Directions of Test

Test Name	Actual CAT 2021 Slot I	Total Questions	66	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	24	0:40(h:m)	3	1/3
DI & Reasoning	20	0:40(h:m)	3	1/3
Quantitative Ability	22	0:40(h:m)	3	1/3

Section : Verbal Ability

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

Question No. : 1

Cuttlefish are full of personality, as behavioral ecologist Alexandra Schnell found out while researching the cephalopod's potential to display self-control....."Self-control is thought to be the cornerstone of intelligence, as it is an important prerequisite for complex decision-making and planning for the future," says Schnell.....

[Schnell's] study used a modified version of the "marshmallow test"..... During the original marshmallow test, psychologist Walter Mischel presented children between age four and six with one marshmallow. He told them that if they waited 15 minutes and didn't eat it, he would give them a second marshmallo. A long-term follow-up study showed that the children who waited for the second marshmallow had more success later in life..... The cuttlefish version of the experiment looked a lot different. The researchers worked with six cuttlefish under nine months old and presented them with seafood instead of sweets. (Preliminary experiments showed that cuttlefishes' favorite food is live grass shrimp, while raw prawns are so-so and Asian shore crab is nearly unacceptable.) Since the researchers couldn't explain to the cuttlefish that they would need to wait for their shrimp, they trained them to recognize certain shapes that indicated when a food item would become available. The symbols were pasted on transparent drawers so that the cuttlefish could see the food that was stored inside. One drawer, labeled with a circle to mean "immediate," held raw king prawn. Another drawer, labeled with a triangle to mean "delayed," held live grass shrimp. During a control experiment, square labels meant "never."

"If their self-control is flexible and I hadn't just trained them to wait in any context, you would expect the cuttlefish to take the immediate reward [in the control], even if it's their second preference," says Schnell . . .and that's what they did. That showed the researchers that cuttlefish wouldn't reject the prawns if it was the only food available. In the experimental trials, the cuttlefish didn't jump on the prawns if the live grass shrimp were labeled with a triangle—many waited for the shrimp drawer to open up. Each time the cuttlefish showed it could wait, the researchers tacked another ten seconds on to the next round of waiting before releasing the shrimp. The longest that a cuttlefish waited was 130 seconds.

Schnell [says] that the cuttlefish usually sat at the bottom of the tank and looked at the two food items while they waited, but sometimes, they would turn away from the king prawn "as if to distract themselves from the temptation of the immediate reward." In past studies, humans, chimpanzees, parrots and dogs also tried to distract themselves while waiting for a reward.

Not every species can use self-control, but most of the animals that can share another trait in common: long, social lives. Cuttlefish, on the other hand, are solitary creatures that don't form relationships even with mates or young..... "We don't know if living in a social group is important for complex cognition unless we also show those abilities are lacking in less social species," says..... comparative psychologist Jennifer Vonk.

All of the following constitute a point of difference between the "original" and "modified" versions of the marshmallow test EXCEPT that:

A) the former was performed over a longer time span than the latter.
B) the former had human subjects, while the latter had cuttlefish.
C) the former used verbal communication with its subjects, while the latter had to develop a symbolic means of communication.
D) the former correlated self-control and future success, while the latter correlated self-control and survival advantages.

Question No. : 2

In which one of the following scenarios would the cuttlefish's behaviour demonstrate self-control?
A) raw prawns are released while an Asian shore crab drawer labelled with a triangle is placed in front of the cuttlefish, to be opened after one minute.
B) raw prawns are released while a live grass shrimp drawer labelled with a square is placed in front of the cuttlefish.
C) Asian shore crabs and raw prawns are simultaneously released while a live grass shrimp drawer labelled with a triangle is placed in front of the cuttlefish, to be opened after one minute.
D) live grass shrimp are released while two raw prawn drawers labelled with a circle and a triangle respectively are placed in front of the cuttlefish; the triangle-labelled drawer is opened after 50 seconds.

Question No. : 3

Which one of the following, if true, would best complement the passage's findings?

A) Cuttlefish wait longer than 100 seconds for the shrimp drawer to open up.
B) Cuttlefish are equally fond of live grass shrimp and raw prawn. C) Cuttlefish live in big groups that exhibit sociability.
D) Cuttlefish cannot distinguish between geometrical shapes.

Question No. : 4

Which one of the following cannot be inferred from Alexandra Schnell's experiment?

A) Cuttlefish exert self-control with the help of diversions. B) Cuttlefish exercise choice when it comes to food
C) Intelligence in a species is impossible without sociability. D) Like human children, cuttlefish are capable of self-control.

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

Question No. : 5

We cannot travel outside our neighbourhood without passports. We must wear the same plainclothes. We must exchange our houses every ten years. We cannot avoid labour. We all go to bed at the same time.... We have religious freedom, but we cannot deny that the soul dies with the body, since 'but for the fear of punishment, they would have nothing but contempt for the laws and customs of society'..... In More's time, for much of the population, given the plenty and security on offer, such restraints would not have seemed overly unreasonable. For modern readers, however, Utopia appears to rely upon relentless transparency, the repression of variety, and the curtailment of privacy. Utopia provides security: but at what price? In both its external and internal relations, indeed, it seems perilously dystopian.

Such a conclusion might be fortified by examining selectively the tradition which follows More on these points. This often portrays societies where..... 'it would be almost impossible for man to be depraved, or wicked'.....This is achieved both through institutions and mores, which underpin the common life..... The passions are regulated and inequalities of wealth and distinction are minimized. Needs, vanity, and emulation are restrained, often by prizing equality and holding riches in contempt. The desire for public power is curbed. Marriage and sexual intercourse are often controlled: in Tommaso Campanella's The City of the Sun (1623), the first great literary utopia after More's, relations are forbidden to men before the age of twenty-one and women before nineteen. Communal child-rearing is normal; for Campanella this commences at age two. Greater simplicity of life, 'living according to nature', is often a result: the desire for simplicity and purity are closely related. People become more alike in appearance, opinion, and outlook than they often have been. Unity, order, and homogeneity thus prevail at the cost of individuality and diversity. This model, as J. C. Davis demonstrates, dominated early modern utopianism....And utopian homogeneity remains a familiar theme well into the twentieth century.

Given these considerations, it is not unreasonable to take as our starting point here the hypothesis that utopia and dystopia evidently share more in common than is often supposed. Indeed, they might be twins, the progeny of the same parents. Insofar as this proves to be the case, my linkage of both here will be uncomfortably close for some readers. Yet we should not mistake this argument for the assertion that all utopias are, or tend to produce, dystopias. Those who defend this proposition will find that their association here is not nearly close enough. For we have only to acknowledge the existence of thousands of successful intentional communities in which a cooperative ethos predominates and where harmony without coercion is the rule to set aside such an assertion. Here the individual's submersion in the group is consensual (though this concept is not unproblematic). It results not in enslavement but voluntary submission to group norms. Harmony is achieved without.....harming others.

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

A) utopian and dystopian societies are twins, the progeny of the same parents.

B) it is possible to see utopias as dystopias, with a change in perspective, because one person's utopia could be seen as another's dystopia.
C) utopian societies exist in a long tradition of literature dealing with imaginary people practicing imaginary customs, in imaginary worlds.
D) many conceptions of utopian societies emphasise the importance of social uniformity and cultural homogeneity.

Question No. : 6

Which sequence of words below best captures the narrative of the passage?

A) Relentless transparency – Homogeneity – Utopia – Dystopia.
B) Curtailment of privacy – Dystopia – Utopia – Intentional community. C) Utopia – Security – Dystopia – Coercion.
D) Utopia – Security – Homogeneity – Intentional community.

Question No. : 7

All of the following arguments are made in the passage EXCEPT that:

A) in More's time, there was plenty and security, so people did not need restraints that could appear unreasonable.
B) in early modern utopianism, the stability of utopian societies was seen to be achieved only with individuals surrendering their sense of self.
C) there have been thousands of communities where homogeneity and stability have been achieved through choice, rather than by force.
D) the tradition of utopian literature has often shown societies in which it would be nearly impossible for anyone to be sinful or criminal.

Question No. : 8

Following from the passage, which one of the following may be seen as a characteristic of a utopian society?

A) The regulation of homogeneity through promoting competitive heterogeneity.
B) A society where public power is earned through merit rather than through privilege.
C) A society without any laws to restrain one's individuality.
D) Institutional surveillance of every individual to ensure his/her security and welfare

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

Question No. : 9

The sleights of hand that conflate consumption with virtue are a central theme in A Thirst for Empire, a sweeping and richly detailed history of tea by the historian Erika Rappaport. How did tea evolve from an obscure "China drink" to a universal beverage imbued with civilizing properties? The answer, in brief, revolves around this conflation, not only by profit-motivated marketers but by a wide variety of interest groups. While abundant historical records have allowed the study of how tea itself moved from east to west, Rappaport is focused on the movement of the idea of tea to suit particular purposes.

Beginning in the 1700s, the temperance movement advocated for tea as a pleasure that cheered but did not inebriate, and industrialists soon borrowed this moral argument in advancing their case for free trade in tea (and hence more open markets for their textiles).Factory owners joined in, compelled by the cause of a sober workforce, while Christian missionaries discovered that tea "would soothe any colonial encounter". During the Second World War, tea service was presented as a social and patriotic activity that uplifted soldiers and calmed refugees.

But it was tea's consumer-directed marketing by importers and retailers – and later by brands– that most closely portends current trade debates. An early version of the "farm to table" movement was sparked by anti-Chinese sentiment and concerns over trade deficits, as well as by the reality and threat of adulterated tea containing dirt and hedge clippings. Lipton was soon advertising "from the Garden to Tea Cup" supply chains originating in British India and supervised by "educated Englishmen". While tea marketing always presented direct consumer benefits (health, energy, relaxation), tea drinkers were also assured that they were participating in a larger noble project that advanced the causes of family, nation and civilization. . . .

Rappaport's treatment of her subject is refreshingly apolitical. Indeed, it is a virtue that readers will be unable to guess her political orientation: both the miracle of markets and capitalism's dark underbelly are evident in tea's complex story, as are the complicated effects of British colonialism. . . . Commodity histories are now themselves commodities: recent works investigate cotton, salt, cod, sugar, chocolate, paper and milk. And morality marketing is now a commodity as well, applied to food, "fair trade" apparel and eco-tourism. Yet tea is, Rappaport makes clear, a world apart – an astonishing success story in which tea marketers not only succeeded in conveying a sense of moral elevation to the consumer but also arguably did advance the

cause of civilisation and community.

I have been offered tea at a British garden party, a Bedouin campfire, a Turkish carpet shop and a Japanese chashitsu, to name a few settings. In each case the offering was more an idea – friendship, community, respect – than a drink, and in each case the idea then created a reality. It is not a stretch to say that tea marketers have advanced the particularly noble cause of human dialogue and friendship.

According to this book review, A Thirst for Empire says that, in addition to "profit-motivated marketers", tea drinking was promoted in Britain by all of the following EXCEPT:
A) the anti-alcohol lobby as a substitute for the consumption of liquor. B) tea drinkers lobbying for product diversity.
C) manufacturers who were pressing for duty-free imports D) factories to instill sobriety in their labour

Question No. : 10

This book review argues that, according to Rappaport, tea is unlike other "morality" products because it:

A) was marketed by a wide range of interest groups. B) was actively encouraged by interest groups in the government
C) appealed to a universal group and not just to a niche section of people
D) had an actual beneficial effect on social interaction and society in general

Question No. : 11

The author of this book review is LEAST likely to support the view that:

A) tea drinking has become a social ritual worldwide B) the ritual of drinking tea promotes congeniality and camaraderie
C) tea drinking was sometimes promoted as a patriotic duty
D) tea became the leading drink in Britain in the nineteenth century

Question No. : 12

Today, "conflat[ing] consumption with virtue" can be seen in the marketing of:

A) ergonomically designed products B) sustainably farmed foods. C) travel to pristine destinations
D) natural health supplements.

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

Question No. : 13

For the Maya of the Classic period, who lived in Southern Mexico and Central America between 250 and 900 CE, the category of 'persons' was not coincident with human beings, as it is for us. That is, human beings were persons – but other, nonhuman entities could be persons, too. . . . In order to explore the slippage of categories between 'humans' and 'persons', I examined a very specific category of ancient Maya images, found painted in scenes on ceramic vessels. I sought out instances in which faces (some combination of eyes, nose, and mouth) are shown on inanimate objects.....Consider my iPhone, which needs to be fed with electricity every night, swaddled in a protective bumper, and enjoys communicating with other fellow-phone-beings. Does it have personhood (if at all) because it is connected to me, drawing this resource from me as an owner or source? For the Maya (who did have plenty of other communicating objects, if not smartphones), the answer was no. Nonhuman persons were not tethered to specific humans, and they did not derive their personhood from a connection with a human. ..... It's a profoundly democratising way of understanding the world. Humans are not more important persons – we are just one of many kinds of persons who inhabit this world. . . .

The Maya saw personhood as 'activated' by experiencing certain bodily needs and through participation in certain social activities. For example, among the faced objects that I examined, persons are marked by personal requirements (such as hunger, tiredness, physical closeness), and by community obligations (communication, interaction, ritual observance). In the images I examined, we see, for instance, faced objects being cradled in humans' arms; we also see them speaking to humans. These core elements of personhood are both turned inward, what the body or self of a person requires, and outward, what a community expects of the persons who are a part of it, underlining the reciprocal nature of community membership.....
.
Personhood was a nonbinary proposition for the Maya. Entities were able to be persons while also being something else. The faced objects I looked at indicate that they continue to be functional, doing what objects do (a stone implement continues to chop, an incense burner continues to do its smoky work). Furthermore, the Maya visually depicted many objects in ways that indicated the material category to which they belonged – drawings of the stone implement show that a person-tool is still made of stone. One additional complexity: the incense burner (which would have been made of clay, and decorated with spiky

appliques representing the sacred ceiba tree found in this region) is categorised as a person – but also as a tree. With these Maya examples, we are challenged to discard the person/nonperson binary that constitutes our basic ontological outlook..... . The porousness of boundaries that we have seen in the Maya world points towards the possibility of living with a certain uncategorisability of the world.

On the basis of the passage, which one of the following worldviews can be inferred to be closest to that of the Classic Maya?
A) A futuristic society that perceives robots to be persons as well as robots because of their similarity to humans.
B) A tribe that perceives plants as person-plants because they form an ecosystem and are marked by needs of nutrition.
C) A tribe that perceives its hunting weapons as sacred person-arte facts because of their significance to its survival.
D) A tribe that perceives its utensils as person-utensils in light of their functionality and bodily needs.

Question No. : 14

Which one of the following, if true, would not undermine the democratising potential of the Classic Maya worldview?

A) They understood the stone implement and the incense burner in a purely humanform.
B) They believed that animals like cats and dogs that live in proximity to humans have a more clearly articulated personhood.
C) They depicted their human healers with physical attributes of local medicinal plants.
D) While they believed in the personhood of objects and plants, they did not believe in the personhood of rivers and animals.

Question No. : 15

Which one of the following best explains the "additional complexity" that the example of the incense burner illustrates regarding personhood for the Classic Maya?

A) The example complicates the nonbinary understanding of personhood by bringing in the sacred, establishing the porosity of the divine and the profane.
B) The example adds a new layer to the nonbinary understanding of personhood by bringing in a third category that shares a similar relation with the previous two.
C) The example provides an exception to the nonbinary understanding of person hood that the passage had hitherto established.
D) The example adds a new layer to the nonbinary understanding of personhood by bringing in a third category that shares a dissimilar relation with the previous two.

Question No. : 16

Which one of the following, if true about the Classic Maya, would invalidate the purpose of the iPhone example in the passage?

A) The clay incense burner with spiky appliques was categorised only as a person and not as a tree by the Classic Maya.
B) Unlike modern societies equipped with mobile phones, the Classic Maya did not have any communicating objects
C) The personhood of the incense burner and the stone chopper was a function of their usefulness to humans.
D) Classic Maya songs represent both humans and non-living objects as characters, talking and interacting with each other.

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

Question No. : 17

1. The legal status of resources mined in space remains ambiguous; and while the market for asteroid minerals is currently nonexistent, this is likely to change as technical hurdles diminish.
2. Outer space is a commons, and all of it is open for exploration, however, space law developed in the 1950s and 60s is state-centric and arguably ill-suited to a commercial future.
3. Laws adopted by the US and Luxembourg are first steps, but they only protect firms from competing claims by their compatriots; a Chinese company will not be bound by US law.
4. Critics say the US is conferring rights that it has no authority to confer; Russia in particular has condemned this, citing the US' disrespect for international law.
5. At issue now is commercial activity, as private firms—rather than nation states—look to space for profit.

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

Question No. : 18

1. The work is more than the text, for the text only takes on life, when it is realized and furthermore the realization is by no means independent of the individual disposition of the reader.
2. The convergence of text and reader brings the literary work into existence and this convergence is not to be identified either with the reality of the text or with the individual disposition of the reader.
3. From this polarity it follows that the literary work cannot be completely identical with the text, or with the realization of the text, but in fact must lie halfway between the two.
4. The literary work has two poles, which we might call the artistic and the aesthetic; the artistic refers to the text created by the author, and the aesthetic to the realization accomplished by the reader.

DIRECTIONS for the question: *The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*

Question No. : 19

McGurk and MacDonald (1976) reported a powerful multisensory illusion occurring with audio-visual speech. They recorded a voice articulating a consonant 'ba-ba-ba' and dubbed it with a face articulating another consonant 'ga-ga-ga'. Even though the acoustic speech signal was well recognized alone, it was heard as another consonant after dubbing with incongruent visual speech i.e., 'da-da-da'. The illusion, termed as the McGurk effect, has been replicated many times, and it has sparked an abundance of research. The reason for the great impact is that this is a striking demonstration of multisensory integration, where that auditory and visual information is merged into a unified, integrated percept.

A) When the auditory speech signal does not match the visual speech movements, the acoustic speech signal is confusing and integration of the two is imperfect.
B) The McGurk effect which is a demonstration of multisensory integration has been replicated many times.
C) When the quality of auditory information is poor, the visual information wins over the auditory information.
D) Visual speech mismatched with auditory speech can result in the perception of an entirely different message: this illusion is known as the McGurk effect.

DIRECTIONS for the question: *The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*

Question No. : 20

Developing countries are becoming hotbeds of business innovation in much the same way as Japan did from the 1950s onwards. They are reinventing systems of production and distribution, and experimenting with entirely new business models. Why are countries that were until recently associated with cheap hands now becoming leaders in innovation? Driven by a mixture of ambition and fear they are relentlessly climbing up the value chain. Emerging-market champions have not only proved highly competitive in their own backyards, they are also going global themselves.

A) Innovations in production and distribution are helping emerging economies compete with countries to which they once supplied cheap labour.
B) Competition has driven emerging economies, once suppliers of cheap labour, to become innovators of business models that have enabled them to move up the value chain and goglobal.
C) Developing countries are being forced to invent new business models which challenge the old business models, so they can remain competitive domestically.
D) Production and distribution models are going through rapid innovations worldwide as developed countries are being challenged by their earlier suppliers from the developing world.

DIRECTIONS for the question: *Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.*

Question No. : 21

1. There is a dark side to academic research, especially in India, and at its centre is the phenomenon of predatory journals.
2. But in truth, as long as you pay, you can get anything published.
3. In look and feel thus, they are exactly like any reputed journal.
4. They claim to be indexed in the most influential databases, say they possess editorial boards that comprise top scientists and researchers, and claim to have a rigorous peer-review structure.

5. But a large section of researchers and scientists across the world are at the receiving end of nothing short of an academic publishing scam.

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

Question No. : 22

1. In the central nervous systems of other animal species, such a comprehensive regeneration of neurons has not yet been proven beyond doubt.
2. Biologists from the University of Bayreuth have discovered a uniquely rapid form of regeneration in injured neurons and their function in the central nervous system of zebrafish.
3. They studied the Mauthner cells, which are solely responsible for the escape behaviour of the fish, and previously regarded as incapable of regeneration.
4. However, their ability to regenerate crucially depends on the location of the injury.

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

Question No. : 23

1. A popular response is the exhortation to plant more trees.
2. It seems all but certain that global warming will go well above two degrees—quite how high no one knows yet.
3. Burning them releases it, which is why the scale of forest fires in the Amazon basin last year garnered headlines.
4. This is because trees sequester carbon by absorbing carbon dioxide.

DIRECTIONS for the question: *The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*

Question No. : 24

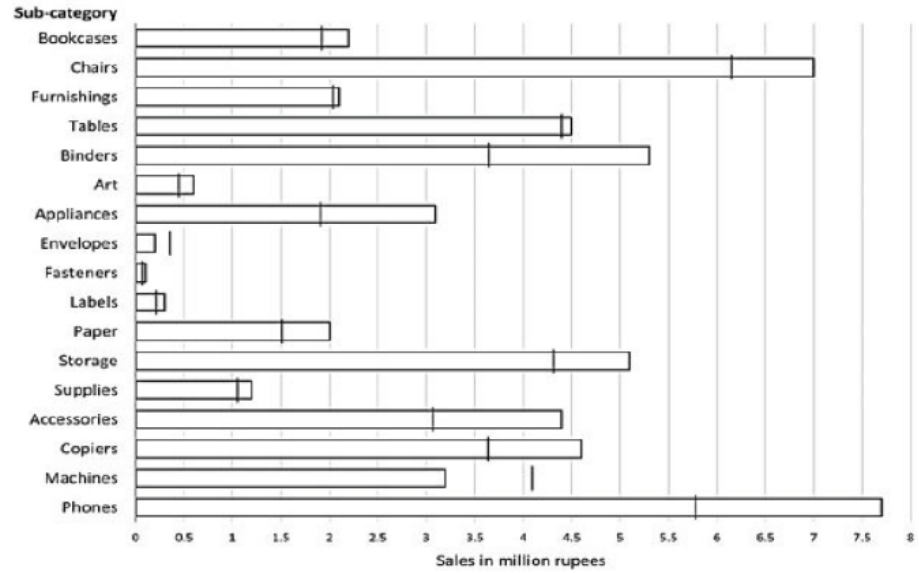
Foreign peacekeepers often exist in a bubble in the poor countries in which they are deployed; they live in posh compounds, drive fancy vehicles, and distance themselves from locals. This may be partially justified as they are outsiders, living in constant fear, performing a job that is emotionally draining. But they are often despised by the locals, and many would like them to leave. A better solution would be bottom-up peace building, which would involve their spending more time working with communities, understanding their grievances and earning their trust, rather than only meeting government officials.

A) The environment in poor countries has tended to make foreign peacekeeping forces live in enclaves, but it is time to change this scenario.
B) Extravagant lifestyles and an aloof attitude among the foreigners working as peacekeepers in poor countries have justifiably make them the target of local anger.
C) Peacekeeping duties would be more effectively performed by local residents given their better understanding, knowledge and rapport with their own communities.
D) Peacekeeping forces in foreign countries have tended to be aloof for valid

Section : DI & Reasoning

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

Question No. : 25



The horizontal bars in the above diagram represent 2020 aggregate sales (in ₹ million) of accompany for the different subcategories of its products. The top four product subcategories (Bookcases, Chairs, Furnishings, Tables) belong to furniture product category; the bottom four product subcategories (Accessories, Copiers, Machines, Phones) belong to the technology product category while all other product subcategories belong to the office supply product category. For each of the product subcategories, there is a vertical line indicating the sales of the corresponding subcategory in 2019.

The total sales (in ₹ million) in 2019 from products in office supplies category is closest to
A) 18.0 B) 12.5 C) 16.5 D) 13.5

Question No. : 26

The percentage increase in sales in Furniture category from 2019 to 2020 is closest to

A) 20% B) 1% C) 8% D) 25%

Question No. : 27

How many subcategories had sales of ₹ 4 million or more in 2019 and registered an increase in sales in excess of 25% in 2020?

Question No. : 28

The improvement index for a category is the maximum percentage increase in sales from 2019 to 2020 among any of its subcategories. The correct order of categories in increasing order of this improvement index is

A) technology, furniture, office supply B) office supply, furniture, technology C) office supply, technology, furniture
D) furniture, technology, office supply

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

Question No. : 29

Ganga, Kaveri, and Narmada are three women who buy four raw materials (Mango, Apple, Banana and Milk) and sell five finished products (Mango smoothie, Apple smoothie, Banana smoothie, Mixed fruit smoothie and Fruit salad). Table-1 gives information about the raw materials required to produce the five finished products. One unit of a finished product requires one unit of each of the raw materials mentioned in the second column of the table.

Table I

Finished product	Raw materials required
Mango smoothie	Mango, Milk
Apple smoothie	Apple, Milk
Banana smoothie	Banana, Milk

Mixed fruit smoothie	Mango, Apple, Banana, Milk
Fruit salad	Mango, Apple, Banana

One unit of milk, mango, apple, and banana cost ₹5, ₹3, ₹2, and ₹1 respectively. Each unit of a finished product is sold for a profit equal to two times the number of raw materials used to make that product. For example, apple smoothie is made with two raw materials (apple and milk) and will be sold for a profit of ₹4 per unit. Leftover raw materials are sold during the last business hour of the day for a loss of ₹1 per unit.

The amount, in rupees, received from sales (revenue) for each woman in each of the four business hours of the day is given in Table-2.

Table II

Business Hour	Ganga	Kaveri	Narmada
Hour 1	23	19	31
Hour 2	21	22	21
Hour 3	29	30	23
Hour 4 (last hour)	30	27	22

The following additional facts are known.
1. No one except possibly Ganga sold any Mango smoothie.
2. Each woman sold either zero or one unit of any single finished product in any hour.
3. Each woman had exactly one unit each of two different raw materials as leftovers.
4. No one had any banana leftover.

What BEST can be concluded about the number of units of fruit salad sold in the first hour?
A) Exactly 2 B) Either 0 or 1 or 2 C) Either 1 or 2 D) Exactly 1

Question No. : 30

Which of the following is NECESSARILY true?

A) Narmada sold one unit of leftover milk. B) Ganga did not sell any leftover mangoes.
C) Ganga did not sell any leftover apples. D) Kaveri sold one unit of leftover mangoes

Question No. : 31

What BEST can be concluded about the total number of units of milk the three women had in the beginning?

A) Either 17 or 18 or 19 units. B) Either 19 or 20 units. C) Either 18 or 19 units. D) Either 18 or 19 or 20 units.

Question No. : 32

If it is known that three leftover units of mangoes were sold during the last business hour of the day, how many apple smoothies were sold during the day?

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

Question No. : 33

A journal plans to publish 18 research papers, written by eight authors (A, B, C, D, E, F, G, and H) in four issues of the journal scheduled in January, April, July and October. Each of the research papers was written by exactly one of the eight authors. Five papers were scheduled in each of the first two issues, while four were scheduled in each of the last two issues. Every author wrote at least one paper and at most three papers. The total number of papers written by A, D, G and H was double the total number of papers written by the other four authors.
Four of the authors were from India and two each were from Japan and China. Each author belonged to exactly one of the three areas — Manufacturing, Automation and Logistics. Four of the authors were from the Logistics area and two were from the Automation area. As per the journal policy, none of the authors could have more than one paper in any issue of the journal.

The following facts are also known.

