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Mock CAT – 10 2019

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VARC

DILR

QA

Sec 1

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

[…] Michael Hulme says, it is only recently, and primarily in the West, that the cultural and physical meanings of climate have become so separated.

That separation has contributed to a narrative vacuum—and, like nature itself, people abhor a vacuum. We fill it with the narratives we have at hand, even if they are powerfully at odds with each other. This goes some way to understanding the vitriol of the climate debate. "The ideological freightage we load onto interpretations of climate and our interactions with it," writes Hulme, "are an essential part of making sense of what is happening around us today in our climate change discourses." Stories about the virtues and evils of capitalism, the role of divine control, nationalist values, and so on, are not so much maliciously inserted into what could be a sober conversation but are an inevitable response to a story that is incomplete without them.

Faced with an absence, we revert to old narratives, and there are few older than utopia and dystopia. The sceptic storyline of the rise of a dictatorial world government usurping American values must be considered not as a unique reply to climate change but as the latest instance of a well-established dystopic trope, stoked by the climate narrative vacuum. Something similar can be said for attacks on the capitalist enterprise from the left. The public, for its part, is served visions of an apocalyptic future, whether it's from politicians or from Hollywood—and, simultaneously, the utopianism of far-distant science fiction, which as a category is consumed in greater quantity than science journalism and which reflects and encourages what sociologists call "optimism bias" or "techno-salvation." These utopian instincts are strengthened by a historical data point obvious to all: Our species has survived every obstacle we've encountered, and we are still here.

The successful assimilation of broad narratives from astronomy and genetics reminds us how powerful science narrative can be. We think of ourselves today as genetic machines, carrying around an adaptive program, which we inherit and pass on, doing so on this one habitable planet among countless others in a universe with a finite age. These facts have become intuitions and a part of our identity. The goal of climate change coverage should be a similar creation of intuition from fact. Intuition that our planet is a dynamic thing, that its environment is highly interconnected, that it has been remade many times by things living and dead.

Are we getting that done? The media has communicated the basic facts behind climate change well enough: the famous line graph of rising carbon dioxide levels, the 300 parts per million line in the sand, the northward migration of adapting species, and the endangerment of those left behind. But the narrative around these facts is more obscure. In the words of social scientists Susanne Moser and Lisa Dilling, science communicators "often assume that a lack of information and understanding explains the lack of public concern and engagement, and that therefore more information and explanation is needed to move people to action." Many of these facts are, by now, either uncontested or unsurprising. It is the narratives around them that are missing. […]

Q.1

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

1 **It describes the evils of the lack of a utopian science narrative regarding climate change.**

2 **It urges scientists to create a cultural narrative that helps people distinguish between utopian fantasies and dystopian realities.**

3 **It explores the possible consequences of a lack of understanding of the real reasons behind climate change.**

4 **It emphasises the need to create a stronger cultural narrative around the issue of climate change.**

FeedBack

Bookmark

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Q.2

With which of the following would Hulme, Moser, and Dilling agree the least?

1 **The narrative vacuum around climate change has led to a distortion in people's perception of the issue.**

2 **With better exposure to information, people will be able to fight climate change more effectively.**

3 **Science fictions with utopian narratives should be made more mainstream if science communicators want effective messaging regarding climate change.**

4 **As people lack understanding of the reality of climate change, they are unable to comprehend the gravity of the issue.**

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Q.3

As per the passage, how do people deal with a narrative vacuum?

1 **They weave new narratives to fit the void.**

2 **They go back to old narratives to fill the void.**

3 **They create utopian and dystopian narratives to fit the void.**

4 They make use of prevalent terms to make sense of the void.

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Q.4

Which of the following, if true, would weaken the author's main point in the passage?

1 **In a survey conducted across North America, more than 85% participants were unaware of the basic terms associated with climate change.**

2 In a survey conducted across Europe, more than 35% of the participants said that they had learnt about climate change from a textbook.

3 In a survey conducted across Australia, more than 40% participants stated that they agreed with the messages in science fictions.

4 In a survey conducted across Asia, more than 45% of the participants said that they prefer to learn about global issues from newspapers or journals.

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Q.5

From the passage, which of the following can be inferred about the issue of climate change?

1 Its reporting will benefit from a stronger and broader chronicle.

2 Its cultural and physical meanings are incompatible.

3 Its true meaning depends on intuitions and facts.

4 It has not been portrayed in a good light by the mainstream publications.

FeedBack

Bookmark

Answer key/Solution

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

[...] Within the framework of humoral medicine, medieval experts held worms and lice to be a product of the body. According to medieval understandings of the body, health was based on the equilibrium of the four humours (blood, phlegm, black bile and yellow bile), and illness was the result of humoral imbalance. In the humours system, the body produced parasites when its humours were out of balance. This meant that diet imbalances, among other things, caused infestations: eating the wrong food could bring all sorts of problems. Gilbert said that 'sweet meats engender watery blood, and that engenders worms and nourishes them', and fruit was also dangerous. Lice were often attributed to overindulgence in fruit, and especially figs. According to Albertus Magnus, this is because of 'the coarseness of their chyme' (his meaning of 'chyme' is probably the same as ours – i.e. the mix of partly digested food and digestive juices that passes from the stomach into the small intestine).

Depending on their individual humoral make-up, some people were more prone to parasitic infections than others. Children were thought to be particularly vulnerable to intestinal parasites because they were naturally warm and wet. Mothers were advised not to give under-sevens too many phlegmatic and viscous foods, such as fruit and oily fish. Convention held that these types of food impeded digestion and unbalanced infant humours, leaving them vulnerable to worms. The susceptibility of adults also depended on diet, among other things. According to Bernard of Gordon, professor of medicine at the University of Montpellier from 1285, gluttons were particularly prone to worms. When the barber of Thomas Cantilupe, bishop of Hereford, asked another servant why their master had so many lice, he replied that 'it happened naturally to some men more than others'.

Medieval people also faced a wider range of parasites than we do: because they were apparently generated by the body, it was believed that they could occur in virtually any part of it. Despite being non-existent, 'earworms' and 'toothworms' were particularly common, and no one was immune. [...] Worms and lice around the eyes also seem to have been a frequent problem. These were probably linked to the contemporary belief in the importance of removing nocturnal residues and excretions from around the eyes on waking. [...]

