a certain period. The percentage by which the population of the village increased during the same period is nearest to

- A) 16 B) 13 C) 10 D) 7

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

Question No. : 77

If a, b, c are three positive integers such that a and b are in the ratio 3 : 4 while b and c are in the ratio 2:1, then which one of the following is a possible value of $(a + b + c)$?

- A) 201 B) 205 C) 207 D) 210

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

Question No. : 78

A motorbike leaves point A at 1 pm and moves towards point B at a uniform speed. A car leaves point B at 2 pm and moves towards point A at a uniform speed which is double that of the motorbike. They meet at 3:40 pm at a point which is 168 km away from A. What is the distance, in km, between A and B?

- A) 364 B) 378 C) 380 D) 388

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

Question No. : 79

Amal can complete a job in 10 days and Bimal can complete it in 8 days. Amal, Bimal and Kamal together complete the job in 4 days and are paid a total amount of Rs 1000 as remuneration. If this amount is shared by them in proportion to their work, then Kamal's share, in rupees, is

- A) 100 B) 200 C) 300 D) 400

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

Question No. : 80

Consider three mixtures - the first having water and liquid A in the ratio 1 : 2, the second having water and liquid B in the ratio 1 : 3, and the third having water and liquid C in the ratio 1 : 4. These three mixtures of A, B, and C, respectively, are further mixed in the proportion 4:3:2. Then the resulting mixture has

- A) The same amount of water and liquid B B) The same amount of liquids B and C C) More water than liquid B
D) More water than liquid A

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

Question No. : 81

Let ABCDEF be a regular hexagon with each side of length 1 cm. The area (in sq cm) of a square with AC as one side is

- A) $3\sqrt{2}$ B) 3 C) 4 D) $\sqrt{3}$

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

Question No. : 82

The base of a vertical pillar with uniform cross section is a trapezium whose parallel sides are of lengths 10 cm and 20 cm while the other two sides are of equal length. The perpendicular distance between the parallel sides of the trapezium is 12 cm. If the height of the pillar is 20 cm, then the total area, in sq cm, of all six surfaces of the pillar is

- A) 1300 B) 1340 C) 1480 D) 1520

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

Question No. : 83

The points (2, 5) and (6, 3) are two end points of a diagonal of a rectangle. If the other diagonal has the equation $y = 3x + c$, then c is

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

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

Question No. : 84

ABCD is a quadrilateral inscribed in a circle with centre O. If $\angle COD = 120$ degrees and $\angle BAC = 30$ degrees, then the value of $\angle BCD$ (in degrees) is

- A) 90 B) C) D)

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

Question No. : 85

If three sides of a rectangular park have a total length 400 ft, then the area of the park is maximum when the length (in ft) of its longer side is

- A) 200 B) C) D)

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

Question No. : 86

Let P be an interior point of a right-angled isosceles triangle ABC with hypotenuse AB. If the perpendicular distance of P from each of AB, BC, and CA is $4(\sqrt{2} - 1)$ cm, then the area, in sq cm, of the triangle ABC is

- A) 16 B) C) D)

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

Question No. : 87

If the product of three consecutive positive integers is 15600 then the sum of the squares of these integers is

- A) 1777 B) 1785 C) 1875 D) 1877

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

Question No. : 88

If x is a real number such that $\log_3 5 = \log_5 (2 + x)$, then which of the following is true?

- A) $0 < x < 3$ B) $23 < x < 30$ C) $x > 30$ D) $3 < x < 23$

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

Question No. : 89

Let $f(x) = x^2$ and $g(x) = 2^x$, for all real x . Then the value of $f(f(g(x)) + g(f(x)))$ at $x = 1$ is

- A) 16 B) 18 C) 36 D) 40

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

Question No. : 90

The minimum possible value of the sum of the squares of the roots of the equation $x^2 + (a + 3)x - (a + 5) = 0$ 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. : 91

If $9^{x-\frac{1}{2}} - 2^{2x-2} = 4^x - 3^{2x-3}$, then x is

- A) $3/2$ B) $2/5$ C) $3/4$ D) $4/9$

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

Question No. : 92

If $\log(2^a \times 3^b \times 5^c)$ is the arithmetic mean of $\log(2^2 \times 3^3 \times 5)$, $\log(2^6 \times 3 \times 5^7)$, and $\log(2 \times 3^2 \times 5^4)$, then a equals

- A) 3 B) C) D)

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

Question No. : 93

Let a_1, a_2, a_3, a_4, a_5 be a sequence of five consecutive odd numbers. Consider a new sequence of five consecutive even numbers ending with $2a_3$.

If the sum of the numbers in the new sequence is 450, then a_5 is

- A) 51 B) C) D)

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

Question No. : 94

How many different pairs (a, b) of positive integers are there such that $a \leq b$ and

$$\frac{1}{a} + \frac{1}{b} = \frac{1}{9} ?$$

- A) 3 B) C) D)

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

Question No. : 95

In how many ways can 8 identical pens be distributed among Amal, Bimal, and Kamal so that Amal gets at least 1 pen, Bimal gets at least 2 pens, and Kamal gets at least 3 pens?

- A) 6 B) C) D)

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

Question No. : 96

How many four digit numbers, which are divisible by 6, can be formed using the digits 0, 2, 3, 4, 6, such that no digit is used more than once and 0 does not occur in the left-most position?

- A) 50 B) C) D)

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

Question No. : 97

If $f(ab) = f(a)f(b)$ for all positive integers a and b , then the largest possible value of $f(l)$ is

- A) 1 B) C) D)

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

Question No. : 98

Let $f(x) = 2x - 5$ and $g(x) = 7 - 2x$. Then $|f(x) + g(x)| = |f(x)| + |g(x)|$ if and only if

- A) $\frac{5}{2} < x < \frac{7}{2}$ B) $x \leq \frac{5}{2}$ or $x \geq \frac{7}{2}$ C) $x < \frac{5}{2}$ or $x \geq \frac{7}{2}$ D) $\frac{5}{2} \leq x \leq \frac{7}{2}$

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

Question No. : 99

An infinite geometric progression $a_1, a_2, a_3, \dots$ has the property that $a_n = 3(a_{n+1} + a_{n+2} + \dots)$ for every $n \geq 1$. If the sum $a_1 + a_2 + a_3 + \dots = 32$, then a_5 is

- A) $1/32$ B) $2/32$ C) $3/32$ D) $4/32$

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

Question No. : 100

If $a_1 = \frac{1}{2 \times 5}$, $a_2 = \frac{1}{5 \times 8}$, $a_3 = \frac{1}{8 \times 11}$, ..., then $a_1 + a_2 + a_3 + \dots + a_{100}$ is

- A) $\frac{25}{151}$ B) $\frac{1}{2}$ C) $\frac{1}{4}$ D) $\frac{111}{55}$

QNo:- 1 ,Correct Answer:- D

Explanation:- (1), (2) and (3) are mentioned in the second paragraph, refer to "diverse populations" - (2), "new ideas" - (1) and "infrastructure for finance, organization" - (3).

QNo:- 2 ,Correct Answer:- B

Explanation:- While (4) is beside the point, (1) does not address the question at hand. (3) goes contrary to received wisdom in the passage. (2) is explicitly mentioned in the third paragraph, refer to "what staunches creativity It's the very institutions".

QNo:- 3 ,Correct Answer:- A

Explanation:- Neither (2) nor (3) are mentioned as such in the passage. (4) is a recommendation, not the central idea of the passage. The passage is on creativity, and the central idea can be found in the first paragraph itself - "What fosters creativity? ... the presence of other creative people", a theme that resonates throughout the passage.

QNo:- 4 ,Correct Answer:- C

Explanation:- The alarming view in (2) is not echoed in the passage. (4) also runs contrary to the passage, Jane Jacobs argues in the fifth paragraph that all cities are filled with creative people. (1) is a lay opinion. Jane Jacobs argues that "some cities had more than their shares of leaders, people and institutions that blocked out that creativity", hence we can safely infer that the more creative cities have leaders and institutions that do not block creativity.

QNo:- 5 ,Correct Answer:- B

Explanation:- (1) again runs contrary to the passage, which places creativity as inversely proportional to age. (4) is not mentioned in the passage. (3) paints with too broad a brush. (2) is resonated in the third paragraph, "staunches creativity ... many of our schools".

QNo:- 6 ,Correct Answer:- A

Explanation:- (2) is not supported by the passage, refer to "the other 66 percent who toil" in the sixth paragraph. The recommendation in (3) is not the author's. (4) assumes that low-wage workers are creative, which is suspect. The author mentions "work which engages our creative faculties ... those of us who work with our minds", the assumption then being that those who work with their hands are not creative.

QNo:- 7 ,Correct Answer:- C

Explanation:- (4) refers to an analogy, which by itself cannot be the purpose of the passage. (2) does not mention how the subnivium is compromised by climate change. (1) also occupies a safe orbit. Paragraph 5 comes to the point - refer to "Scientists are now beginning to explore how climate change will affect the subnivium". Hence, (3) is the answer.

QNo:- 8 ,Correct Answer:- B

Explanation:- (1) finds mention in paragraph 5 - "Both depth and density of snow are sensitive to temperature". (3) is mentioned in paragraph 2 - "a constant temperature of 32 degrees Fahrenheit can often be 30 to 40 degrees warmer than the air temperature". (4) finds mention in the last paragraph - "In field experiments, researchers removed a portion of the snow cover to investigate the importance of the subnivium's insulation. They found that soil frost in the snow-free area resulted in damage to plant roots". But positive effects of climate change, if any, cannot be discerned in the passage.

QNo:- 9 ,Correct Answer:- B

Explanation:- If climate change is the critical factor, then regulations have to curb global warming. (1), (3) and (4) are stop-gap measures at best, and completely uncertain at worst. Hence, (2) is the apt answer.