1. F, an Indian author from the Logistics area, wrote only one paper. It was scheduled in the October issue.
2. A was from the Automation area and did not have a paper scheduled in the October issue.
3. None of the Indian authors were from the Manufacturing area and none of the Japanese or Chinese authors were from the Automation area.
4. A and H were from different countries, but had their papers scheduled in exactly the same issues.
5. C and E, both Chinese authors from different areas, had the same number of papers scheduled. Further, E had papers scheduled in consecutive issues of the journal but C did not.
6. B, from the Logistics area, had a paper scheduled in the April issue of the journal.
7. B and G belonged to the same country. None of their papers were scheduled in the same issue of the journal.
8. D, a Japanese author from the Manufacturing area, did not have a paper scheduled in the July issue.
9. C and H belonged to different areas.

What is the correct sequence of number of papers written by B, C, E and G, respectively?
A) 3, 1, 1, 3 B) 1, 3, 3, 1 C) 1, 2, 2, 3 D) 1, 2, 2, 1

Question No. : 34

How many papers were written by Indian authors?

Question No. : 35

Which of the following statement(s) MUST be true?

Statement A: Every issue had at least one paper by author(s) from each country.
Statement B: Every issue had at most two papers by author(s) from each area.

A) Both the statements B) Neither of the statements C) Only Statement A D) Only Statement B

Question No. : 36

Which of the following statements is FALSE?

A) Every issue had exactly two papers by authors from Logistics area.
B) Every issue had at least one paper by author(s) from Automation area.
C) Every issue had exactly two papers by Indian authors D) Every issue had exactly one paper by a Chinese author

Question No. : 37

Which of the following statements is FALSE?

A) There were exactly two papers by authors from Manufacturing area in the January issue.
B) There were exactly two papers by authors from Manufacturing area in the July issue.
C) There was exactly one paper by an author from Logistics area in the October issue.
D) There was exactly one paper by an author from Manufacturing area in the April issue

Question No. : 38

Which of the following is the correct sequence of number of papers by authors from Automation, Manufacturing and Logistics areas, respectively?

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

DIRECTIONS for the question: *Study the following information carefully and answer the given question.*

Question No. : 39

Amudha, Bharatan, Chandran, Dhinesh, Ezhil, Fani and Gowtham are seven people in a town. Any pair of them could either be strangers, acquaintances, or friends. All relationships are mutual. For example, if Amudha is a friend of Bharatan, then Bharatan is also a friend of Amudha. Similarly, if Amudha is a stranger to Bharatan, then Bharatan is also a stranger to Amudha.

Partial information about the number of friends, acquaintances, and strangers of each of these people among them is given in the table below.

	No. of Friends	No. of Acquaintances	No. of Strangers
Amudha		1	4
Bharatan			
Chandran		1	
Dhinesh			2
Ezhil			1
Fani	1		
Gowtham		3	2

The following additional facts are also known.

1. Amudha, Bharatan, and Chandran are mutual strangers.
2. Amudha, Dhinesh, and Fani are Ezil's friends.
3. Chandran and Gowtham are friends.
4. Every friend of Amudha is an acquaintance of Bharatan, and every acquaintance of Bharatan is a friend of Amudha.
5. Every friend of Bharatan is an acquaintance of Amudha, and every acquaintance of Amudha is a friend of Bharatan.

Who are Gowtham's acquaintances?
A) Bharatan, Dhinesh and Ezhil B) Dhinesh, Ezhil and Fani C) Amudha, Dhinesh and Fani D) Amudha, Bharatan and Fani

Question No. : 40

Which of these pairs share the same type of relationship?

A) (Bharatan, Ezhil) and (Fani, Gowtham) B) (Amudha, Gowtham) and (Ezhil, Fani)
C) (Chandran, Ezhil) and (Dhinesh, Gowtham) D) (Bharatan, Chandran) and (Dhinesh, Ezhil)

Question No. : 41

Who is an acquaintance of Amudha?

A) Fani B) Ezhil C) Dhinesh D) Gowtham

Question No. : 42

Who is an acquaintance of Chandran?

A) Fani B) Ezhil C) Dhinesh D) Bharatan

Question No. : 43

How many friends does Ezhil have?

Question No. : 44

How many people are either a friend or a friend-of-a-friend of Ezhil?

Section : Quantitative Ability

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

Question No. : 45

The strength of an indigo solution in percentage is equal to the amount of indigo in grams per 100 cc of water. Two 800 cc bottles are filled with indigo solutions of strengths 33% and 17%, respectively. A part of the solution from the first bottle is thrown away and replaced by an equal volume of the solution from the second bottle. If the strength of the indigo solution in the first bottle has now changed to21% then the volume, in cc, of the solution left in the second bottle is

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

Question No. : 46

How many three-digit numbers are greater than 100 and increase by 198 when the three digits are arranged in the reverse order?

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

Question No. : 47

The amount Neeta and Geeta together earn in a day equals what Sita alone earns in 6days. The amount Sita and Neeta together earn in a day equals what Geeta alone earns in 2 days. The ratio of the daily earnings of the one who earns the most to that of the one who earns the least is

A) 7 : 3 B) 11 : 7 C) 11 : 3 D) 3 : 2

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

Question No. : 48

Anu, Vinu and Manu can complete a work alone in 15 days, 12 days and 20 days, respectively. Vinu works everyday. Anu works only on alternate days starting from the first day while Manu works only on alternate days starting from the second day. Then, the number of days needed to complete the work is

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

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

Question No. : 49

If $x_0 = 1$, $x_1 = 2$, and $x_{n+2} = \frac{1 + x_{n+1}}{x_n}$, $n = 0, 1,2,3\ldots\ldots$, then x_{2021} is equal to

A) 2 B) 1 C) 4 D) 3

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

Question No. : 50

If $5 - \log_{10}\sqrt{1+x} + 4\log_{10}\sqrt{1-x} = \log_{10}\frac{1}{\sqrt{1-x^2}}$, then 100x equals

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

Question No. : 51

Suppose hospital A admitted 21 less Covid infected patients than hospital B, and all eventually recovered. The sum of recovery days for patients in hospitals A and B were 200 and 152, respectively. If the average recovery days for patients admitted in hospital A was 3 more than the average in hospital B then the number admitted in hospital A was

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

Question No. : 52

If r a constant such that $|x^2 - 4x - 13| = r$ has exactly three distinct real roots, then the value of r is
A) 17 B) 18 C) 15 D) 21

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

Question No. : 53

Anil invests some money at a fixed rate of interest, compounded annually. If the interests accrued during the second and third year are ₹ 806.25 and ₹ 866.72, respectively, the interest accrued, in INR, during the fourth year is nearest to 46/99

A) 931.72 B) 926.84 C) 934.65 D) 929.48

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

Question No. : 54

A circle of diameter 8 inches is inscribed in a triangle ABC where $\angle ABC = 90^o$. If BC = 10 inches then the area of the triangle in square inches is

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

Question No. : 55

Two trains cross each other in 14 seconds when running in opposite directions along parallel tracks. The faster train is 160 m long and crosses a lamp post in 12 seconds. If the speed of the other train is 6 km/hr less than the faster one, its length, in m, is

A) 190 B) 184 C) 192 D) 180

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

Question No. : 56

A basket of 2 apples, 4 oranges and 6 mangoes costs the same as a basket of 1 apple,4 oranges and 8 mangoes, or a basket of 8 oranges and 7 mangoes. Then the number of mangoes in a basket of mangoes that has the same cost as the other baskets is

A) 12 B) 13 C) 10 D) 11

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

Question No. : 57

Amar, Akbar and Anthony are working on a project. Working together Amar and Akbar can complete the project in 1 year, Akbar and Anthony can complete in 16months, Anthony and Amar can complete in 2 years. If the person who is neither the fastest nor the slowest works alone, the time in months he will take to complete the project is

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

Question No. : 58

If the area of a regular hexagon is equal to the area of an equilateral triangle of side 12 cm, then the length, in cm, of each side of the hexagon is

A) $6\sqrt{6}$ B) $2\sqrt{6}$ C) $\sqrt{6}$ D) $4\sqrt{6}$

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

Question No. : 59

Amal purchases some pens at ₹ 8 each. To sell these, he hires an employee at a fixed wage. He sells 100 of these pens at ₹ 12 each. If the remaining pens are sold at₹ 11 each, then he makes a net profit of ₹ 300, while he makes a net loss of ₹ 300 if the remaining pens are sold at ₹ 9 each. The wage of the employee, in INR, is

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

Question No. : 60

The number of integers n that satisfy the inequalities |n -60| < |n-100| <| n-20| is

A) 19 B) 20 C) 18 D) 21

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

Question No. : 61

Identical chocolate pieces are sold in boxes of two sizes, small and large. The large box is sold for twice the price of the small box. If the selling price per gram of chocolate in the large box is 12% less than that in the small box, then the percentage by which the weight of chocolate in the large box exceeds that in the small box is nearest to

A) 127 B) 124 C) 144 D) 135

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

Question No. : 62

The natural numbers are divided into groups as (1), (2, 3, 4), (5, 6, 7, 8, 9), ... and soon. Then, the sum of the numbers in the 15th group is equal to

A) 6119 B) 6090 C) 7471 D) 4941

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

Question No. : 63

Onion is sold for 5 consecutive months at the rate of Rs 10, 20, 25, 25, and 50 per kg, respectively. A family spends a fixed amount of money on onion for each of the first three months, and then spends half that amount on onion for each of the next two months. The average expense for onion, in rupees per kg, for the family over these 5months is closest to

A) 26 B) 16 C) 18 D) 20

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

Question No. : 64

Suppose the length of each side of a regular hexagon ABCDEF is 2 cm. It T is the mod point of CD, then the length of AT, in cm, is

A) √13 B) √15 C) √14 D) √12

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

Question No. : 65

$f(x) = \frac{x^2 + 2x - 15}{x^2 - 7x - 18}$ is negative if and only if

A) x < - 5 or 3 < x < 9 B) -5 < x < -2 or 3 < x < 9 C) x < -5 or -2 < x < 3 D) -2 < x < 3 or x > 9

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

Question No. : 66

The number of groups of three or more distinct numbers that can be chosen from 1,2, 3, 4, 5, 6, 7 and 8 so that the groups always include 3 and 5, while 7 and 8 are never included together is

Directions of Test

Test Name	Actual CAT 2021 Slot I	Total Questions	66	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	24	0:40(h:m)	3	1/3
DI & Reasoning	20	0:40(h:m)	3	1/3
Quantitative Ability	22	0:40(h:m)	3	1/3

Section : Verbal Ability

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

Explanation:-
Refer to this line of the third paragraph – "That showed the researchers that cuttlefish wouldn't reject the prawns if it was the only food available." Thus It's not about survival.
Other options are explicitly mentioned in the passage.

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

Explanation:-
Refer to this line of the third paragraph – "In the experimental trials, the cuttlefish didn't jump on the prawns if the live grass shrimp were labeled with a triangle— many waited for the shrimp drawer to open up"
and this line of the second paragraphPreliminary experiments showed that cuttlefishes' favorite food is live grass shrimp, while raw prawns are so-so and Asian shore crab is nearly unacceptable.

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

Explanation:-
Option C is correct; refer to this line of the last paragraph – "We don't know if living in a social group is important for complex cognition unless we also show those abilities are lacking in less social species,"
Option A is wrong; refer to this line of the third paragraph – "The longest that a cuttlefish waited was 130 seconds." As 100 is less than 130."
Option B is wrong; refer to this line of the second paragraph – "Preliminary experiments showed that cuttlefishes' favorite food is live grass shrimp, while raw prawns are so-so and Asian shore crab is nearly unacceptable."
Option D if true would not complement the findings in any way.

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

Explanation:-
Refer to this line of the last paragraph – "We don't know if living in a social group is important for complex cognition unless we also show those abilities are lacking in less social species," Hence Option C cannot be inferred.
Options A, B and D can be inferred from Second & third paragraph of the passage.

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

Explanation:- *Refer to this line of the third paragraph – "Indeed, they **might** be twins, the progeny of the same parents." Might refers to a probability whereas 'are' refers to certainty.*

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

Explanation:- *The passage treads from introducing 'Utopia' and then harps on that as per popular belief it provides 'security' and leads to 'Homogeneity' and finally refers to 'international community' towards the end.*

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

Explanation:-
*Refer to this line of the first paragraph –" In More's time, for much of the population, given the plenty and security on offer, **such restraints would not have seemed overly unreasonable.**" This implies that restraints were not unwelcome. As this is an 'Except' question so first option is ruled out.*

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

Explanation:-
Refer to this line of the first paragraph –" In More's time, for much of the population, given the plenty and security on offer, such restraints would not have seemed overly unreasonable."

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

Explanation:-
Option A finds help in this line of the second paragraph – "Beginning in the 1700s, the temperance movement advocated for tea as a pleasure that cheered but did not inebriate."
Option C finds help in this line of the second paragraph – "industrialists soon borrowed this moral argument in advancing their case for free trade in tea."
Option D finds help in this line of the second paragraph – "Factory owners joined in, compelled by the cause of a sober workforce."

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

Explanation:-
Refer to the last line of the passage –"It is not a stretch to say that tea marketers have advanced the particularly noble cause of human dialogue and friendship."

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

Explanation:-
Option D can't be supported based on the information stated in the passage.
Option C is correct, refer to this line of the second paragraph – "During the Second World War, tea service was presented as a social and patriotic activity that uplifted soldiers and calmed refugees."
Option A and B are correct – Refer to these last lines of the passage – "It is not a stretch to say that tea marketers have advanced the particularly noble cause of human dialogue and friendship."

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

Explanation:-
*Refer to this line of the second last paragraph – "And morality marketing is **now** a commodity as well, applied to food, "fair trade" apparel and eco-tourism."*

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

Explanation:-
Only option B respects the plants for its needs and accepts it as an independent identity whereas all other options mark the element for its link or usage with humans.

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

Explanation:-
This is a double negative question, thus we need to look for the statement that strengthens or is in line with the main idea conveyed by the passage.
Option D is explicitly against the main idea of the passage. Option B gives importance of human linkage to identify/ respect the identity of cats and dogs. Option A also mentions the importance of human linkage. Whereas Option C gives more importance to 'local medicinal plants'.

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

Explanation:-
The example is neither meant to complicate nor provide an exemption. Rather it's an attempt to break the non-binary understanding of personhood by bringing in a third category that shares a similar relation.
Refer to this line of the last paragraph - "With these Maya examples, we are challenged to discard the person/nonperson binary that constitutes our basic ontological outlook....."

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

Explanation:-
Refer to this line of the first paragraph – "For the Maya (who did have plenty of other communicating objects, if not smartphones), the answer was no." But if the personhood of the incense burner and the stone chopper was a function of their usefulness to humans. Then the answer would be changed to 'yes'.

QNo:- 17 ,Correct Answer:- *4*

Explanation:-
The discussion is regarding the ownership & rights related to the 'space'. Option 4 though touches upon the rights but it is not specifically linked to the 'outer space'

QNo:- 18 ,Correct Answer:- *4312*

Explanation:-
Sentence 4 introduces the topic by listing the 'two poles'. Sentence 3 mentions that 'fact must lie halfway between' Sentence 1 elaborates it further. The 'convergence' mentioned in sentence 2 makes it the appropriate concluding sentence.

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

Explanation:-
Option A is wrong as it's not about 'confusion'. Option B is wrong as instead of multiplication it is about 'an entirely different message. 'Option C is wrong as it's not about winning over rather 'mismatch'

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

Explanation:-
Options A & D are wrong as they focus on production & distribution & miss on 'business models'. Option C is wrong as the developing economies are not being forced into something.

QNo:- 21 ,Correct Answer:- *5*

Explanation:-
The topic of discussion is the 'predatory journals' specifically with reference to India but Option 5 moves on to the 'Global' aspect.

QNo:- 22 ,Correct Answer:- *2341*

Explanation:-
Sentence 2 is a standalone complete and introductory sentence. 'They' is sentence 3 refers to Biologists mentioned in '2'.Sentence 4 lists the specific aspect and Statement 1 aptly sums up the discussion.

QNo:- 23 ,Correct Answer:- *2143*

Explanation:-
Statement 2 raises a concern. Statement 1 lists a popular response to counter 'global warming'. Sentence 4 explains the mechanism. 'It' in Sentence 3 refers to carbon mentioned in statement 4.

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

Explanation:-
Option A is wrong as it shifts the onus on the 'environment' and hampers the need to mix up and listen to the grievance of the locals. Option B is wrong as this has not been stated as the reason for foreign peacekeepers being despised by the locals. Option C is wrong as the passage states that –"their spending more time working with communities, understanding their grievances and earning their trust, rather than only meeting government officials." Their refers to the foreign peacekeepers and not locals.

Section : DI & Reasoning

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

Explanation:- *Total sales in 2019 of office supply*
= 3.65 + 0.4 + 1.8 + 0.3 + 0.1 + 0.3 + 1.5 + 4.3 + 1.1 = 13.5 million

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

Explanation:- *Sales of Furniture in 2019 = 1.9 + 6.2 + 2.0 + 4.4 = 14.5 million*

Sales of furniture in 2020 = 22 + 70 + 201 + 45 = 15.8 million

$$\% \text{ increase} = \frac{15.8-14.5}{14.5} = 100$$

$$= \frac{1.3}{14.5} \times 100 = 8\%$$

QNo:- 27 ,Correct Answer:- *1*

Explanation:- *By Visualisation*
The increase should be 1/4 of Bar
It is only of Phones. Hence only 1

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

Explanation:- *In Technology*
The improvement index is for

$$\text{Accessories and is } \frac{4.4-3.1}{3.1} \times 100 = 41\%$$

In Furniture improvement index is

$$\text{For book case and is } \frac{2.2-1.9}{1.9} \times 100 = 15\%$$

In office supply improvement index is for

$$\text{Appliance and is } \frac{3.2-1.8}{1.8} \times 100 = 77\%$$

Hence order is Furniture technology office supply

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

Explanation:- *As per information following are SP of finished product (will be represented by (a, b, c, d, e)*

a	Mango smoothie	12
b	Apple smoothie	11
c	Banana smoothie	10
d	Mix fruit smoothie	19
e	Fruit salad	12

Now following are possible product sale of each of them in every hour and in last hour sale of left over and product in shown

	Ganga	Kavari	Narmada
Hour 1	a/b or e/b	b/d	d/e
Hour 2	b/c	(a/c) or (e/c)	b/c
Hour 3	c/d	b/d	a/b or e/b
Hour 4	Left over milk + mango sold a/e	Case 1: (2+1) Sold a/c Case 2: (4+1) sold a/c or e/c	Left over mango+apple (2+1) sold (d)

As shown fruit salad is represented by e. So it could be 1 or 2.

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

Explanation:- *As per information following are SP of finished product (will be represented by (a, b, c, d, e)*

a	Mango smoothie	12
b	Apple smoothie	11
c	Banana smoothie	10
d	Mix fruit smoothie	19
e	Fruit salad	12

Now following are possible product sale of each of them in every hour and in last hour sale of left over and product in shown

	Ganga	Kavari	Narmada
Hour 1	a/b or e/b	b/d	d/e
Hour 2	b/c	(a/c) or (e/c)	b/c
Hour 3	c/d	b/d	a/b or e/b
Hour 4	Left over milk + mango sold a/e	Case 1: (2+1) Sold a/c Case 2: (4+1) sold a/c or e/c	Left over mango+apple (2+1) sold (d)

As shown Ganga sold only left over milk and Mango not Apple. Hence option 3 is true.

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

Explanation:- *As per information following are SP of finished product (will be represented by (a, b, c, d, e)*

a	Mango smoothie	12
b	Apple smoothie	11
c	Banana smoothie	10
d	Mix fruit smoothie	19
e	Fruit salad	12

Now following are possible product sale of each of them in every hour and in last hour sale of left over and product in shown

	Ganga	Kavari	Narmada
Hour 1	a/b or e/b	b/d	d/e
Hour 2	b/c	(a/c) or (e/c)	b/c
Hour 3	c/d	b/d	a/b or e/b
Hour 4	Left over milk + mango sold a/e	Case 1: (2+1) Sold a/c Case 2: (4+1) sold a/c or e/c	Left over mango+apple (2+1) sold (d)

As shown it is 18 or 19 or 20

QNo:- 32 ,Correct Answer:- *6*

Explanation:- *As per information following are SP of finished product (will be represented by (a, b, c, d, e)*

a	Mango smoothie	12
b	Apple smoothie	11
c	Banana smoothie	10
d	Mix fruit smoothie	19
e	Fruit salad	12

Now following are possible product sale of each of them in every hour and in last hour sale of left over and product in shown

	Ganga	Kavari	Narmada
Hour 1	a/b or e/b	b/d	d/e
Hour 2	b/c	(a/c) or (e/c)	b/c
Hour 3	c/d	b/d	a/b or e/b
Hour 4	Left over milk + mango sold a/e	Case 1: (2+1) Sold a/c Case 2: (4+1) sold a/c or e/c	Left over mango+apple (2+1) sold (d)

It means each of them sold 1 left over Mango. So we have to count Apple smoothie i.e. b
So 2 + 2 + 2 = 6 is the answer

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

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
According to point 6 both C and E have published same number and for 2 months.
So C and E have published 2 each and B and F 1 each respectively.
So whole points are summarized in following table.

Authors	No. of Papers	Everyday	Area	Months
A	3	Indian	Automation	Jan, April, July
B	1	Indian	Logistics	April
C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct

H	3	Japanese	Logistics	Jan, April, July

As shown it is 1,2,2,3

QNo:- 34 ,Correct Answer:- *8*

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
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D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Total papers by Indian Authors are 3 + 1 + 1 + 3 = 8

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

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
According to point 6 both C and E have published same number and for 2 months.
So C and E have published 2 each and B and F 1 each respectively.
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Authors	No. of Papers	Everyday	Area	Months
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C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Only option A is true

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

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
According to point 6 both C and E have published same number and for 2 months.
So C and E have published 2 each and B and F 1 each respectively.
So whole points are summarized in following table.

Authors	No. of Papers	Everyday	Area	Months
A	3	Indian	Automation	Jan, April, July
B	1	Indian	Logistics	April
C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Option 1 is false

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

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
According to point 6 both C and E have published same number and for 2 months.

So C and E have published 2 each and B and F 1 each respectively.
So whole points are summarized in following table.

Authors	No. of Papers	Everyday	Area	Months
A	3	Indian	Automation	Jan, April, July
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C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Option 2 is false

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

Explanation:-
Before drawing the table following Summarization should be done

Authors (eight) : A,B,C,D,E,F,G,H
Research paper (18) : 5 in Jan, 5 in April, 4 in July, 4 in Oct.
Also ratio of (A,D,G,H) to B,C,E,F) is 2:1
So, A,D,E,G must have published total 12 and BCEF total 6 papers

Further no one can publish more than 3 papers, so A,D,E,H each must have published 3 each .
Now B,C,E,F could have published 3, 1, 1, 1 or 2, 2, 1, 1 in any order.
According to point 6 both C and E have published same number and for 2 months.
So C and E have published 2 each and B and F 1 each respectively.
So whole points are summarized in following table.

Authors	No. of Papers	Everyday	Area	Months
A	3	Indian	Automation	Jan, April, July
B	1	Indian	Logistics	April
C	2	Chinese	Manufacturing	Jan, Oct
D	3	Japanese	Manufacturing	Jan, April, Oct
E	2	Chinese	Logistics	April, July
F	1	Indian	Logistics	Oct.
G	3	Indian	Automation	Jan, July, Oct
H	3	Japanese	Logistics	Jan, April, July

Papers by Authors from Automation are 3 + 3 = 6
BY Manufacturing are 2 + 3 = 5
By Logistics are 1 + 2 + 1 + 3 = 7
Hence option 1 is the answer

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

Explanation:-

Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As shown Gowtham's Acquaintances are Dhinesh, Ezhil and Fani

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

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As in option 1 both pairs above same relation of Acquaintance. Hence the Answer

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

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As shown it is Dhinesh

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

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As shown it is Fani

QNo:- 43 ,Correct Answer:- *3*

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

As shown 3 Friends

***QNo:- 44 ,Correct Answer:-** 4*

Explanation:-
Before solving we have to understand the following :
(i) Each one will have total 6 relation (Friend, Acquaintances, strangers). So in first row for Amudha number of friends are 6 -(1+4) = 6.5 = 1.

Similarly for Gowtham the number of friends for Gowtham are also 6-(2 + 3) = 6-5= 1
(ii) The best way of solving is by Grid e.g. if C and G are friends we write in intersection of C and G as Fr and intersection of G and C also Fr

Proceeding in this way we will conclude the whose information in following Grid:

.	A	B	C	D	E	F	G
A	X	S	S	Ac	Fr	S	S
B	S	X	S	Fr	Ac	S	S
C	S	S	X	S	S	Ac	Fr
D	Ac	Fr	S	X	Fr	S	Ac
E	Fr	Ac	S	Fr	X	Fr	Ac
F	S	S	Ac	Ac	Fr	X	Ac
G	S	S	Fr	Ac	Ac	Ac	X

Friends are Amudha, Dhinesh and Fani. Also Dhani's friend Bhartan. So 4 is answer

Section : Quantitative Ability

***QNo:- 45 ,Correct Answer:-** 200*

***Explanation:-** Indigo in 1st bottle = 33% of 800 = 264gm*
Indigo in 2nd bottle = 17% of 800 = 136gm
New Indigo in 1st bottle = 21% of 800 = 168gm
Reduction in Indigo = 264 - 168 = 96gm
Now per 100cc reduction (if 100 cc are thrown form 1st bottle and replaced from 2nd bottle = 33 - 17 = 16gm
$\therefore$ solution transferred from 2nd bottle $= \frac{96}{16} \times 100 = 600$ cc
$\therefore$ *solution left in 2nd bottle = 800 - 600 = 200cc*

QNo:- 46 ,Correct Answer:- *70*

Explanation:- *Let digit at unit place = a*
Ten's place = b
Hundred's place = c
∴ Number = 100c + 10 b + a
On reversing number = 100a + 10b + c
∴ (100a + 10b+c) - (100c + 10 b + a) = 198
99a - 99c = 198
⇒ a-c = 2
Now (a,c) can have seven combination i.e. (3,1) (4, 2) (5,3) (6,4) (7,5) (8,6) (9,7) and b can take 10 values (0 to 9)
∴ 7 × 10 = 70 are possible three digits numbers

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

Explanation:- *(Neeta + Geeta) : Sita = 6 : 1*

$\text{Means Sita} = \frac{1}{7}th \text{ of total}$

(Sita + Neeta) : Geeta = 2: 1

$\text{Means Geeta} = \frac{1}{3}rd \text{ of total}$

$\text{So Neeta} = 1-\frac{1}{7}-\frac{1}{3}$

$\frac{21-3-7}{21}=\frac{11}{21}$

$\therefore \text{Highest to lowest ratio} = \frac{11}{21}\,\frac{7}{7}$

$=\frac{11:3}{21}=11:3$

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

Explanation:- *Let total work = 60 units*

$\therefore \text{Anu can do } \frac{60}{15}=4 \text{ units/day}$

$\text{Vinu can do } \frac{60}{12}=5 \text{ units/day}$

$\text{Manu can do } \frac{60}{20}=3 \text{ units/day}$

1st day work = (4+5) = 9 units
2nd day work = (5+3) = 8 units
∴ work done in 2 days= 9 + 8 = 17 units
Work done in 6 days = 17 × 3 = 51 units
So remaining 60-51 = 9 units are done in 7th day

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

Explanation:- $x_0 = 1$
$x_1 = 2$

$As\ x_{n+2} = \frac{1+2n+1}{xn}$

$\therefore x_2 = \frac{1+x_1}{x_0} = \frac{1+2}{1} = 3$

$x_3 = \frac{1+x_2}{x_1} = \frac{1+3}{2} = 2$

$x_4 = \frac{1+x_3}{x_2} = \frac{1+2}{3} = 1$

So sequence become (1,2,3, 2,1) and it states replacing from x_5.