Medieval recipe collections are scattered with treatments for parasites – suggesting both the scale of the problem, and also a real desire to be rid of these pests. The nature and likely efficacy of these remedies varies considerably. Some were very straightforward but surely ineffective: sniffing lavender to kill lice, for example, or washing the hair in sea water to treat nits. Others were more effective, but also more unpleasant. Most worm remedies were based on bitter herbs, in particular wormwood and gentian. Such bitter herbs would have killed the parasites, but they would also have caused severe diarrhoea. In medieval terms, this unfortunate side-effect meant that the patient had been well-purged, and his humours rebalanced. Many medieval physicians seem to have understood treating worms as a two-step process: first they had to be killed, then they could be expelled from the body. [...]

Q.6

It can be inferred from the passage that the author considers medieval treatments of parasites as:

1 **barbaric and mostly ineffective due to a lack of fundamental understanding of the problem.**

2 **propelled by a genuine necessity but partly futile due to a lack of proper understanding of the phenomenon.**

3 **unpleasant, ineffective, and, sometimes, outrightly hilarious.**

4 **fuelled by the magnitude of the issue of infestations and aided by the patients' desire to be cured.**

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Q.7

What was believed to be the cause of sickness in the medieval times?

1 **A lack of proper diet which resulted in infestations**

2 **The production of parasites due to dietary imbalance**

3 **The eating of wrong food which led to the generation of parasites**

4 **A lack of equilibrium between the four humours**

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Q.8

Why did the medieval people have to deal with a larger group of parasites than we do?

1 **Because of a lack of understanding of human physiology.**

2 **Because of the mistaken belief that earworms existed.**

3 **Because of the lack of proper hygiene like washing one's teeth and ears.**

4 **Because of the notion that our body, and every part of it, could produce parasites.**

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Q.9

Which of the following best describes the nature of the given passage?

1 **An impassioned description of a certain issue belonging to a bygone era**

2 **A subjective analysis of the cause and effect of a certain fallacious belief in the old ages**

3 **An objective overview of a persistent human problem**

4 **A satiric narrative on an obsolete era and its superstitious practices**

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[…] Within the framework of humoral medicine, medieval experts held worms and lice to be a product of the body. According to medieval understandings of the body, health was based on the equilibrium of the four humours (blood, phlegm, black bile and yellow bile), and illness was the result of humoral imbalance. In the humours system, the body produced parasites when its humours were out of balance. This meant that diet imbalances, among other things, caused infestations: eating the wrong food could bring all sorts of problems. Gilbert said that 'sweet meats engender watery blood, and that engenders worms and nourishes them', and fruit was also dangerous. Lice were often attributed to overindulgence in fruit, and especially figs. According to Albertus Magnus, this is because of 'the coarseness of their chyme' (his meaning of 'chyme' is probably the same as ours – i.e. the mix of partly digested food and digestive juices that passes from the stomach into the small intestine).

Depending on their individual humoral make-up, some people were more prone to parasitic infections than others. Children were thought to be particularly vulnerable to intestinal parasites because they were naturally warm and wet. Mothers were advised not to give under-sevens too many phlegmatic and viscous foods, such as fruit and oily fish. Convention held that these types of food impeded digestion and unbalanced infant humours, leaving them vulnerable to worms. The susceptibility of adults also depended on diet, among other things. According to Bernard of Gordon, professor of medicine at the University of Montpellier from 1285, gluttons were particularly prone to worms. When the barber of Thomas Cantilupe, bishop of Hereford, asked another servant why their master had so many lice, he replied that 'it happened naturally to some men more than others'.

Medieval people also faced a wider range of parasites than we do: because they were apparently generated by the body, it was believed that they could occur in virtually any part of it. Despite being non-existent, 'earworms' and 'toothworms' were particularly common, and no one was immune. […] Worms and lice around the eyes also seem to have been a frequent problem. These were probably linked to the contemporary belief in the importance of removing nocturnal residues and excretions from around the eyes on waking. […]

Medieval recipe collections are scattered with treatments for parasites – suggesting both the scale of the problem, and also a real desire to be rid of these pests. The nature and likely efficacy of these remedies varies considerably. Some were very straightforward but surely ineffective: sniffing lavender to kill lice, for example, or washing the hair in sea water to treat nits. Others were more effective, but also more unpleasant. Most worm remedies were based on bitter herbs, in particular wormwood and gentian. Such bitter herbs would have killed the parasites, but they would also have caused severe diarrhoea. In medieval terms, this unfortunate side-effect meant that the patient had been well-purged, and his humours rebalanced. Many medieval physicians seem to have understood treating worms as a two-step process: first they had to be killed, then they could be expelled from the body. […]

Q.10

All of the following were used as treatments of parasites in the medieval era EXCEPT:

1 **Sniffing lavender**

2 **Consumption of bitter herbs**

3 **Avoiding certain fruits and oily fish**

4 **Washing hair in sea water**

✔

FeedBack

Bookmark

Answer key/Solution

Direction for questions (11-15): Read the given passage and answer the questions that follow.

We've all been there. The thundering steps across the tarmac. The nervous glance over your shoulder. The hand reaching for you with a shout of "You're it!" Playing tag is a staple of most childhoods and, for me, rushing across the playground at break was the only time my imagination really came alive. It was a moment of freedom, when I could recreate the worlds I had read about in class.

But a recent BBC report found that not all schools in England value this free time. In fact, many are sacrificing playtimes and lunch to make the day shorter. This is happening for a variety of reasons; in some schools it's to reduce local congestion, while others have made the change to bring teaching time in line with Department for Education guidelines. Elsewhere, playtime is being reduced to make more time for lessons.

A report from the Nuffield Foundation found that schools have been cutting breaktime since 2006. Anthony D Pellegrini, professor of educational psychology at the University of Minnesota, also reports that many school authorities are attempting to "maximise instructional time and minimise unstructured play time".

In 2012, a review of more than 40 studies highlighted the relationship between play and creative problem-solving, cooperation and logical thinking. Research by Edward Fisher also found that play can enhance early development by anything from 33% to 67% by increasing adjustment, improving language skills and reducing social and emotional problems. This has positive implications for both educational development and everyday intellectual life.

Play keeps children fit, too. A study by Nicola D Ridgers at Deakin University in Australia found that longer playtimes were associated with higher levels of physical activity. And as the number of primary school children leaving school obese increases, cutting playtime could deprive them of a valuable opportunity to get the physical exercise they need.

Getting together outside of the classroom also enables young people to develop social skills. In fact, playtime may be the only opportunity some children get to interact with other young people in a safe environment. The government's Play Strategy, published in 2008, defines play as "children and young people following their own ideas and interests, in their own way and for their own reasons."

Children establish a sense of self through play which is particularly important at a time when "value" in primary education is increasingly being determined by test scores rather than personal development.