QNo:- 10 ,Correct Answer:- D

Explanation:- Examples of crowberry and alpine azalea demonstrate that shrubs help maintain higher depths of snow, which in turn keeps soils insulated and increases plant decomposition and nutrient release. Conversely, lower depths of snow results in soil frost which damages plants. (1) does not address this aspect at all. (2) also misses the point. Nor does (3) address the impact shrubs have on the subnivium. (4) mentions how shrubs can protect the subnivium, among other factors.

QNo:- 11 ,Correct Answer:- A

Explanation:- Since equatorial and arid regions are not discussed in the passage, no conclusions as in (2) can be drawn. Likewise, we have no information to conclude whether the loss of the subnivium would affect only temperate and Arctic regions, so (4) is suspect. Which kind of blanket will provide maximum protection from the cold would trivialize the passage, hence (3) is ruled out. (1), however, can be inferred from the third paragraph of the passage. Refer to "disruptions to the subnivium brought about by climate change will affect everything from population dynamics to nutrient cycling through the ecosystem".

QNo:- 12 ,Correct Answer:- C

Explanation:- The example of blankets is used to demonstrate the benefits of greater depths of low-density snow to insulate the ground. Hence, (1), (2) and (4) which explain the mechanics of winter bedtime are rejected. The answer is thus (3).

QNo:- 13 ,Correct Answer:- C

Explanation:- The sentence " Ms Musk is selling a dream that the world wants to believe in" in the second paragraph gives a peep into the author's scepticism. The second sentence of the third paragraph talks about "unattainable self-fulfilment". The subsequent sentences talk about how the potential car- buyer is never told of the traffic jams which will rob him of independence. Thus, the myth of independence of the private car is perpetuated.

QNo:- 14 ,Correct Answer:- D

Explanation:- The 4th paragraph mentions clearly that in place of today's oil despots, there will be new undeserving despots – those who control these rare material for batteries - who will become fantastically rich. This makes 1 true; thus 1 is ruled out. "...once more breathable .." in the same paragraph makes 2 true ; thus 2 is ruled out. "Traffic jams will be abolished only when. . . ." in the last paragraph makes 3 true ; thus 3 is ruled out.

QNo:- 15 ,Correct Answer:- D

Explanation:- "The sleek and swift autonomy and power" at the beginning of the 4th paragraph makes 4 the right choice. The other points : " more cost-effective than fossil fuel-driven cars", "tax subsidy for Tesla" or " the company upscaling charging stations ..." are not explicitly mentioned in the passage .

QNo:- 16 ,Correct Answer:- C

Explanation:-

At the beginning of the last paragraph, the author says "the fantasy of autonomy comes full circle". What the author suggests by the use of the term "comes full circle," is that it completes a cycle and returns to its beginnings. That is, there will be no autonomy. He goes on to say, through the balance part of the paragraph, that public transport will be reinvented. Thus, the future may well be public transport.

QNo:- 17 ,Correct Answer:- C

Explanation:- In the last paragraph, the author says through the sentence "The logical outcome of cars which need no driver is that they will need no owner either". This means that they will become public transport. The author clinches his point through phrases like "summoned at will".

QNo:- 18 ,Correct Answer:- B

Explanation:- Note the sentences in the last paragraph, "Traffic jams will be abolished only when the car becomes a public utility. What will happen to our fantasies of independence? We will all have to take to electrically powered bicycles". Since independence and autonomy are synonymous, the author suggests that we will need to consider bicycles if we want autonomy.

QNo:- 19 ,Correct Answer:- A

Explanation:- Throughout the passage, the author is explaining why the typewriter continues to be used even in today's digital age. Some of the reasons he has given are that they are personal and private. The information typed on a typewriter cannot be leaked out. He also talks about its nostalgic value. It does not need electricity and can, therefore, be used even in remote locations.

QNo:- 20 ,Correct Answer:- D

Explanation:- The fourth sentence of the passage "Type a document and lock it away and more or less the only way anyone else can get it is if you give it to them" clearly shows that it is possible to control who reads the document.

QNo:- 21 ,Correct Answer:- D

Explanation:- Options 1, 2 and 3 are positive in connotation. Even "noisier than computers" seems to be a welcome thing; look at "encouraging clack" of keys. Clearly, the only thing that is not welcome about the typewriter is that it is messier than that the computer.

QNo:- 22 ,Correct Answer:- C

Explanation:- The passage begins with "Despite their fierce reputation...". It goes on to suggest that the Vikings were traders too. The second paragraph begins with "Since the artifacts were found in marketplaces...". Thus, they had trade relations with Europe.

QNo:- 23 ,Correct Answer:- D

Explanation:- The second paragraph clearly says that the raids began in 793 while some of the artifacts are as old as 725. Clearly, the trade relations of the Vikings with Europe predated the raids.

QNo:- 24 ,Correct Answer:- A

Explanation:- Options 2, 3 and 4 are explicitly mentioned in the passage. The purpose for which the reindeer were brought to Denmark is not explicitly mentioned in the passage.

QNo:- 25 ,Correct Answer:- C

Explanation:- Option 1 cannot be the appropriate summary because it fails to mention that the walnut sphinx moth caterpillars make use of acoustic deception to ward off predators. Further, it is not stated in the paragraph that they have specialized vocal chords. Even option 2 fails to capture the essence of the paragraph as it does not mention the point – the acoustic deception used by the caterpillars to mimic bird alarm calls. Between options 3 and 4, the former is appropriate as option 4 talks about deception and not "acoustic deception" which is employed by the birds. Further, it is not mentioned in the paragraph that the caterpillars use "camouflage" to trick the predators. Hence option 3 captures the essence of the paragraph.

QNo:- 26 ,Correct Answer:- D

Explanation:- It can be understood from the paragraph that both Socrates and Bacon believed that arguments and theories can be validated only by examining them from both sides. This point is stated only in option 4. Option 1, which states that Socrates and Bacon advocated clever questioning in order to disprove the arguments and theories put forth by opponents, is not the appropriate summary of the paragraph. Option 2 captures only a part of the argument. Option 3 is a distortion of the paragraph.

QNo:- 27 ,Correct Answer:- C

Explanation:- The main point of the paragraph is that language is fluid and its meaning is derived from usage and exchange. Lexicographers abstract the meaning from that exchange and this meaning is then set within the meaning of the dictionary definition. This point is covered only in option 3. Options 2 and 4, which suggest the converse of what is stated in the paragraph, are easy eliminations. Option 1 captures only a part of the paragraph as it does not mention that the definitions of words are extracted from their meaning in exchange.

QNo:- 28 ,Correct Answer:- 25341

Explanation:- Statement 2, which is general statement, begins the paragraph declaring that the stories that we tell reflect the world around us. 5 complements 2 stating that as soon as we capture a story, the world we were trying to capture has changed. 3 carries the discussion forward by emphasizing that we cannot but retell the stories that we value. 4 is linked to 3 - "never quite right" (statement 3) and "even if we manage to get them quite right" (statement 4). 1 concludes the para stating that the implications of retelling stories takes on a new meaning in a modern India. Therefore, 25341 is the appropriate sequence.

QNo:- 29 ,Correct Answer:- 53421

Explanation:- 5 begins the paragraph by talking about the importance of lightning. 3, which states that lightning starts the series of chemical reactions that need to happen to nitrogen, and ultimately helps it to nourish the earth, is a continuation of 5. 4 follows 3 by explaining how nitrogen nourishes the earth with its ubiquitous presence over each square mile on earth. 2 follows by describing that nitrogen, in its aerial form is insoluble and that it is in need of transformation. 1 complements 2 explaining how nitrogen must undergo transformation similar to the way that food undergoes transformation in our digestive machinery. The logical sequence is 53421.

QNo:- 30 ,Correct Answer:- 25431

Explanation:- 2 begins the paragraph describing placebo effect and goes on to state that placebo effect used to be dismissed by researchers as a psychological effect. 5 follows 2 stating that placebo effects are now being studied as a potential portal into the self-healing powers of the body. 4 follows 5 elaborating on the effectiveness of placebo effect in empowering chronic patients to believe in the notion of our bodies' capacity for self-healing. 3 carries forward the discussion stating that the placebo effect is not based only on believing in treatment and that the clinical setting in which treatments are administered is also important. 1 concludes the paragraph reiterating the importance of placebo effect in providing effective treatment. The appropriate sequence is 25431.

QNo:- 31 ,Correct Answer:- 43512

Explanation:- 4 begins the paragraph describing how the dictionary was a necessity for the 18th century reader and this cause was championed by a vigorous and practical champion. 3 follows 4 describing this champion – Samuel Johnson and goes on to describe Johnson's qualities. 5 follows 3 by elaborating on Johnson's watchwords, stating that Johnson believed that language must have a daily practical use. 1 complements 5 elaborating on how Johnson treated English very practically. 2 concludes the paragraph with the statement that Johnson masked a profound inner torment and found solace in compiling words.

QNo:- 32 ,Correct Answer:- 2

Explanation:- Statement 1, which states that although we are born with the gift of language, we are not skilled when it comes to communicating with others. 5 follows 1 explaining how we end up being unskilled in communicating with others. 3 and 4 further elaborate on how we are unskilled while communicating others. Therefore, 1,5,3 and 4 form a sequence and 2, which has an advisory tone and mentions how we must orchestrate our speech if we want to achieve our goals, conveys a different idea and is, therefore, the odd man out.

QNo:- 33 ,Correct Answer:- 4

Explanation:- It's elementary to pair (2) and (1) as "similar impression" in (1) refers to "the sense of timelessness" in (2). (3) comes to the point and identifies the "one ...finest champions" as Roger Federer. (5) follows by giving reasonable reasons for his longevity. However, (4) refers to match specifics, which is out of the broad scope of this particular paragraph.