$\therefore x_{2021}$ which will be 2022nd term will be 2nd term i.e. 2

QNo:- 50 ,Correct Answer:- *99*

Explanation:-

$$5 - \log_{10}\sqrt{1+x} + 4\log_{10}\sqrt{1-x} = \log_{10}\frac{1}{\sqrt{1-x^2}}$$

$$\log 100000 - \log\sqrt{1+x} + \log\left(\sqrt{1-x}\right)^4 = \log\frac{1}{\sqrt{1-x^2}}$$

$$\log\left[\frac{100000 \times \left(\sqrt{1-x}\right)^4}{\sqrt{1+x}}\right] = \log\frac{1}{\sqrt{1-x^2}}$$

$\frac{100000\left(\sqrt{1-x}\right)^4}{\sqrt{1+x}} = \frac{1}{\sqrt{1+x}\sqrt{1-x}}$

$\frac{100000}{1}\left(\sqrt{1-x}\right)^4 = \frac{1}{\left(\sqrt{1-x}\right)}$

$\Rightarrow \left(\sqrt{1-x}\right)^5 = 10^{-5}$

$\sqrt{1-x} = 10^7$

$1-x = \frac{1}{100}$

$\Rightarrow x = \frac{99}{100}$

$\therefore 100x = \frac{99}{100} \times 100 = 99$

QNo:- 51 ,Correct Answer:- *35*

Explanation:- *Let patient in hospital B = x*

Patient in hospital A = x - 21

Patient/day in B = B

Patient/day in A= B+3

According to question

xB = 152

(x-21) (B+3) = 200

$B = \frac{152}{x}$

$(x-21)\left(\frac{152}{x}+3\right) = 200$

$152x - 3192 + 3x^2 + 630 = 200x$

$3x^2 - 11x - 3192 = 0$

$x^2 - 37x - 1064 = 0$

(x-56) (x+19) = 0

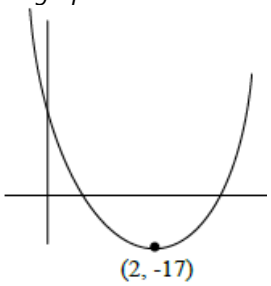
$\Rightarrow x = 56$

So patient in A = x - 21

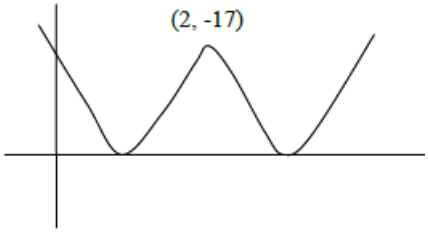
= 56 - 21 = 35

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

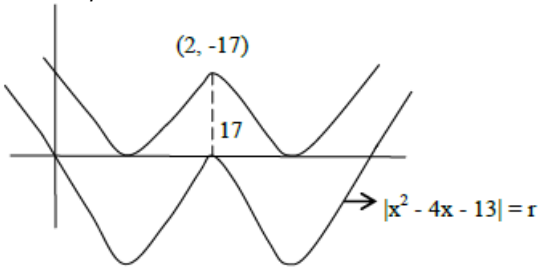
Explanation:- *Here $|x^2 - 4x - 13| = r$*
Let $f(x) = x^2 - 14x - 13 = (x-2)^2 - 17$
Its graph will be



Now $|x^2 - 4x - 13| = 0$
$\Rightarrow |(x-2)^2 - 17| = 0$, its graph will be



The original equation is $|x^2 - 4x - 13| = r$
$\Rightarrow |(x-2)^2 - 17| - r = 0$
As it has exactly 3 roots so the above graph will tough x-axis thrice, so
$\therefore$ value of r = 17

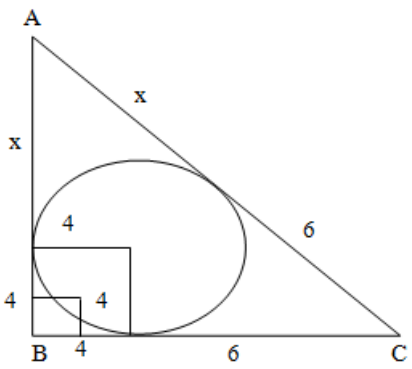


QNo:- 53 ,Correct Answer:- *A*

Explanation:- $\text{Required interest} = \frac{866.72}{806.25} \times 866.72 = 931.72$

QNo:- 54 ,Correct Answer:- *120*

Explanation:-



$$\text{In radius} = \frac{Area\ of\ \Delta}{Semi\ perimeter}$$

$$\therefore 4 = \frac{\frac{1}{2} \times BC \times AB}{\frac{x+4+10+x+6}{2}}$$

$$4 = \frac{\frac{1}{2} \times 10(x+4)}{\frac{2x+20}{2}}$$

$$4 = \frac{5(x+4)}{x+10}$$

$4x + 40 = 5x + 20$

$\Rightarrow x = 20$

$$\text{Area of } \Delta \frac{1}{2} \times BC \times AB$$

$$= \frac{1}{2} \times 10 \times 24$$

$= 120$ sq. inch

QNo:- 55 ,Correct Answer:- A

Explanation:-

$$\text{Speed of 1st train } = \frac{160}{12} = \frac{40}{3} \text{ m/sec}$$

$$\text{Speed of 2nd train} = \frac{40}{3} - \frac{6 \times 5}{18}$$

$$= \frac{40}{3} - \frac{5}{3} = \frac{35}{3} m/\sec$$

$$\text{Relative speed} = = \frac{40}{3} + \frac{35}{3} = \frac{75}{3} = 25m/\sec$$

$\therefore$ time = 14 sec

$\therefore$ Sum of lengths of two trains = 25 × 14 = 350m

$\therefore$ length of 2nd train = 350 - 160 = 190m

QNo:- 56 ,Correct Answer:- B

Explanation:- 2A + 4 O + 6 M = 1 A + 4 O + 8 M

$\Rightarrow$ 1A = 2M ..... (1)

1 A+ 4 O + 8 M = 8 O + 7 M

2 M + 4 O + 8 M = 8 O + 7 M

10 M + 4 O = 8 O + 7 M

3 M = 8 O - 4 O

3 M = 4 O

So 1st basket in terms of M can be 2 A + 4 O + 6 M

= 4 M + 3 M + 6 M

= 13 Mangoes

QNo:- 57 ,Correct Answer:- 32

Explanation:- Amar and Akbar can do work in 12 months

Akbar and Anthony in 16 months

Anthony and Amar in 24 months

Let total work = 48 units

$\therefore$ Amar + Akbar will 48/12 = 4 units/month

Akbar + Anthony will 48/16 = 3 units/month

Anthony + Amar will do 48/24 = 2 units/months

∴ 2 (Amar + Akbar + Anthony) will do 4 + 3 + 2 = 9 units/month
∴ Amar + Akbar + Anthony do 9/2 = 4.5 units/month
∴ Anthony will do 4.5 - 4 = .5 units/month
Hence will do work in 48/.5 = 96 months

Amar will do $\frac{48}{(4.5-3)}=\frac{48}{1.5}=32$ months

Akbar will do in $\frac{48}{(4.5-2)}=\frac{48}{2.5}=19.2$ months

So neither fastest non slowest will do in 32 months.

QNo:- 58 ,Correct Answer:- *B*

Explanation:- *Let side of hexagon = a*

$\therefore \frac{6\times\sqrt{3}}{4}\times a^2=\frac{\sqrt{3}}{4}\times 12^2$

$a^2=\frac{12\times 12}{6}=24$

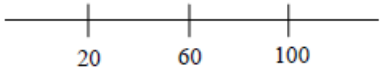
$\Rightarrow a=\sqrt{24}=2\sqrt{6}$

QNo:- 59 ,Correct Answer:- *1000*

Explanation:-
Let number of pens = n
Fixed salary = k
CP of n pens = 8n Rs.
So According to question
[12 × 100 + (n-100)×11] - [k+8n] = 300 ..... (1)
Also
[12 × 100 + (n-100) × 9] - [k+8n] = -300
Solving we get = n = 400
and k = 1000
∴ Salary = 1000 Rs.

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

Explanation:-



(i) |n - 60| is the distance of n from 60 or number line
(ii) |n - 100| is the distance of n from 100 or number line
(iii) |n - 20| is distance of n from 20 on number line

Given that |n-60| < |n-100| < |n-20|
At n = 60, |n-20| and |n-100| are equal
∴ n > 60
Mid-point of 60 and 100 is 80
At n = 80, |n-60| = |n-100|
∴ n < 80
So n lines between 60 and 80
n = (61, 62, ...79)
Hence 19 values possible

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

Explanation:- *Let as suppose each chocolate weight k gm and n_1 are chocolate in small box and n_2 in second box and price are P and 88 p.*

∴ $(n_2 \times k) \times .88P = 2(n_1 \times k) \times P$

$$\therefore \frac{n_2 \times k}{n_1 \times k} = \frac{2}{.88} = \frac{200}{88} = \frac{25}{11}$$

$$\therefore \%\ \text{increase} = \frac{25-11}{11} \times 100$$

$$= \frac{14}{11} \times 100$$

$$\approx 127\%$$

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

Explanation:- *In first group 1 element is there*
In second group 3 elements are there
In third group 5 elements are there
∴ in 14th group 27 elements are there
∴ Numbers used = 1 + 3 + 5 + ... + 27 = 14^2
∴ First elements of 15th group will be 197 and it will have 29 numbers
∴ S = 29/2 [2 × 197 + (28)] = 6119

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

Explanation:- *Fixed amount for 1st 3 months will be LCM of 10, 20, 25 i.e. 100 Rs. And last two months will be 100/2 = 50 Rs.*

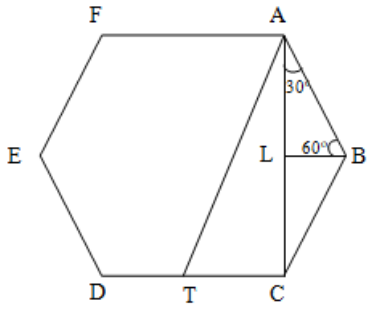
$$\therefore \text{Quantity purchase} = \frac{100}{10} + \frac{100}{20} + \frac{100}{25} + \frac{50}{25} + \frac{50}{50}$$

= 10 + 5 + 4 + 2 + 1
= 22kg

$$\therefore \text{Average Price} = \frac{100+100+100+50+80}{22}$$

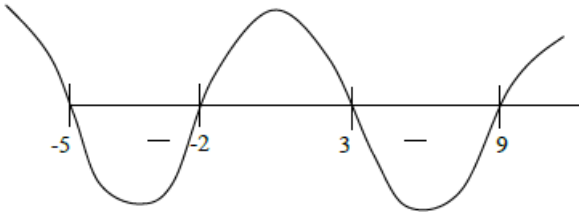
$$= \frac{400}{22} = 18\ \text{Rs./kg}$$

QNo:- 64 ,Correct Answer:- *A*



Explanation:-
As shown BL = √3 (30^o, 60^o, 90^o Δ)
Also LC = √3
∴ AC = 2√3
∴ A T^2 = $(2\sqrt{3})^2 + (1)^2$
= 12 + 1
= 13
⇒ AT = √13

QNo:- 65 ,Correct Answer:- *B*



Explanation:-

$f(x) = \frac{x^2+2x-15}{x^2-7x-18}$

$= \frac{x^2+5x-3x-15}{x^2-9x+2x-18} = \frac{(x+5)(x-3)}{(x-9)(x+2)}$

$\frac{(x+5)(x-3)}{(x-9)(x+2)} < 0$

∵ *-5 < x <-2 or 3 < x < 9*

is the answer

QNo:- 66 ,Correct Answer:- *47*

Explanation:- *As 3, 5 are fixed. So we have to select remaining digits such that 7, 8 are not together.*

Three digits number = $^6c_1$ *= 6 (as only 1 digit is selected out of)*

4 digit number = $^6c_2$ *-1 = 14*

5 digits number = $^6c_3$ *- 4 = 16*

6 digits number = $^6c_4$ *- 6 = 9*

7 digits number = $^6c_5$ *-* $^4c_3$ *= 2*

8 digit number will not be possible as (7,8) will be together'

∴ number of groups = 6 + 14 + 16 + 9 + 2 = 47

Directions of Test

Test Name	Actual CAT 2021 Slot II	Total Questions	66	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	24	0:40(h:m)	3	1/3
DI & Reasoning	20	0:40(h:m)	3	1/3
Quantitative Ability	22	0:40(h:m)	3	1/3

Section : Verbal Ability

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

Question No. : 1

I have elaborated..... a framework for analyzing the contradictory pulls on [Indian] nationalist ideology in its struggle against the dominance of colonialism and the resolution it offered to those contradictions. Briefly, this resolution was built around a separation of the domain of culture into two spheres—the material and the spiritual. It was in the material sphere that the claims of Western civilization were the most powerful. Science, technology, rational forms of economic organization, modern methods of statecraft—these had given the European countries the strength to subjugate the non-European people..... To overcome this domination, the colonized people had to learn those superior techniques of organizing material life and incorporate them within their own cultures..... But this could not mean the imitation of the West in every aspect of life, for then the very distinction between the West and the East would vanish—the self-identity of national culture would itself be threatened.....

The discourse of nationalism shows that the material/spiritual distinction was condensed into an analogous, but ideologically far more powerful, dichotomy: that between the outer and the inner Applying the inner/outer distinction to the matter of concrete day-to-day living separates the social space into ghar and bāhir, the home and the world. The world is the external, the domain of the material; the home represents one's inner spiritual self, one's true identity. The world is a treacherous terrain of the pursuit of material interests, where practical considerations reign supreme. It is also typically the domain of the male. The home in its essence must remain unaffected by the profane activities of the material world—and woman is its representation. And so one gets an identification of social roles by gender to correspond with the separation of the social space into ghar and bāhir.....

The colonial situation, and the ideological response of nationalism to the critique of Indian tradition, introduced an entirely new substance to [these dichotomies] and effected their transformation. The material/spiritual dichotomy, to which the terms world and home corresponded, had acquired.... a very special significance in the nationalist mind. The world was where the European power had challenged the non-European peoples and, by virtue of its superior material culture, had subjugated them. But, the nationalists asserted, it had failed to colonize the inner, essential, identity of the East which lay in its distinctive, and superior, spiritual culture..... [I]n the entire phase of the national struggle, the crucial need was to protect, preserve and strengthen the inner core of the national culture, its spiritual essence. . .

Once we match this new meaning of the home/world dichotomy with the identification of social roles by gender, we get the ideological framework within which nationalism answered the women's question. It would be a grave error to see in this, as liberals are apt to in their despair at the many marks of social conservatism in nationalist practice, a total rejection of the West. Quite the contrary: the nationalist paradigm in fact supplied an ideological principle of selection.

On the basis of the information in the passage, all of the following are true about the spiritual/material dichotomy of Indian nationalism EXCEPT that it:

A) helped in safeguarding the identity of Indian nationalism.
B) was not as ideologically powerful as the inner/outer dichotomy
C) represented a continuation of age-old oppositions in Indian culture
D) constituted the premise of the ghar/bāhir dichotomy

Question No. : 2

Which one of the following explains the "contradictory pulls" on Indian nationalism?
A) Despite its spiritual superiority, Indian nationalism had to fight against colonial domination.
B) Despite its scientific and technological inferiority, Indian nationalism had to fight against colonial domination.
C) Despite its fight against colonial domination, Indian nationalism had to borrow from the coloniser in the spiritual sphere.
D) Despite its fight against colonial domination, Indian nationalism had to borrow from the coloniser in the material sphere

Question No. : 3

Which one of the following, if true, would weaken the author's claims in the passage?

A) The colonial period saw the hybridisation of Indian culture in all realms as it came in contact with British/European culture.
B) Forces of colonial modernity played an important role in shaping anti-colonial Indian nationalism.
C) The Industrial Revolution played a crucial role in shaping the economic prowess of Britain in the eighteenth century.
D) Indian nationalists rejected the cause of English education for women during the colonial period.

Question No. : 4

Which one of the following best describes the liberal perception of Indian nationalism?

A) Indian nationalist discourses provided an ideological principle of selection.
B) Indian nationalism's sophistication resided in its distinction of the material from the spiritual spheres.
C) Indian nationalist discourses reaffirmed traditional gender roles for Indian women.
D) Indian nationalism embraced the changes brought about by colonialism in Indian women's traditional gender roles.

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

Question No. : 5

It has been said that knowledge, or the problem of knowledge, is the scandal of philosophy. The scandal is philosophy's apparent inability to show how, when and why we can be sure that we know something or, indeed, that we know anything. Philosopher Michael Williams writes: 'Is it possible to obtain knowledge at all? This problem is pressing because there are powerful arguments, some very ancient, for the conclusion that it is not . . . Scepticism is the skeleton in Western rationalism's closet'. While it is not clear that the scandal matters to anyone but philosophers, philosophers point out that it should matter to everyone, at least given a certain conception of knowledge. For, they explain, unless we can ground our claims to knowledge as such, which is to say, distinguish it from mere opinion, superstition, fantasy, wishful thinking, ideology, illusion or delusion, then the actions we take on the basis of presumed knowledge – boarding an airplane, swallowing a pill, finding someone guilty of a crime – will be irrational and unjustifiable.

That is all quite serious-sounding but so also are the rattlings of the skeleton: that is, the sceptic's contention that we cannot be sure that we know anything – at least not if we think of knowledge as something like having a correct mental representation of reality, and not if we think of reality as something like things-as-they-are-in-themselves, independent of our perceptions, ideas or descriptions. For, the sceptic will note, since reality, under that conception of it, is outside our ken (we cannot catch a glimpse of things-in-themselves around the corner of our own eyes; we cannot form an idea of reality that floats above the processes of our conceiving it), we have no way to compare our mental representations with things-as- they-are-in-themselves and therefore no way to determine whether they are correct or incorrect. Thus the sceptic may repeat (rattling loudly), you cannot be sure you 'know' something or anything at all – at least not, he may add (rattling softly before disappearing), if that is the way you conceive 'knowledge'.

There are a number of ways to handle this situation. The most common is to ignore it. Most people outside the academy – and, indeed, most of us inside it – are unaware of or unperturbed by the philosophical scandal of knowledge and go about our lives without too many epistemic anxieties. We hold our beliefs and presumptive knowledges more or less confidently, usually depending on how we acquired them (I saw it with my own eyes; I heard it on Fox News; a guy at the office told me) and how broadly and strenuously they seem to be shared or endorsed by various relevant people: experts and authorities, friends and family members, colleagues and associates. And we examine our convictions more or less closely, explain them more or less extensively, and defend them more or less vigorously, usually depending on what seems to be at stake for ourselves and/or other people and what resources are available for reassuring ourselves or making our beliefs credible to others (look, it's right here on the page; add up the figures yourself; I happen to be a heart specialist).

The author of the passage is most likely to support which one of the following statements?

A) The scandal of philosophy is that we might not know anything at all about reality if we think of reality as independent of our perceptions, ideas or descriptions.
B) The confidence with which we maintain something to be true is usually independent of the source of the alleged truth.

C) For the sceptic, if we think of reality as independent of our perceptions, ideas or descriptions, we should aim to know that reality independently too.
D) The actions taken on the basis of presumed knowledge are rational and justifiable if we are confident that that knowledge is widely held.

Question No. : 6

". . . we cannot catch a glimpse of things-in-themselves around the corner of our own eyes; we cannot form an idea of reality that floats above the processes of our conceiving it . . ." Which one of the following statements best reflects the argument being made in this sentence?

A) Our knowledge of reality cannot be merged with our process of conceiving it.
B) Our knowledge of reality floats above our subjective perception of it.
C) If the reality of things is independent of our perception, logically we cannot perceive that reality.
D) If the reality of things is independent of our eyesight, logically we cannot perceive our perception

Question No. : 7

According to the last paragraph of the passage, "We hold our beliefs and presumptive knowledges more or less confidently, usually depending on" something. Which one of the following most broadly captures what we depend on?

A) All of the options listed here. B) How much of a stake we have in them; what resources there are to support them
C) Remaining outside the academy; ignoring epistemic anxieties
D) How we come to hold them; how widely they are held in our social circles

Question No. : 8

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

A) sceptics believe that we can never fully know anything, if by "knowing" we mean knowledge of a reality that is independent of the knower.
B) if we cannot distinguish knowledge from opinion or delusion, we will not be able to justify our actions
C) philosophers maintain that the scandal of philosophy should be of concern to everyone
D) the best way to deal with scepticism about the veracity of knowledge is to ignore it

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

Question No. : 9

It's easy to forget that most of the world's languages are still transmitted orally with no widely established written form. While speech communities are increasingly involved in projects to protect their languages – in print, on air and online – orality is fragile and contributes to linguistic vulnerability. But indigenous languages are about much more than unusual words and intriguing grammar: They function as vehicles for the transmission of cultural traditions, environmental understandings and knowledge about medicinal plants, all at risk when elders die and livelihoods are disrupted.

Both push and pull factors lead to the decline of languages. Through war, famine and natural disasters, whole communities can be destroyed, taking their language with them to the grave, such as the indigenous populations of Tasmania who were wiped out by colonists. More commonly, speakers live on but abandon their language in favor of another vernacular, a widespread process that linguists refer to as "language shift" from which few languages are immune. Such trading up and out of a speech form occurs for complex political, cultural and economic reasons – sometimes voluntary for economic and educational reasons, although often amplified by state coercion or neglect. Welsh, long stigmatized and disparaged by the British state, has rebounded with vigor.

Many speakers of endangered, poorly documented languages have embraced new digital media with excitement. Speakers of previously exclusively oral tongues are turning to the web as a virtual space for languages to live on. Internet technology offers powerful ways for oral traditions and cultural practices to survive, even thrive, among increasingly mobile communities. I have watched as videos of traditional wedding ceremonies and songs are recorded on smartphones in London by Nepali migrants, then uploaded to YouTube and watched an hour later by relatives in remote Himalayan villages . . .

Globalization is regularly, and often uncritically, pilloried as a major threat to linguistic diversity. But in fact, globalization is as much process as it is ideology, certainly when it comes to language. The real forces behind cultural homogenization are unbending beliefs, exchanged through a globalized delivery system, reinforced by the historical monolingualism prevalent in much of the West.

Monolingualism – the condition of being able to speak only one language – is regularly accompanied by a deep-seated conviction in the value of that language over all others. Across the largest economies that make up the G8, being monolingual is still often the norm, with multilingualism appearing unusual and even somewhat exotic. The monolingual mindset stands in sharp contrast to the lived reality of most the world, which throughout its history has been more multilingual than unilingual. Monolingualism, then, not globalization, should be our primary concern.

Multilingualism can help us live in a more connected and more interdependent world. By widening access to technology, globalization can support indigenous and scholarly communities engaged in documenting and protecting our shared linguistic heritage. For the last 5,000 years, the rise and fall of languages was intimately tied to the plow, sword and book. In our digital age, the keyboard, screen and web will play a decisive role in shaping the future linguistic diversity of our species.

The author mentions the Welsh language to show that:
A) while often pilloried, globalisation can, in fact, support linguistic revival.
B) efforts to integrate Welsh speakers in the English-speaking fold have been fruitless.
C) vulnerable languages can rebound with state effort.
D) languages can revive even after their speakers have gone through a "language shift".

Question No. : 10

From the passage, we can infer that the author is in favour of:

A) an expanded state role in the preservation of languages B) cultural homogenisation C) greater multilingualism
D) "language shifts" across languages

Question No. : 11

We can infer all of the following about indigenous languages from the passage EXCEPT that:

A) they are repositories of traditional knowledge about the environment and culture.
B) people are increasingly working on documenting these languages.
C) their vocabulary and grammatical constructs have been challenging to document.
D) they are in danger of being wiped out as most can only be transmitted orally.

Question No. : 12

The author lists all of the following as reasons for the decline or disappearance of a language EXCEPT:

A) governments promoting certain languages over others
B) the focus on only a few languages as a result of widespread internet use
C) a catastrophic event that entirely eliminates a people and their culture.
D) people shifting away from their own language to study or work in another language.

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

Question No. : 13

Many people believe that truth conveys power .... Hence sticking with the truth is the best strategy for gaining power. Unfortunately, this is just a comforting myth. In fact, truth and power have a far more complicated relationship, because in human society, power metwo very different things.

On the one hand, power mehaving the ability to manipulate objective realities: to hunt animals, to construct bridges, to cure diseases, to build atom bombs. This kind of power is closely tied to truth. If you believe a false physical theory, you won't be able to build an atom bomb. On the other hand, power also mehaving the ability to manipulate human beliefs, thereby getting lots of people to cooperate effectively. Building atom bombs requires not just a good understanding of physics, but also the coordinated labor of millions of humans. Planet Earth was conquered by Homo sapiens rather than by chimpanzees or elephants, because we are the only mammals that can cooperate in very large numbers. And large-scale cooperation depends on believing common stories. But these stories need not be true. You can unite millions of people by making them believe in completely fictional stories about God, about race or about economics. The dual nature of power and truth results in the curious fact that we humknow many more truths than any other animal, but we also believe in much more nonsense. . . .

When it comes to uniting people around a common story, fiction actually enjoys three inherent advantages over the truth. First, whereas the truth is universal, fictions tend to be local. Consequently if we want to distinguish our tribe from foreigners, a fictional story will serve as a far better identity marker than a true storyThe second huge advantage of fiction over truth has to

do with the handicap principle, which says that reliable signals must be costly to the signaler. Otherwise, they can easily be faked by cheaters.... If political loyalty is signaled by believing a true story, anyone can fake it. But believing ridiculous and outlandish stories exacts greater cost, and is therefore a better signal of loyalty ..... Third, and most important, the truth is often painful and disturbing. Hence if you stick to unalloyed reality, few people will follow you. An American presidential candidate who tells the American public the truth, the whole truth and nothing but the truth about American history has a 100 percent guarantee of losing the elections. .... An uncompromising adherence to the truth is an admirable spiritual practice, but it is not a winning political strategy. . . .

Even if we need to pay some price for deactivating our rational faculties, the advantages of increased social cohesion are often so big that fictional stories routinely triumph over the truth in human history. Scholars have known this for thousands of years, which is why scholars often had to decide whether they served the truth or social harmony. Should they aim to unite people by making sure everyone believes in the same fiction, or should they let people know the truth even at the price of disunity?

The author implies that, like scholars, successful leaders:
A) today know how to create social cohesion better than in the past. B) know how to balance truth and social unity.
C) use myths to attain the first type of power. D) need to leverage both types of power to remain in office.

Question No. : 14

The central theme of the passage is about the choice between:

A) truth and power B) stories that unite people and those that distinguish groups from each other
C) attaining social cohesion and propagating objective truth
D) leaders who unknowingly spread fictions and those who intentionally do so

Question No. : 15

Regarding which one of the following quotes could we argue that the author overemphasises the importance of fiction?