Too often young people choose to lose themselves in the instant gratification of gaming on a screen. But in computer games, as in SAT tests, they are scored on their performance, consolidating the idea of competitive hierarchies. Real-world play provides them with a space in which to entertain themselves using their own resources of mind and body, while nurturing a sense of self-worth.

[…] Many of the reasons for reducing the school day come down to convenience – less congestion and a quicker journey home, for example. But this is often for the benefit of adults, not the children.

Play needs to be preserved in the school routine, so that children can appreciate it as part of the learning experience. Attempts to cut or treat it as an optional extra risk perpetuating the view that it is an indulgence, rather than essential. With defined times for play, students can look forward to finding themselves, even when they do not find lessons the easiest. Schools need to pay homage to the benefits of play, rather than playing with it – and fast.

Q.11

The author is in favour of preserving play time in schools for all of the following reasons EXCEPT:

1 **Play helps the child develop a more wholesome self-esteem.**

2 **Play time helps children develop better social interaction.**

3 **Play helps a child score well in competitive exams.**

4 **Play time helps children become more well-adjusted.**

FeedBack

Bookmark

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Q.12

In the context of the passage, which of the following best captures the significance of the first paragraph?

1 ○ **It helps the author in building a backstory in order to discuss the issue at hand.**

2 ○ **It helps the author consolidate his position on the importance of social interactions.**

3 ○ **It enables the author to start the narrative with a distraction before discussing the main point.**

4 **It provides the readers with a humorous anecdote before they face the more serious theme of the passage.**

FeedBack

Bookmark

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Q.13

Which of the following can surely be inferred from the passage?

1 **Playing childhood games make people feel free of any constraint.**

2 **Dedicated play hours in schools can help curb the problem of childhood obesity.**

3 **Many schools over the world are becoming insensitive to the cognitive development of children.**

4 **Without dedicated play hours in school, children will be unable to interact with their peers in a secure space.**

FeedBack

Bookmark

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Q.14

As per the passage, which of the following can be determined to be the main reason behind the cutting of play hours by schools?

1 **The need for convenience by adults**

2 **The desire to target higher academic excellence**

3 **Logistical problems or bureaucratic directives**

4 **Academic reasons or governmental interference**

FeedBack

Bookmark

Answer key/Solution

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Q.15

Which of the following is the main conclusion of the 2012 study mentioned in the passage?

1 **Regular play time makes children fitter.**

2 **If a child plays regularly, he/she will develop his/her non-cognitive qualities.**

3 **Interaction with one's peers can help a child develop a stronger sense of 'self-identity'.**

4 There is a correlation between physical activity and mental development.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (16-19): Read the given passage and answer the questions that follow.

[…] The final hurdle in establishing an artwork's authenticity is forensic. An array of non-invasive scientific testing methods is available that can help assure an object's age, but these cannot guarantee authorship. Perhaps surprisingly, forensic testing is rarely turned to in the art trade, even with extremely expensive items. If an object looks good, and the provenance checks out, then it is usually accepted as genuine, and sold. Forensic testing usually takes place when some red flag is raised in the connoisseurship or provenance studies, or if someone who acquires it later grows suspicious. In this case, *Saint Sebastian* was likely tested at the Louvre in November 2016: since 'it was listed as a *tresor national* by the Ministry of Culture shortly after, we can assume the results were positive,' says de Bayser. Besides, a government wishing to keep the work in France would have wanted to confirm its authenticity before committing tax-euros to purchasing it.

Forensic tests are best at spotting anachronisms, details that might give away an object's imposture, like some pigment or material found in an artwork that post-dates the period in which the work was supposedly created. The German forger Wolfgang Beltracchi, for instance, was caught when titanium white, a modern substance, was found in 2008 in a painting ostensibly created before titanium white was available. Testing can also date organic material (such as paper) to a certain period, often accurate to within a few years. What forensic testing almost never does is guarantee authorship. It is better at weeding out than honing in. Presumably, when this work was tested, no flags were raised – everything dated as it should to feasibly allow authorship by Leonardo. Effectively, science offered a double-negative to support the conclusions of the connoisseurship and provenance examinations.

But art history is pocked with compelling copies, often by members of an artist's studio, as well as forgeries, which can tax and strain even the most assured expert eye. This is why the double-negative assurance (the business of authenticating originals) is so important. The art historian Katy Blatt's 2011 book on Leonardo's painting *The Virgin of the Rocks* concerns two versions of it – both by Leonardo. 'Historically, the second *Virgin of the Rocks* at the National Gallery, London, has been seen by scholars as a lesser copy,' she said. Having the painting authenticated 'was helpful to maintain [the gallery's] standing as a global centre for art treasures; and it certainly boosted their ticket sales; the 2011 Leonardo exhibition attracted 323,897 visitors, more than six times the numbers normally admitted to exhibitions.' […]

Q.16

As per the passage, the business of authenticating originals is crucial because:

1 it helps identify copies which even experts can't identify.

2 it provides conclusive evidence regarding the authorship of the work being tested.

3 it increases the commercial viability of the art work by increasing its value or by attracting more visitors towards it.

4 it helps the experts in weeding out fakes and honing in genuine buyers.

FeedBack

Bookmark

Answer key/Solution

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Q.17

The author gives the example of Wolfgang Beltracchi to demonstrate that:

1 **Forensic testing should logically always follow connoisseurship and provenance examinations.**

2 **Copies by expert forgers is a common occurrence in the modern world.**

3 **Forensic testing is done only if a red flag is raised by the connoisseur.**

4 **Forensic examinations can test if the work was created at a particular period of time.**

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FeedBack

Bookmark

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Q.18

Which of the following is definitely true according to the passage?

1 **National treasures are seldom sold by world governments.**

2 **Forensic testing is not done on all expensive paintings.**

3 **Titanium white was not used in paintings that were created before 2008.**

4 **The Leonardo exhibition was the most successful art event of 2011.**

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FeedBack

Bookmark

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Q.19

The author in the passage:

1 **tries to build a case for mandatory forensic testing on expensive artworks.**

2 **subtly criticise the methods used by museums to boost the price of an artwork.**

3 **describes the reason why a certain procedure is adopted in the artworld.**

4 **helps explain the details involved in authenticating the ownership of a painting.**

FeedBack

Bookmark

Answer key/Solution

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

Psychopaths are fearless, confident, charismatic, ruthless, and focused. Yet, contrary to popular belief, not necessarily violent. It depends, on what else you've got lurking on the shelves of your personality cupboard. Far from being an open and shut case – you're either a psychopath or you're not – there are, instead, inner and outer zones of that disorder: a bit like the fare zones on an Underground map. There is a spectrum of psychopathy along which each of us has our place, with only a small minority of A-listers resident in the 'inner city'.