QNo:- 34 ,Correct Answer:- 1

Explanation:- (2) introduces the Commonwealth Bank logo and (5) ups the ante for the bank logo. (4) explains what designers do thus to enhance a brand value and (3) takes the paragraph into a "deeper" context. Again, (1) makes reference to symbols, whereas only a 'logo' is specified in the passage, hence the answer is (1).

QNo:- 35 ,Correct Answer:- B

Explanation:-

	Thin Crust		Deep Dish		
	Normal Cheese	Extra Cheese	Normal Cheese	Extra Cheese	
Party 1	x	72 - x	w	48 - w	120
Party 2	y	66 - y	36 - y	18 + y	120
Party 3	z	162 - z	364 - z	34 + z	560
Total					800
	300		500		

Thin Crust pizzas delivered to party 3 = $z + 162 - z = 162$.

QNo:- 36 ,Correct Answer:- C

Explanation:-

	Thin Crust		Deep Dish		
	Normal Cheese	Extra Cheese	Normal Cheese	Extra Cheese	
Party 1	x	72 - x	w	48 - w	120
Party 2	y	66 - y	36 - y	18 + y	120
Party 3	z	162 - z	364 - z	34 + z	560
Total					800
	300		500		

Total Normal Cheese pizzas delivered to the three parties = $0.52 (800) = 416$

From the table,

$$416 = (x + y + z) + (w + 36 - y + 364 - z)$$

$$416 = 400 + w + x$$

$$\Rightarrow w + x = 16$$

So, party 1 ordered 16 Normal Cheese pizzas

QNo:- 37 ,Correct Answer:- B

Explanation:-

	Thin Crust		Deep Dish		
	Normal Cheese	Extra Cheese	Normal Cheese	Extra Cheese	
Party 1	x	72 - x	w	48 - w	120
Party 2	y	66 - y	36 - y	18 + y	120
Party 3	z	162 - z	364 - z	34 + z	560
Total					800
	300		500		

Given, of the 36 Normal Cheese pizzas delivered to party 2, 50% or 18 were of Thin Crust variety

$$\therefore y = 18.$$

Difference between $66 - y$ and $18 + y$

$$= 48 - 2y = 48 - 36$$

$$= 12$$

QNo:- 38 ,Correct Answer:- A

Explanation:-

	Thin Crust		Deep Dish		
	Normal Cheese	Extra Cheese	Normal Cheese	Extra Cheese	
Party 1	x	72 - x	w	48 - w	120
Party 2	y	66 - y	36 - y	18 + y	120
Party 3	z	162 - z	364 - z	34 + z	560
Total					800
	300		500		

We already know, $w + x = 16$

Further, we're told that of the $x + w$ Normal Cheese pizzas delivered to party 1, 25% are of Deep Dish variety.

$$\therefore \frac{w}{x+w} = \frac{1}{4} \Rightarrow x = 3w$$

So, $x = 12$ and $w = 4$

Cost of a T-EC pizza = Rs. 500

Cost of a D-EC pizza = Rs. 550

Cost of a T-NC pizza = Rs. 330

Cost of a D-NC pizza = Rs. 330

Total pizza bill for part 1 = $12(330) + 60(500) + 4(330) + 44(550)$
= Rs. 59,480

QNo:- 39 ,Correct Answer:- C

Explanation:- STEP I:

Given that after change, E2 is 30 more than before. E2 before was at least 46. E2 (after) was 76. So, E2 before must have been $76 - 30 = 46$. That indicates that the two empty cells can be filled as 0 each across the row E2. Hence, the table will be as follows (after this condition).

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25			2	
E4		3	2	14		4	
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		76					300

STEP II:

Given that before change $E1 = E4 + 6$. Now, $E1$ (before) = 31. Further, $E4$ (before) must be more than 23 ($3 + 2 + 14 + 4 +$ data in two empty cells). That indicates, the two empty cells across $E4$ must be 1 and 1. So, after this step, the cells can be filled up as follows.

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25			2	
E4	1	3	2	14	1	4	25
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		76					300

STEP III:

Given that after change, $E1 = E4 - 3$. It is to be noted that $E1$ (afterwards) can be at least 16 and at most 18. $E4$ (column) cannot be 20, as in that case, the total number of zeroes will cross 4. $E4$ must be 21. So, that $E1$ (afterwards) will be 18. This indicates, there must be 3 zeroes in $E4$ and one entry as "1" in the column $E4$. All other entries will be "1".

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25	0	1	2	36
E4	1	3	2	14	1	4	25
E5	1	5	1	0	30	1	38
E6	1	7	3	1	2	9	23
E7	4	16	30	5	5	41	101
Total	18	76	79	21	45	61	300

The electives which had a decrease in the enrollments after the change process are E1, E4. So, a total of 2 electives.

QNo:- 40 ,Correct Answer:- D

Explanation:- STEP I:

Given that after change, E2 is 30 more than before. E2 before was at least 46. E2 (after) was 76. So, E2 before must have been $76 - 30 = 46$. That indicates that the two empty cells can be filled as 0 each across the row E2. Hence, the table will be as follows (after this condition).

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25			2	
E4		3	2	14		4	
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		76					300

STEP II:

Given that before change $E1 = E4 + 6$. Now, $E1$ (before) = 31. Further, $E4$ (before) must be more than 23 ($3 + 2 + 14 + 4 +$ data in two empty cells). That indicates, the two empty cells across $E4$ must be 1 and 1. So, after this step, the cells can be filled up as follows.

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25			2	
E4	1	3	2	14	1	4	25
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		76					300

STEP III:

Given that after change, $E1 = E4 - 3$. It is to be noted that $E1$ (afterwards) can be at least 16 and at most 18. $E4$ (column) cannot be 20, as in that case, the total number of zeroes will cross 4. $E4$ must be 21. So, that $E1$ (afterwards) will be 18. This indicates, there must be 3 zeroes in $E4$ and one entry as "1" in the column $E4$. All other entries will be "1".

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25	0	1	2	36
E4	1	3	2	14	1	4	25
E5	1	5	1	0	30	1	38
E6	1	7	3	1	2	9	23
E7	4	16	30	5	5	41	101
Total	18	76	79	21	45	61	300

After the change process, correct sequence of number of persons in electives E1 to E6 is as shown below:

$\Rightarrow 18, 76, 79, 21, 45$ and 61 .

QNo:- 41 ,Correct Answer:- D

Explanation:- STEP I:

Given that after change, E2 is 30 more than before. E2 before was at least 46. E2 (after) was 76. So, E2 before must have been $76 - 30 = 46$. That indicates that the two empty cells can be filled as 0 each across the row E2. Hence, the table will be as follows (after this condition).

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25			2	
E4		3	2	14		4	
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		76					300

STEP II:

Given that before change $E1 = E4 + 6$. Now, $E1$ (before) = 31. Further, $E4$ (before) must be more than 23 ($3 + 2 + 14 + 4$ + data in two empty cells). That indicates, the two empty cells across $E4$ must be 1 and 1. So, after this step, the cells can be filled up as follows.

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25			2	
E4	1	3	2	14	1	4	25
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		76					300

STEP III:

Given that after change, $E1 = E4 - 3$. It is to be noted that $E1$ (afterwards) can be at least 16 and at most 18. $E4$ (column) cannot be 20, as in that case, the total number of zeroes will cross 4. $E4$ must be 21. So, that $E1$ (afterwards) will be 18. This indicates, there must be 3 zeroes in $E4$ and one entry as "1" in the column $E4$. All other entries will be "1".

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25	0	1	2	36
E4	1	3	2	14	1	4	25
E5	1	5	1	0	30	1	38
E6	1	7	3	1	2	9	23
E7	4	16	30	5	5	41	101
Total	18	76	79	21	45	61	300

The maximum change occurs in E6. From 23 to 61. A change of 38 and a % change of approx 165%

QNo:- 42 ,Correct Answer:- A

Explanation:- STEP I:

Given that after change, E2 is 30 more than before. E2 before was at least 46. E2 (after) was 76. So, E2 before must have been $76 - 30 = 46$. That indicates that the two empty cells can be filled as 0 each across the row E2. Hence, the table will be as follows (after this condition).

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25			2	
E4		3	2	14		4	
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		76					300

STEP II:

Given that before change $E1 = E4 + 6$. Now, $E1$ (before) = 31. Further, $E4$ (before) must be more than 23 ($3 + 2 + 14 + 4$ + data in two empty cells). That indicates, the two empty cells across $E4$ must be 1 and 1. So, after this step, the cells can be filled up as follows.

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25			2	
E4	1	3	2	14	1	4	25
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		76					300

STEP III:

Given that after change, $E1 = E4 - 3$. It is to be noted that $E1$ (afterwards) can be at least 16 and at most 18. $E4$ (column) cannot be 20, as in that case, the total number of zeroes will cross 4. $E4$ must be 21. So, that $E1$ (afterwards) will be 18. This indicates, there must be 3 zeroes in $E4$ and one entry as "1" in the column $E4$. All other entries will be "1".

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	31
E2	0	34	8	0	2	2	46
E3	2	6	25	0	1	2	36
E4	1	3	2	14	1	4	25
E5	1	5	1	0	30	1	38
E6	1	7	3	1	2	9	23
E7	4	16	30	5	5	41	101
Total	18	76	79	21	45	61	300

Total number of persons in $E1$ (after the shift) is less than 20. All the 31 persons (earlier in $E1$) stayed back in $E1$. This implies no one shifted to $E2$, $E3$, $E4$, $E5$ and $E6$. In this scenario, total number of persons is as shown below.

	E1	E2	E3	E4	E5	E6	Total
E1	31	0	0	0	0	0	31
E2	0	34	8	0	2	2	46
E3	2	6	25	0	1	2	36
E4	1	3	2	14	1	4	25
E5	1	5	1	0	30	1	38
E6	1	7	3	1	2	9	23
E7	4	16	30	5	5	41	101
Total	40	71	99	20	41	59	300

The number of persons in decreasing order: E2, E3, E6, E5, E1, E4.