A) "…. scholars often had to decide whether they served the truth or social harmony. Should they aim to unite people by making sure everyone believes in the same fiction, or should they let people know the truth ….?"
B) "Hence sticking with the truth is the best strategy for gaining power. Unfortunately, this is just a comforting myth."
C) "In fact, truth and power have a far more complicated relationship, because in human society, power me two very different things."
D) "On the one hand, power me having the ability to manipulate objective realities: to hunt animals, to construct bridges, to cure diseases, to build atom bombs."

Question No. : 16

The author would support none of the following statements about political power EXCEPT that:

A) people cannot handle the unvarnished truth, so leaders retain power by deviating from it.
B) while unalloyed truth is not recommended, leaders should stay as close as possible to it.
C) there are definite advantages to promoting fiction, but there needs to be some limit to a pervasive belief in myths.
D) manipulating people's beliefs is politically advantageous, but a leader who propagates only myths is likely to lose power.

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

Question No. : 17

1. Look forward a few decades to an invention which can end the energy crisis, change the global economy and curb climate change at a stroke: commercial fusion power.
2. To gain meaningful insights, logic has to be accompanied by asking probing questions of nature through controlled tests, precise observations and clever analysis.
3. The greatest of all inventions is the uber-invention that has provided the insights on which others depend: the modern scientific method.
4. This invention is inconceivable without the scientific method; it will rest on the application of a diverse range of scientific insights, such as the process transforming hydrogen into helium to release huge amounts of energy.

DIRECTIONS for the question: *The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*

Question No. : 18

The unlikely alliance of the incumbent industrialist and the distressed unemployed worker is especially powerful amid the debris of corporate bankruptcies and layoffs. In an economic downturn, the capitalist is more likely to focus on costs of the competition emanating from free markets than on the opportunities they create. And the unemployed worker will find many others in a similar condition and with anxieties similar to his, which will make it easier for them to organize together. Using the cover and the political organization provided by the distressed, the capitalist captures the political agenda.

A) An unlikely alliance of the industrialist and the unemployed happens during an economic downturn in which they come together to unite politically and capture the political agenda.
B) In an economic downturn, the capitalists use the anxieties of the unemployed and their political organisation to set the political agenda to suit their economic interests.
C) The purpose of an unlikely alliance between the industrialist and the unemployed during an economic downturn is to stifle competition in free markets.
D) An economic downturn creates competition because of which the capitalists capture the political agenda created by the political organisation provided by the unemployed.

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

Question No. : 19

1. It has taken on a warm, fuzzy glow in the advertising world, where its potential is being widely discussed, and it is being claimed as the undeniable wave of the future.
2. There is little enthusiasm for this in the scientific arena; for them marketing is not a science, and only a handful of studies have been published in scientific journals.
3. The new, growing field of neuromarketing attempts to reveal the inner workings of consumer behaviour and is an extension of the study of how choices and decisions are made.
4. Some see neuromarketing as an attempt to make the "art" of advertising into a science, being used by marketing experts to back up their proposals with some form of real data.
5. The marketing gurus have already started drawing on psychology in developing tests and theories, and advertising people have borrowed the idea of the focus group from social scientists.

DIRECTIONS for the question: *The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*

Question No. : 20

Creativity is now viewed as the engine of economic progress. Various organizations are devoted to its study and promotion; there are encyclopedias and handbooks surveying creativity research. But this proliferating success has tended to erode creativity's stable identity: it has become so invested with value that it has become impossible to police its meaning and the practices that supposedly identify and encourage it. Many people and organizations committed to producing original thoughts now feel that undue obsession with the idea of creativity gets in the way of real creativity.

A) The industry that has built up around researching what comprises and encourages creativity has destroyed the creative process itself.
B) Creativity has proliferated to the extent that is no longer a stable process, and its mutating identity has stifled the creative process.
C) The value assigned to creativity today has assumed such proportions that the concept itself has lost its real meaning and this is hampering the engendering of real creativity.
D) The obsession with original thought, how it can be promoted and researched, has made it impossible for people and organizations to define the concept anymore.

DIRECTIONS for the question: *The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*

Question No. : 21

Biologists who publish their research directly to the Web have been labelled as "rogue", but physicists have been routinely publishing research digitally ("preprints"), prior to submitting in a peer-reviewed journal. Advocates of preprints argue that quick and open dissemination of research speeds up scientific progress and allows for wider access to knowledge. But some journals still don't accept research previously published as a preprint. Even if the idea of preprints is gaining ground, one of the biggest barriers for biologists is how they would be viewed by members of their conservative research community.

A) While digital publication of research is gaining popularity in many scientific disciplines, almost all peer-reviewed journals are reluctant to accept papers that have been published before.
B) Compared to biologists, physicists are less conservative in their acceptance of digital pre-publication of research papers, which allows for faster dissemination of knowledge.
C) One of the advantages of digital preprints of research is they hasten the dissemination process, but these are not accepted by most scientific communities.
D) Preprints of research are frowned on by some scientific fields as they do not undergo a rigourous reviewing process but are accepted among biologists as a quick way to disseminate information.

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. : 22

1. The care with which philosophers examine arguments for and against forms of biotechnology makes this an excellent primer on formulating and assessing moral arguments.
2. Although most people find at least some forms of genetic engineering disquieting, it is not easy to articulate why: what is wrong with re-engineering our nature?
3. Breakthroughs in genetics present us with the promise that we will soon be able to prevent a host of debilitating diseases, and the predicament that our newfound genetic knowledge may enable us to enhance our genetic traits.
4. To grapple with the ethics of enhancement, we need to confront questions that verge on theology, which is why modern philosophers and political theorists tend to shrink from them.
5. One argument is that the drive for human perfection through genetics is objectionable as it represents a bid for mastery that fails to appreciate the gifts of human powers and achievements.

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

Question No. : 23

1. But today there is an epochal challenge to rethink and reconstitute the vision and practice of development as a shared responsibility – a sharing which binds both the agent and the audience, the developed world and the developing, in a bond of shared destiny.
2. We are at a crossroads now in our vision and practice of development.
3. This calls for the cultivation of an appropriate ethical mode of being in our lives which enables us to realize this global and planetary situation of shared living and responsibility.
4. Half a century ago, development began as a hope for a better human possibility, but in the last fifty years, this hope has lost itself in the dreary desert of various kinds of hegemonic applications.

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

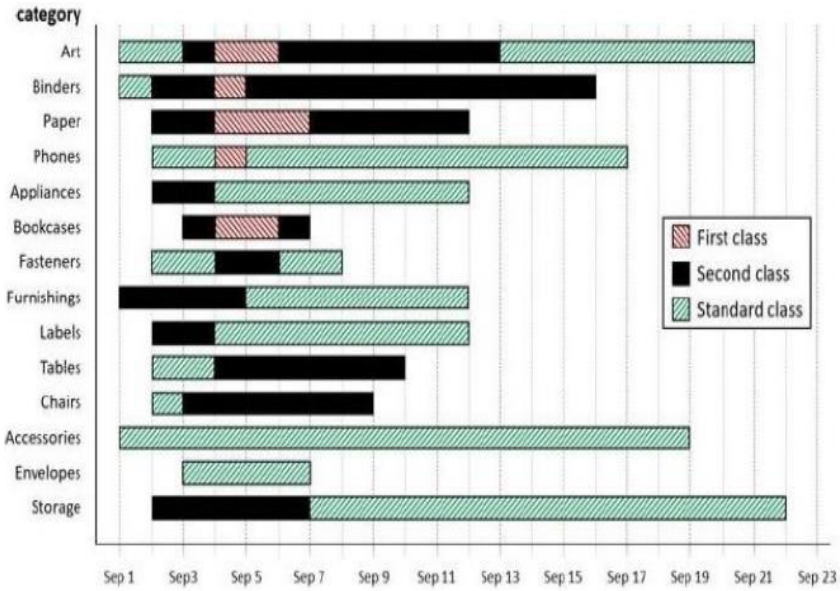
Question No. : 24

1. The US has long maintained that the Northwest Passage is an international strait through which its commercial and military vessels have the right to pass without seeking Canada's permission.
2. Canada, which officially acquired the group of islands forming the Northwest Passage in 1880, claims sovereignty over all the shipping routes through the Passage.
3. The dispute could be transitory, however, as scientists speculate that the entire Arctic Ocean will soon be ice-free in summer, so ship owners will not have to ask for permission to sail through any of the Northwest Passage routes.
4. The US and Canada have never legally settled the question of access through the Passage, but have an agreement whereby the US needs to seek Canada's consent for any transit.

Section : DI & Reasoning

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

Question No. : 25



The different bars in the diagram above provide information about different orders in various categories (Art, Binders, ...) that were booked in the first two weeks of September of a store for one client. The colour and pattern of a bar denotes the ship mode (First Class / Second Class / Standard Class). The left end point of a bar indicates the booking day of the order, while the right end point indicates the dispatch day of the order. The difference between the dispatch day and the booking day (measured in terms of the number of days) is called the processing time of the order. For the same category, an order is considered for booking only after the previous order of the same category is dispatched. No two consecutive orders of the same category had identical ship mode during this period.

For example, there were only two orders in the furnishing category during this period. The first one was shipped in the Second Class. It was booked on Sep 1 and dispatched on Sep 5. The second order was shipped in the Standard class. It was booked on Sep 5 (although the order might have been placed before that) and dispatched on Sep 12. So the processing times were 4 and 7 days respectively for these orders.

How many days between Sep 1 and Sep 14 (both inclusive) had no booking from this client considering all the above categories? (in numerical value)

Question No. : 26

What was the average processing time of all orders in the categories which had only one type of ship mode? (in numerical value)

Question No. : 27

The sequence of categories -- Art, Binders, Paper and Phones -- in decreasing order of average processing time of their orders in this period is:

A) Paper, Binders, Art, Phones B) Phones, Art, Binders, Paper C) Art, Binders, Paper, Phones
D) Phones, Binders, Art, Paper

Question No. : 28

Approximately what percentage of orders had a processing time of one day during the period Sep 1 to Sep 22 (both dates inclusive)?

A) 16% B) 22% C) 20% D) 25%

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

Question No. : 29

The game of Chango is a game where two people play against each other; one of them wins and the other loses, i.e., there are no drawn Chango games. 12 players participated in a Chango championship. They were divided into four groups: Group A consisted of Aruna, Azul, and Arif; Group B consisted of Brinda, Brij, and Biju; Group C consisted of Chitra, Chetan, and Chhavi; and Group D consisted of Dipen, Donna, and Deb.

Players within each group had a distinct rank going into the championship. The players have NOT been listed necessarily according to their ranks. In the group stage of the game, the second and third ranked players play against each other, and the winner of that game plays against the first ranked player of the group. The winner of this second game is considered as the winner of the group and enters a semi-final.

The winners from Groups A and B play against each other in one semi-final, while the winners from Groups C and D play against each other in the other semi-final. The winners of the two semi-finals play against each other in the final to decide the winner of the championship.

It is known that:
1. Chitra did not win the championship.
2. Aruna did not play against Arif. Brij did not play against Brinda.
3. Aruna, Biju, Chitra, and Dipen played three games each, Azul and Chetan played two games each, and the remaining players played one game each.

Who among the following was DEFINITELY NOT ranked first in his/her group?

A) Brij B) Aruna C) Dipen D) Chitra

Question No. : 30

Which of the following pairs must have played against each other in the championship?

A) Donna, Chetan B) Azul, Biju C) Deb, Donna D) Chitra, Dipen

Question No. : 31

Who won the championship?

A) Brij B) Cannot be determined C) Aruna D) Chitra

Question No. : 32

Who among the following did NOT play against Chitra in the championship?

A) Biju B) Aruna C) Dipen D) Chetan

DIRECTIONS for the question: *Study the following information carefully and answer the given question.*

Question No. : 33

Ravi works in an online food-delivery company. After each delivery, customers rate Ravi on each of four parameters – Behaviour, Packaging, Hygiene, and Timeliness, on a scale from 1 to 9. If the total of the four rating points is 25 or more, then Ravi gets a bonus of Rs. 20 for that delivery. Additionally, a customer may or may not give Ravi a tip. If the customer gives a tip, it is either Rs. 30 or Rs. 50.

One day, Ravi made four deliveries - one to each of Atal, Bihari, Chirag and Deepak, and received a total of Rs. 120 in bonus and tips. He did not get both a bonus and a tip from the same customer.

The following additional facts are also known.

1. In Timeliness, Ravi received a total of 21 points, and three of the customers gave him the same rating points in this parameter. Atal gave higher rating points than Bihari and Chirag in this parameter.

2. Ravi received distinct rating points in Packaging from the four customers adding up to 29 points. Similarly, Ravi received distinct rating points in Hygiene from the four customers adding up to 26 points.
3. Chirag gave the same rating points for Packaging and Hygiene.
4. Among the four customers, Bihari gave the highest rating points in Packaging, and Chirag gave the highest rating points in Hygiene.
5. Everyone rated Ravi between 5 and 7 in Behaviour. Unique maximum and minimum ratings in this parameter were given by Atal and Deepak respectively.
6. If the customers are ranked based on ratings given by them in individual parameters, then Atal's rank based on Packaging is the same as that based on Hygiene. This is also true for Deepak.

What was the minimum rating that Ravi received from any customer in any parameter? (in numerical value)

Question No. : 34

The COMPLETE list of customers who gave the maximum total rating points to Ravi is

A) Atal and Bihari B) Bihari C) Atal D) Bihari and Chirag

Question No. : 35

What rating did Atal give on Timeliness? (in numerical value)

Question No. : 36

What BEST can be concluded about the tip amount given by Deepak?

A) Either Rs. 0 or Rs. 30 or Rs. 50 B) Rs. 50 C) Either Rs. 30 or Rs. 50 D) Rs. 30

Question No. : 37

In which parameter did Atal give the maximum rating points to Ravi?

A) Hygiene B) Packaging C) Timeliness D) Behaviour

Question No. : 38

What rating did Deepak give on Packaging?

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

DIRECTIONS for the question: *Study the following information carefully and answer the given question.*

Question No. : 39

Ten objects o1, o2, …, o10 were distributed among Amar, Barat, Charles, Disha, and Elise. Each item went to exactly one person. Each person got exactly two of the items, and this pair of objects is called her/his bundle.

The following table shows how each person values each object.

	o1	**o2**	**o3**	**o4**	**o5**	**o6**	**o7**	**o8**	**o9**	**o10**
Amar	4	9	9	3	7	3	8	7	9	5
Barat	5	9	7	5	5	3	6	8	10	8
Charles	8	8	8	3	6	4	5	8	9	6
Disha	8	8	8	5	5	3	6	4	9	8
Elise	6	8	9	5	6	5	6	3	7	10

The value of any bundle by a person is the sum of that person's values of the objects in that bundle. A person X envies another person Y if X values Y's bundle more than X's own bundle.

For example, hypothetically suppose Amar's bundle consists of o1 and o2, and Barat's bundle consists of o3 and o4. Then Amar

values his own bundle at 4 + 9 = 13 and Barat's bundle at 9
+ 3 = 12. Hence Amar does not envy Barat. On the other hand, Barat values his own bundle at 7 + 5 = 12 and Amar's bundle at 5 + 9 = 14. Hence Barat envies Amar.

The following facts are known about the actual distribution of the objects among the five people.

1. If someone's value for an object is 10, then she/he received that object.
2. Objects o1, o2, and o3 were given to three different people.
3. Objects o1 and o8 were given to different people.
4. Three people value their own bundles at 16. No one values her/his own bundle at a number higher than 16.
5. Disha values her own bundle at an odd number. All others value their own bundles at an even number.
6. Some people who value their own bundles less than 16 envy some other people who value their own bundle at 16. No one else envies others.

What BEST can be said about object o8?
A) o8 was given to Amar, Charles, or Disha B) o8 was given to Charles C) o8 was given to Disha
D) o8 was given to Charles or Disha

Question No. : 40

Who among the following envies someone else?

A) Barat B) Elise C) Charles D) Amar

Question No. : 41

What is Amar's value for his own bundle? (in numerical value)

Question No. : 42

Object o4 was given to

A) Elise B) Charles C) Barat D) Disha

Question No. : 43

Object o5 was given to

A) Disha B) Elise C) Charles D) Amar

Question No. : 44

What BEST can be said about the distribution of object o1?

A) o1 was given to Charles B) o1 was given to Charles or Disha C) o1 was given to Disha
D) o1 was given to Charles, Disha, or Elise

Section : Quantitative Ability

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

Question No. : 45

Let D and E be points on sides AB and AC, respectively, of a triangle ABC, such that AD : BD = 2 : 1 and AE : CE = 2 : 3. If the area of the triangle ADE is 8 sq cm, then the area of the triangle ABC, in sq cm, is (in numerical value)

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

Question No. : 46

Two trains A and B were moving in opposite DIRECTIONSs, their speeds being in the ratio 5 : 3. The front end of A crossed the rear end of B 46 seconds after the front ends of the trains had crossed each other. It took another 69 seconds for the rear ends of the trains to cross each other. The ratio of length of train A to that of train B is

A) 3 : 2 B) 2 : 1 C) 5 : 3 D) 2 : 3

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

Question No. : 47

Anil, Bobby and Chintu jointly invest in a business and agree to share the overall profit in proportion to their investments. Anil's share of investment is 70%. His share of profit decreases by Rs. 420 if the overall profit goes down from 18% to 15%. Chintu's share of profit increases by Rs. 80 if the overall profit goes up from 15% to 17%. The amount, in INR, invested by Bobby is

A) 2200 B) 2400 C) 2000 D) 1800

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

Question No. : 48

The sides AB and CD of a trapezium ABCD are parallel, with AB being the smaller side. P is the midpoint of CD and ABPD is a parallelogram. If the difference between the areas of the parallelogram ABPD and the triangle BPC is 10 sq cm, then the area, in sq cm, of the trapezium ABCD is

A) 40 B) 25 C) 20 D) 30

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

Question No. : 49

A person buys tea of three different qualities at Rs. 800, Rs. 500, and Rs. 300 per kg, respectively, and the amounts bought are in the proportion 2 : 3 : 5. She mixes all the tea and sells one-sixth of the mixture at Rs. 700 per kg. The price, in INR per kg, at which she should sell the remaining tea, to make an overall profit of 50%, is

A) 688 B) 675 C) 653 D) 692

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

Question No. : 50

If a rhombus has area 12 sq cm and side length 5 cm, then the length, in cm, of its longer diagonal is

A) $\sqrt{13}+\sqrt{12}$ B) $\sqrt{37}+\sqrt{13}$ C) $\frac{\sqrt{13}+\sqrt{12}}{2}$ D) $\frac{\sqrt{37}+\sqrt{13}}{2}$

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

Question No. : 51

Three positive integers x, y and z are in arithmetic progression. If $y - x > 2$ and $xyz = 5(x + y + z)$, then $z - x$ equals

A) 14 B) 10 C) 8 D) 12

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

Question No. : 52

For a 4-digit number, the sum of its digits in the thousands, hundreds and tens places is 14, the sum of its digits in the hundreds, tens and units places is 15, and the tens place digit is 4 more than the units place digit. Then the highest possible 4-digit number satisfying the above conditions is (in numerical value)

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

Question No. : 53

The number of ways of distributing 15 identical balloons, 6 identical pencils and 3 identical erasers among 3 children, such that each child gets at least four balloons and one pencil, is (in numerical value)

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

Question No. : 54

For all possible integers n satisfying $2.25 \le 2 + 2^{n+2} \le 202$, the number of integer values of $3 + 3^{n+1}$ is (in numerical value)

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

Question No. : 55

Raj invested Rs. 10000 in a fund. At the end of first year, he incurred a loss but his balance was more than Rs. 5000. This balance, when invested for another year, grew and the percentage of growth in the second year was five times the percentage of loss in the first year. If the gain of Raj from the initial investment over the two year period is 35%, then the percentage of loss in the first year is

A) 10 B) 15 C) 70 D) 5

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

Question No. : 56

Two pipes A and B are attached to an empty water tank. Pipe A fills the tank while pipe B drains it. If pipe A is opened at 2 pm and pipe B is opened at 3 pm, then the tank becomes full at 10 pm. Instead, if pipe A is opened at 2 pm and pipe B is opened at 4 pm, then the tank becomes full at 6 pm. If pipe B is not opened at all, then the time, in minutes, taken to fill the tank is

A) 264 B) 144 C) 140 D) 120

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

Question No. : 57

A box has 450 balls, each either white or black, there being as many metallic white balls as metallic black balls. If 40% of the white balls and 50% of the black balls are metallic, then the number of non-metallic balls in the box is (in numerical value)

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

Question No. : 58

For all real values of x, the range of the function $f(x) = \dfrac{x^2+2x+4}{2x^2+4x+9}$ is

A) $\left(\frac{3}{7}, \frac{1}{2}\right)$ B) $\left[\frac{3}{7}, \frac{1}{2}\right)$ C) $\left[\frac{3}{7}, \frac{8}{9}\right)$ D) $\left[\frac{4}{9}, \frac{8}{9}\right]$

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

Question No. : 59

If $\log_2 [3 + \log_3 \{4 + \log_4 (x - 1)\}] - 2 = 0$, then $4x$ equals (in numerical value)

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

Question No. : 60

Consider the pair of equations: $x^2 - xy - x = 22$ and $y^2 - xy + y = 34$. If $x > y$, then $x - y$ equals

A) 8 B) 6 C) 4 D) 7

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

Question No. : 61

For a sequence of real numbers $x_1, x_2, \ldots\ldots x_n$, if $x_1 - x_2 + x_3 - \ldots. + (-1)^{n+1} x_n = n^2 + 2n$ for all natural numbers n, then the sum $x_{49} + x_{50}$ equals

A) 200 B) -2 C) 2 D) -200

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

Question No. : 62

From a container filled with milk, 9 litres of milk are drawn and replaced with water. Next, from the same container, 9 litres are drawn and again replaced with water. If the volumes of milk and water in the container are now in the ratio of 16 : 9, then the capacity of the container, in litres, is (in numerical value)

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

Question No. : 63

For a real number x the condition $|3x - 20| + |3x - 40| = 20$ necessarily holds if

A) $7 < x < 12$ B) $9 < x < 14$ C) $10 < x < 15$ D) $6 < x < 11$

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

Question No. : 64

In a football tournament, a player has played a certain number of matches and 10 more matches are to be played. If he scores a total of one goal over the next 10 matches, his overall average will be 0.15 goals per match. On the other hand, if he scores a total of two goals over the next 10 matches, his overall average will be 0.2 goals per match. The number of matches he has played is (in numerical value)

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

Question No. : 65

Suppose one of the roots of the equation $ax^2 - bx + c = 0$ is $2 + \sqrt{13}$, where a, b and c are rational numbers and $a \neq 0$. If $b = c^3$ then $|a|$ equals

A) 4 B) 2 C) 1 D) 3

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

Question No. : 66

Anil can paint a house in 60 days while Bimal can paint it in 84 days. Anil starts painting and after 10 days, Bimal and Charu join him. Together, they complete the painting in 14 more days. If they are paid a total of Rs. 21000 for the job, then the share of Charu, in INR, proportionate to the work done by him, is

A) 9100 B) 9150 C) 9000 D) 9200

Directions of Test

Test Name	Actual CAT 2021 Slot II	Total Questions	66	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	24	0:40(h:m)	3	1/3
DI & Reasoning	20	0:40(h:m)	3	1/3
Quantitative Ability	22	0:40(h:m)	3	1/3

Section : Verbal Ability

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

Explanation:-
Q is all of the following are true, EXCEPT
For option 1, refer lines "a framework for analyzing the contradictory pulls on [Indian] nationalist ideology in its struggle against the dominance of colonialism and the resolution it offered to those contradictions. Briefly, this resolution was built around a separation of the domain of culture into two spheres—the material and the spiritual."
For option 2, refer lines "The discourse of nationalism shows that the material/spiritual distinction was condensed into an analogous, but ideologically far more powerful, dichotomy: that between the outer and the inner."
For option 4, refer lines "The discourse of nationalism shows that the material/spiritual distinction was condensed into an analogous, but ideologically far more powerful, dichotomy: that between the outer and the inner. . . . Applying the inner/outer distinction to the matter of concrete day-to-day living separates the social space into ghar and bāhir, the home and the world. The world is the external, the domain of the material; the home represents one's inner spiritual self, one's true identity."

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

Explanation:-
*Refer lines "**It was in the material sphere that the claims of Western civilization were the most powerful**. Science, technology, rational forms of economic organization, modern methods of statecraft—these had given the European countries the strength to subjugate the non-European people . . . **To overcome this domination, the colonized people had to learn those superior techniques of organizing material life and incorporate them within their own cultures. . . . But this could not mean the imitation of the West in every aspect of life, for then the very distinction between the West and the East would vanish—the self-identity of national culture would itself be threatened. .** ."*

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

Explanation:-
Option 1 goes against lines "But this could not mean the imitation of the West in every aspect of life, for then the very distinction between the West and the East would vanish—the self-identity of national culture would itself be threatened."
Here the author talks about distinction, while the option talks about hybridization in all realms

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

Explanation:-

*Q is about liberals' **perception**. Refer lines*
"as liberals are apt to in their despair at the many marks of social conservatism in nationalist practice, a total rejection of the West."