One individual, for example, may be ice-cool under pressure, and display about as much empathy as an avalanche and yet at the same time act neither violently, nor antisocially, nor without conscience. Scoring high on two psychopathic attributes, such an individual may rightly be considered further along the psychopathic spectrum than someone scoring lower on that dyad of traits, yet still not be anywhere near the danger zone of a person scoring high on all of them.

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Q.20

As per the passage, it can be inferred that psychopaths are better at decoding vulnerability because of:

1 **their ability to score high on the Self-Report Psychopathy Scale.**

2 **their ability to spot fear.**

3 **their hidden 'talents'.**

4 **their hidden nature such as focus and ruthlessness.**

FeedBack

Bookmark

Answer key/Solution

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Q.21

With which of the following would the author of the passage most likely agree?

1 **A focused psychopath can't be part of the inner zone of the spectrum.**

2 **A psychopath need not always be a threat to the society.**

3 **All psychopaths can be a boon for the society if trained well.**

4 **Psychopaths make better surgeons and custom officers as compared to normal humans.**

FeedBack

Bookmark

Answer key/Solution

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Q.22

What was the main purpose of the experiment conducted by the author?

1 To ascertain if all psychopaths are drain on the society or not

2 To find the key qualities needed for one to become a better law enforcement professional

3 To study if psychopaths were really better at a certain skill

4 To understand how psychopaths are able to operate under pressure

FeedBack

Bookmark

Answer key/Solution

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Q.23

As per the author, who, among the following, will be most likely to be a part of the A-listers residing in the 'inner city' of psychopathy?

1 **A musician who shows no compassion for below-par singers, and who takes pleasure in deriding them in public**

2 **A pilot who loves performing risky manoeuvres, yet manages to always land the plane successfully**

3 **A sportsperson who has no qualms in using aggressive tactics which are illegal to win a match**

4 **A judge who likes to hand out strict physical punishments to the guilty even when it is considered immoral**

FeedBack

Bookmark

Answer key/Solution

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Q.24

The tone of the author in the passage is:

1 a combination of humour and sarcasm.

2 a mixture of derision and evaluation.

3 both humorous and judgemental.

4 both informative and explanatory.

✖

FeedBack

Bookmark

Answer key/Solution

Q.25

Directions for question (25): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. On a 100 –point scale, the GI of peanuts is 14, and the GL of peanuts is one.
2. Sucrose and starch constitute the major while reducing sugars form the minor proportion of the peanut carbohydrates.
3. It is being speculated whether the peanut protein is necessary in conjunction with the probiotic or whether the latter is effective alone.
4. This may contribute to the fact that peanut have a low glycemic index (GI) and glycemic load (GL).
5. Peanuts are also a good source of fiber, according to the Food and Drug Administration.

✖

FeedBack

Bookmark

Answer key/Solution

Q.26

Directions for question (26): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. It seems safe to say that the mutual difficulties between phonetics and phonology have waned considerably, even if they have not disappeared.
2. However, phonology can be done in a laboratory without phonetics.
3. Another direction for Laboratory Phonology is the modern study of sound change.
4. Most people take 'Laboratory Phonology' to refer to the interaction or interface of phonetics and phonology.
5. Take for example psycholinguistic phonology and computational phonology!

FeedBack

Bookmark

Answer key/Solution

Q.27

Directions for question (27): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. Still some product managers are able to devise creative marketing programs for their products.
2. The profitability of established products is affected greatly by the extent to which they are meaningfully differentiated from competing alternatives.
3. Maintaining meaningful differentiation, in turn, is facilitated by ongoing development of creative marketing programs.
4. Unfortunately, marketing programs for many established products fall short in terms of creativity.
5. Marketplace observation reveals a general lack of creativity in the way established products are marketed.

FeedBack

Bookmark

Answer key/Solution

Q.28

Directions for question (28): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Fossils in ancient seafloor rocks display a thriving and diverse marine ecosystem, then a swath of corpses. Some 96 percent of marine species were wiped out during the 'Great Dying', followed by millions of years when life had to multiply and diversify once more. What has been debated until now is exactly what made the oceans inhospitable to life – the high acidity of the water, metal and sulfide poisoning, a complete lack of oxygen, or simply higher temperatures. New research from the University of Washington and Stanford University combines models of ocean conditions and animal metabolism with published lab data and paleoceanographic records to show that the Permian mass extinction in the oceans was caused by global warming that left animals unable to breathe. As temperatures rose and the metabolism of marine animals sped up, the warmer waters could not hold enough oxygen for them to survive.

1 **Though the causes of the Permian mass extinction, which wiped out 96 percent of the earth's species, have been debated for long, a new study has shown that global warming possibly caused the 'Great Dying'.**

2 **A new research by a University shows that global warming could have caused the extinction of a large number of marine species, a catastrophe known as the Permian mass extinction**

3 **Traces of the Permian mass extinction which happened due to rising temperature can still be found on the ancient sea floor rocks in the marine ecosystem.**

4 **New research has shed lights on an alternate possible cause of the Permian mass extinction which till now has been attributed to factors like water acidity, water poisoning, lack of oxygen, and higher temperature.**

FeedBack

Bookmark

Answer key/Solution

Q.29

Directions for question (29): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Some authors offer a guide for translation of cultural issues, speaking of 'backtranslation', a technique which implies the independent translation of the translated text back into the original language. Then, the original text is compared to the retranslated version, and, if necessary, the translation is reviewed. But this method seems to be too sophisticated and time consuming. There are many words for which there is no equivalent, especially when taken out of the context. Experts have remarked that translations obtained through this method are most of the time stilted.

1 **Backtranslation, as a technique to evaluate the merit of a translated work, is too sophisticated and time consuming.**

2 **Backtranslation is a technique where the independent translation of the translated text back into the original language is done, which results in a stilted piece of work.**

3 **Backtranslation, despite being advocated by experts, results in a stiff or formal piece of end product which is both time consuming and contextually irrelevant.**

4 **Backtranslation is a problematic approach in evaluating translated works as it is too complex and time consuming, and the end result might involve out of context words and overformal undertones.**

FeedBack

Bookmark

Answer key/Solution

Q.30

Directions for question (30): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

It is essential, prior to any discussion concerning modification of behaviours, to differentiate between 'praise' and 'positive reinforcement'. In the most classic definition, positive reinforcement is a method of identifying to children which behaviours are acceptable and appropriate and which are not. More specifically, the use of positive reinforcement is the act of identifying and encouraging a behaviour, with the hopes that the desired behaviour will increase in frequency. The theory is that any behaviour followed by a pleasant stimulus is likely to be repeated. Although, praise is one of many forms of positive reinforcement, it is by no means the only or even the best choice when working with young children.