QNo:- 43 ,Correct Answer:- C

Explanation:- Total amount distributed by the old woman = Rs.70 lakh (bank deposits) + Rs.50 lakh (House) + Rs.90 lakhs (3 flats) i.e Rs.210 lakhs + Gold coins worth Rs.1 lakh each

Given that Neeta received the least amount and Geeta received the highest amount in bank deposits. Given, all assets are equally distributed. Hence each one should get Rs.70 lakh. Neeta should get 2 flats (Rs.60 lakh), Seetha should get the house and Geeta should get 1 flat (Rs.30 lakh). Hence the bank deposits received by the three are Rs.10 lakh, Rs.20 lakh and Rs.40 lakh respectively. Choice (3)

QNo:- 44 ,Correct Answer:- 2

Explanation:- Total amount distributed by the old woman = Rs.70 lakh (bank deposits) + Rs.50 lakh (House) + Rs.90 lakhs (3 flats) i.e Rs.210 lakhs + Gold coins worth Rs.1 lakh each

Given that Neeta received the least amount and Geeta received the highest amount in bank deposits. Given, all assets are equally distributed. Hence each one should get Rs.70 lakh. Neeta should get 2 flats (Rs.60 lakh), Seetha should get the house and Geeta should get 1 flat (Rs.30 lakh).

So Neeta should get 2 flats.

QNo:- 45 ,Correct Answer:- B

Explanation:- Total amount distributed by the old woman = Rs.70 lakh (bank deposits) + Rs.50 lakh (House) + Rs.90 lakhs (3 flats) i.e Rs.210 lakhs + Gold coins worth Rs.1 lakh each.

From the given data, the gold coins were distributed in the ratio 2 : 3 : 4, and the total assets were distributed in the ratio 1 : 2 : 3. From both the ratios, we can see that Seeta received $\frac{1}{3}$ of the total property and $\frac{1}{3}$ of the gold coins. This means her share is $\frac{1}{3}$ (Bank deposits + house + flats) = Rs.70 lakhs.

Also, one child got all the three flats but not the house. One child other than Geeta got Rs.30 lakhs in bank deposits.

From this we can conclude that Seeta cannot get all the three flats. As her share is Rs.70 lakhs + $\frac{1}{3}$ (gold coins).

$\therefore$ Seeta should receive one house and bank deposits of Rs.20 lakhs. This implies Neeta should get Rs.30 lakhs in bank deposits.

Hence Geeta should get Rs.20 lakhs in bank deposits. From this all the three flats should be received by Geeta.

Let the number of gold coins received by Neeta, Seeta and Geeta be $2x$, $3x$ and $4x$ respectively.

From these we've, $\frac{30+2x}{70+3x} = \frac{1}{2} \Rightarrow x=10$

$\therefore$ Number of gold coins must be 90. Choice (2)

QNo:- 46 ,Correct Answer:- 20

Explanation:- Total amount distributed by the old woman = Rs.70 lakh (bank deposits) + Rs.50 lakh (House) + Rs.90 lakhs (3 flats) i.e Rs.210 lakhs + Gold coins worth Rs.1 lakh each

From the given data, the gold coins were distributed in the ratio 2 : 3 : 4, and the total assets were distributed in the ratio 1 : 2 : 3. From both the ratios, we can see that Seeta received $\frac{1}{3}$ of the total property and $\frac{1}{3}$ of the gold coins. This means her share is $\frac{1}{3}$ (Bank deposits + house + flats) = Rs.70 lakhs.

Also, one child got all the three flats but not the house. One child other than Geeta got Rs.30 lakhs in bank deposits.

From this we can conclude that Seeta cannot get all the three flats. As her share is Rs.70 lakhs + $\frac{1}{3}$ (gold coins).

$\therefore$ Seeta should receive one house and bank deposits of Rs.20 lakhs. This implies Neeta should get Rs.30 lakhs in bank deposits.

Hence Geeta should get Rs.20 lakhs in bank deposits.

QNo:- 47 ,Correct Answer:- D

Explanation:- From the data, there are 2 dorms which require Rs.1 crore, 1 dorm which requires Rs.2 crore, 3 dorms which require Rs.3 crore, 1 dorm which requires Rs.4 crore, 1 dorm which requires Rs.5 crore and two dorms which require Rs.6 crore. Hence the total amount needed is Rs.34 crore.

Dorms 4 to 9 have different repair costs. Dorm 7 needs the maximum and Dorm 8 needs the minimum. From the other conditions given, we have the following table with partial data.

Dorm Number	1	2	3	4	5	6	7	8	9	10
Repair Type	H/M	L /H	M	L/H	M/H	L	M/H	L/H	M	L /H
Conclusion (Rs. in Cr)	3	1/6	3	5	3/4	2	6	1	4/3	6/1

L = Light

M = Moderate

H = Extensive

Going by the options, Dorm 1 needs a moderate repair is possibly true. Dorm 5 not needing more than Rs.4 crore is true. Hence Dorm 10's repair not costing more than Rs.4 crore is not necessarily true as it may require Rs.6 crore or Rs.1 crore.

Choice (4)

QNo:- 48 ,Correct Answer:- 19

Explanation:- From the data, there are 2 dorms which require Rs.1 crore, 1 dorm which requires Rs.2 crore, 3 dorms which require Rs.3 crore, 1 dorm which requires Rs.4 crore, 1 dorm which requires Rs.5 crore and two dorms which require Rs.6 crore. Hence the total amount needed is Rs.34 crore.

Dorms 4 to 9 have different repair costs. Dorm 7 needs the maximum and Dorm 8 needs the minimum. From the other conditions given, we have the following table with partial data.

Dorm Number	1	2	3	4	5	6	7	8	9	10
Repair Type	H/M	L /H	M	L/H	M/H	L	M/H	L/H	M	L /H
Conclusion (Rs. in Cr)	3	1/6	3	5	3/4	2	6	1	4/3	6/1

L= Light

M= Moderate

H = Extensive

The total cost for the odd numbered dorms are $3 + 3 + 3$ (or) $4 + 6 + 4$ (or) 3 i.e. Rs.19 crore

Ans : 19

QNo:- 49 ,Correct Answer:- 3

Explanation:- From the data, there are 2 dorms which require Rs.1 crore, 1 dorm which requires Rs.2 crore, 3 dorms which require Rs.3 crore, 1 dorm which requires Rs.4 crore, 1 dorm which requires Rs.5 crore and two dorms which require Rs.6 crore. Hence the total amount needed is Rs.34 crore.

Dorms 4 to 9 have different repair costs. Dorm 7 needs the maximum and Dorm 8 needs the minimum. From the other conditions given, we have the following table with partial data.

Dorm Number	1	2	3	4	5	6	7	8	9	10
Repair Type	H/M	L /H	M	L/H	M/H	L	M/H	L/H	M	L /H
Conclusion (Rs. in Cr)	3	1/6	3	5	3/4	2	6	1	4/3	6/1

L= Light

M= Moderate

H = Extensive

Additional data for Solutions

4 of the 10 dorms are women's dorms which need Rs.20 crore for repairs. Also from 1 to 5 there is only one women's dorm. This is possible with repairing costs Rs.6, Rs.6, Rs.5 and Rs.3 crore. Among the first 5, dorm 4 should be women's dorm. Rs.6 cr dorms can only be dorm 7 and dorm 10. Rs.3 crore can be from dorm 1, 3, 5 or 9. But 1, 3 or 5 are not women's dorm. So it has to be dorm 9.

From the above, the repair cost for dorm 9 is Rs.3 crore Ans : 3

QNo:- 50 ,Correct Answer:- D

Explanation:- From the data, there are 2 dorms which require Rs.1 crore, 1 dorm which requires Rs.2 crore, 3 dorms which require Rs.3 crore, 1 dorm which requires Rs.4 crore, 1 dorm which requires Rs.5 crore and two dorms which require Rs.6 crore. Hence the total amount needed is Rs.34 crore.

Dorms 4 to 9 have different repair costs. Dorm 7 needs the maximum and Dorm 8 needs the minimum. From the other conditions given, we have the following table with partial data.

Dorm Number	1	2	3	4	5	6	7	8	9	10
Repair Type	H/M	L /H	M	L/H	M/H	L	M/H	L/H	M	L /H
Conclusion (Rs. in Cr)	3	1/6	3	5	3/4	2	6	1	4/3	6/1

L= Light

M= Moderate

H = Extensive

Additional data for Solutions

4 of the 10 dorms are women's dorms which need Rs.20 crore for repairs. Also from 1 to 5 there is only one women's dorm. This is possible with repairing costs Rs.6, Rs.6, Rs.5 and Rs.3 crore. Among the first 5, dorm 4 should be women's dorm. Rs.6 cr dorms can only be dorm 7 and dorm 10. Rs.3 crore can be from dorm 1, 3, 5 or 9. But 1, 3 or 5 are not women's dorm. So it has to be dorm 9.

From the above, dorm 10 should be women's dorm. Choice (4)

QNo:- 51 ,Correct Answer:- 7

Explanation:- Let the ratings be such that the tea with the highest rating is ranked 1 and the tea with the lowest rating is ranked 6. From (2) and (5), we get the following:

Ranking	Place	Cup No	Rating
1	Ooty		
2			
3			
4			
5			
6		Cup 2	

From (4), only two cups have been given even numbered ratings and one of them is given to the tea in Cup 2 (from (5))

From (3), it can be inferred that the rating of the tea in Cup 3, is an even number.

Hence, the rating of the tea in Cup 5 is an odd number.

Besides, the tea in Cup 3 has a higher rating than those in Cup 5, Cup 2 and Cup 1 (from (6))

Therefore, the ranking of Cup 3 is either 2 or 3. It cannot be 1 since the tea from Ooty is not in Cup 6.