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

Explanation:-
Option1 is supported by paras 1 and 2
*Option2 is incorrect Refer lines "We hold our beliefs and presumptive knowledges more or less confidently, usually **depending on how we acquired them** (I saw it with my own eyes; I heard it on Fox News; a guy at the office told me)"*
Option 3 is incorrect as sceptic says "we should aim to know that reality independently" isn't supported by the passage

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

Explanation:-
Refer to lines preceding the line in Q and we reach option 3 as the answer
"we cannot be sure that we know anything – at least not if we think of knowledge as something like having a correct mental representation of reality, and not if we think of reality as something like things-as-they-are-in-themselves, independent of our perceptions, ideas or descriptions. For, the sceptic will note, since reality, under that conception of it, is outside our ken (we cannot catch a glimpse of things-in-themselves around the corner of our own eyes; we cannot form an idea of reality that floats above the processes of our conceiving it), we have no way to compare our mental representations with things-asthey-are-in-themselves and therefore no way to determine whether they are correct or incorrect"

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

Explanation:-
*Refer lines "We hold our beliefs and presumptive knowledge's more or less confidently, usually **depending on how we acquired them** (I saw it with my own eyes; I heard it on Fox News; a guy at the office told me) **and how broadly and strenuously they seem to be shared or endorsed by various relevant people:** experts and authorities, friends and family members, colleagues and associates"*

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

Explanation:-
Q is all of the following, EXCEPT
For option 1 refer lines "sceptic's contention that we cannot be sure that we know anything – at least not if we think of knowledge as something like having a correct mental representation of reality, and not if we think of reality as something like things-as-they-are-in-themselves, independent of our perceptions, ideas or descriptions."
*For option2 refer lines "**unless we can ground our claims to knowledge as such, which is to say, distinguish it from mere opinion**, superstition, fantasy, wishful thinking, ideology, illusion **or delusion**, then the actions we take on the basis of presumed knowledge – boarding an airplane, swallowing a pill, finding someone guilty of a crime – **will be irrational and unjustifiable.**"*
For option 3 refer lines "While it is not clear that the scandal matters to anyone but philosophers, philosophers point out that it should matter to everyone"

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

Explanation:-
Option 4 is correct as it's supported by lines "Both push and pull factors lead to the decline of languages. ….. More commonly, speakers live on but abandon their language in favor of another vernacular, a widespread process that

*linguists refer to as "**language shift**" from which few languages are immune. Such trading up and out of a speech form occurs for complex political, cultural and economic reasons – sometimes voluntary for economic and educational reasons, although often amplified by state coercion or neglect. Welsh, long stigmatized and disparaged by the British state, has rebounded with vigor." where author talks about language shift in previous lines*
Option 1 is incorrect as author doesn't state globalization as reason for Welsh language
Option 2 is incorrect as it's not about people but about the language
*Option 3 is incorrect as it gives credit to state opposite to what the author states "Such trading up and out of a speech form occurs for complex political, cultural and economic reasons – sometimes voluntary for economic and educational reasons, although often amplified by **state coercion** or neglect. Welsh, **long stigmatized and disparaged by the British state**, has rebounded with vigor."*

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

Explanation:-
Refer last paragraph

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

Explanation:-
Q is all of the following EXCEPT
Option 3 is incorrect because of words 'challenging to document' which isn't supported by the passage
*Option 1 is supported by lines "But indigenous languages are about much more than unusual words and intriguing grammar**: They function as vehicles for the transmission of cultural traditions, environmental understandings** and knowledge about medicinal plants, all at risk when elders die and livelihoods are disrupted."*
Option 2 is supported by lines "While speech communities are increasingly involved in projects to protect their languages – in print, on air and online – orality is fragile and contributes to linguistic vulnerability."
*Option 4 is supported throughout the passage especially by lines "It's easy to forget that **most of the world's languages are still transmitted orally with no widely established written form.** While speech communities are increasingly involved in projects to protect their languages – in print, on air and online – **orality is fragile and contributes to linguistic vulnerability**."*

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

Explanation:-
Q is all of the following EXCEPT
Option 2 is opposite of what author states Refer lines:
"Speakers of previously exclusively oral tongues are turning to the web as a virtual space for languages to live on. Internet technology offers powerful ways for oral traditions and cultural practices to survive, even thrive, among increasingly mobile communities"
"By widening access to technology, globalization can support indigenous and scholarly communities engaged in documenting and protecting our shared linguistic heritage"

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

***Explanation:-** Q is about 'successful' leaders*
Option 1 is incorrect because of the word 'better' which isn't supported by the passage
Option 3 is incorrect as it isn't first but second type of power
Option 4 is extreme owing to its meaning and use of words 'need' and 'both' and 'to remain'

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

***Explanation:-** 2 Main points to be covered are 'truth' and 'unity' Refer lines "Should they aim to unite people by*

making sure everyone believes in the same fiction, or should they let people know the truth even at the price of disunity?"

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

Explanation:- *None of the other options actually talks about fiction*

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

Explanation:-
Option 2 is not correct as author doesn't recommend staying close to unalloyed truth Refer line "Hence if you stick to unalloyed reality, few (i.e. hardly anyone) people will follow you."
Option 3 is incorrect as author doesn't talk about limits
Option 4 is incorrect as author doesn't talk about "a leader who propagates ***only*** *myths"*

QNo:- 17 ,Correct Answer:- *3214*

Explanation:-
1-4 1-4 is an obvious pair as 'this invention' in 1 is referring to 'commercial fusion power' in 1
3-2 2 tells why the modern scientific method is the greatest as the method (including controlled tests, precise observations and clever analysis) provides meaningful insights
32-14 14 add to the why the method is the greatest by providing an example (commercial fusion power is inconceivable without it)

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

Explanation:-
Option 1 is incorrect as the industrialist and the unemployed don't capture the political agenda, the capitalist does
Option 3 is incorrect as 'stifle competition in free markets'
isn't talked about in the paragraph
Option 4 is incorrect as 'the capitalists capture the political agenda' because of competition isn't implied by the paragraph
Option 2 summarizes the paragraph without committing any of the mistakes in other options

QNo:- 19 ,Correct Answer:- *5*

Explanation:- *Statement 1 to 4 talk about marketing and neuromarketing while Statement 5 talks about social scientists, who haven't been talked about in any other Statement Hence 5 is the odd one out*

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

Explanation:-
Option 1 is incorrect as it's the undue obsession not the industry that is hampering creativity. Also, 'destroyed' is too strong a word
Option 2 is incorrect as it's not proliferation of creativity that is negative but undue obsession with it. Also, the paragraph never implied that there ever was a stable process for creativity
Option 4 is incorrect as it focuses on ***defining*** *creativity while paragraph is talking about real creativity*
Option 3 summarizes the paragraph without committing any of the mistakes in other options

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

Explanation:-
Option 1 is factually incorrect because of use of words 'almost all'
Option 3 is incorrect as it leaves out biologists and physicists completely and also because of use of word 'most'
Option 4 is factually incorrect as preprints aren't accepted by biologists

QNo:- 22 ,Correct Answer:- *1*

Explanation:- *Statement 2 and 3 both talk about genetics*
Statement 3,4 and 5 talk about enhancement through genetics
Statement 4 talks about philosophers shrinking from/shying away while Statement 1 talks about 'The care with which philosophers examine ' Hence Statement 1 and 4 are conceptually opposing

QNo:- 23 ,Correct Answer:- *2413*

Explanation:- *Statement 2 at the beginning states that we are at crossroads*
2-41 41 state why we are at crossroads comparing situations 'half a century ago' and 'today'
1-3 'This' in 3 is referring to initial part of Statement 1

QNo:- 24 ,Correct Answer:- *2143*

Explanation:- *2 starts the paragraph as it states what the northwest passage is composed of*
4-3 'the dispute' in 3 is referring to Statement 4
Also, 3 concludes by stating the dispute is transitory
21--3 the basis of 'the dispute' in 3 is given in Statement 2 and 1 so 2 and 1 come before Statement 3 though not immediately before statement 3

Section : DI & Reasoning

QNo:- 25 ,Correct Answer:- *6*

Explanation:- *From the given information, we can make the following table. The numbers here are the dates on which the orders are booked (B) and dispatched (D).*

	Order									
	I		II		III		IV		V	
	B	D	B	D	B	D	B	D	B	D
Art	1	3	3	4	4	6	6	13	13	21
Binders	1	2	2	4	4	5	5	16		
Paper	2	4	4	7	7	12				
Phones	2	4	4	5	5	17				
Appliances	2	4	4	12						
Book cases	3	4	4	6	6	7				
Fasteners	2	4	4	6	6	8				
Furnishing	1	5	5	12						
Labels	2	4	4	12						
Tables	2	4	4	10						
Chairs	2	3	3	9						

Accessories	1	19		
Envelopes	3	7		
Storage	2	7	7	22

From the above table, we can see that no booking was done on 8th, 9th, 10th, 11th, 12th and 14th Sept. Therefore, for 6 days there was no booking.

QNo:- 26 ,Correct Answer:- *11*

Explanation:- *From the given information, we can make the following table. The numbers here are the dates on which the orders are booked (B) and dispatched (D).*

	Order									
	I		II		III		IV		V	
	B	D	B	D	B	D	B	D	B	D
Art	1	3	3	4	4	6	6	13	13	21
Binders	1	2	2	4	4	5	5	16		
Paper	2	4	4	7	7	12				
Phones	2	4	4	5	5	17				
Appliances	2	4	4	12						
Book cases	3	4	4	6	6	7				
Fasteners	2	4	4	6	6	8				
Furnishing	1	5	5	12						
Labels	2	4	4	12						
Tables	2	4	4	10						
Chairs	2	3	3	9						
Accessories	1	19								
Envelopes	3	7								
Storage	2	7	7	22						

Accessories and Envelopes have only one type of shipping mode.
Processing time for Accessories = (19 - 1) = 18 days
Processing time for Envelopes = (7 - 3) = 4 days
Therefore, average time $= \frac{18+4}{2} = 11$ days

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

Explanation:- *From the given information, we can make the following table. The numbers here are the dates on which the orders are booked (B) and dispatched (D).*

	Order									
	I		II		III		IV		V	
	B	D	B	D	B	D	B	D	B	D
Art	1	3	3	4	4	6	6	13	13	21
Binders	1	2	2	4	4	5	5	16		
Paper	2	4	4	7	7	12				

Phones	2	4	4	5	5	17
Appliances	2	4	4	12		
Book cases	3	4	4	6	6	7
Fasteners	2	4	4	6	6	8
Furnishing	1	5	5	12		
Labels	2	4	4	12		
Tables	2	4	4	10		
Chairs	2	3	3	9		
Accessories	1	19				
Envelopes	3	7				
Storage	2	7	7	22		

Average processing time for Arts

$$=\frac{(3-1)+(4-3)+(6-4)+(13-6)+(21-13)}{5}=\frac{2+1+2+7+8}{5}=\frac{20}{5}=4\,\text{days}$$

Average processing time for Binders

$$=\frac{(2-1)+(4-2)+(5-4)+(16-5)}{4}=\frac{1+2+1+11}{4}=\frac{15}{4}=3.75$$

Average processing time for Paper $=\frac{(4-2)+(7-4)+(12-7)}{3}=\frac{2+3+5}{3}=\frac{10}{3}=3.33$

Average processing time for Phones $=\frac{(4-2)+(5-4)+(17-5)}{3}=\frac{2+1+12}{3}=\frac{15}{3}=5$

Therefore, the decreasing order is Phones, Art, Binders, Paper

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

Explanation:- *From the given information, we can make the following table. The numbers here are the dates on which the orders are booked (B) and dispatched (D).*

	Order									
	I		II		III		IV		V	
	B	D	B	D	B	D	B	D	B	D
Art	1	3	3	4	4	6	6	13	13	21
Binders	1	2	2	4	4	5	5	16		
Paper	2	4	4	7	7	12				
Phones	2	4	4	5	5	17				
Appliances	2	4	4	12						
Book cases	3	4	4	6	6	7				
Fasteners	2	4	4	6	6	8				
Furnishing	1	5	5	12						
Labels	2	4	4	12						
Tables	2	4	4	10						
Chairs	2	3	3	9						
Accessories	1	19								
Envelopes	3	7								
Storage	2	7	7	22						

Total orders = 35
Orders with processing time of one day = 7
$\therefore$ Required %age $= \frac{7}{35} \times 100 = 20\%$

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

Explanation:-
3 games:- Aruna, Biju, Chira, Dipen
2 games:- Azul, Chetan
1 game:- Arif, Brinda, Brij, Chhavi, Donna, Deb

Group A:- Arif played one game & Azul played 2 games
$\therefore$ 1st match →Arif vs Azul → Azul won
2nd match →Azul vs Aruna →Aruna won
$\therefore$ Aruna is Rank 1 player of group A.
As Aruna played 3 matches and she played only one match in group 1, so the remaining two matches of Aruna are semifinal & final.
⇒ Aruna played final

Group B:- Brinda & Brig played 1 match each, so Biju cannot be rank one player in Group B. This is because, if Biju is rank 1, then Brinda & Brij will play first match and winner of that match will play against Biju, so that person will play 2 matches, which is not possible.
If Brinda is rank 1 player, then
I match →Biju vs Brij ⇒ Biju won
II match →Biju vs Brinda ⇒ Biju won
If Brij is rank 1 player, then
I match →Biju vs Brinda ⇒ Biju won
II match →Biju vs Brij ⇒ Biju won
So either Brij or Brinda is rank 1 player in group B and Biju played 2 matches in group.
So the third match which Biju will play is semifinal.

Group C:- Here Chhavi played one match and Chetan played 2 matches.
So match I:- Chhavi vs Chetan ⇒ Chetan won
match II:- Chitra vs Chetan ⇒ Chitra won
if Chhavi plays with Chitra & Chitra beats her, then Chitra will beat Chetan also. In that case Chetan has played only one game which is not possible.
Here Chitra had played one match in group and her remaining matches are semifinal & final. So Chitra played final.

Group D:- Here Donna & Deb played one match each. So as discussed in Group B, Dipen cannot be rank 1 player.
$\therefore$ In group D, either Donna & Deb are rank 1 player & Dipen played 2 matches in group and his one match will be semifinal.

Dipen is definitely not ranked first in his group.

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

Explanation:-
3 games:- Aruna, Biju, Chira, Dipen
2 games:- Azul, Chetan
1 game:- Arif, Brinda, Brij, Chhavi, Donna, Deb

Group A:- Arif played one game & Azul played 2 games
$\therefore$ 1st match →Arif vs Azul → Azul won
2nd match →Azul vs Aruna →Aruna won

∴ Aruna is Rank 1 player of group A.
As Aruna played 3 matches and she played only one match in group 1, so the remaining two matches of Aruna are semifinal & final.
⇒ Aruna played final

Group B:- Brinda & Brig played 1 match each, so Biju cannot be rank one player in Group B. This is because, if Biju is rank 1, then Brinda & Brij will play first match and winner of that match will play against Biju, so that person will play 2 matches, which is not possible.
If Brinda is rank 1 player, then
I match →Biju vs Brij ⇒ Biju won
II match →Biju vs Brinda ⇒ Biju won
If Brij is rank 1 player, then
I match →Biju vs Brinda ⇒ Biju won
II match →Biju vs Brij ⇒ Biju won
So either Brij or Brinda is rank 1 player in group B and Biju played 2 matches in group.
So the third match which Biju will play is semifinal.

Group C:- Here Chhavi played one match and Chetan played 2 matches.
So match I:- Chhavi vs Chetan ⇒ Chetan won
match II:- Chitra vs Chetan ⇒ Chitra won
if Chhavi plays with Chitra & Chitra beats her, then Chitra will beat Chetan also. In that case Chetan has played only one game which is not possible.
Here Chitra had played one match in group and her remaining matches are semifinal & final. So Chitra played final.

Group D:- Here Donna & Deb played one match each. So as discussed in Group B, Dipen cannot be rank 1 player.
∴ In group D, either Donna & Deb are rank 1 player & Dipen played 2 matches in group and his one match will be semifinal.

Dipen is definitely not ranked first in his group.

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

Explanation:-
3 games:- Aruna, Biju, Chira, Dipen
2 games:- Azul, Chetan
1 game:- Arif, Brinda, Brij, Chhavi, Donna, Deb

Group A:- Arif played one game & Azul played 2 games
∴ 1st match →Arif vs Azul → Azul won
2nd match →Azul vs Aruna →Aruna won
∴ Aruna is Rank 1 player of group A.
As Aruna played 3 matches and she played only one match in group 1, so the remaining two matches of Aruna are semifinal & final.
⇒ Aruna played final

Group B:- Brinda & Brig played 1 match each, so Biju cannot be rank one player in Group B. This is because, if Biju is rank 1, then Brinda & Brij will play first match and winner of that match will play against Biju, so that person will play 2 matches, which is not possible.
If Brinda is rank 1 player, then
I match →Biju vs Brij ⇒ Biju won
II match →Biju vs Brinda ⇒ Biju won
If Brij is rank 1 player, then
I match →Biju vs Brinda ⇒ Biju won
II match →Biju vs Brij ⇒ Biju won
So either Brij or Brinda is rank 1 player in group B and Biju played 2 matches in group.
So the third match which Biju will play is semifinal.

Group C:- Here Chhavi played one match and Chetan played 2 matches.
So match I:- Chhavi vs Chetan ⇒ Chetan won
match II:- Chitra vs Chetan ⇒ Chitra won
if Chhavi plays with Chitra & Chitra beats her, then Chitra will beat Chetan also. In that case Chetan has played only one game which is not possible.
Here Chitra had played one match in group and her remaining matches are semifinal & final. So Chitra played final.

Group D:- Here Donna & Deb played one match each. So as discussed in Group B, Dipen cannot be rank 1 player.
∴ In group D, either Donna & Deb are rank 1 player & Dipen played 2 matches in group and his one match will be semifinal.

Aruna & Chitra reached the final. As Chitra did not win final, so Aruna must have won it.

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

Explanation:-
3 games:- Aruna, Biju, Chira, Dipen
2 games:- Azul, Chetan
1 game:- Arif, Brinda, Brij, Chhavi, Donna, Deb

Group A:- Arif played one game & Azul played 2 games
∴ 1st match →Arif vs Azul → Azul won
2nd match →Azul vs Aruna →Aruna won
∴ Aruna is Rank 1 player of group A.
As Aruna played 3 matches and she played only one match in group 1, so the remaining two matches of Aruna are semifinal & final.
⇒ Aruna played final

Group B:- Brinda & Brig played 1 match each, so Biju cannot be rank one player in Group B. This is because, if Biju is rank 1, then Brinda & Brij will play first match and winner of that match will play against Biju, so that person will play 2 matches, which is not possible.
If Brinda is rank 1 player, then
I match →Biju vs Brij ⇒ Biju won
II match →Biju vs Brinda ⇒ Biju won
If Brij is rank 1 player, then
I match →Biju vs Brinda ⇒ Biju won
II match →Biju vs Brij ⇒ Biju won
So either Brij or Brinda is rank 1 player in group B and Biju played 2 matches in group.
So the third match which Biju will play is semifinal.

Group C:- Here Chhavi played one match and Chetan played 2 matches.
So match I:- Chhavi vs Chetan ⇒ Chetan won
match II:- Chitra vs Chetan ⇒ Chitra won
if Chhavi plays with Chitra & Chitra beats her, then Chitra will beat Chetan also. In that case Chetan has played only one game which is not possible.
Here Chitra had played one match in group and her remaining matches are semifinal & final. So Chitra played final.

Group D:- Here Donna & Deb played one match each. So as discussed in Group B, Dipen cannot be rank 1 player.
∴ In group D, either Donna & Deb are rank 1 player & Dipen played 2 matches in group and his one match will be semifinal.

Biju played semifinal against Aruna and lost it. So he cannot play against Chitra.

***QNo:- 33 ,Correct Answer:-** 6*

***Explanation:-** The total tip received is Rs. 120*

Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. x > y & x + 3y = 21
⇒ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings ⇒ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			*x*	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Minimum rating given is 5

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

Explanation:- *The total tip received is Rs. 120*
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. x > y & x + 3y = 21
⇒ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings ⇒ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			*x*	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26

Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Bihari & Chirag gave maximum 27 points

QNo:- 35 ,Correct Answer:- *6*

Explanation:- *The total tip received is Rs. 120*
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. x > y & x + 3y = 21
⇒ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings ⇒ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			*x*	

Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Atal gave rating of 6 on timeliness

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

Explanation:- *The total tip received is Rs. 120*
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. x > y & x + 3y = 21
⇒ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings ⇒ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			*x*	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26

Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Deepak can give a tip of Rs 30 or 50

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

Explanation:- *The total tip received is Rs. 120*
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. x > y & x + 3y = 21
⇒ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings ⇒ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.
∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			*x*	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Atal gave maximum points in behaviour

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

***Explanation:-** The total tip received is Rs. 120*
Now 120 = 20 + 20 + 30 + 50 or 20 + 50 + 50 + 0 or 30 + 30 + 30 + 30
It is given that in Timeliness, Ravi received a total of 21 points. As per point 1, let Atal gave x points then Bihari, Chirag and Deepak will give y each, s.t. x > y & x + 3y = 21
⇒ (x, y) are (6, 5) or (9, 4)
Total of Packaging is 29 with all distinct ratings ⇒ 29 = 9 + 8 + 7 + 5
Hygiene also has distinct ratings with a total of 26.
Now 26 = 9 + 8 + 7 + 2 or 9 + 8 + 6 + 3 or 9 + 8 + 5 + 4 or 8 + 7 + 6 + 5
Point 4 says that Chirag gave highest rating to hygiene, and also rating of Chirag as per point 3 is same for packaging & hygiene. So Chirag cannot give rating 9 to packaging as Bihari is the one giving highest rating to packaging.

∴ Chirag will give highest rating of 8 to hygiene and therefore 26 = 8 + 7 + 6 + 5
Using the point 5, the partial table can be as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7			*x*	
Bihari	6	9		y	
Chirag	6	8	8	y	
Deepak	5			y	
Total		9	26	21	

Point 6 says that Atal's Rank in Packaging & hygiene is same. So it can be rank 3 or 4 and the same is true for Deepak also.

Two cases arise here:
Case I:- If Atal's rank is 3rd in packaging and hygiene.
In this case Atal's rating in packaging will be 7 and in hygiene will be 6 Deepak will be ranked 4 in these parameters with ratings 5 each.
Also taking the possible values of timeliness, the table will look like as follows

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	7	6	6/9	26/29
Bihari	6	9	7	5/4	27/26
Chirag	6	8	8	5/4	27/26
Deepak	5	5	5	5/4	20/19
Total		29	26	21	

In this case Ravi will get bonus of Rs 20 each from Atal, Bihari & Chirag. From Deepak he can get maximum Rs 50 as tip. So his total will not be Rs 120 therefore, this case is wrong.

Case II:- If Atal's rank is 4th in packaging and hygiene. In this case Atal's ratings in these two parameters will be 5 each and Deepak's rank will be third with ratings of 7 & 6 respectively in packaging and hygiene respect.
We get the first table as follows:

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	9	26
Bihari	6	9	7	4	26
Chirag	6	8	8	4	26
Deepak	5	7	6	4	22

In this case again he will get Rs 20 bonus from Atal, Bihari & Chirag, so his total cannot be Rs 120. Hence this case is not valid.

If we take the second case of timeliness, then the table will be

	Behaviour	Packaging	Hygiene	Timeliness	Total
Atal	7	5	5	6	23
Bihari	6	9	7	5	27
Chirag	6	8	8	5	27
Deepak	5	7	6	5	23
Total		29	26		

In this case Ravi can get tip from Atal & Deepak & will get bonus from Bihari & Chirag. Atal & Deepak can give tip of Rs 30 & Rs 50 in any order.
So he will get 120 = 20 + 20 + 30 + 50.

Deepak gave rating of 7 on packaging

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

Explanation:- *Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so*
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

o8 was given to Charles

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

Explanation:- *Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so*
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12

Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

Amar with 12 bundle value envies others with bundle value 16

QNo:- 41 ,Correct Answer:- *12*

Explanation:- *Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so*
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

Amar's bundle value = 12

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

Explanation:- *Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so*
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

o4 was given to Disha

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

Explanation:- *Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so*
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise

o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

Now question can be answered using the above table

o5 was given to Elise

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

Explanation:- *Since, Bharat value o9 = 10 and Elsie value o10 = 10, they definitely receive so*
Also, three people value their bundle = 16 and no value could be greater than 16
(Except Disha as she values her bundle as odd, number)
The other object of Bharat must be o7 = 6 to make it total = 16 (even)
And the other object of Elsie must be either o1 or o5
Now if Amar value his bundle = 16, objects received o2 or o3 = 9 and o5 or o8 = 7
Let say combination is o2 and o5, in that case Elsie must get o1
Then Charles get either o3 or o8 along with o6, total value = 12,
But Charles with those objects and score will not envy Amar as his bundle value is either equal or greater than Amar.
Likewise, in other cases as well, Charles bundle value cannot be 12
So, Charles bundle value must be = 16 and Amar bundle value must be = 12
Rest of the information can be gathered as follows

	Amar	Barat	Charles	Disha	Elise
o1	×	×	×	o1 = 8	×
o2	o2/o3 = 9	×	o2/o3 = 8	×	×
o3		×		×	×
o4	×	×	×	o4 = 5	×
o5	×	×	×	×	o5 = 6
o6	o6 = 3	×	×	×	×
o7	×	o7 = 6	×	×	×
o8	×	×	o8 = 8	×	×
o9	×	o9 = 10	×	×	×
o10	×	×	×	×	o10 = 10
Bundle Value	12	16	16	13	16

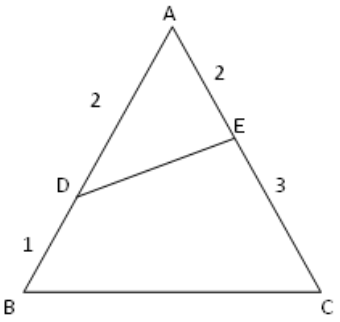
Now question can be answered using the above table

o1 was given to Disha

Section : Quantitative Ability

QNo:- 45 ,Correct Answer:- *30*

Explanation:- *Let AD = 2x, BD = x*
AE = 2y, EC = 3y
Area of ΔAED = 8



⇒ 1/2 × 2x × 2y × SinA = 8
⇒2xy Sin A = 8
⇒ xy Sin A = 4 ----(i)
Area of ΔABC = 1/2 × 3x × 5y Sin A
= 1/2 × 15 × xy Sin A
= 1/2 × 15 × 4 = 30 Sq unit

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

Explanation:- *Let the speeds of trains A and B is 5x & 3x respectively and their lengths be l1 & l2 respectively.*
In the first case, distance travelled will be equal to length of train B

$$\therefore \frac{l_2}{8x} = 46 \Rightarrow l2 = 46 \times 8x$$

In the second case, distance travelled will be equal to length of train A.

$$\therefore \frac{l_1}{8x} = 69 \Rightarrow l1 = 8x \times 69$$

$$\therefore \text{Required ratio} = \frac{l_1}{l_2} = \frac{8x \times 69}{46 \times 8x} = \frac{3}{2}$$

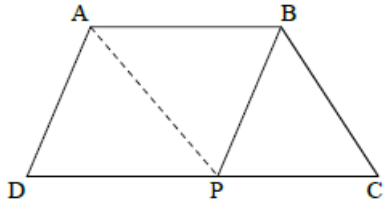
QNo:- 47 ,Correct Answer:- *C*

Explanation:- *Here the investment of Anil is 70% of the total investment. Now his share of profit decreased by Rs 420 when the profit decreased from 18% to 15%. So 70% of (decreased profit) = 420*
⇒ Decreased profit = 420/0.7 = Rs 600.
Therefore, 3% of total investment = 600 ⇒ Total investment = Rs 20000
So, Anil's investment is 70% of 20000 = Rs 14000.
Now Chintu's profit increased by Rs 80 when the profit increases from 15% to 17%.
Therefore, 2% of Chintu's investment = 80 ⇒ Chintu's investment = 80/0.02 = Rs 4000
Hence, Bobby's investment = 20000 – (14000 + 4000) = Rs 2000.

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

Explanation:- *Join AP*
Here in ΔADP & ΔBPC,
AD = BP, DP = PC
∠BPC = ∠PBA = ∠ADP

⇒ Δs ADP & BPC are congruent
Also AP is diagonal of parallelogram ABPD
∴ Ar (ΔADP) = Ar (ΔABP)
Let Ar (ΔADP) = x = Ar (ΔABP) = Ar (ΔBPC)
∴ Area of trapezium ABCD = 3x
Now given that 2x - x = 10 ⇒ x = 10
∴ Area of trapezium = 10 × 3 = $30cm^2$

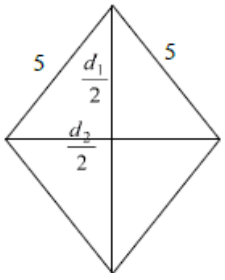


QNo:- 49 ,Correct Answer:- *A*

Explanation:- *Let the quantitites bought are 6kg, 9kg & 15kg respectively.*
Total cost = 6 × 800 + 500 × 9 + 300 × 15 = Rs 13800
Total SP = 13800 × 1.5 = Rs 20700
SP of 5kg = 5 × 700 = Rs 3500
Remaining SP = Rs 17200
$\therefore \text{SP/kg} = \frac{17200}{25} = \text{Rs. } 688$

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

Explanation:- *Area of rhombus = 12*
⇒ *1/2 d1 × d2 = 12*
d1 × d2 = 24
$\text{Also } \frac{d_1^2}{4} + \frac{d_2^2}{4} = 25 \quad \Rightarrow d12 + d22 = 100$
Now (d1 + d2)2 = d12 + d22 + 2d1d2 = 100 + 48 = 148
$\Rightarrow d1 + d2 = 2\sqrt{37}$ ---(1)
Again (d1 - d2)2 = d12 + d22 - 2d1d2 = 100 - 48 = 52
$\Rightarrow d1 - d2 = 2\sqrt{13}$ ---(2)
$(1) + (2) \Rightarrow 2d1 = 2\left(\sqrt{37} + \sqrt{13}\right) \Rightarrow d_1 = \sqrt{37} + \sqrt{13}$



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

Explanation:- *Here x, y, 7 are in AP*
$\Rightarrow y = \frac{x+z}{2} \quad \Rightarrow x + z = 2y$
Now xyz = 5 (x + y + z)
⇒ *xyz = 5 × (2y + y)*
⇒ *xyz = 5 × 3y*
⇒ *xz = 15*
Now (x, z) can be (3, 5) & (1, 15)

But if x & z are 3 & 5 then y - x is no greater than 2 ⇒ x = 1, z = 15 and y = 8
⇒ z - x = 14.