1 **When it comes to conditioning young children to follow a desired behavioural pattern, praise is not the best way of reinforcing positive stimulus.**

2 Positive reinforcement is not limited to mere praise, as young children need a more stringent and intense form of positive stimulus to be able to repeat appropriate behaviours.

3 Positive reinforcement is the technique of teaching accepted and appropriate behaviours, via pleasant stimulus such as praise.

4 Positive reinforcement may or may not include praise; however, it is the technique of making young children behave appropriately with positive and pleasant stimulus.

FeedBack

Bookmark

Answer key/Solution

Q.31

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

1. The researchers suggest that pumping both food and blood with the same system may conserve metabolic energy.
2. Sea spiders are arthropods (but not true arachnids) that live in the ocean.
3. This study is the first to report this dual-mode circulation.
4. Their unusual digestive system extends down each of their eight legs, providing maximum surface area for taking up oxygen via diffusion.

FeedBack

Bookmark

Answer key/Solution

Q.32

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

1. During the major warming period after 14,000 years ago, a new genetic component related to present-day Near Easterners appears in Europe.
2. A 35,000 year old individual from northwest Europe represents an early branch of this founder population which was then displaced across a broad region, before reappearing in southwest Europe during the Ice Age 19,000 years ago.
3. The earliest modern humans in Europe did not contribute substantially to present-day Europeans.
4. Though, all individuals between 37,000 and 14,000 years ago descended from a single founder population which forms part of the ancestry of present-day Europeans.

FeedBack

Bookmark

Answer key/Solution

Q.33

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

1. As highlighted by Feng Xia and his team, social media constitute an emerging approach to evaluating the impact of scholarly publications, and it is relevant to consider the influence of the journal, discipline, publication year and user type.
2. In fact, different studies address the relationship between the presence of articles on social networks and citations.
3. The authors revealed that people's concerns differ by discipline and observed more interest in papers related to everyday life, biology, and earth and environmental sciences.
4. In the field of biomedical sciences, Haustein analysed the dissemination of journal articles on Twitter to explore the correlations between tweets and citations and proposed a framework to evaluate social media-based metrics.

FeedBack

Bookmark

Answer key/Solution

Q.34

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

1. An international conference on cultural heritage issues that took place at Willamette University sought to generate fresh ideas about these cultural heritage issues.
2. The legacy of conquest, colonialization, and commerce looms large in defining and explaining these threats.
3. It also tried to offer a good sense of their nuances and complexities; and reveal how culture, law, and ethics can interact, complement, diverge, and contradict one another.
4. The global community, dependent as always on the cooperation of nation states, is gradually learning to address the serious threats to the cultural heritage of our disparate but shared civilizations.

FeedBack

Bookmark

Answer key/Solution

Sec 2

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

Youth For Seva (YFS) is an NGO involved in providing assistance to government schools and students suffering from lack of educational resources. Currently, the NGO has 37 volunteers and is involved in three educational projects: Teaching Assistance (TA) in Uttar Pradesh, Distribution of Educational Resources (DER) in Bihar, and Educational Evaluation (EE) in Tamil Nadu. Each volunteer working with YFS has to be involved in at least one of these three educational projects.
• DER project has the highest number of involvement of volunteers. Among them, the number of volunteers involved only in DER project is equal to the number of volunteers having additional involvement in the EE project.
• The number of volunteers involved only in the EE project is two times the number of volunteers involved in all the three projects.
• 17 volunteers are involved in the TA project.
• The number of volunteers involved only in the TA project is one less than the number of volunteers involved only in EE project.
• Ten volunteers involved in the TA project are also involved in at least one more project.
• No two projects have same number of volunteers involved in it.

Q.35
The minimum possible number of volunteers involved in both DER and TA projects, but not in EE project is

1 **1**

2 **3**

3 **4**

4 **5**

FeedBack

Bookmark

Answer key/Solution

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• Ten volunteers involved in the TA project are also involved in at least one more project.
• No two projects have same number of volunteers involved in it.

Q.36

Which of the following additional information would enable us to find the exact number of volunteers involved in all possible combination of projects?

1 Twenty volunteers are involved in project DER.

2 Four volunteers are involved in all the three projects.

3 Twenty three volunteers are involved in exactly one project.

4 No need of any additional information.

FeedBack

Bookmark

Answer key/Solution

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• 17 volunteers are involved in the TA project.

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• Ten volunteers involved in the TA project are also involved in at least one more project.

• No two projects have same number of volunteers involved in it.

Q.37

After some time, the volunteers who were involved in all the three projects were asked to withdraw from any one project. As a result, one of the volunteers opted out of the TA project, and one opted out of the EE project, while the remaining ones involved in all the three projects opted out of the DER project. Which of the following statements, then, necessarily follows?

1 The lowest number of volunteers is now in TA project.

2 More volunteers are now in DER project as compared to EE project.

3 More volunteers are now in TA project as compared to EE project.

4 None of the above.

FeedBack

Bookmark

Answer key/Solution

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

Youth For Seva (YFS) is an NGO involved in providing assistance to government schools and students suffering from lack of educational resources. Currently, the NGO has 37 volunteers and is involved in three educational projects: Teaching Assistance (TA) in Uttar Pradesh, Distribution of Educational Resources (DER) in Bihar, and Educational Evaluation (EE) in Tamil Nadu. Each volunteer working with YFS has to be involved in at least one of these three educational projects.

• DER project has the highest number of involvement of volunteers. Among them, the number of volunteers involved only in DER project is equal to the number of volunteers having additional involvement in the EE project.

• The number of volunteers involved only in the EE project is two times the number of volunteers involved in all the three projects.

• 17 volunteers are involved in the TA project.

• The number of volunteers involved only in the TA project is one less than the number of volunteers involved only in EE project.

• Ten volunteers involved in the TA project are also involved in at least one more project.

• No two projects have same number of volunteers involved in it.

Q.38

After the withdrawal of volunteers, as given in the previous question, some new volunteers joined the NGO. Each one of them was allowed to involve in only one project in a manner such that, the number of volunteers working in one project alone for each of the three projects became same identical. At that point, it was also found that the number of volunteers involved in DER and EE projects was equal to the number of volunteers involved in TA and DER projects. Which of the given three projects has the highest number of volunteers now?