From (5), the rating of the tea in Cup 2 can either be 2 or 4. Any other even number below 10 cannot be assigned to it since there are five other cups in which the tea has been rated from 1 to 10 and all the ratings are distinct numbers.

If the rating of the tea in Cup 2 is 4, the minimum possible rating for the tea in Cup 5 will be 5 and from that, the rating of the tea in Cup 3 will be 10. But 10 is the highest rating and it is not given to the tea in Cup 3 (from (2)).

Therefore, the tea in Cup 2 has a rating of 2.

The only rating that can be given to the tea in Cup 5 is 3. (Since it cannot be an even number and it has to be less than 5).

Therefore, the rank of the tea in Cup 5 will be 5 with a rating of 3. Hence, the rating of the tea in Cup 3 will be 6.

Between the ratings 3 and 6, only one rating is possible i.e. 5, because there are only two even ratings that are given to the tea in Cup 3 and Cup 2. Also, the tea in Cup 1 has a less rating than the tea in Cup 3. So the only possibility is that the tea in Cup 1 has a rating of 5 and is ranked fourth and the tea in Cup 3 has a rating of 6 and is ranked third.

From (1), only the tea which has got the second highest rating can belong to Himachal and it is the tea in Cup 6. Therefore, the tea from Himachal is in Cup 6 and it has the second highest rating. The rating has to be an odd number greater than 6 and less than 10. The only number possible is 7. If it were 9, then the tea from Ooty has to be given a rating of 10 but there are only two even ratings. Hence, the tea from Himachal has got a rating of 7.

The tea from Ooty will be in Cup 4. The rating of the tea from Ooty should be an odd number greater than 7 and less than 10. The only possible value is 9.

The final table will be as follows:

Ranking	Place	Cup No	Rating
1	Ooty	Cup 4	9
2	Himachal	Cup 6	7
3		Cup 3	6
4		Cup 1	5
5		Cup 5	3
6		Cup 2	2

The second highest rating is given to the tea from Himachal and it is 7. Ans: 7

QNo:- 52 ,Correct Answer:- 4

Explanation:- Let the ratings be such that the tea with the highest rating is ranked 1 and the tea with the lowest rating is ranked 6. From (2) and (5), we get the following:

Ranking	Place	Cup No	Rating
1	Ooty		
2			
3			
4			
5			
6		Cup 2	

From (4), only two cups have been given even numbered ratings and one of them is given to the tea in Cup 2 (from (5))

From (3), it can be inferred that the rating of the tea in Cup 3, is an even number.

Hence, the rating of the tea in Cup 5 is an odd number.

Besides, the tea in Cup 3 has a higher rating than those in Cup 5, Cup 2 and Cup 1 (from (6))

Therefore, the ranking of Cup 3 is either 2 or 3. It cannot be 1 since the tea from Ooty is not in Cup 6.

From (5), the rating of the tea in Cup 2 can either be 2 or 4. Any other even number below 10 cannot be assigned to it since there are five other cups in which the tea has been rated from 1 to 10 and all the ratings are distinct numbers.

If the rating of the tea in Cup 2 is 4, the minimum possible rating for the tea in Cup 5 will be 5 and from that, the rating of the tea in Cup 3 will be 10. But 10 is the highest rating and it is not given to the tea in Cup 3 (from (2)).

Therefore, the tea in Cup 2 has a rating of 2.

The only rating that can be given to the tea in Cup 5 is 3. (Since it cannot be an even number and it has to be less than 5).

Therefore, the rank of the tea in Cup 5 will be 5 with a rating of 3. Hence, the rating of the tea in Cup 3 will be 6.

Between the ratings 3 and 6, only one rating is possible i.e. 5, because there are only two even ratings that are given to the tea in Cup 3 and Cup 2. Also, the tea in Cup 1 has a less rating than the tea in Cup 3. So the only possibility is that the tea in Cup 1 has a rating of 5 and is ranked fourth and the tea in Cup 3 has a rating of 6 and is ranked third.

From (1), only the tea which has got the second highest rating can belong to Himachal and it is the tea in Cup 6. Therefore, the tea from Himachal is in Cup 6 and it has the second highest rating. The rating has to be an odd number greater than 6 and less than 10. The only number possible is 7. If it were 9, then the tea from Ooty has to be given a rating of 10 but there are only two even ratings. Hence, the tea from Himachal has got a rating of 7.

The tea from Ooty will be in Cup 4. The rating of the tea from Ooty should be an odd number greater than 7 and less than 10. The only possible value is 9.

The final table will be as follows:

Ranking	Place	Cup No	Rating
1	Ooty	Cup 4	9
2	Himachal	Cup 6	7
3		Cup 3	6
4		Cup 1	5
5		Cup 5	3
6		Cup 2	2

The number of the cup that contained tea from Ooty is Cup 4. Ans: 4

QNo:- 53 ,Correct Answer:- B

Explanation:- Let the ratings be such that the tea with the highest rating is ranked 1 and the tea with the lowest rating is ranked 6. From (2) and (5), we get the following:

Ranking	Place	Cup No	Rating
1	Ooty		
2			
3			
4			
5			
6		Cup 2	

From (4), only two cups have been given even numbered ratings and one of them is given to the tea in Cup 2 (from (5))

From (3), it can be inferred that the rating of the tea in Cup 3, is an even number.

Hence, the rating of the tea in Cup 5 is an odd number.

Besides, the tea in Cup 3 has a higher rating than those in Cup 5, Cup 2 and Cup 1 (from (6))

Therefore, the ranking of Cup 3 is either 2 or 3. It cannot be 1 since the tea from Ooty is not in Cup 6.

From (5), the rating of the tea in Cup 2 can either be 2 or 4. Any other even number below 10 cannot be assigned to it since there are five other cups in which the tea has been rated from 1 to 10 and all the ratings are distinct numbers.

If the rating of the tea in Cup 2 is 4, the minimum possible rating for the tea in Cup 5 will be 5 and from that, the rating of the tea in Cup 3 will be 10. But 10 is the highest rating and it is not given to the tea in Cup 3 (from (2)).

Therefore, the tea in Cup 2 has a rating of 2.

The only rating that can be given to the tea in Cup 5 is 3. (Since it cannot be an even number and it has to be less than 5).

Therefore, the rank of the tea in Cup 5 will be 5 with a rating of 3. Hence, the rating of the tea in Cup 3 will be 6.

Between the ratings 3 and 6, only one rating is possible i.e. 5, because there are only two even ratings that are given to the tea in Cup 3 and Cup 2. Also, the tea in Cup 1 has a less rating than the tea in Cup 3. So the only possibility is that the tea in Cup 1 has a rating of 5 and is ranked fourth and the tea in Cup 3 has a rating of 6 and is ranked third.

From (1), only the tea which has got the second highest rating can belong to Himachal and it is the tea in Cup 6. Therefore, the tea from Himachal is in Cup 6 and it has the second highest rating. The rating has to be an odd number greater than 6 and less than 10. The only number possible is 7. If it were 9, then the tea from Ooty has to be given a rating of 10 but there are only two even ratings. Hence, the tea from Himachal has got a rating of 7.

The tea from Ooty will be in Cup 4. The rating of the tea from Ooty should be an odd number greater than 7 and less than 10. The only possible value is 9.

The final table will be as follows:

Ranking	Place	Cup No	Rating
1	Ooty	Cup 4	9
2	Himachal	Cup 6	7
3		Cup 3	6
4		Cup 1	5
5		Cup 5	3
6		Cup 2	2

It is given that the rating of the tea from Munnar is less than that of the teas from Wayanad and Assam. So it can be ranked either fifth or sixth. If the tea from Munnar did not get the minimum rating, it will be ranked fifth with a rating of 3. Therefore, the teas from Assam and Wayanad will be ranked third and fourth respectively. Hence, the rating of the tea from Wayanad will be 5.

Choice (2)

QNo:- 54 ,Correct Answer:- B

Explanation:- Let the ratings be such that the tea with the highest rating is ranked 1 and the tea with the lowest rating is ranked 6. From (2) and (5), we get the following:

Ranking	Place	Cup No	Rating
1	Ooty		
2			
3			
4			
5			
6		Cup 2	

From (4), only two cups have been given even numbered ratings and one of them is given to the tea in Cup 2 (from (5))

From (3), it can be inferred that the rating of the tea in Cup 3, is an even number.

Hence, the rating of the tea in Cup 5 is an odd number.

Besides, the tea in Cup 3 has a higher rating than those in Cup 5, Cup 2 and Cup 1 (from (6))

Therefore, the ranking of Cup 3 is either 2 or 3. It cannot be 1 since the tea from Ooty is not in Cup 6.

From (5), the rating of the tea in Cup 2 can either be 2 or 4. Any other even number below 10 cannot be assigned to it since there are five other cups in which the tea has been rated from 1 to 10 and all the ratings are distinct numbers.

If the rating of the tea in Cup 2 is 4, the minimum possible rating for the tea in Cup 5 will be 5 and from that, the rating of the tea in Cup 3 will be 10. But 10 is the highest rating and it is not given to the tea in Cup 3 (from (2)).

Therefore, the tea in Cup 2 has a rating of 2.

The only rating that can be given to the tea in Cup 5 is 3. (Since it cannot be an even number and it has to be less than 5).

Therefore, the rank of the tea in Cup 5 will be 5 with a rating of 3. Hence, the rating of the tea in Cup 3 will be 6.

Between the ratings 3 and 6, only one rating is possible i.e. 5, because there are only two even ratings that are given to the tea in Cup 3 and Cup 2. Also, the tea in Cup 1 has a less rating than the tea in Cup 3. So the only possibility is that the tea in Cup 1 has a rating of 5 and is ranked fourth and the tea in Cup 3 has a rating of 6 and is ranked third.