QNo:- 52 ,Correct Answer:- *4195*

Explanation:- *Let the number is abcd*
Given the $a + b + c = 14$ *-----(1)*
$b + c + d = 15$ *-----(2)*
$\& c = d + 4$ *-----(3)*
(2) - (1) ⇒ d - a = 1 ⇒ a = d - 1 -----(4)
As highest number is asked ⇒ a should be max. So (4) ⇒ d should be maximum, or (3) ⇒ c should be maximum ⇒ c = 9 ⇒ d = 5
∴ (4) ⇒ a = 4 & (1) ⇒ 4 + b + 9 = 14 ⇒ b = 1
∴ Number is 4195.

QNo:- 53 ,Correct Answer:- *1000*

Explanation:- *We have 15 identical ballons, 6 identical pencils and 3 identical erasers. Let the children are A, B and C. Now every child should get four balloons and one pencil. So first dstribute 4 balloons and one pencil to A, B and C. We are left with 3 balloons, 3 pencils and 3 erasers.*
3 balloons can be distributed to A, B, C in 3 + 3- 1C3 – 1 Or 5C2 = 10 ways.
Similarly, 3 pencils can & 3 erasers can be distributed in 10 ways each.
∴ Total ways = 10 × 10 × 10 = 1000

QNo:- 54 ,Correct Answer:- *7*

Explanation:- *Given that* $2.25 \le 2 + 2n+2 \le 202$
$\Rightarrow 2 + 0.25 \le 2 + 2n+2 \le 2 + 128 < 202$
$\Rightarrow 2 + 2\text{-}2 \le 2 + 2n+2 \le 2 + 27$
$\therefore -2 \le n + 2 \le 7 \Rightarrow -4 \le n \le 5$
$\therefore n = -4, -3, -2, -1, 0, 1, 2, 3, 4, 5$
Now for n = -1, 0, 1, 2, 3, 4, 5, 3 + 3n+1 is an integer.
Therefore total '7' values of 'n' are possible.

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

Explanation:- *Let the loss incurred in first year is x%*
As the balance is more than 5000 ⇒ x < 50%
Profit in the next year = 5x & overall profit is 35%

$$\Rightarrow 5x - x + \frac{5x(-x)}{100} = 35$$

$$\Rightarrow 4x - \frac{x^2}{20} = 35$$

$\Rightarrow x^2 - 80x + 700 = 0$
$\Rightarrow (x - 70)(x - 10) = 0$
$\Rightarrow x = 10, 70$
As x < 50% ⇒ x = 10%

QNo:- 56 ,Correct Answer:- *B*

Explanation:- *In the first case A worked for 8 hours and B worked for 7 hours.*
In the second case A worked for 4 hours and B worked for 2 hours.

∴ If B worked 5 hours less then time saved for A = 4 hour
B does not work then time saved for A = 4/5 × 7 = 5.6 hours
So in this A would have filled the tank in 8 - 5.6 = 2.4 hour or 144 minutes.

QNo:- 57 ,Correct Answer:- 250

Explanation:- Let the metallic white and metallic black balls are x each.
Now 40% of white balls = x ⇒ white balls = 2.5x
& 50% of black balls = x ⇒ Total black balls = 2x
Now 2.5x + 2x = 450 ⇒ 4.5x = 450 ⇒ x = 100
∴ Number of non-metallic white & non metallic black balls = 1.5x + x = 2.5x = 2.5 × 100 = 250

QNo:- 58 ,Correct Answer:- B

Explanation:- Let $\frac{x^2+2x+4}{2x^2+4x+9}=k$
⇒ x2 + 2x + 4 = 2kx2 + 4kx + 9k
⇒ (2k - 1)x2 + (4k - 2)x + (9k - 4) = 0
As x is real ⇒ D ≥ 0
⇒ (4k - 2)2 - 4 (2 k - 1) (9k - 4) ≥ 0
⇒ (2k - 1)2 - (2k - 1) (9k - 4) ≥ 0
⇒ (2k - 1) [2k - 1 - 9k + 4] ≥ 0
⇒ (2k - 1) (-7k + 3) ≥ 0
⇒ (2k - 1) (7k - 3) ≤ 0
$\Rightarrow \frac{3}{7} \le k \le \frac{1}{2}$
∴ option 2 is the best choice

QNo:- 59 ,Correct Answer:- 5

Explanation:- Here log2 [3 + log3 {4 + log4 (x-1)}] - 2 = 0
⇒ log2 [3 + log3 {4 + log4 (x-1)}] = 2
⇒ 3 + log3 {4 + log4 (x-1)} = 4
⇒ log3 [4 + log4 (x-1)] = 1
⇒ 4 + log4 (x-1) = 3
$\Rightarrow \log_4 (x-1) = -1 \Rightarrow x - 1 = \frac{1}{4} \Rightarrow x = 5/4$
$\text{Now } 4x = 4 \times \frac{5}{4} = 5$

QNo:- 60 ,Correct Answer:- A

Explanation:- We have x2 - xy - x = 22 ---(1)
y2 - xy + y = 34 ---(2)
Add the equation (1) & (2), we get
x2 + y2 - 2xy - (x - y) = 56
⇒ (x - y)2 - (x - y) = 56
⇒ (x - y) (x - y - 1) = 56
As (x - y) and (x - y - 1) are consecutive numbers and their product is 56 ⇒ x - y = 8 & x - y - 1 = 7.
∴ x - y = 8

QNo:- 61 ,Correct Answer:- B

Explanation:- *Here x1 - x2 + x3 - x4 + ------- + (- 1)n + 1 x4 = n2 + 2n*
n = 1 ⇒ x1 = 1 + 2 = 3
n = 2 ⇒ x1 - x2 = 8 ⇒ x2 = - 5
n = 3 ⇒ x1 - x2 + x3 = 15 ⇒ x3 = 7
n = 4 ⇒ x1 - x2 + x3 - x4 = 24 ⇒ x4 = - 9 and so on
Now here x1 + x2 = - 2, x3 + x4 = -2 and so on, so x49 + x50 = - 2

QNo:- 62 ,Correct Answer:- *45*

Explanation:-

$$\text{Here } \frac{\text{milk}}{\text{Total vol}} = \frac{16}{25} = \left(\frac{4}{5}\right)^2$$

$$\therefore \frac{1}{5} \text{ of total mixture is taken out every time}$$

$$\therefore \frac{1}{5} \times T = 9 \Rightarrow T = 45 \text{l}$$

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

Explanation:- *Here |3x - 20| + |3x - 40| = 20 ---(1)*

Case I: If $x < \frac{20}{3}$, $(1) \Rightarrow -(3x - 20) - (3x - 40) = 20$

⇒ -3x + 20 - 3x + 40 = 20

$\Rightarrow -6x = -40 \Rightarrow x = \frac{20}{3}$, but $x = \frac{20}{3}$

∴ This is not possible

Case II: If $\frac{20}{3} \le x < \frac{40}{3}$, $(1) \Rightarrow 3x - 20 - 3x + 40 = 20 \Rightarrow 20 = 20$ which is true

$\therefore \frac{20}{3} \le x < \frac{40}{3}$

Case III: If $x \ge \frac{40}{3}$, $\Rightarrow 3x - 20 + 3x - 40 = 20 \Rightarrow 6x = 80 \Rightarrow x = \frac{40}{3}$

Combining the case II & III, we have $\frac{20}{3} \le x \le \frac{40}{3}$ or $6.67 \le x \le 13.33$

Therefore, option (1) satisfies.

QNo:- 64 ,Correct Answer:- *10*

Explanation:- *Let the original matches be 'n' and original goals be 'x'*
Now (n + 10) × 0.15 = x + 1
⇒ 0.15 n + 1.5 = x + 1 ---(1)
& (n + 10) × 0.2 = x + 2
⇒ 0.2n + 2 = x + 2 ---(2)

$(2) - (1) \Rightarrow 0.05n + 0.5 = 1 \Rightarrow 0.05n = 0.5 \Rightarrow n = \frac{0.5}{0.05} = 10$

QNo:- 65 ,Correct Answer:- *B*

Explanation:- *Given equation is ax2 - bx + c = 0*

Its one root is $2+\sqrt{3}$, so second root will $2-\sqrt{3}$,

Sum of roots $= \frac{b}{a} = 2+\sqrt{3}+2-\sqrt{3} = 4$

$\therefore \frac{b}{a} = 4$ ---(1)

Product of roots $= \frac{c}{a} = (2+\sqrt{3})(2-\sqrt{3}) = 1$

$\Rightarrow \frac{c}{a} = 1$ ---(2)

(1) / (2) $\Rightarrow \frac{b}{c} = 4 \Rightarrow b = 4c$ ---(3)

Also b = c3, (3) ⇒ c3 = 4c ⇒ c2 = 4 ⇒ c = 2, - 2

If c = 2 ⇒ b = 8

Now $\frac{b}{a} = 4 \Rightarrow \frac{8}{a} = 4 \Rightarrow a = 2 \Rightarrow |a| = 2$

If c = - 2, b = - 8 & $\frac{b}{a} = 4 \Rightarrow -\frac{8}{a} = 4 \Rightarrow a = a = -2 =. |a| = 2$

QNo:- 66 ,Correct Answer:- *A*

Explanation:- *Let the total work is 420 units*
A can do 7 units/d, B can do 5 units / day
Let C can do x units/d
∴ 7 × 24 + 5 × 14 + x × 14 = 420 ⇒ 14x + 238 = 420 ⇒ 14x = 182 ⇒ x = 13
Work done by A = 168 units
Work done by B = 70 units
Work done by C = 182 units
∴ Ratio of work done by A, B & C is 168 : 70 : 182 or 84 : 35 : 91
∴ Amount given to C $= \frac{91}{210} \times 21000 = \text{Rs } 9100$

Directions of Test

Test Name	Actual CAT 2021 Slot III	Total Questions	66	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	24	0:40(h:m)	3	1/3
DI & Reasoning	20	0:40(h:m)	3	1/3
Quantitative Ability	22	0:40(h:m)	3	1/3

Section : Verbal Ability

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

Question No. : 1

Back in the early 2000s, an awesome thing happened in the New X-Men comics. Our mutant heroes had been battling giant robots called Sentinels for years, but suddenly these mechanical overlords spawned a new threat: Nano-Sentinels! Not content to rule Earth with their metal fists, these tiny robots invaded our bodies at the microscopic level. Infected humans were slowly converted into machines, cell by cell.

Now, a new wave of extremely odd robots is making at least part of the Nano-Sentinels story come true. Using exotic fabrication materials like squishy hydro gels and elastic polymers, researchers are making autonomous devices that are often tiny and that could turn out to bemore powerful than an army of Terminators. Some are 1-centimetre blobs that can skate overwater. Others are flat sheets that can roll themselves into tubes, or matchstick-sized plastic coils that act as powerful muscles. No, they won't be invading our bodies and turning us into Sentinels – which I personally find a little disappointing – but some of them could one day swim through our bloodstream to heal us. They could also clean up pollutants in water or fold themselves into different kinds of vehicles for us to drive. . . .

Unlike a traditional robot, which is made of mechanical parts, these new kinds of robots are made from molecular parts. The principle is the same: both are devices that can move around and do things independently. But a robot made from smart materials might be nothing more than a pink drop of hydrogel. Instead of gears and wires, it's assembled from two kinds of molecules – some that love water and some that avoid it – which interact to allow the bot to skate on top of a pond.

Sometimes these materials are used to enhance more conventional robots. One team of researchers, for example, has developed a different kind of hydrogel that becomes sticky when exposed to a low-voltage zap of electricity and then stops being sticky when the electricity is switched off. This putty-like gel can be pasted right onto the feet or wheels of arobot. When the robot wants to climb a sheer wall or scoot across the ceiling, it can activate its sticky feet with a few volts. Once it is back on a flat surface again, the robot turns off the adhesive like a light switch.

Robots that are wholly or partly made of gloop aren't the future that I was promised in science fiction. But it's definitely the future I want. I'm especially keen on the nanometer-scale "soft robots" that could one day swim through our bodies. Metin Sitti, a director at the Max Planck Institute for Intelligent Systems in Germany, worked with colleagues to prototype these tiny, synthetic beasts using various stretchy materials, such as simple rubber, and seeding them with magnetic micro particles. They are assembled into a finished shape by applying magnetic fields. The results look like flowers or geometric shapes made from Tinker toy ball and stick modelling kits. They're guided through tubes of fluid using magnets, and can even stop and cling to the sides of a tube.

Which one of the following scenarios, if false, could be seen as supporting the passage?

A) There are two kinds of molecules used to make some nano-robots: one that reacts positively to water and the other negatively.
B) Nano-Sentinel-like robots are likely to be used to inject people to convert them into robots, cell by cell.
C) Some hydro gels turn sticky when an electric current is passed through them; this potentially has very useful applications.
D) Robots made from smart materials are likely to become part of our everyday lives in the future

Question No. : 2

Which one of the following statements best summarises the central point of the passage?
A) There are two kinds of molecules used to make some nano-robots: one that reacts positively to water and the other negatively.
B) Nano-robots made from molecules that react to water have become increasingly useful
C) The field of robotics is likely to be feature more and more in comics like the New X-Men.
D) Once the stuff of science fiction, nano-robots now feature in cutting-edge scientific research

Question No. : 3

Which one of the following statements, if true, would be the most direct extension ofthe arguments in the passage?

A) X-Men may be created by injecting people with mutant nano-gels that will respond to the brain's magnetic field.
B) In the future, robots will be used to search and destroy diseases even in the deepest recesses of the human body.
C) Sentinel robots will be used in warfare to cause large-scale destructive mutations amongst civilians
D) 1-centimetre blobs of gel that have nano-robots in them will be used to send messages.

Question No. : 4

Which one of the following statements best captures the sense of the first paragraph?

A) People who were infected by Nano-Sentinel robots became mutants who were called X-Men.
B) Tiny sentinels called X-Men infected people, turning them into mutant robot overlords.
C) None of the options listed here
D) The X-Men were mutant heroes who now had to battle tiny robots called Nano-Sentinels.

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

Question No. : 5

Keeping time accurately comes with a price. The maximum accuracy of a clock is directly related to how much disorder, or entropy, it creates every time it ticks. Natalia Ares at the University of Oxford and her colleagues made this discovery using a tiny clock with an accuracy that can be controlled. The clock consists of a 50-nanometre-thick membrane of silicon nitride, vibrated by an electric current. Each time the membrane moved up and down once and then returned to its original position, the researchers counted a tick, and the regularity of the spacing between the ticks represented the accuracy of the clock. The researchers found that as they increased the clock's accuracy, the heat produced in the system grew, increasing the entropy of its surroundings by jostling nearby particles . . . "If a clock is more accurate, you are paying for it somehow," says Ares. In this case, you pay for it by pouring more ordered energy into the clock, which is then converted into entropy. "By measuring time, we are increasing the entropy of the universe," says Ares. The more entropy there is in the universe, the closer it may be to its eventual demise. "Maybe we should stop measuring time," says Ares. The scale of the additional entropy is so small, though, that there is no need to worry about its effects, she says.

The increase in entropy in timekeeping may be related to the "arrow of time", says Marcus Huber at the Austrian Academy of Sciences in Vienna, who was part of the research team. It has been suggested that the reason that time only flows forward, not in reverse, is that the total amount of entropy in the universe is constantly increasing, creating disorder that cannot be put in order again.

The relationship that the researchers found is a limit on the accuracy of a clock, so it doesn't mean that a clock that creates the most possible entropy would be maximally accurate –hence a large, inefficient grandfather clock isn't more precise than an atomic clock. "It's a bit like fuel use in a car. Just because I'm using more fuel doesn't mean that I'm going faster or further," says Huber.

When the researchers compared their results with theoretical models developed for clocks that rely on quantum effects, they were surprised to find that the relationship between accuracy and entropy seemed to be the same for both. . . . We can't be sure yet that these results are actually universal, though, because there are many types of clocks for which the relationship between accuracy and entropy haven't been tested. "It's still unclear how this principle plays out in real devices such as atomic clocks, which push the ultimate quantum limits of accuracy," says Mark Mitchison at Trinity College Dublin in Ireland. Understanding this relationship could be helpful for designing clocks in the future, particularly those used in quantum computers and other devices where both accuracy and temperature are crucial, says Ares. This finding could also help us understand more generally how the quantum world and the classical world are similar and different in terms of thermodynamics and the passage of time.

"It's a bit like fuel use in a car. Just because I'm using more fuel doesn't mean that I'm going faster or further . . ." What is the purpose of this example?

A) If you go faster in a car, you will tend to consume more fuel, but the converse is not necessarily true. In the same way, increased entropy does not necessarily mean greater accuracy of a clock.
B) The further you go in a car, the more fuel you use. In the same way, the faster you go in a car, the less time you use.
C) If you measure the speed of a car with a grandfather clock, the result will be different than if you measured it with an atomic clock.
D) The further and faster you go in a car, the greater the amount of fuel you will use, the greater the amount of heat produced and, hence, the greater the entropy.

Question No. : 6

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

A) The relationship between accuracy and entropy may not apply to all clocks.
B) Researchers found that the heat produced in a system is the price paid for increased accuracy of measurement.
C) There is no difference in accuracy between an inefficient grandfather clock and an atomic clock.
D) In designing clocks for quantum computers, both precision and heat have to be taken into account.

Question No. : 7

Which one of the following sets of words and phrases serves best as keywords of the passage?

A) Electric current; Heat; Quantum effects B) Silicon Nitride; Energy; Grandfather Clocks
C) Measuring Time; Accuracy; Entropy D) Membrane; Arrow of time; Entropy

Question No. : 8

None of the following statements can be inferred from the passage EXCEPT that:

A) the arrow of time has not yet been tested for atomic clocks.
B) quantum computers are likely to produce more heat and, hence, more entropy, because of the emphasis on their clocks' accuracy
C) grandfather clocks are likely to produce less heat and, hence, less entropy, because they are not as accurate.
D) a clock with a 50-nanometre-thick membrane of silicon nitride has been made to vibrate, producing electric currents.

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

Question No. : 9

Today we can hardly conceive of ourselves without an unconscious. Yet between 1700 and1900, this notion developed as a genuinely original thought. The "unconscious" burst the shell of conventional language, coined as it had been to embody the fleeting ideas and the shifting conceptions of several generations until, finally, it became fixed and defined in specialized terms within the realm of medical psychology and Freudian psychoanalysis.

The vocabulary concerning the soul and the mind increased enormously in the course of the nineteenth century. The enrichments of literary and intellectual language led to an altered understanding of the meanings that underlie time-honored expressions and traditional catchwords. At the same time, once coined, powerful new ideas attracted to themselves awhile host of seemingly unrelated issues, practices, and experiences, creating a peculiar network of preoccupations that as a group had not existed before. The drawn-out attempt to approach and define the unconscious brought together the spiritualist and the psychical researcher of borderline phenomena (such as apparitions, spectral illusions, haunted houses, mediums, trance, automatic writing); the psychiatrist or alienist probing the nature of mental disease, of abnormal ideation, hallucination, delirium, melancholia, mania; the surgeon performing operations with the aid of hypnotism; the magnetizer claiming to correct the disequilibrium in the universal flow of magnetic fluids but who soon came to be regarded as a clever manipulator of the imagination; the physiologist and the physician who puzzled oversleep, dreams, sleepwalking, anesthesia, the influence of the mind on the body in health and disease; the neurologist concerned with the functions of the brain and the physiological basis of mental life; the philosopher interested in the will, the emotions, consciousness, knowledge, imagination and the creative genius; and, last but not least, the psychologist.

Significantly, most if not all of these practices (for example, hypnotism in surgery or psychological magnetism) originated in the waning years of the eighteenth century and during the early decades of the nineteenth century, as did some of the disciplines (such as psychology and psychical research). The majority of topics too were either new or assumed hitherto unknown colors. Thus, before 1790, few if any spoke, in medical terms, of the affinity between creative genius and the hallucinations of the insane . . .

Striving vaguely and independently to give expression to a latent conception, various lines of thought can be brought together by some novel term. The new concept then serves as a kind of resting place or stocktaking in the development of ideas, giving satisfaction and a stimulus for further discussion or speculation. Thus, the massive introduction of the term unconscious by Hartmann in 1869 appeared to focalize many stray thoughts, affording a temporary feeling that a crucial step had been taken forward, a comprehensive knowledge gained, a knowledge that required only further elaboration, explication, and unfolding in order to bring in a bounty of higher understanding. Ultimately, Hartmann's attempt at defining the unconscious proved fruitless because he extended its reach into every realm of organic and inorganic, spiritual, intellectual, and instinctive existence, severely diluting the precision and compromising the impact of the concept.

All of the following statements may be considered valid inferences from the passage, EXCEPT:
A) Unrelated practices began to be treated as related to each other, as knowledge of the mind grew in the nineteenth century.
B) Without the linguistic developments of the nineteenth century, the growth of understanding of the soul and the mind may not have happened.
C) Eighteenth century thinkers were the first to perceive a connection between creative genius and insanity.
D) New conceptions in the nineteenth century could provide new knowledge because of the establishment of fields such as anesthesiology

Question No. : 10

Which one of the following statements best describes what the passage is about?

A) The discovery of the unconscious as a part of the human mind
B) The collating of diverse ideas under the single term: unconscious
C) The growing vocabulary of the soul and the mind, as diverse processes
D) The identification of the unconscious as an object of psychical research

Question No. : 11

"The enrichments of literary and intellectual language led to an altered understanding of the meanings that underlie time-honored expressions and traditional catchwords." Which one of the following interpretations of this sentence would be closest in meaning to the original?

A) The meanings of time-honored expressions were changed by innovations in literary and intellectual language.
B) Literary and intellectual language was altered by time-honored expressions and traditional catchwords.
C) All of the options listed here.
D) Time-honored expressions and traditional catchwords were enriched by literary and intellectual language.

Question No. : 12

Which one of the following sets of words is closest to mapping the main arguments of the passage?

A) Language; Unconscious; Psychoanalysis B) Literary language; Unconscious; Insanity
C) Unconscious; Latent conception; Dreams D) Imagination; Magnetism; Psychiatry

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

Question No. : 13

Starting in 1957, [Noam Chomsky] proclaimed a new doctrine: Language, that most human of all attributes, was innate. The grammatical faculty was built into the infant brain, and your average 3-year-old was not a mere apprentice in the great enterprise of absorbing English from his or her parents, but a "linguistic genius." Since this message was couched in terms of Chomskyan theoretical linguistics, in discourse so opaque that it was nearly incomprehensible even to some scholars, many people did not hear it. Now, in a brilliant, witty and altogether satisfying book, Mr. Chomsky's colleague Steven Pinker . . . has brought Mr. Chomsky's findings to everyman. In "The Language Instinct" he has gathered persuasive data from such diverse fields as cognitive neuroscience, developmental psychology and speech therapy to make his points, and when he disagrees with Mr. Chomsky he tells you so. . . .

For Mr. Chomsky and Mr. Pinker, somewhere in the human brain there is a complex set of neural circuits that have been programmed with "super-rules" (making up what Mr. Chomsky calls "universal grammar"), and that these rules are unconscious and instinctive. A half-century ago, this would have been pooh-poohed as a "black box" theory, since one could not actually pinpoint this grammatical faculty in a specific part of the brain, or describe its functioning. But now things are different.

Neurosurgeons [have now found that this] "black box" is situated in and around Broca's area, on the left side of the forebrain. . . .

Unlike Mr. Chomsky, Mr. Pinker firmly places the wiring of the brain for language within the framework of Darwinian natural selection and evolution. He effectively disposes of all claims that intelligent nonhuman primates like chimps have any abilities to learn and use language. It is not that chimps lack the vocal apparatus to speak; it is just that their brains are unable to produce or use grammar. On the other hand, the "language instinct," when it first appeared among our most distant hominid ancestors, must have given them a selective reproductive advantage over their competitors (including the ancestral chimps). . . .

So according to Mr. Pinker, the roots of language must be in the genes, but there cannot be a "grammar gene" any more than there can be a gene for the heart or any other complex body structure. This proposition will undoubtedly raise the hackles of some behavioral psychologists and anthropologists, for it apparently contradicts the liberal idea that human behavior may be changed for the better by improvements in culture and environment, and it might seem to invite the twin bugaboos of biological determinism and racism. Yet Mr. Pinker stresses one point that should allay such fears. Even though there are 4,000 to 6,000languages today, they are all sufficiently alike to be considered one language by an extraterrestrial observer. In other words, most of the diversity of the world's cultures, so beloved to anthropologists, is superficial and minor compared to the similarities. Racial differences are literally only "skin deep." The fundamental unity of humanity is the theme of Mr. Chomsky's universal grammar, and of this exciting book.

On the basis of the information in the passage, Pinker and Chomsky may disagree with each other on which one of the following points?
A) The possibility of a universal grammar. B) The language instinct C) The inborn language acquisition skills of humans
D) The Darwinian explanatory paradigm for language

Question No. : 14

According to the passage, all of the following are true about the language instinct EXCEPT that:

A) all intelligent primates are gifted with it. B) not all intelligent primates are gifted with it
C) developments in neuroscience have increased its acceptance D) it confers an evolutionary reproductive advantage

Question No. : 15

From the passage, it can be inferred that all of the following are true about Pinker 'book, "The Language Instinct", EXCEPT that Pinker:

A) writes in a different style from Chomsky B) draws from behavioural psychology theories
C) disagrees with Chomsky on certain grounds D) draws extensively from Chomsky's propositions

Question No. : 16

Which one of the following statements best summarises the author's position about Pinker's book?

A) The evolutionary and deterministic framework of Pinker's book makes it racist.
B) The universality of the "language instinct" counters claims that Pinker's book is racist.
C) Culture and environment play a key role in shaping our acquisition of language
D) Anatomical developments like the voice box play a key role in determining language acquisition skills.

DIRECTIONS for the question: *The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*

Question No. : 17

Brazil's growth rate has been low, yet most Brazilians say their financial situation has improved, and they expect it to get even better. This is because most incomes are rising fast, with higher minimum wages and very low unemployment. The result is falling inequality and a growing middle class — the result of economic stabilization, improved social security and universal primary education. But despite recent improvements the Brazilian economy is still painfully unequal, with poor Brazilian spaying the biggest share of their income in taxes and getting the least back in government services.