1 **EE**

2 **DER**

3 **TA**

4 **Cannot be determined**

FeedBack

Bookmark

Answer key/Solution

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

Five friends - Suraj, Siddharth, Sarthak, Suman, and Supriya - from Psychology department, each wrote mid-semester exams of three subjects - Qualitative Analysis (QA), Attention and Perception (AP), and Intelligence and Creativity (IC). They got different ranks according to their performances in the respective subjects. Rank 1 in any subject is the best rank followed by rank 2, then rank 3 and so on. No two friends got the same rank in the same subject. Also, each of them got different ranks in different subjects. Further, the following information is also known:
(A) Sarthak got better rank than Suman and Suraj in QA and IC respectively.
(B) Supriya didn not get the best rank in any of the three subjects while she got third rank in QA.
(C) Friend who got rank 5 in IC, got rank 2 in AP.
(D) Siddharth got rank 5 in AP and his best possible rank in any subject is 3.
(E) Suman got the best rank in AP but her rank is lower than that of Siddharth in IC.
(F) Suman and Suraj both got the best rank and the worst rank each, in any subject.
(G) Suraj got rank 1 in QA.

Q.39
Who got rank 3 in AP?

1 **Suman**

2 **Siddharth**

3 **Sarthak**

4 **Supriya**

FeedBack

Bookmark

Answer key/Solution

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

Five friends - Suraj, Siddharth, Sarthak, Suman, and Supriya - from Psychology department, each wrote mid-semester exams of three subjects - Qualitative Analysis (QA), Attention and Perception (AP), and Intelligence and Creativity (IC). They got different ranks according to their performances in the respective subjects. Rank 1 in any subject is the best rank followed by rank 2, then rank 3 and so on. No two friends got the same rank in the same subject. Also, each of them got different ranks in different subjects. Further, the following information is also known:
(A) Sarthak got better rank than Suman and Suraj in QA and IC respectively.
(B) Supriya didn not get the best rank in any of the three subjects while she got third rank in QA.
(C) Friend who got rank 5 in IC, got rank 2 in AP.
(D) Siddharth got rank 5 in AP and his best possible rank in any subject is 3.
(E) Suman got the best rank in AP but her rank is lower than that of Siddharth in IC.
(F) Suman and Suraj both got the best rank and the worst rank each, in any subject.
(G) Suraj got rank 1 in QA.

Q.40
Who got the best rank in IC?

1 **Suman**

2 Sarthak

3 Siddharth

4 Supriya

FeedBack

Bookmark

Answer key/Solution

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

Five friends - Suraj, Siddharth, Sarthak, Suman, and Supriya - from Psychology department, each wrote mid-semester exams of three subjects - Qualitative Analysis (QA), Attention and Perception (AP), and Intelligence and Creativity (IC). They got different ranks according to their performances in the respective subjects. Rank 1 in any subject is the best rank followed by rank 2, then rank 3 and so on. No two friends got the same rank in the same subject. Also, each of them got different ranks in different subjects. Further, the following information is also known:
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(C) Friend who got rank 5 in IC, got rank 2 in AP.
(D) Siddharth got rank 5 in AP and his best possible rank in any subject is 3.
(E) Suman got the best rank in AP but her rank is lower than that of Siddharth in IC.
(F) Suman and Suraj both got the best rank and the worst rank each, in any subject.
(G) Suraj got rank 1 in QA.

Q.41
Who got rank 2 in AP?

1 Suman

2 Siddharth

3 Suraj

4 Sarthak

FeedBack

Bookmark

Answer key/Solution

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

Five friends - Suraj, Siddharth, Sarthak, Suman, and Supriya - from Psychology department, each wrote mid-semester exams of three subjects - Qualitative Analysis (QA), Attention and Perception (AP), and Intelligence and Creativity (IC). They got different ranks according to their performances in the respective subjects. Rank 1 in any subject is the best rank followed by rank 2, then rank 3 and so on. No two friends got the same rank in the same subject. Also, each of them got different ranks in different subjects. Further, the following information is also known:
(A) Sarthak got better rank than Suman and Suraj in QA and IC respectively.
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(C) Friend who got rank 5 in IC, got rank 2 in AP.
(D) Siddharth got rank 5 in AP and his best possible rank in any subject is 3.
(E) Suman got the best rank in AP but her rank is lower than that of Siddharth in IC.
(F) Suman and Suraj both got the best rank and the worst rank each, in any subject.
(G) Suraj got rank 1 in QA.

Q.42
Who got lowest rank in QA?

1 **Suman**

2 **Sarthak**

3 **Supriya**

4 **Cannot be determined**

FeedBack

Bookmark

Answer key/Solution

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

Eight players, wearing Jerseys numbered from 1 to 8, travel in two trains, four players in each train, moving in opposite directions one starting from New Delhi (source) to Mumbai (destination) and other from Mumbai to New Delhi. They board train at any station among Mathura, Agra, Morena, Gwalior, Jhansi, Bhopal, Khandwa and Kalyan which are in between New Delhi and Mumbai in that order. After travelling for at least two stations, they can deboard the train at any aforementioned eight stations except at Gwalior station e.g, if a player boards the train at Morena station moving towards Mumbai, then he can deboard earliest at the station Bhopal. Each of these players like one distinct snacks item among omelette, bread pakora, bread roll, batata vada, rabri, aloo tikki, choley bhature and poha. No two or more players travelling in the same train either board or deboard at the same station. i.e., if a player boards from a station then other players cannot board but can deboard at that station. Same holds true for deboarding. The additional information is also known which is given as below.
(i) Player who likes poha boards train at Jhansi station and player who likes rabri deboards at Mathura station.
(ii) Player who likes omelette boards at the station which was exactly in the middle of the stations at which players who like batata vada and aloo tikki boards the train in that order.
(iii) Player wearing jersey number 1 likes choley bhature and player wearing jersey number 6 boards the train at Bhopal station.
(iv) The sum of jersey number of all players who board or deboard at each station, except Bhopal station, is a perfect square. There were five players for which the number of stations between their boarding and deboarding stations was at least three.
(v) Players wearing jersey number 2 and 4 deboard at station Agra and Morena, in any order and they like bread pakora and bread roll, not necessarily in that order.