From (1), only the tea which has got the second highest rating can belong to Himachal and it is the tea in Cup 6. Therefore, the tea from Himachal is in Cup 6 and it has the second highest rating. The rating has to be an odd number greater than 6 and less than 10. The only number possible is 7. If it were 9, then the tea from Ooty has to be given a rating of 10 but there are only two even ratings. Hence, the tea from Himachal has got a rating of 7.

The tea from Ooty will be in Cup 4. The rating of the tea from Ooty should be an odd number greater than 7 and less than 10. The only possible value is 9.

The final table will be as follows:

Ranking	Place	Cup No	Rating
1	Ooty	Cup 4	9
2	Himachal	Cup 6	7
3		Cup 3	6
4		Cup 1	5
5		Cup 5	3
6		Cup 2	2

If the cups containing teas from Wayanad and Ooty have consecutive numbers, then the Cup containing tea from Wayanad can either be Cup 5 or Cup 3. But the tea from Wayanad cannot be in Cup 3 because the tea from Assam got a higher rating than the tea from Wayanad. Therefore, the tea from Wayanad should be in Cup 5. In this case, the tea from Munnar will be in Cup 2 and the tea from Darjeeling can either be in Cup 1 or Cup 3. Choice (2)

QNo:- 55 ,Correct Answer:- C

Explanation:- Following is a chess board for 8 X 8.

Queen is at C5 (as shown below). Pieces which are under attack are A3, C2, G1, G5. So, a total of 4 pieces are under attack.

		QUEEN				(G5) Piece	
(A3) Piece						(G3) Piece	
		(C2) Piece					
A	B	C	D	E	F	(G1) Piece	H

QNo:- 56 ,Correct Answer:- D

Explanation:- Pieces are at A1, A3, B4, D7, H7 and H8 (These are as indicated below)

Option (1): If Queen is at F8, it will attack H8 and B4. A total of 2 pieces.

Option (2): If Queen is at A7, it will attack A3 and D7. A total of 2 pieces.

Option (3): If Queen is at C1, it will attack A1 and A3. A total of 2 pieces.

Option (4): If Queen is at D3, it will attack A3, D7 and H7, a total of 3 pieces.

So, Queen at D3 implies 3 pieces will be under attack (which is the maximum).

							Piece (H8)
			Piece (D7)				Piece (H7)
		Piece (B4)					
Piece (A3)							
Piece (A1)	B	C	D	E	F	G	H

QNo:- 57 ,Correct Answer:- C

Explanation:- Queen cannot be placed in Columns -A, B, D, and H.
From the remaining columns, it has to be assessed.

For e.g.

COLUMN C:-> If Queen is placed in C2, it will attack H7. Further, other positions in the column C can be ruled out. Similarly, analyzing other squares, the result is as follows:->

Queen can be placed in E2, F2, G2, G5 (such that the pieces on board are NOT under attack).

So, there are a total of 4 such squares for the Queen.

								Piece (H8)
			Piece (D7)					Piece (H7)
		Piece (B4)						
Piece (A3)								
Piece (A1)	B	C	D	E	F	G	H	

QNo:- 58 ,Correct Answer:- C

Explanation:- Given that Queen is at d5. The squares which will be under attack are as indicated below (by the term under Attack). These squares are either lying in the diagonal, or in the row or in the column. The remaining squares are marked safe. A total of 36 such squares are safe (by counting).

Under Attack			Under Attack			Under Attack	
	Under Attack		Under Attack		Under Attack		
		Under Attack	Under Attack	Under Attack			
Under Attack	Under Attack	Under Attack	QUEEN	Under Attack	Under Attack	Under Attack	Under Attack
		Under Attack	Under Attack	Under Attack			
	Under Attack		Under Attack		Under Attack		
Under Attack			Under Attack			Under Attack	
			Under Attack				Under Attack

QNo:- 59 ,Correct Answer:- A

Explanation:- For discussion we take the initial letter of each friend.

From the given data, one can observe that Row number 1 to 20 have extra charges except for middle seat.

J, A, B must be in Aisle seats to get the sum as 4600; and we know that J, A, B paid different amount. Therefore,

Row/No	A	B	C	D	E	F	Remarks
10			J	M			$500 \times 2 = 1000$
11			A				$400 \times 1 = 400$
12			B				$1000 \times 1 = 1000$
13					G	K	$1000 \times 2 = 2000$ (6 persons = 4400)
20						P	$200 \times 1 = 200$ (7 persons = 4600)
21						T	No extra charge

Note: G, K and K, G can be interchanged. Moreover they can be placed in row 1 to 0. So also the right window positions and aisle seats can be interchanged.

Row number (10) Choice (1)

QNo:- 60 ,Correct Answer:- C

Explanation:- For discussion we take the initial letter of each friend.

From the given data, one can observe that Row number 1 to 20 have extra charges except for middle seat.

J, A, B must be in Aisle seats to get the sum as 4600; and we know that J, A, B paid different amount. Therefore,

Row/No	A	B	C	D	E	F	Remarks
10			J	M			$500 \times 2 = 1000$
11			A				$400 \times 1 = 400$
12			B				$1000 \times 1 = 1000$
13					G	K	$1000 \times 2 = 2000$ (6 persons = 4400)
20						P	$200 \times 1 = 200$ (7 person = 4600)
21						T	No extra charge

Note: G, K and K G can be interchanged. Moreover they can be placed in row 1 to 0. So also the right window positions and aisle seats can be interchanged.

He paid (500) Choice (3)

QNo:- 61 ,Correct Answer:- D

Explanation:- For discussion we take the initial letter of each friend.

From the given data, one can observe that Row number 1 to 20 have extra charges except for middle seat.

J, A, B must be in Aisle seats to get the sum as 4600; and we know that J, A, B paid different amount. Therefore,

Row/No	A	B	C	D	E	F	Remarks
10			J	M			$500 \times 2 = 1000$
11			A				$400 \times 1 = 400$
12			B				$1000 \times 1 = 1000$
13					G	K	$1000 \times 2 = 2000$ (6 persons = 4400)
20						P	$200 \times 1 = 200$ (7 person = 4600)
21						T	No extra charge

Note: G, K and K G can be interchanged. Moreover they can be placed in row 1 to 0. So also the right window positions and aisle seats can be interchanged.

He paid Rs. (1000) Choice (4)

QNo:- 62 ,Correct Answer:- D

Explanation:- For discussion we take the initial letter of each friend.

From the given data, one can observe that Row number 1 to 20 have extra charges except for middle seat.

J, A, B must be in Aisle seats to get the sum as 4600; and we know that J, A, B paid different amount. Therefore,

Row/No	A	B	C	D	E	F	Remarks
10			J	M			$500 \times 2 = 1000$
11			A				$400 \times 1 = 400$
12			B				$1000 \times 1 = 1000$
13					G	K	$1000 \times 2 = 2000$ (6 persons = 4400)
20						P	$200 \times 1 = 200$ (7 person = 4600)
21						T	No extra charge

Note: G, K and K G can be interchanged. Moreover they can be placed in row 1 to 0. So also the right window positions and aisle seats can be interchanged.

Tapesesh (option 4)

QNo:- 63 ,Correct Answer:- 11

Explanation:- Since the order of exactly one out of the five scans can't be changed, either all the scans are in the correct order or one pair of scans can be varied, i.e. their positions can be interchanged.

Case (1): when all the scans are in the correct order = 1 way

Case (2): when exactly two are interchanged:

We can choose any two of the five scans that can be interchanged in $5C2$ ways, viz. 10

Both case (1) and case (2) together = 11. Ans: (11)

QNo:- 64 ,Correct Answer:- C

Explanation:- Let the original scan be: TIMRL

(1) All sequence as original = 1 way

(2) Interchange of TI = 1 way

(TI) + (RL) = 1 way

→ 2 way

(3) Interchange of IM = 1 way

(IM) + (RL) = 1 way

→ 2 way

(4) Interchange of MR = 1 way

(MR) + (TI) = 1 way

→ 2 way

(5) Interchange of RL = 1 way

Total = 1 + 2 + 2 + 2 + 1 = 8 ways.

Choice (3)

QNo:- 65 ,Correct Answer:- 15

Explanation:- Let us say original input: TIMTRL.

Case (1): None of them misplaced : 1.

Case (2): When exactly two are misplaced.

T can be misplaced → 4 ways.

I can be misplaced → 4 ways.

M can be misplaced → 3 ways.

T can be misplaced → 2 ways.

R can be misplaced → 1 way.

Total ways in case (2) = 4 + 4 + 3 + 2 + 1

= 14 ways.

Both case (1) and case (2) = 14 + 1 = 15 ways

QNo:- 66 ,Correct Answer:- C

Explanation:- Given LRLTIM

The distinct possibilities are:

1. No shift = 1 way

2. (a) LR = 1 way

(b) LR + LT = 1 way

(c) LR + LT + IM = 1 way

(d) LR + IM = 1 way

(e) LR + IT = 1 way (Total 5 ways)

3. (a) RL = 1 way

(b) RL + TI = 1 way

(c) RL + IM = 1 way (Total 3 ways)

4. (a) LT = 1 way

(b) LT + IM = 1 way (Total 2 way)

5. TI = 1 way

6. IM = 1 way

Total ways = 1 + 5 + 3 + 2 + 1 + 1 = 13 ways.

Choice (3)

QNo:- 67 ,Correct Answer:- 3

Explanation:- The square grid is filled by 9 numbers from 1 to 9. Their sum $(1 + 2 + 3 + \dots + 9)$ equals 45. Since the sum of numbers in each row and each column and each diagonal must be equal, the sum of terms in each row and in each column and in each diagonal, must be 15. For this to happen, the middle element in the 2nd row and the 2nd column must be the middle-most term of the 9 terms, i.e. 5. The corner elements in the first row are 6 and 2 (given), so the middle element in the first row must be 7. In the 2nd column, the top most element is 7 and the middle element is 5, so the bottom row middle element must be 3.