A) Economic reforms have benefitted many Brazilians, but they are unaware of the impending problems from rising inequalities in their society.
B) With rising incomes and falling unemployment, most Brazilians are being misled into thinking that their economy is doing well.

C) Good economic indicators have masked the unfair taxation of the poor that is likely to destabilise the Brazilian economy in the next few years.
D) Most Brazilians feel they have benefitted from recent economic events, but the poor continue to be dealt unfairly by the state.

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

Question No. : 18

1. Businesses find automation, such as robotic employees, a big asset in terms of productivity and efficiency.
2. But in recent years, robotics has had increasing impacts on unemployment, not just of manual labour, as computers are rapidly handling some white-collar and service-sector work.
3. For years politicians have promised workers that they would bring back their jobs by clamping down on trade, off shoring and immigration.
4. Economists, based on their research, say that the bigger threat to jobs now is not globalisation but automation.

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

Question No. : 19

1. A typical example is Wikipedia, where the overwhelming majority of contributors are male and so the available content is skewed to reflect their interests.
2. Without diversity of thought and representation, society is left with a distorted picture of future options, which are likely to result in augmenting existing inequalities.
3. Gross gender inequality in the technology sector is problematic, not only for the industry-wide marginalization of women, but because technology designs embody the values of their makers.
4. While redressing unequal representation in the workplace is a step in the right direction, broader social change is needed to address the structural inequalities embedded within the current organization of work and employment.
5. If technology merely reflects the perspectives of the male stereotype, then new technologies are unlikely to accommodate the diverse social contexts within which they operate.

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

Question No. : 20

1. Restitution of artefacts to original cultures could faces legal obstacles, as many Western museums are legally prohibited from disposing off their collections.
2. This is in response to countries like Nigeria, which are pressurising European museums to return their precious artefacts looted by colonisers in the past.
3. Museums in Europe today are struggling to come to terms with their colonial legacy, some taking steps to return artefacts but not wanting to lose their prized collections.
4. Legal hurdles notwithstanding, politicians and institutions in France and Germany would now like to defuse the colonial time bombs, and are now backing the return of part of their holdings.

DIRECTIONS for the question: *The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*

Question No. : 21

People view idleness as a sin and industriousness as a virtue, and in the process have developed an unsatisfactory relationship with their jobs. Work has become a way for them to keep busy, even though many find their work meaningless. In their need for activity people undertake what was once considered work (fishing, gardening) as hobbies. The opposing view is that hard

work has made us prosperous and improved our levels of health and education. It has also brought innovation and labour and time-saving devices, which have lessened life's drudgery.

A) Despite some detractors, hard work is essential in today's world to enable economic progress, for education and health and to propel innovations that make life easier.
B) Some believe that hard work has been glorified to the extent that it has become meaningless, and led to greater idleness, but it has also had enormous positive impacts on everyday life.
C) Hard work has overtaken all aspects of our lives and has enabled economic prosperity, but it is important that people reserve their leisure time for some idleness.
D) While the idealisation of hard work has propelled people into meaningless jobs and endless activity, it has also led to tremendous social benefits from prosperity and innovation.

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

Question No. : 22

1. They often include a foundation course on navigating capitalism with Chinese characteristics and have replaced typical cases from US corporates with a focus on how Western theories apply to China's buzzing local firms.
2. The best Chinese business schools look like their Western rivals but are now growing distinct in terms of what they teach and the career boost they offer.
3. Western schools have enhanced their offerings with double degrees, popular with domestic and overseas students alike—and boosted the prestige of their Chinese partners.
4. For students, a big draw is the chance to rub shoulders with captains of China's private sector.
5. Their business courses now largely cater to the growing demand from China Inc which has become more global, richer and ready to recruit from this sinocentric student body.

DIRECTIONS for the question: *The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*

Question No. : 23

The human mind is wired to see patterns. Not only does the brain process information as it comes in, it also stores insights from all our past experiences. Every interaction, happy or sad, is catalogued in our memory. Intuition draws from that deep memory well to inform our decisions going forward. In other words, intuitive decisions are based on data, and not contrary to data as many would like to assume. When we subconsciously spot patterns, the body starts firing neuro chemicals in both the brain and gut. These "somatic markers" are what give us that instant sense that something is right … or that it's off. Not only are these automatic processes faster than rational thought, but our intuition draws from decades of diverse qualitative experience(sights, sounds, interactions, etc.) – a wholly human feature that big data alone could never accomplish.

A) Intuition draws from deep memory, and may not be related to data, but to decades of diverse qualitative experience.
B) Intuition is infinitely richer than big data which is based on rational thought and accomplishes more than what big data can.
C) Intuitions are neuro-chemical firings based on pattern recognition and draw upon a rich and vast database of experiences.
D) Intuitions are automatic processes and are therefore faster than rational thought, and so decisions based on them are better.

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

Question No. : 24

1. It is regimes of truth that make certain relationships speak able – relationships, like subjectivities, are constituted through discursive formations, which sustain regimes of truth.
2. Relationships are nothing without the communication that brings them into being; interpersonal communication is connected to knowledge shared by interlocutors, and scholars should attend to relational histories in their analyses.
3. A Foucauldian approach to relationships goes beyond these conceptions of discourse and history to macro level regimes of truth as constituting relationships.
4. Reconsidering micro practices within relationships that are constituted within and simultaneously contributors to regimes of

truth acknowledges the central position of power/knowledge in the constitution of what has come to be considered true and real.

Section : DI & Reasoning

DIRECTIONS for the question: *Study the following information carefully and answer the given question.*

Question No. : 25

10 players – P1, P2, … , P10 - competed in an international javelin throw event. The number (after P) of a player reflects his rank at the beginning of the event, with rank 1 going to the topmost player. There were two phases in the event with the first phase consisting of rounds 1,2, and 3, and the second phase consisting of rounds 4, 5, and 6. A throw is measured in terms of the distance it covers (in meters, up to one decimal point accuracy), only if the throw is a 'valid' one. For an invalid throw, the distance is taken as zero. A player's score at the end of around is the maximum distance of all his throws up to that round. Players are re-ranked after every round based on their current scores. In case of a tie in scores, the player with a prevailing higher rank retains the higher rank. This ranking determines the order in which the players go for their throws in the next round.

In each of the rounds in the first phase, the players throw in increasing order of their latest rank, i.e. the player ranked 1 at that point throws first, followed by the player ranked 2 at that point and so on. The top six players at the end of the first phase qualify for the second phase. In each of the rounds in the second phase, the players throw in decreasing order of their latest rank i.e. the player ranked 6 at that point throws first, followed by the player ranked 5 at that point and so on. The players ranked 1, 2, and 3 at the end of the sixth round receive gold, silver, and bronze medals respectively.

All the valid throws of the event were of distinct distances (as per stated measurement accuracy). The tables below show distances (in meters) covered by all valid throws in the first and the third round in the event.

Distances covered by all the valid throws in the first round

Player	Distance (in m)
P1	82.9
P3	81.5
P5	86.4
P6	82.5
P7	87.2
P9	84.1

Distances covered by all the valid throws in the third round

Player	Distance (in m)
P1	88.6
P3	79.0
P9	81.4

The following facts are also known.

i. Among the throws in the second round, only the last two were valid. Both the throws enabled these players to qualify for the second phase, with one of them qualifying with the least score. None of these players won any medal.
ii. If a player throws first in a round AND he was also the last (among the players in the current round) to throw in the previous round, then the player is said to get a double. Two players got a double.
iii. In each round of the second phase, exactly one player improved his score. Each of these improvements was by the same amount.
iv. The gold and bronze medalists improved their scores in the fifth and the sixth rounds respectively. One medal winner improved his score in the fourth round.
v. The difference between the final scores of the gold medalist and the silver medalist, as well as the difference between the final scores of the silver medalist and the bronze medalist was1.0 m.

Which two players got the double?
A) P1, P10 B) P2, P4 C) P8, P10 D) P1, P8

Question No. : 26

Who won the silver medal?

A) P9 B) P5 C) P7 D) P1

Question No. : 27

Who threw the last javelin in the event?

A) P7 B) P1 C) P10 D) P9

Question No. : 28

What was the final score (in m) of the silver-medalist?

A) 87.2 B) 89.6 C) 88.6 D) 88.4

Question No. : 29

Which of the following can be the final score (in m) of P8?

A) 85.1 B) 0 C) 81.9 D) 82.7

Question No. : 30

By how much did the gold medalist improve his score (in m) in the second phase?

A) 2.0 B) 1.2 C) 1.0 D) 2.4

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

Question No. : 31

Three reviewers Amal, Bimal, and Komal are tasked with selecting questions from a pool of 13 questions (Q01 to Q13). Questions can be created by external "subject matter experts" (SMEs) or by one of the three reviewers. Each of the reviewers either approves or disapproves a question that is shown to them. Their decisions lead to eventual acceptance or rejection of the question in the manner described below.

If a question is created by an SME, it is reviewed first by Amal, and then by Bimal. If both of them approve the question, then the question is accepted and is not reviewed by Komal. If both disapprove the question, it is rejected and is not reviewed by Komal. If one of them approves the question and the other disapproves it, then the question is reviewed by Komal. Then the question is accepted only if she approves it.

A question created by one of the reviewers is decided upon by the other two. If a question is created by Amal, then it is first reviewed by Bimal. If Bimal approves the question, then it is accepted. Otherwise, it is reviewed by Komal. The question is then accepted only if Komal approves it. A similar process is followed for questions created by Bimal, whose questions are first reviewed by Komal, and then by Amal only if Komal disapproves it. Questions created by Komal are first reviewed by Amal, and then, if required, by Bimal.

The following facts are known about the review process after its completion.

1. Q02, Q06, Q09, Q11, and Q12 were rejected and the other questions were accepted.
2. Amal reviewed only Q02, Q03, Q04, Q06, Q08, Q10, Q11, and Q13.
3. Bimal reviewed only Q02, Q04, Q06 through Q09, Q12, and Q13.
4. Komal reviewed only Q01 through Q05, Q07, Q08, Q09, Q11, and Q12.

How many questions were DEFINITELY created by Amal? (in numerical value)

Question No. : 32

How many questions were DEFINITELY created by Komal? (in numerical value)

Question No. : 33

How many questions were DEFINITELY created by the SMEs? (in numerical value)

Question No. : 34

How many questions were DEFINITELY disapproved by Bimal? (in numerical value)

Question No. : 35

The approval ratio of a reviewer is the ratio of the number of questions (s)he approved to the number of questions (s)he reviewed. Which option best describes Amal's approval ratio?

A) lies between 0.25 and 0.75 B) 0.25 C) either 0.25 or 0.75 D) lies between 0.25 and 0.50

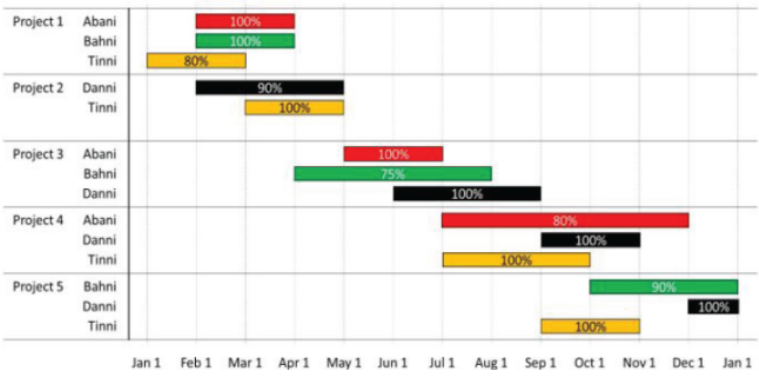
Question No. : 36

How many questions created by Amal or Bimal were disapproved by at least one of the other reviewers?

A) 5 B) 2 C) 4 D) 7

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

Question No. : 37



The figure above shows the schedule of four employees – Abani, Bahni, Danni and Tinni –whom Dhoni supervised in 2020. Altogether there were five projects which started and concluded in 2020 in which they were involved. For each of these projects and for each employee, the starting day was at the beginning of a month and the concluding day was the end of a month, and these are indicated by the left and right end points of the corresponding horizontal bars. The number within each bar indicates the percentage of assigned work completed by the employee for that project, as assessed by Dhoni.

For each employee, his/her total project-month (in 2020) is the sum of the number of months(s)he worked across the five project, while his/her annual completion index is the weight age average of the completion percentage assigned from the different projects, with the weights being the corresponding number of months (s)he worked in these projects. For each project, the total employee-month is the sum of the number of months four employees worked in this project, while its completion index is the weight age average of the completion percentage assigned for the employees who worked in this project, with the weights being the corresponding number of months they worked in this project.

Which of the following statements is/are true?

I: The total project-month was the same for the four employees.
II: The total employee-month was the same for the five projects.

A) Only II B) Only I C) Neither I nor II D) Both I and II

Question No. : 38

Which employees did not work in multiple projects for any of the months in 2020?
A) Only Abani and Bahni B) Only Tinni C) All four of them D) Only Abani, Bahni and Danni

Question No. : 39

The project duration, measured in terms of the number of months, is the time duringwhich at least one employee worked in the project. Which of the following pairs of theprojects had the same duration?

A) Project 4, Project 5 B) Project 3, Project 5 C) Project 3, Project 4 D) Project 1, Project 5

Question No. : 40

The list of employees in decreasing order of annual completion index is:

A) Danni, Tinni, Bahni, Abani B) Danni, Tinni, Abani, Bahni C) Tinni, Danni, Abani, Bahni D) Bahni, Abani, Tinni, Danni

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

Question No. : 41

Each of the bottles mentioned in this question contains 50 ml of liquid. The liquid in any bottle can be 100% pure content (P) or can have certain amount of impurity (I). Visually it is not possible to distinguish between P and I. There is a testing device which detects impurity, as long as the percentage of impurity in the content tested is 10% or more.

For example, suppose bottle 1 contains only P, and bottle 2 contains 80% P and 20% I. If content from bottle 1 is tested, it will be found out that it contains only P. If content of bottle 2is tested, the test will reveal that it contains some amount of I. If 10 ml of content from bottle 1is mixed with 20 ml content from bottle 2, the test will show that the mixture has impurity, and hence we can conclude that at least one of the two bottles has I. However, if 10 ml of content from bottle 1 is mixed with 5 ml of content from bottle 2. the test will not detect any impurity in the resultant mixture.

5 ml of content from bottle A is mixed with 5 ml of content from bottle B. The resultant mixture, when tested, detects the presence of I. If it is known that bottle A contains only P, what BEST can be concluded about the volume of I in bottle B?

A) 10 ml or more B) Less than 1 ml C) 1 ml D) 10 ml

Question No. : 42

There are four bottles. Each bottle is known to contain only P or only I. They will be considered to be “collectively ready for despatch” if all of them contain only P. In minimum how many tests, is it possible to ascertain whether these four bottles are “collectively ready for despatch”? (in numerical value)

Question No. : 43

There are four bottles. It is known that three of these bottles contain only P, while the remaining one contains 80% P and 20% I. What is the minimum number of tests required to definitely identify the bottle containing some amount of I? (in numerical value)

Question No. : 44

There are four bottles. It is known that either one or two of these bottles contain(s)only P, while the remaining ones contain 85% P and 15% I. What is the minimum number of tests required to ascertain the exact number of bottles containing only P?

A) 2 B) 1 C) 3 D) 4

Section : Quantitative Ability

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

Question No. : 45

Anil can paint a house in 12 days while Barun can paint it in 16 days. Anil, Barun, and Chandu undertake to paint the house for ₹ 24000 and the three of them together complete the painting in 6 days. If Chandu is paid in proportion to the work done by him, then the amount in INR received by him is (in numerical value)

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

Question No. : 46

The arithmetic mean of scores of 25 students in an examination is 50. Five of these students top the examination with the same score. If the scores of the other students are distinct integers with the lowest being 30, then the maximum possible score of the toppers is (in numerical value)

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

Question No. : 47

A shop owner bought a total of 64 shirts from a wholesale market that came in two sizes, small and large. The price of a small shirt was INR 50 less than that of a large shirt. She paid a total of INR 5000 for the large shirts, and a total of INR 1800 for the small shirts. Then, the price of a large shirt and a small shirt together, in INR, is

A) 150 B) 175 C) 200 D) 225

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

Question No. : 48

The total of male and female populations in a city increased by 25% from 1970 to 1980.During the same period, the male population increased by 40% while the female population increased by 20%. From 1980 to 1990, the female population increased by25%. In 1990, if the female population is twice the male population, then the percentage increase in the total of male and female populations in the city from 1970to 1990 is

A) 68.25 B) 68.50 C) 69.25 D) 68.75

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

Question No. : 49

A tea shop offers tea in cups of three different sizes. The product of the prices, in INR, of three different sizes is equal to 800. The prices of the smallest size and the medium size are in the ratio 2 : 5. If the shop owner decides to increase the prices of the smallest and the medium ones by INR 6 keeping the price of the largest size unchanged, the product then changes to 3200. The sum of the original prices of three different sizes, in INR, is (in numerical value)

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

Question No. : 50

If a certain weight of an alloy of silver and copper is mixed with 3 kg of pure silver, there sulting alloy will have 90% silver by weight. If the same weight of the initial alloy is mixed with 2 kg of another alloy which has 90% silver by weight, the resulting alloy will have 84% silver by weight. Then, the weight of the initial alloy, in kg, is

A) 3 B) 2.5 C) 3.5 D) 4

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

Question No. : 51

The number of distinct pairs of integers (m, n) satisfying $|1 + mn| < |m + n| < 5$ is (in numerical value)

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

Question No. : 52

One part of a hostel's monthly expenses is fixed, and the other part is proportional to the number of its boarders. The hostel collects ₹ 1600 per month from each boarder. When the number of boarders is 50, the profit of the hostel is ₹ 200 per boarder, and when the number of boarders is 75, the profit of the hostel is ₹ 250 per boarder. When the number of boarders is 80, the total profit of the hostel, in INR, will be

A) 20200 B) 20800 C) 20500 D) 20000

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

Question No. : 53

Let ABCD be a parallelogram. The lengths of the side AD and the diagonal AC are 10 cm and 20 cm, respectively. If the angle ΔADC is equal to 30° then the area of the parallelogram, in sq. cm, is

A) $25\left(\sqrt{5}+\sqrt{15}\right)$ B) $25\left(\sqrt{3}+\sqrt{15}\right)$ C) $\frac{25\left(\sqrt{5}+\sqrt{15}\right)}{2}$ D) $\frac{25\left(\sqrt{3}+\sqrt{15}\right)}{2}$

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

Question No. : 54

If $f(x) = x^2 - 7x$ and $g(x) = x + 3$, then the minimum value of $f(g(x)) - 3x$ is

A) -16 B) -15 C) -12 D) -20

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

Question No. : 55

If n is a positive integer such that $\left(\sqrt[7]{10}\right)\left(\sqrt[7]{10}\right)^2\ldots\left(\sqrt[7]{10}\right)^n > 999$, then the smallest value of n is (in numerical value)

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

Question No. : 56

In a tournament, a team has played 40 matches so far and won 30% of them. If they win 60% of the remaining matches, their overall win percentage will be 50%. Suppose they win 90% of the remaining matches, then the total number of matches won by the team in the tournament will be

A) 84 B) 78 C) 86 D) 80

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

Question No. : 57

The cost of fencing a rectangular plot is ₹ 200 per ft along one side, and ₹ 100 per ft along the three other sides. If the area of the rectangular plot is 60000 sq. ft, then the lowest possible cost of fencing all four sides, in INR, is

A) 100000 B) 120000 C) 160000 D) 90000

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

Question No. : 58

One day, Rahul started a work at 9 AM and Gautam joined him two hours later. They then worked together and completed the work at 5 PM the same day. If both had started at 9 AM and worked together, the work would have been completed 30 minutes earlier. Working alone, the time Rahul would have taken, in hours, to complete the work is

A) 12 B) 10 C) 11.5 D) 12.5

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

Question No. : 59

If $3x + 2|y| + y = 7$ and $x + |x| + 3y = 1$, then $x + 2y$ is

A) $\frac{8}{3}$ B) $-\frac{4}{3}$ C) 1 D) 0

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

Question No. : 60

Bank A offers 6% interest rate per annum compounded half yearly. Bank B and Bank Coffer simple interest but the annual interest rate offered by Bank C is twice that of Bank B. Raju invests a certain amount in Bank B for a certain period and Rupa invests₹ 10,000 in Bank C for twice that period. The interest that would accrue to Raju during that period is equal to the interest that would have accrued had he invested the same amount in Bank A for one year. The interest accrued, in INR, to Rupa is

A) 1436 B) 3436 C) 2346 D) 2436

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

Question No. : 61

A park is shaped like a rhombus and has area 96 sq m. If 40 m of fencing is needed to enclose the park, the cost, in INR, of laying electric wires along its two diagonals, at the rate of ₹125 per m, is (in numerical value)

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

Question No. : 62

Consider a sequence of real number $x_1, x_2, x_3, \ldots$ such that $x_{n+1} = x_n + n - 1$ for all $n \geq 1$. If $x_1 = -1$ then x_{100} is equal to

A) 4949 B) 4850 C) 4950 D) 4849

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

Question No. : 63

Mira and Amal walk along a circular track, starting from the same point at the sometime. If they walk in the same direction, then in 45 minutes, Amal completes exactly3 more rounds than Mira. If they walk in opposite directions, then they meet for the first time exactly after 3 minutes. The number of rounds Mira walks in one hour is (in numerical value)

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

Question No. : 64

In a triangle ABC, $\Delta BCA = 50°$. D and E are points on AB and AC, respectively, such that AD = DE. If F is a point on BC such that BD = DF, then ΔFDE, in degrees, is equal to

A) 72 B) 100 C) 96 D) 80

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

Question No. : 65

For a real number a, if $\frac{\log_{15} a + \log_{32} a}{(\log_{15} a)(\log_{32} a)} = 4$ then a must lie in the range

A) 3 < a < 4 B) 2 < a < 3 C) 4 < a < 5 D) a > 5

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

Question No. : 66

A four-digit number is formed by using only the digits 1, 2 and 3 such that both 2and 3 appear at least once. The number of all such four-digit numbers is (in numerical value)

Directions of Test

Test Name	Actual CAT 2021 Slot III	Total Questions	66	Total Time	120 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	24	0:40(h:m)	3	1/3
DI & Reasoning	20	0:40(h:m)	3	1/3
Quantitative Ability	22	0:40(h:m)	3	1/3

Section : Verbal Ability

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

Explanation:- *Q is "Which one of the following scenarios, **if false**, could be seen as supporting the passage?" which means we are looking for an option which in its current form contradicts the passage*

*In para 2, the author says that the Nano-sentinels **won't** be used invade our bodies and turn us into robots,*

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

Explanation:-
The entire passage is about nano robots and how they are now a reality. The first line of second para states it clearly.

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

Explanation:-
Refer to the lines, 'some of them could one day swim through our bloodstream to heal us.

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

Explanation:-
The first para is about the battle between Nano sentinels and X-men.

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

Explanation:-
The author uses this example to clarify the relationship between accuracy and entropy.

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

Explanation:-
The price paid is not the heat, but the increased entropy.

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

Explanation:-

Option 3 is the best set of words as it's about the relationship between entropy and accuracy in the context of measuring time.

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

Explanation:-
*Q is "**None** of the following statements can be inferred from the passage **EXCEPT** that:" i.e. we are looking for an option which can be inferred*
Option B can be inferred as the passage states that the quantum computers emphasise on accuracy and accuracy leads to more heat and more entropy.
For option C refer lines:
*"The relationship that the researchers found is a limit on the accuracy of a clock, so it **doesn't** mean that a clock that creates the most possible entropy would be maximally accurate –hence a large, inefficient grandfather clock isn't more precise than an atomic clock."*

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

Explanation:-
Option 2 and 1 can be drawn from the second para" The vocabulary concerning the soul and the mind increased enormously in the course of the nineteenth century. The enrichments of literary and intellectual language led to an altered understanding of the meanings that underlie time-honoured expressions and traditional catchwords. At the same time, once coined, powerful new ideas attracted to themselves a whole host of seemingly unrelated issues, practices, and experiences, creating a peculiar network of preoccupations that as a group had not existed before. "Also, option 1 further can be drawn from last para.
Option 3 can be drawn from the 3rd para "Thus, before 1790, few if any spoke, in medical terms, of the affinity between creative genius and the hallucinations of the insane"

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

Explanation:-
The passage talks about The collating of diverse ideas under the single term: unconscious.
The passage throughout talks about vocabulary/language/concept and unconscious
It can be seen in the 2nd para and final para of the passage "Striving vaguely and independently to give expression to a latent conception, various lines of thought can be brought together by some novel term. The new concept then serves as a kind of resting place or stocktaking in the development of ideas, giving satisfaction and a stimulus for further discussion or speculation. Thus, the massive introduction of the term unconscious by Hartmann in 1869 appeared to focalize many stray thoughts, affording a temporary feeling that a crucial step had been taken forward, a comprehensive knowledge gained, a knowledge that required only further elaboration, explication, and unfolding in order to bring in a bounty ofhigher understanding."

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

Explanation:-
The enrichments of literary and intellectual language led to an altered understanding of the meanings that underlie time-honoured expressions and traditional catchwords."
So option 1 which is The meanings of time-honoured expressions were changed by innovations in literary and intellectual language is apt.
Option 2 goes in a different direction and states language was altered
Option 4 does not mention about alteration/change in meanings rather talks about enrichment/defining the term better.

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

Explanation:-
Main sets of words closest to mapping the main arguments of the passage are Language; Unconscious; Psychoanalysis.
They form the basis of the passage and present from the start of the passage till the end. "The "unconscious" burst the shell of conventional language, coined as it had been to embody the fleeting ideas and the shifting conceptions of several generations until, finally, it became fixed and defined in specialized terms within the realm of medical psychology and Freudian psychoanalysis." Para 2 explains these points in detail.

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

Explanation:-
It is mentioned in para 3 "Unlike Mr. Chomsky, Mr. Pinker firmly places the wiring of the brain for language within the framework of Darwinian natural selection and evolution. He effectively disposes of all claims that intelligent nonhuman primates like chimps have any abilities to learn and use language. Itis not those chimps lack the vocal apparatus to speak; it is just that their brains are unable to produce or use grammar."

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

Explanation:-
It is mentioned in the 3rd para
" He effectively disposes of all claims that intelligent nonhuman primates like chimps have any abilities to learn and use language. Itis not those chimps lack the vocal apparatus to speak; it is just that their brains are unable to produce or use grammar. On the other hand, the "language instinct," when it first appeared among our most distant hominid ancestors, must have given them a selective reproductive advantage over their competitors'

For option 3 refer lines "A half-century ago, this would have been pooh-poohed as a "black box" theory, since one could not actually pinpoint this grammatical faculty in a specific part of the brain, or describe its functioning. ***But now things are different. Neurosurgeons [have now found that this] "black box" is situated in and around Broca's area, on the left side of the forebrain. .*** *. "*

*For option 4 refer lines "On the other hand, the "language instinct," when it first appeared among o****ur most distant hominid ancestors, must have given them a selective reproductive advantage over their competitors*** *(including the ancestral chimps)."*

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

Explanation:-
For option 2 refer lines
*"****So according to Mr. Pinker,*** *the roots of language must be in the genes, but there cannot be a "grammar gene" any more than there can be a gene for the heart or any other complex body structure.* ***This proposition will undoubtedly raise the hackles of some behavioral psychologists*** *and anthropologists,"*
Also, it is mentioned in the 1st para ". In "The Language Instinct" he has gathered persuasive data from such diverse fields as cognitive neuroscience, developmental psychology and speech therapy to make his points, and when he disagrees with Mr. Chomsky he tells you so." So, we cannot infer behavior psychology.