Q.43
Jersey number of the player who likes poha is

FeedBack

Bookmark

Answer key/Solution

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

Eight players, wearing Jerseys numbered from 1 to 8, travel in two trains, four players in each train, moving in opposite directions one starting from New Delhi (source) to Mumbai (destination) and other from Mumbai to New Delhi. They board train at any station among Mathura, Agra, Morena, Gwalior, Jhansi, Bhopal, Khandwa and Kalyan which are in between New Delhi and Mumbai in that order. After travelling for at least two stations, they can deboard the train at any aforementioned eight stations except at Gwalior station e.g, if a player boards the train at Morena station moving towards Mumbai, then he can deboard earliest at the station Bhopal. Each of these players like one distinct snacks item among omelette, bread pakora, bread roll, batata vada, rabri, aloo tikki, choley bhature and poha. No two or more players travelling in the same train either board or deboard at the same station. i.e., if a player boards from a station then other players cannot board but can deboard at that station. Same holds true for deboarding. The additional information is also known which is given as below.
(i) Player who likes poha boards train at Jhansi station and player who likes rabri deboards at Mathura station.
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(iii) Player wearing jersey number 1 likes choley bhature and player wearing jersey number 6 boards the train at Bhopal station.
(iv) The sum of jersey number of all players who board or deboard at each station, except Bhopal station, is a perfect square. There were five players for which the number of stations between their boarding and deboarding stations was at least three.
(v) Players wearing jersey number 2 and 4 deboard at station Agra and Morena, in any order and they like bread pakora and bread roll, not necessarily in that order.

Q.44
If the player who likes bread roll gets off at Morena station, then the players who board and deboard at Jhansi station, like

1 **Batata vada, choley bhature and bread pakora.**

2 **Batata vada, choley bhature, poha and bread pakora.**

3 **Omelette, choley bhature, poha and bread pakora.**

4 **Omelette, choley bhature and bread pakora.**

FeedBack

Bookmark

Answer key/Solution

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

Eight players, wearing Jerseys numbered from 1 to 8, travel in two trains, four players in each train, moving in opposite directions one starting from New Delhi (source) to Mumbai (destination) and other from Mumbai to New Delhi. They board train at any station among Mathura, Agra, Morena, Gwalior, Jhansi, Bhopal, Khandwa and Kalyan which are in between New Delhi and Mumbai in that order. After travelling for at least two stations, they can deboard the train at any aforementioned eight stations except at Gwalior station e.g, if a player boards the train at Morena station moving towards Mumbai, then he can deboard earliest at the station Bhopal. Each of these players like one distinct snacks item among omelette, bread pakora, bread roll, batata vada, rabri, aloo tikki, choley bhature and poha. No two or more players travelling in the same train either board or deboard at the same station. i.e., if a player boards from a station then other players cannot board but can deboard at that station. Same holds true for deboarding. The additional information is also known which is given as below.
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(iii) Player wearing jersey number 1 likes choley bhature and player wearing jersey number 6 boards the train at Bhopal station.
(iv) The sum of jersey number of all players who board or deboard at each station, except Bhopal station, is a perfect square. There were five players for which the number of stations between their boarding and deboarding stations was at least three.
(v) Players wearing jersey number 2 and 4 deboard at station Agra and Morena, in any order and they like bread pakora and bread roll, not necessarily in that order.

Q.45
Who travelled for maximum distance? (It is assumed that there was same distance between every two consecutive stations)

1 **Player wearing jersey number 7.**

2 **Player who likes batata vada.**

3 **Player wearing jersey number 1.**

4 **Player who likes rabri.**

FeedBack

Bookmark

Answer key/Solution

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

Eight players, wearing Jerseys numbered from 1 to 8, travel in two trains, four players in each train, moving in opposite directions one starting from New Delhi (source) to Mumbai (destination) and other from Mumbai to New Delhi. They board train at any station among Mathura, Agra, Morena, Gwalior, Jhansi, Bhopal, Khandwa and Kalyan which are in between New Delhi and Mumbai in that order. After travelling for at least two stations, they can deboard the train at any aforementioned eight stations except at Gwalior station e.g, if a player boards the train at Morena station moving towards Mumbai, then he can deboard earliest at the station Bhopal. Each of these players like one distinct snacks item among omelette, bread pakora, bread roll, batata vada, rabri, aloo tikki, choley bhature and poha. No two or more players travelling in the same train either board or deboard at the same station. i.e., if a player boards from a station then other players cannot board but can deboard at that station. Same holds true for deboarding. The additional information is also known which is given as below.
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(iii) Player wearing jersey number 1 likes choley bhature and player wearing jersey number 6 boards the train at Bhopal station.
(iv) The sum of jersey number of all players who board or deboard at each station, except Bhopal station, is a perfect square. There were five players for which the number of stations between their boarding and deboarding stations was at least three.
(v) Players wearing jersey number 2 and 4 deboard at station Agra and Morena, in any order and they like bread pakora and bread roll, not necessarily in that order.

Q.46
How many of the following statements is/are true?
(i) No player boards the train at Gwalior station.
(ii) Player wearing jersey number 5 likes omelette.
(iii) Player wearing jersey number 7 likes aloo tikki