QNo:- 68 ,Correct Answer:- 1900

Explanation:- A beats B by 1 km, means A travels 10 km in the same time that B travels 9 km. The ratio of speeds of A and B is 10 : 9. Similarly, the ratio of speeds of B and C is 10 : 9.

$$A : B = 10 : 9$$

$$B : C = 10 : 9$$

$$\Rightarrow \text{The ratio of speeds of } A : B : C = 100 : 90 : 81$$

In the same time that A travels 100 m, C travels 81 metres

$\Rightarrow$ In the same time that A travels 10000 m, C would travel 8100 m or A would beat C by 1900 m. Ans: (1900)

QNo:- 69 ,Correct Answer:- B

Explanation:- Concentration of milk in the first bottle is $\frac{7}{9}$ and that in the second bottle is $\frac{9}{13}$. They need to be mixed in a certain ratio to get a solution which has $\frac{3}{4}$ th milk.

Applying alligation,

(Liquid taken from bottle 1)/(Liquid taken from bottle 2) =

$$\text{bottle 2) } = \frac{\frac{9}{13} - \frac{3}{4}}{\frac{3}{4} - \frac{7}{9}} = \frac{27}{13}$$

QNo:- 70 ,Correct Answer:- C

Explanation:- Let the distance from his home to his hostel be x miles.

Time taken on his onward journey = $\frac{x}{60}$ hours

Time taken on his return journey = $\frac{(x/2)}{25} + \frac{(x/2 + 5)}{50}$

Given, his return journey took 0.5 hours more than his onward journey

$$\Rightarrow \frac{x}{60} + 0.5 = \frac{x}{50} + \frac{(x/2 + 5)}{50}$$

Upon solving, $x = 30$

Therefore, total distance travelled = $30 + 15 + 20 = 65$ miles.

QNo:- 71 ,Correct Answer:- B

Explanation:- A total of 15% shirts are defective. Of the remaining 85%, 20% are sold in the domestic market. So, 20% of 85%, i.e. 17% are sold in the domestic market and the remaining 68% are exported. But, it is given that 8840 shirts were exported.

$$\text{If 68\% is 8840, } 100\% = \frac{(100)(8840)}{68} = 13000.$$

QNo:- 72 ,Correct Answer:- C

Explanation:- Let the average height of the 20 toddlers be x inches. When the 2 toddlers are included, the average of the group comes down by 2, i.e. it becomes $x - 2$. Also, given, that the average height of the 2 toddlers is one-third of the average height of the 22 toddlers, viz. $x - 2$.

$$\frac{20(x) + \frac{2(x-2)}{3}}{22} = x - 2$$

Upon solving, $x = 32$ inches.

QNo:- 73 ,Correct Answer:- B

Explanation:- Let the manufacturing cost of the table be Rs. m .
 The wholesaler buys it for Rs. $1.1m$.
 The retailer buys it for Rs. $(1.1)(1.3)m$.
 The customer buys it for Rs. $(1.1)(1.3)(1.5)m$, viz. Rs. $2.145m$.
 Given, $2.145m = 4,290$
 $\Rightarrow m = \text{Rs. } 2,000$

QNo:- 74 ,Correct Answer:- A

Explanation:- The inlet pipe can normally fill the tank in 8 hours, but it takes 10 hours when the outlet pipe is also open. In the two additional hours, the inlet pipe fills $2/8$ or 25% more, and the outlet pipe took 10 hours to drain the additional 25%. So, the outlet pipe can drain 25% in 10 hours, and to drain 50%, it'll take 20 hours.
 Alternately, we can assume total capacity of the tank as LCM [8, 10] or 40 litres. We'll know the filling rates and the emptying rates of both the pipes and we can answer the question based on the same.

QNo:- 75 ,Correct Answer:- A

Explanation:- He buys x dozen candies at Rs.15 a dozen and x more dozen at Rs.12 a dozen, so the average cost per dozen is Rs. $(15 + 12)/2 = \text{Rs. } 13.5$ a dozen.
 By selling a dozen at Rs.16.5, he'll make a profit of Rs.3 per dozen.
 To make an overall profit of Rs.150, he needs to sell 50 dozen.

QNo:- 76 ,Correct Answer:- C

Explanation:- Let the initial production be p , population be x and the initial per capita consumption be c .

As $p = (c)(x)$, we can say-

$$\frac{(x_1)(c_1)}{p_1} = \frac{(x_2)(c_2)}{p_2}$$

Finally, production became $1.4p$ and per capita consumption became $1.27c$.

$$\frac{(x)(c)}{p} = \frac{(x_2)(1.27c)}{1.4p} \Rightarrow x_2 = \frac{(1.4x)}{1.27} = 1.102x$$

Therefore, population (x) increased by approximately 10%.

QNo:- 77 ,Correct Answer:- C

Explanation:- $a : b = 3 : 4$ and $b : c = 2 : 1$

Multiplying the second ratio by 2, we have

$$a : b = 3 : 4$$

$$b : c = 4 : 2$$

Therefore, $a : b : c = 3 : 4 : 2$.

$$\Rightarrow a = 3k, b = 4k, c = 2k.$$

Since a , b and c are positive integers, their sum should be $9k$, a positive integer.

From the options, only choice (3), which is 207, is a multiple of 9.

QNo:- 78 ,Correct Answer:- B

Explanation:- The motorbike that left A travelled 168 km from 1:00 p.m. to 3:40 p.m., i.e. in $2 \frac{2}{3}$ hours or $8/3$ hours.

The car that left B, started at 2:00 p.m. and travelled till 3:40 p.m., i.e. for $1 \frac{2}{3}$ hours or $5/3$ hours.

The car would've travelled $5/8$ th of the distance as the bike, but since the car travelled at twice the speed, the car would've travelled $10/8$ th of the distance, i.e. $(10/8) \times 168 = 210$ km.

Therefore, total distance between A and B = $168 + 210 = 378$ km.

QNo:- 79 ,Correct Answer:- A

Explanation:- The team completes the job in 4 days.

Since Amol needs 10 days to complete the job, in 4 days, he does $\frac{4}{10}$ th or 40% of the work.

Since Bimal needs 8 days to complete the job, in 4 days, he does $\frac{4}{8}$ th or 50% of the work.

Therefore, Kamal did 10% of the work and for doing 10% of the work, he gets 10% of the payment, i.e. Rs. 100.

QNo:- 80 ,Correct Answer:- C

Explanation:- First mixture has $\frac{2}{3}$ rd A and the rest water. Second mixture has $\frac{3}{4}$ th B and the rest water. Third mixture has $\frac{4}{5}$ th C and the rest water.

The 3 mixtures are mixed in the ratio 4 : 3 : 2. Let's say we get a 1 litre mixture containing the three mixtures.

There will be $\frac{4}{9}\left(\frac{2}{3}\right)$ th A, $\frac{3}{9}\left(\frac{3}{4}\right)$ th B and $\frac{2}{3}\left(\frac{4}{5}\right)$ th

C. (the remaining part would be water)

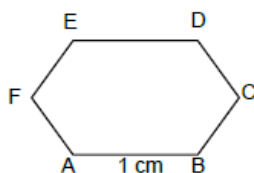
$\frac{8}{27}$ litres A, $\frac{9}{36}$ litres B, $\frac{8}{45}$ litres C

$$\text{Water} = 1 - \left[\frac{8}{27} + \frac{9}{36} + \frac{8}{45} \right] = \frac{149}{540} \text{ litres}$$

$$\text{We can see that } \frac{149}{540} < \frac{8}{27} \text{ and } \frac{149}{540} > \frac{9}{36}$$

$\therefore$ There is more water than B in the resultant solution. Choice (3)

QNo:- 81 ,Correct Answer:- B



Explanation:-

In $\triangle ABC$, $AB = 1$ cm, $BC = 1$ cm

As $\angle B = 120^\circ$,

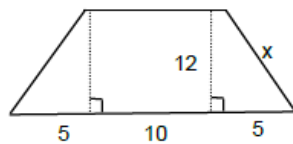
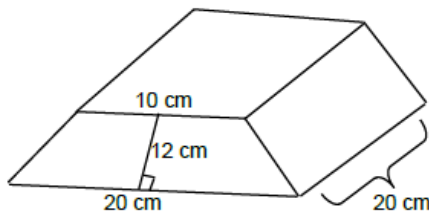
$$AC^2 = 1^2 + 1^2 - 2(1)(1) \cos(120^\circ) \text{ (Cosine rule)}$$

$$= 1^2 + 1^2 + 1 = 3$$

$$\Rightarrow AC = \sqrt{3} \text{ cm}$$

The square of side $\sqrt{3}$ cm will have an area of $(\sqrt{3})^2 = 3 \text{ cm}^2$

QNo:- 82 ,Correct Answer:- C



Explanation:-

Given, the non-parallel sides are equal.

Let the non-parallel sides be x cm each

$$x = \sqrt{12^2 + 5^2} = 13$$

So, we have 6 faces, two are trapezoid faces and 4 are rectangular faces.

Area of 2 trapeziums

$$= 2 \left[\frac{1}{2} (10 + 20) \times 12 \right] = 360 \text{ cm}^2$$

Area of 4 rectangles

$$= 2[13 \times 20] + 20(20) = 1120 \text{ cm}^2$$

$$\text{Total area} = 1120 + 360 = 1480 \text{ cm}^2 \text{ Choice (3)}$$

QNo:- 83 ,Correct Answer:- D

Explanation:- In a rectangle, diagonals bisect each other, so one diagonal should pass through the midpoint of the other.

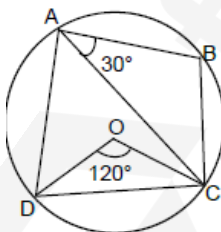
Midpoint of the diagonal connecting (2, 5) and (6, 3)

$$= \left(\frac{2+6}{2}, \frac{5+3}{2} \right) = (4, 4)$$

The other diagonal, $y = 3x + c$ should also pass through (4, 4).