OPtion 1 can be inferred from "Since this message was couched in terms of Chomskyan theoretical linguistics, in discourse so opaque that it was nearly incomprehensible even to some scholars, many people did not hear it. Now, in a brilliant, witty and altogether satisfying book, Mr. Chomsky's colleague Steven Pinker . . . has brought Mr. Chomsky's findings to everyman."
Options C and D can also be drawn from "Now, in a brilliant, witty and altogether satisfying book, Mr. Chomsky's colleague Steven Pinker . . . ***has brought Mr. Chomsky's findings to everyman.*** *In "The Language Instinct" he has gathered persuasive data from such diverse fields as cognitive neuroscience, developmental psychology and speech therapy to make his points, and* ***when he disagrees with Mr. Chomsky he tells you so****. . . ."*

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

Explanation:-
It is mentioned in the last para that " Racial differences are literally only "skin deep." The fundamental unity of humanity is the theme of Mr. Chomsky's universal grammar, and of this exciting book."

OPtion 4 is incorrect because of it's not about 'anatomical' developments or 'voice' box or 'language acquisition' (Refer line 1- Language is innate)

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

Explanation:-
The clue limes are 'Brazil's growth rate has been low, yet most Brazilians say their financial situation has improved, and they expect it to get even better & "But despite recent improvements the Brazilian economy is still painfully unequal, with poor Brazilian spaying the biggest share of their income in taxes and getting the least back in government services'. There is no mention of impending problems from rising inequality. There is no mention of 'most Brazilians being misled or even guided by the progress in the economy of the nation. This could be an inference and not the summary that unfair taxation of the poor that is likely to destabilise the Brazilian economy in the next few years.

QNo:- 18 ,Correct Answer:- *3412*

Explanation:-
The question has presented views on threat to the employement by politicians & economists. The opening sentence is 3 as it introduces the theme of the discussion. It is countered by 4 as the real problem ,as stated by economists, is 'automation'. This has been futher explained by 1. After this 2 will come as it counters 1 as it's not just manual labour where robotic employees are helpful in increasing efficiency and productivity but now, computers are rapidly handling some white-collar and service-sector work, which explains increasing unemployment owing to automation

QNo:- 19 ,Correct Answer:- *4*

Explanation:- *Other sentences talk about technology sector but 4 talks about workplace in general.*
3152
3 opens the argument
3-152 152 give an example and explain stt 3
1-5 are linked by 'reflect their interests.' in 1 and 'reflects the perspectives of the male stereotype' in 5
5-2 are linked by diversity

QNo:- 20 ,Correct Answer:- *3214*

Explanation:-
The context talks about returninmg the artefacts to the countries they belong and challenges & apprehensions involved.
The opening sentence is 3 as it introduces the topic under discussion.
'this' in 2 in what has been said in 3.
After this 1 will come as it talks about the legal hurdles in this process.
The legal context has been further extended by 4 and will the conclude the context by stating the politicians stand on the issue.

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

Explanation:-
The clue lines are 'Work has become a way for them to keep busy, even though many find their work meaningles' & 'hard work has made us prosperous'. Also the line 'has also brought innovation'.
OPtion 1 is incorrect as author states both positives and negatives of vieweing hard work as virtuous but never goes on to say 'hard work is essential'
OPtion2 is incorrect as glorification of hard work has 'led to greater idleness' isn't implied

QNo:- 22 ,Correct Answer:- *3*

Explanation:-
The sentences talk about the Chinese business schools and inspite of looking like their western rival, they are somewhat distinct in terms of what they offer. 3 is focusing on what western schools are doing and not actions of Chinese schools

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

Explanation:-
The clue lines are 'Intuition draws from that deep memory well to inform our decisions going forward. In other words, intuitive decisions are based on data, and not contrary to data as many would like to assume' & 'subconsciously spot patterns, the body starts firing neuro chemicals in both the brain and gut'.
Option 1 is incorrect because of words 'may not be related to data' whichc contradicts 'In other words, intuitive decisions are based on data, and not contrary to data as many would like to assume'
Option 2 is incorrect as it focuses lot more on big data than the para. Also, 'accomplishes more than what big data can' is different from big data not being able to draw on qualitative factors like sight, sounds etc {'our intuition draws from decades of diverse qualitative experience(sights, sounds, interactions, etc.) – a wholly human feature that big data alone could never accomplish.'}
Option D is incomplete as it leaves out the 1st half completely. Also, it's not just speed that makes intuition better 'Not only are these automatic processes faster than rational thought, but our intuition draws from decades of diverse qualitative experience(sights, sounds, interactions, etc.) '

QNo:- 24 ,Correct Answer:- *2314*

Explanation:-
The context moves around what constitutes the understanding of relationships other than what is generally perceived. The opening sentence is 2 as it talks about what scholars should attend to while establishing the realtionships. 3 & 4 talk about the 'approach' that goes beyond the macro level in establishing the relationship in true essence. 1 further explains this approach and its ability to sustain truth.

Section : DI & Reasoning

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

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6

Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

**After solving the whole data, the possibility of having double is for P8 and P10*
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

Since P1, P2 and P4 never gets a double,
Hence, eliminating the options, it must be P8 and P10

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

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

**After solving the whole data, the possibility of having double is for P8 and P10*
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2

Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

P1

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

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

**After solving the whole data, the possibility of having double is for P8 and P10*
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

P7 (who won gold)

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

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

**After solving the whole data, the possibility of having double is for P8 and P10*
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

88.6

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

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10

Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

**After solving the whole data, the possibility of having double is for P8 and P10*
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2										
Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

82.5 < P8 < 84.1, so 82.7 is possible score among given options

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

Explanation:-
The given information can be gathered as follows

Phase 1										
Rank	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Round 1 score	82.9	0	81.5	0	86.4	82.5	87.2	0	84.1	0
Rank	P4	P7	P6	P8	P2	P5	P1	P9	P3	P10
Round 2 score	0	0	0	0	0	0	0	82.5 < < 84.1	0	82.5 < < 87.6
Maximum	82.9	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P5	P9	P8	P10	P3	P7	P2	P6	P4	P1*
Round 3 score	88.6	0	79.0	0	0	0	0	0	81.4	0
Maximum	88.6	0	81.5	0	86.4	82.5	87.2	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P3	P6	P5	P2

**After solving the whole data, the possibility of having double is for P8 and P10*
So, P10 in round 2 being last, scores maximum in round 3 being first, and, P8 scoring last in round 3 would have 1st turn in round 1 as in phase 2, last rank throws 1st and rest of the data can be arranged as follows

Phase 2

Round 4 score	NA	-	-	-	NA	-	88.4	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	88.4	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P1	-	-	-	P4	-	P2	P6	P5	P3
Round 5 score	NA	-	-	-	NA	-	89.6	NA	NA	NA
Maximum	88.6	-	-	-	86.4	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P4	-	P1	P6	P5	P3
Round 6 score	NA	-	-	-	87.6	-	NA	NA	NA	NA
Maximum	88.6	-	-	-	87.6	-	89.6	82.5 < < 84.1	84.1	87.2 < < 87.6
Rank	P2	-	-	-	P3	-	P1	P6	P5	P4
	Silver	-	-	-	Bronze	-	Gold	-	-	-

89.6 - 87.2 = 2.4

QNo:- 31 ,Correct Answer:- *3,3,3,1,4*

Explanation:-
The information can be gathered as follows

	Created by			**Reviewed by**			**Status**
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
		Q01				✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
		Q05				✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

Amal definitely created 3 questions Q07, Q09, Q12

QNo:- 32 ,Correct Answer:- *1*

Explanation:-
The information can be gathered as follows

	Created by			**Reviewed by**			**Status**
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
		Q01				✓	Accepted

Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
		Q05				✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

Komal definitely created 1 question Q10

QNo:- 33 ,Correct Answer:- *3*

Explanation:-
The information can be gathered as follows

	Created by			Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
		Q01				✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
		Q05				✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

SME definitely created 3 questions Q02, Q04 and Q08

QNo:- 34 ,Correct Answer:- *4*

Explanation:-

The information can be gathered as follows

Created by				Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
		Q01				✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
		Q05				✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

Bimal definitely disapproved 4 questions Q06, Q07, Q09 and Q12

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

Explanation:-
The information can be gathered as follows

Created by				Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
		Q01				✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
		Q05				✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

Amal reviewed 8 questions, among them he approved at least 2 questions Q03, Q10 and maximum Amal can

approve 6 questions Q02, Q03, Q04, Q08, Q10 and Q13
Approval ratio of Amal lies between 2/8 = 0.25 and 6/8 = 0.75

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

Explanation:-
The information can be gathered as follows

Created by				Reviewed by			Status
SME	Amal	Bimal	Komal	Amal	Bimal	Komal	
		Q01				✓	Accepted
Q02				✓/×	×/✓	×	Rejected
		Q03		✓		×	Accepted
Q04				✓/×	×/✓	✓	Accepted
		Q05				✓	Accepted
Q06			Q06	×	×		Rejected
	Q07				×	✓	Accepted
Q08				✓/×	×/✓	✓	Accepted
	Q09				×	×	Rejected
			Q10	✓			Accepted
		Q11		×		×	Rejected
	Q12				×	×	Rejected
Q13			Q13	✓/×	✓		Accepted

✓ means approved and × means disapproved

For Amal, Q07, Q09 and Q12 or for Bimal Q03 and Q11 are disapproved by at least one of the other reviewers, total = 5 questions

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

Explanation:-
The given information can be gathered as follows

	Abani	Bahni	Danni	Tinni	Total Employee-Month	Project Completion Index
Project 1	2 × 100%	2 × 100%	0	2 × 80%	6	560/6 = 93.33%
Project 2	0	0	3 × 90%	2 × 100%	5	470/5 = 94%
Project 3	2 × 100%	4 × 75%	3 × 100%	0	9	800/9 = 88.89%
Project 4	5 × 80%	0	2 × 100%	3 × 100%	10	900/10 = 90%
Project 5	0	3 × 90%	1 × 100%	2 × 100%	6	570/6 = 95%
Total Project-Month	9	9	9	9		
Employee Annual Completion Index	800/9 = 88.89%	770/9 = 85.56%	870/9 = 96.67%	860/9 = 95.56%		

From the above table, it is clear that
I: The total project-month was the same for the four employees = 9 is true

II: The total employee-month was the same for the five projects is not true
Only I is true

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

Explanation:-
The given information can be gathered as follows

	Abani	Bahni	Danni	Tinni	Total Employee-Month	Project Completion Index
Project 1	2 × 100%	2 × 100%	0	2 × 80%	6	560/6 = 93.33%
Project 2	0	0	3 × 90%	2 × 100%	5	470/5 = 94%
Project 3	2 × 100%	4 × 75%	3 × 100%	0	9	800/9 = 88.89%
Project 4	5 × 80%	0	2 × 100%	3 × 100%	10	900/10 = 90%
Project 5	0	3 × 90%	1 × 100%	2 × 100%	6	570/6 = 95%
Total Project-Month	9	9	9	9		
Employee Annual Completion Index	800/9 = 88.89%	770/9 = 85.56%	870/9 = 96.67%	860/9 = 95.56%		

By observation only Tinni worked in multiple projects, so Abani, Bahni and Danni did not work in multiple projects

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

Explanation:-
The given information can be gathered as follows

	Abani	Bahni	Danni	Tinni	Total Employee-Month	Project Completion Index
Project 1	2 × 100%	2 × 100%	0	2 × 80%	6	560/6 = 93.33%
Project 2	0	0	3 × 90%	2 × 100%	5	470/5 = 94%
Project 3	2 × 100%	4 × 75%	3 × 100%	0	9	800/9 = 88.89%
Project 4	5 × 80%	0	2 × 100%	3 × 100%	10	900/10 = 90%
Project 5	0	3 × 90%	1 × 100%	2 × 100%	6	570/6 = 95%
Total Project-Month	9	9	9	9		
Employee Annual Completion Index	800/9 = 88.89%	770/9 = 85.56%	870/9 = 96.67%	860/9 = 95.56%		

Again, by observation, project duration of
Project 1 = Jan to Mar = 3 months
Project 2 = Feb to Apr = 3 months
Project 3 = Apr to Aug = 5 months
Project 4 = Jul to Nov = 5 months
Project 5 = Sep to Dec = 4 months
Hence, project duration as per options, Project 3 and Project 4 is same

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

Explanation:-
The given information can be gathered as follows

	Abani	Bahni	Danni	Tinni	Total Employee-Month	Project Completion Index
Project 1	2 × 100%	2 × 100%	0	2 × 80%	6	560/6 = 93.33%
Project 2	0	0	3 × 90%	2 × 100%	5	470/5 = 94%
Project 3	2 × 100%	4 × 75%	3 × 100%	0	9	800/9 = 88.89%
Project 4	5 × 80%	0	2 × 100%	3 × 100%	10	900/10 = 90%
Project 5	0	3 × 90%	1 × 100%	2 × 100%	6	570/6 = 95%
Total Project-Month	9	9	9	9		
Employee Annual Completion Index	800/9 = 88.89%	770/9 = 85.56%	870/9 = 96.67%	860/9 = 95.56%		

From the above table, it is clear that in terms of Annual Completion Index
Danni > Tinni > Abani > Bahni

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

Explanation:-
Given, A = 0% I and 100% P
Let B = x% I and (100 – x)% P
Since they are mixed in equal quantity to detect the presence of I.
(0% I + x% I)/2 ≥ 10% Total, x% I ≥ 20% Total
Hence, x% I ≥ 20% of 50 ml = 10 ml

QNo:- 42 ,Correct Answer:- *1,2*

Explanation:-
Since each bottle contains only P or only I
Take equal quantity from each bottle say 10 ml and mix them
Now, if at least any one of them will contain only I, then
I % = 10/40 × 100 = 25% > 10%, so impurity will be detected
And if all four bottles contain only P, then 0% I will be detected
Hence, minimum of 1 test required to ascertain that all of them contain only P

QNo:- 43 ,Correct Answer:- *2*

Explanation:-
Since three bottles contains only P and one contains 80% P and 20% I
Taking equal quantity from each bottle say 10 ml and mixing them
I % = 2/40 × 100 = 5% < 10%, so only one test is not sufficient to detect the bottle
Let the bottles be B1, B2, B3 and B4 in any order
Now consider any two bottles (say B1 and B2) and take equal quantity from each bottle say 10 ml and mix them,
Case I, if I% = 0, then both the bottles are only P and now take any one bottle from either B1 or B2 and mix with either B3 or B4
if I% is still = 0, then the remaining bottle contains 20% I
and if I% = (0 + 20)/2 = 10, then the newly mixed bottle contains 20% I
Case II, if I% = 10, then remaining B3 and B4 are only P, now take either B1 or B2 and mix with B3 or B4
If I% = 0, then the other bottle among B1 or B2 contains 20% I

And if I% is still = 10, then the bottle taken among B1 or B2 contains 20% I
Hence, minimum of 2 tests required in either of the cases

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

Explanation:-
Case I, if only one bottle contains only P and remaining three bottles contains 15% I
Take equal quantity from each bottle and mix them
I% = (0 + 15 + 15 + 15)/4 = 11.25 > 10, so impurity will be detected
Case II, if two bottles contain only P and remaining two bottles contain 15% I
Take equal quantity from each bottle and mix them
I% = (0 + 0 + 15 + 15)/4 = 7.5 < 10, so impurity will not be detected
Hence, minimum of only 1 test ascertain the exact number of bottles containing only P

Section : Quantitative Ability

QNo:- 45 ,Correct Answer:- *3000*

Explanation:-
Since money paid is in proportion to the work done
Let work = 24000 units (1 unit = 1 Re)
Anil's efficiency = 24000/12 = 2000 units/day
Barun's efficiency = 24000/16 = 1500 units/day
Together, Anil + Barun + Chandu = 24000/6 = 4000 units/day
Chandu's efficiency = 4000 – 2000 – 1500 = 500 units/day
Since Chandu worked for 6 days, money paid = 500 × 6 = Rs 3000

QNo:- 46 ,Correct Answer:- *92*

Explanation:-
Sum (25 students) = 25 × 50 = 1250
Let the score of each topper = x, sum (5 toppers) = 5x
Remaining students = 20
To maximize the score of the topper, we have to minimize the remaining score with 30 being least and all distinct integer
Sum (20 students minimum) = 30 + 31 + 32 + ... 20 values
= 20/2 (2 × 30 + 19 × 1) = 790
So, Sum (5 toppers) = 5x = 1250 – 790 = 460
Hence, the score of each topper (maximum) = 460/5 = 92

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

Explanation:-
Let the number of large size shirt = x and small size shirt = 64 – x
Let the price of the large shirt = P, then price of small shirt = P – 50
Given, P × x = 5000 and (P – 50)(64 – x) = 1800
64P – Px – 3200 + 50x = 1800
64P + 50x = 10000
32P + 25 (5000/P) = 5000
$32P^2 – 5000P + 125000 = 0$
$4P^2 – 625P + 15625 = 0$
$4P^2 – 500P – 125P + 15625 = 0$
(4P – 125)(P – 125) = 0
P = 125 (as P = 125/4 making P – 50 negative, so rejected)

Hence the price of large shirt and small shirt together
= P + (P – 50) = 200

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

Explanation:-
Given information can be gathered as follows

	Male	Female	Total
1970	m	f	100 (let)
1980	1.4m	1.2f	125

m + f = 100 and 1.4m + 1.2f = 1250
Solving, m = 25 and f = 75

	Male	Female	Total
1970	25	75	100
1980	35	90	125
1990	56.25	90 + 25/100 × 90 = 112.5	168.75

Required percentage increase = (168.75 – 100)/100 × 100 = 68.75%

QNo:- 49 ,Correct Answer:- *34*

Explanation:-
Let the price of smallest cup = 2x, price of medium cup = 5x
And let the price of largest cup = p
Given, $2x \times 5x \times p = 800$, $p = 80/x^2$
Also, $(2x + 6) \times (5x + 6) \times p = 3200$
$(10x^2 + 42x + 36) \times p = 3200$
$10x^2 + 42x + 36 = 40x^2$, $5x^2 – 7x – 6 = 0$
$(5x + 3)(x – 2) = 0$, $x = 2$, $p = 20$
Required sum = 2x + 5x + p = 34

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

Explanation:-
Let the weight of the initial alloy = x kg and percentage of silver in the alloy = p%
Given, p% of x + 100% of 3 = 90% of (x + 3)
px + 300 = 90x + 270, 90x – px = 30
Also, p% of x + 90% of 2 = 84% of (x + 2)
px + 180 = 84x + 168, 84x – px = 12
Subtracting and solving, 6x = 18, x = 3 kg

QNo:- 51 ,Correct Answer:- *12*

Explanation:-
There are two cases possible

Case I, $0 < 1 + mn < m + n < 5$ $mn – m – n + 1 < 0$	Case II, $-5 < m + n < 1 + mn < 0$ $mn – m – n + 1 > 0$

(m – 1)(n – 1) < 0	(m – 1)(n – 1) > 0
m < 1 or n < 1	m > 1 or n > 1
Also, mn + 1 > 0, mn > -1	Also, mn + 1 < 0, mn < -1
Only possible,	Again, only possible,
if either m = 0, n = 2, 3, 4	if either m = 0, n = -2, -3, -4
or n = 0, m = 2, 3 and 4	or n = 0, m = -2, -3 and -4

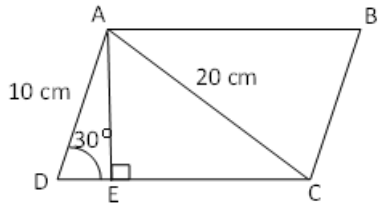
Total solutions = 12

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

Explanation:-
Total Expenses = Total Revenue – Total Profit
Also, Total Expenses (T) = Fixed Expenses (F) + Variable Expenses per boarder (V) × Number of boarder (n)
(1600 – 200) × 50 = 70000 = F + 50V
(1600 – 250) × 75 = 101250 = F + 75V
Solving, V = 1250 and F = 7500
Total Expenses (80 boarders) = 7500 + 80 × 1250 = 107500
Total Profit = 80 × 1600 – 107500 = 20500

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

Explanation:-
Given, AD = 10 cm and AC = 20 cm



Also angle ADC = 30°
Drop perpendicular AE at DC
Triangle DAE becomes 30-60-90
Since, AD = 10 cm, AE = 5 cm
and DE = 5√3 cm
Also, in right angled triangle AEC
$AC^2 = AE^2 + EC^2$
$EC^2 = 400 – 25 = 375$, $EC = 5\sqrt{15}$ *cm*

Required Area = AE × (DE + EC) = 5 × (5√3 + 5√15) = 25 (√3 + √15) cm^2

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

Explanation:-
$f(g(x)) – 3x = f(x + 3) – 3x = (x + 3)^2 – 7(x + 3) – 3x = x^2 – 4x – 12$
The minimum value of above function is at x = -(-4)/2 = 2
Hence, required value = 4 – 8 – 12 = -16

QNo:- 55 ,Correct Answer:- *6*

Explanation:-

$(10)^{1/7} \times (10)^{2/7} \times \ldots \times (10)^{n/7} > 999$
$(10)^{1/7 + 2/7 + \ldots + n/7} > 999 \approx 10^3$
$(10)^{n(n+1)/14} \approx 10^3$
$n(n+1) \approx 42$, so for n = 6 satisfies the given in equation

QNo:- 56 ,Correct Answer:- A

Explanation:-
Matches played = 40, Won = 30% of 40 = 12
Let remaining matches = x, Win among them = 60% of x = 0.6
Overall win, 12 + 0.6x = 50% of (40 + x)
Solving, x = 80 = remaining matches
Required value = 12 + 90% of 80 = 84

QNo:- 57 ,Correct Answer:- B

Explanation:-
Let L and B be the length and breadth of rectangular plot
One side cost = 200 be on one of the lengths and other three sides cost = 100
Total cost = 200L + 100L + 100B + 100B = 300L + 200B
The cost to be lowest possible, 300L = 200B = k
Area, L × B = 60000, k/300 × k/200 = 60000, k = 60000
Hence, L = 200 and B = 300
Required lowest cost = 300 × 200 + 200 × 300 = 120000

QNo:- 58 ,Correct Answer:- B

Explanation:-
Let R and G be the efficiencies respectively
Given, R × 8 + G × 6 = W (total work) × 5
Also, R × 7.5 + G × 7.5 = W × 4
Subtracting, 40R – 30R = W, R = W/10
Hence, Rahul alone would have taken 10 hours

QNo:- 59 ,Correct Answer:- D

Explanation:-
$3x + 2|y| + y = 7$ and $x + |x| + 3y = 1$

Case I, x > 0, y > 0 3x + 3y = 7 2x + 3y = 1 Solving, x = 6 and y = -11/3 rejected as y > 0	Case II, x > 0, y < 0 3x – y = 7 2x + 3y = 1 Solving, x = 2 and y = -1 So, x + 2y = 0
Case III, x < 0, y > 0 3x + 3y = 7 3y = 1 Solving, x = 2 and y = 1/3 rejected as x < 0	Case IV, x < 0, y < 0 3x – y = 7 3y = 1 Solving, x = 22/9 and y = 1/3 rejected as x and y < 0

Hence, only case II possible, x + 2y = 0

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

Explanation:-
Let the rate of interest at bank B = R%, then at bank C = 2R%
Let the principal invested by Raju at bank B = P
Amount accrued by Raju = P + PRT/100
= P(1 + (6/2)/100)$^{1\times2}$
1 + RT/100 = (1.03)^2,
RT = 6.09,
Rupa invested Rs 10000 at twice the rate and twice the period
Rupa's interest = 10000 × 4RT/100 = Rs 2436

QNo:- 61 ,Correct Answer:- *3500*

Explanation:-
Area of rhombus = 1/2 × d_1 × d_2 = 96, d_1 × d_2 = 192
Also, Perimeter (given) = 40 m, so side, a = 10 m
We know, (d_1/2)^2 + (d_2/2)^2 = a^2 = 100
Considering d_1 and d_2 to be integers, d_1 and d_2 = 12
and 16 satisfies the above triplet as well as 12 × 16 = 192
Hence required cost = (12 + 16) × 125 = Rs 3500

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

Explanation:-
Given, x_1 = -1
x_2 = x_1 + 1 – 1 = -1
x_3 = x_2 + 2 – 1 = 0
x_4 = x_3 + 3 – 1 = 2
x_5 = x_4 + 4 – 1 = 5
...
Sum = x_1 + x_2 + x_3 + x_4 + x_5 + ... + x_n
Sum = -1 + -1 + 0 + 2 + 5 + ... + x_n
Sum = -1 + -1 + 0 + 2 + 5 + ... + x_{n-1} + x_n
Subtracting,
0 = -1 + 0 + 1 + 2 + 3 + ... + (n – 2) – x_n
x_n = n/2 (-1 + n – 2) = n(n – 3)/2
x_{100} = (100 × 97)/2 = 4850

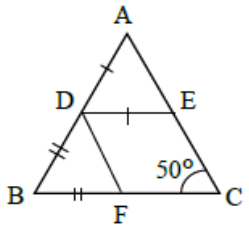
QNo:- 63 ,Correct Answer:- *8,50*

Explanation:-
Let the length of the track = x
Let the speed of Mira and Amal be m and a respectively
If Amal completes 3 more round than Mira in 45 min walking in same direction,
a – m = 3x/45 = x/15
Also, when they walk in opposite direction, a + m = x/3
Solving, a = x/5 and m = 2x/15 = x/7.5

So, Mira walks one round in 7.5 mins
Hence number of rounds Mira walks in one hours = 60/7.5 = 8

QNo:- 64 ,Correct Answer:- *D*

Explanation:-
Given, angle BCA = 50°



AD = DE and BD = DF
Let angle DAE = angle DEA = x
So, angle ADE = 180° – 2x
Also let angle BDF = angle BFD = y°
So, angle BDF = 180° – 2y
Also, angle A + B + C = 180°
So, x + y = 130°
Again, angle ADE + angle BDF + angle FDE = 180°
180° – 2x + 180° – 2y + angle FDE = 180°
Angle FDE = 260° - 180° = 80°

QNo:- 65 ,Correct Answer:- *C*

Explanation:-
$(\log_{15} a + \log_{32} a)/(\log_{15} a)(\log_{32} a) = 4$
$[(\log a)/(\log 15) + (\log a)/(\log 32)]/[(\log a)/(\log 15) \times (\log a)/(\log 32)] = 4$
$\log 32 + \log 15 = 4 \log a, \log 480 = \log a^4$
Hence, 4 < a < 5

QNo:- 66 ,Correct Answer:- *50*

Explanation:-
Following cases are possible
(2, 3, 1, 1) can be arranged in 4!/2! = 12 cases
(2, 3, 1, 2) can be arranged in 4!/2! = 12 cases
(2, 3, 1, 3) can be arranged in 4!/2! = 12 cases
(2, 3, 2, 2) can be arranged in 4!/3! = 4 cases
(2, 3, 2, 3) can be arranged in 4!/2!2! = 6 cases
(2, 3, 3, 3) can be arranged in 4!/3! = 4 cases
Total = 50 cases