On substitution, $4 = 3(4) + c \Rightarrow -8$.

QNo:- 84 ,Correct Answer:- 90



Explanation:-

Given, $\angle COD = 120^\circ$ and $\angle BAC = 30^\circ$.

As $\angle COD = 120^\circ$, $\angle DAC = 60^\circ$ (Central angle)

$$\angle DAC + \angle BAC = 60^\circ + 30^\circ = 90^\circ$$

$\angle A = 90^\circ \Rightarrow \angle BCD = 90^\circ$ (Opposite angles are supplementary in a cyclic quadrilateral)

QNo:- 85 ,Correct Answer:- 200

Explanation:- Let one side be l and the other be b . (l is not necessarily greater than b)

Given, $2l + b = 400$

For area to be maximum, lb should be maximum.

$\therefore l(400 - 2l)$ should be maximum

$l(400 - 2l) = l(2)(200 - l) = 2(l)(200 - l)$

$l(200 - l)$ will be maximum when $l = 200 - l$ or $2l = 200$

$\Rightarrow l = 100$

If $l = 100$, $b = 200$.

$\therefore$ The longer side must be 200 feet long.

QNo:- 86 ,Correct Answer:- 16

Explanation:- As P is equidistant from the sides, P is the in center of the triangle.

r is the in radius of the triangle, viz. $4(\sqrt{2} - 1)$ cm

Let the sides of the triangle be $a, a, a\sqrt{2}$

As $\Delta = \frac{1}{2}(a)(a) = r(s)$,

$$\frac{a^2}{2} = 4(\sqrt{2} - 1) \frac{(a + a + a\sqrt{2})}{2}$$

$\Rightarrow a = 4\sqrt{2}$

Area = $\frac{1}{2}(a^2) = 16$ sq. units

QNo:- 87 ,Correct Answer:- D

Explanation:- Given, $(n - 1)(n)(n + 1) = 15600$

As 15600 has 2 zeroes in it, one of $n - 1$, n or $n + 1$ should be a multiple of 25.

Dividing 15600 by 25, we get 624, but $624 = 24 \times 26$ so, the numbers are 24, 25 and 26

$24^2 + 25^2 + 26^2 = 1877$

QNo:- 88 ,Correct Answer:- D

Explanation:- $\log_3 5 = \log_5 (x + 2)$

$\log_3 3 < \log_3 5 < \log_3 9$

$1 < \log_3 5 < 2$

So, $1 < \log_5 (x + 2) < 2$

$5^1 < x + 2 < 5^2$

$3 < x < 23$

QNo:- 89 ,Correct Answer:- C

Explanation:- $f[f(2^x) + g(x^2)]$

as $x = 1$,

$f[f(2) + g(1)]$

$= f[2^2 + 2^1]$

$= f[6] = 6^2 = 36$

QNo:- 90 ,Correct Answer:- C

Explanation:- $x^2 + (a + 3)x - (a + 5) = 0$

$$\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta = (-(a + 3))^2 - 2(-(a + 5))$$

$$= a^2 + 9 + 6a + 2(a + 5)$$

$$= a^2 + 8a + 19$$

$$= (a + 4)^2 + 3$$

The minimum value is 3, at $a = -4$. Choice (3)

QNo:- 91 ,Correct Answer:- A

$$9^{x-\frac{1}{2}} - 2^{2x-2} = 4^x - 3^{2x-3}$$

$$\frac{9^x}{9^{1/2}} - \frac{2^{2x}}{4} = 4^x - \frac{3^{2x}}{27}$$

$$\frac{9^x}{3} - \frac{2^{2x}}{4} = 4^x - \frac{9^x}{27}$$

$$\frac{9^x}{3} - \frac{4^x}{4} = 4^x - \frac{9^x}{27}$$

$$\frac{9^x}{3} + \frac{9^x}{27} = 4^x + \frac{4^x}{4}$$

$$9^x \frac{(10)}{27} = 4^x \frac{(5)}{4}$$

Explanation:-

$$\frac{9^x}{4^x} = \frac{27}{8}$$

$$\left(\frac{3}{2}\right)^{2x} = \frac{27}{8} = \frac{3^3}{2^3} = \left(\frac{3}{2}\right)^3$$

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

Alternately, we could've substituted the value of x from the options and it would've taken much less time.

QNo:- 92 ,Correct Answer:- 3

$$\log(2^a \times 3^b \times 5^c) = \frac{1}{3} [\log(2^2 \times 3^3 \times 5) +$$

$$\log(2^8 \times 3 \times 5^7) + \log(2 \times 3^2 \times 5^4)]$$

$$\log(2^a 3^b 5^c) = \frac{1}{3} [\log(2^2 \times 3^3 \times 5 \times 2^8 \times 3 \times 5^7$$

$$\times 2 \times 3^2 \times 5^4)]$$

$$\log(2^a 3^b 5^c) = \frac{1}{3} [\log(2^9 \times 3^8 \times 5^{12})]$$

Explanation:- $\log(2^a 3^b 5^c) = \log(2^3 \times 3^2 \times 5^4)$

While it is not explicitly stated that a , b and c are integers, going by the spirit of the question, we are forced to assume that they are integers. In that case, we can equate the powers of 2, 3 and 5 on the LHS and the RHS and say that $a = 3$, $b = 2$, and $c = 4$.

QNo:- 93 ,Correct Answer:- 51

Explanation:- The 5 consecutive odd numbers are

$$a_1, a_2, a_3, a_4, a_5$$

The 5 consecutive even numbers are

$$2a_3 - 8, 2a_3 - 6, 2a_3 - 4, 2a_3 - 2, 2a_3$$

The sum of these 5 numbers $= 10a_3 - 20 = 450$ (given)

$\therefore a_3 = 47$ and $a_5 = 51$. Ans: (51)

QNo:- 94 ,Correct Answer:- 3

Explanation:- $\frac{1}{a} + \frac{1}{b} = \frac{1}{9}$

$$\Rightarrow 9(a + b) = ab$$

$$\Rightarrow ab - 9a - 9b + 81 = 81$$

$$\Rightarrow (a - 9)(b - 9) = 81 = 3^4$$

As $a, b > 0$ and $a \leq b$, there are only 3 ordered pairs, given by $a - 9 = 1, 3$ or 9 and correspondingly $b - 9 = 81, 27, 9$.

QNo:- 95 ,Correct Answer:- 6

Explanation:- The data is shown below.

A B K

1 2 3

The remaining 2 pens can go to different people

(3 ways – 1,1,0; 0,1,1; 1,0,1) or the same person

(3 ways – 2,0,0; 0,2,0; 0,0,2).

Alternately, we can distribute the last 2 identical pens among the three of them using

$x_1 + x_2 + x_3 = 2$, which has 4C_2 non-negative integral solutions, i.e. 6.

QNo:- 96 ,Correct Answer:- 50

Explanation:- The sum of the digits must be a multiple of 3. We can use (A) 2,4,0,3 or (B) 2,4,0,6 or (C) 2,4,3,6

(A) ___ 0 (6 numbers)

___ 2 (4 numbers)

___ 4 (4 numbers)

(B) ___ 0 (6 numbers)

___ 2 (4 numbers)

___ 4 (4 numbers)

___ 6 (4 numbers)

(C) 2, 4, 3, 6 (18 numbers, with even digit in the units place)

There are a total of 50 numbers.

QNo:- 97 ,Correct Answer:- 1

Explanation:- $f(1 \times 1) = f(1)f(1)$ Let $f(1) = x$

$\therefore x = x^2$ i.e., $x = 0$ or 1 . The 'largest' value is 1.

Ans: (1)

Alternately, the function which satisfies the condition is an exponential function of the form $f(a) = a^x$.

When $x = 1$, the largest value of $f(1)$ is $1x$, which is 1.

QNo:- 98 ,Correct Answer:- D

Explanation:- $f(x) = 2x - 5$, $g(x) = 7 - 2x$.

Given, $|f(x) + g(x)| = |f(x)| + |g(x)|$

$$2 = |f(x)| + |g(x)|$$

In the 3 ranges $\left(-\infty, \frac{5}{2}\right]$, $\left[\frac{5}{2}, \frac{7}{2}\right]$ and $\left[\frac{7}{2}, \infty\right)$,

$$|f(x)| + |g(x)| = 2 \text{ only when } x \in \left[\frac{5}{2}, \frac{7}{2}\right]$$

QNo:- 99 ,Correct Answer:- C

Explanation:- For any $n \geq 1$, $a_n = 3(a_{n+1} + a_{n+2} + \dots)$

$\therefore a_1 = 3(a_2 + a_3 + \dots)$ or $r = 1/4$ and

$$a_1 + a_2 + a_3 + \dots = \frac{4a_1}{3} = 32 \text{ (given)} \therefore a_1 = 24$$

The GP is 24, 6, 1.5, $\frac{1.5}{4}$, $\frac{1.5}{16}$,

$$\therefore a_5 = \frac{1.5}{16} = \frac{3}{32}$$

QNo:- 100 ,Correct Answer:- A

Explanation:-

$$a_1 = \frac{1}{2(5)} = \frac{1}{3} \left(\frac{1}{2} - \frac{1}{5} \right)$$

$$a_2 = \frac{1}{5(8)} = \frac{1}{3} \left(\frac{1}{5} - \frac{1}{8} \right)$$

.....

$$a_{100} = \frac{1}{299(302)} = \frac{1}{3} \left(\frac{1}{299} - \frac{1}{302} \right)$$

All the terms like $1/5, 1/8, \dots, 1/299$ will cancel out.

$$\therefore \text{The sum} = \frac{1}{3} \left(\frac{1}{2} - \frac{1}{302} \right)$$

$$= \frac{1}{3} \frac{(300)}{(2)(302)} = \frac{50}{302} = \frac{25}{151}$$