1 **0**

2 **1**

3 **2**

4 **3**

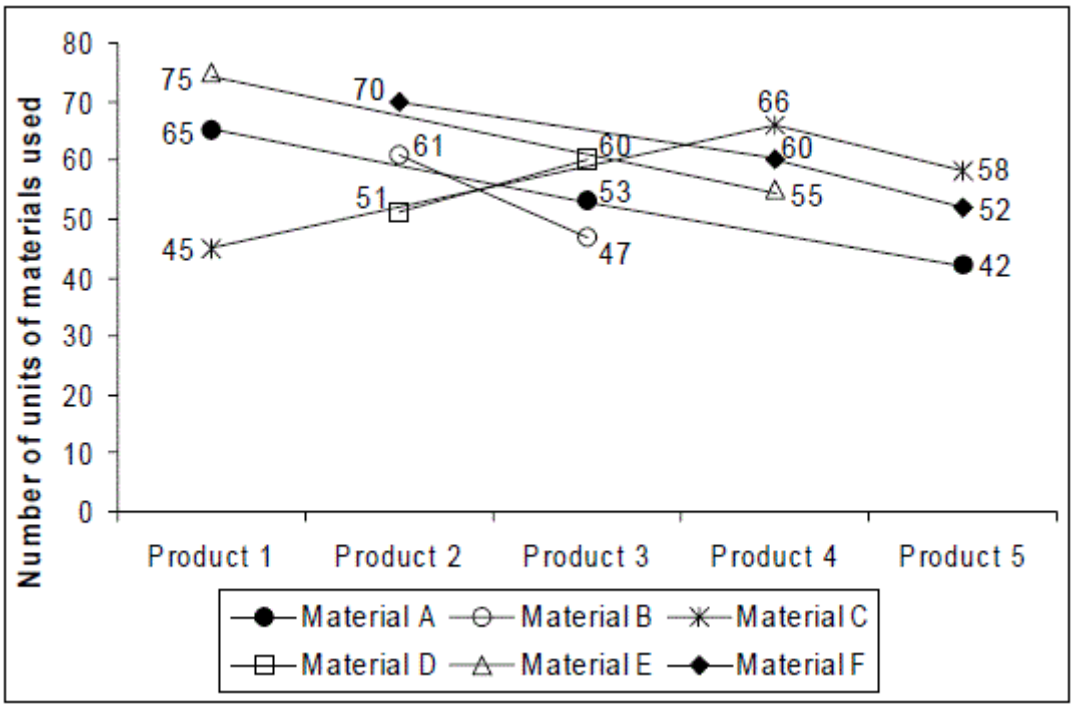
FeedBack

Bookmark

Answer key/Solution

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

Each of the five products – product 1, product 2, product 3, product 4 and product 5 – are made up of six different materials – A, B, C, D, E and F – having different combinations in each product. The price (per unit) of these six materials are Rs.70, Rs.60, Rs. 72, Rs.65, Rs.58 and Rs.86 respectively. The partial information about the number of units of these six materials used to produce required number of pieces of each product is depicted below:



Some other information about the products and materials used, for producing each product, is as given below:
I. Total number of units of materials used in product 5 was equal to the number of units of material B used in making all the products. The sum of units of materials B and D used in product 4 was 53 more than that of material A used in product 2.
II. Total cost of making product 4 was equal to that of product 5.
III. Number of units of material B used in product 1 and product 4 was equal. Total amount spent on using material B in making of these 5 products was Rs.21,000.
IV. The sum of units of material C used in product 2 and that of material E used in product 3 was 100.
Total units of material E used was equal to that of total of all six materials used in product 2.
V. Equal number of units of material D and E were used in product 5. The number of units of material E used in product 5 was neither more than 65 nor less than 60. The number of units of material D used in product 4 was more than 50.
VI. Two out of the five products, except product 2, each were made by using a total of 288 units of these six materials.
VII. Material C used in product 3 was 39 units more than the material E used in product 2.

[Note: Zero unit of a material may be used in any particular product and the number of units of any material of all products are integers.]

Q.47
Total units of these six materials used in product 2 was

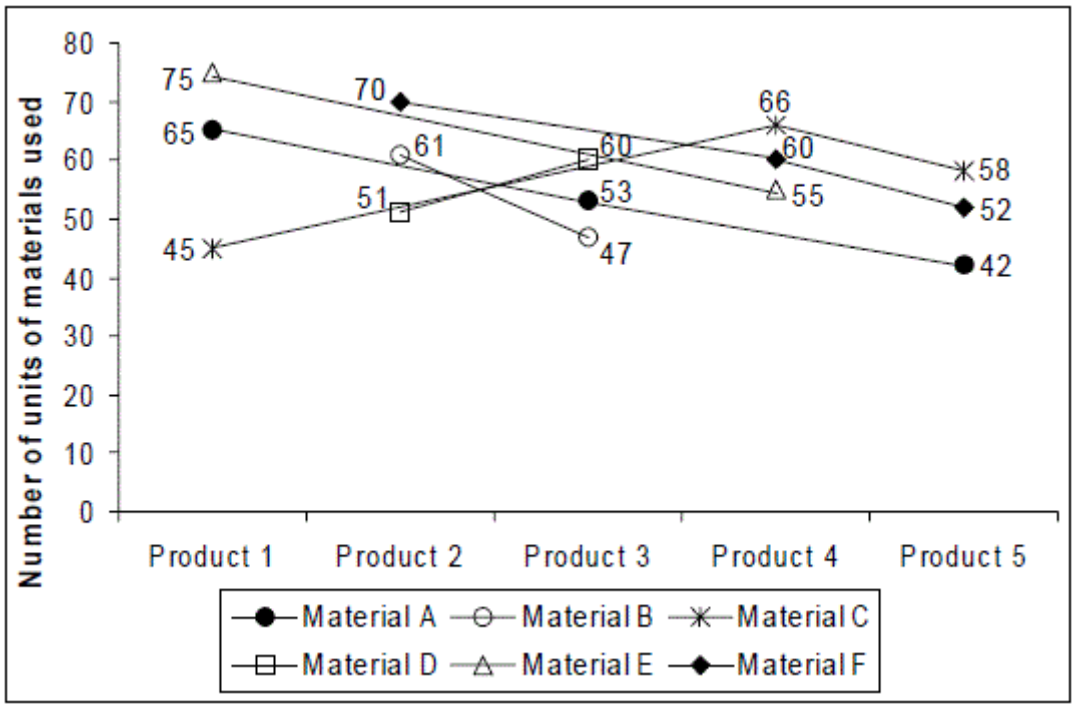
FeedBack

Bookmark

Answer key/Solution

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

Each of the five products – product 1, product 2, product 3, product 4 and product 5 – are made up of six different materials – A, B, C, D, E and F – having different combinations in each product. The price (per unit) of these six materials are Rs.70, Rs.60, Rs. 72, Rs.65, Rs.58 and Rs.86 respectively. The partial information about the number of units of these six materials used to produce required number of pieces of each product is depicted below:



Some other information about the products and materials used, for producing each product, is as given below:
I. Total number of units of materials used in product 5 was equal to the number of units of material B used in making all the products. The sum of units of materials B and D used in product 4 was 53 more than that of material A used in product 2.
II. Total cost of making product 4 was equal to that of product 5.
III. Number of units of material B used in product 1 and product 4 was equal. Total amount spent on using material B in making of these 5 products was Rs.21,000.
IV. The sum of units of material C used in product 2 and that of material E used in product 3 was 100.
Total units of material E used was equal to that of total of all six materials used in product 2.
V. Equal number of units of material D and E were used in product 5. The number of units of material E used in product 5 was neither more than 65 nor less than 60. The number of units of material D used in product 4 was more than 50.
VI. Two out of the five products, except product 2, each were made by using a total of 288 units of these six materials.
VII. Material C used in product 3 was 39 units more than the material E used in product 2.

[Note: Zero unit of a material may be used in any particular product and the number of units of any material of all products are integers.]

Q.48
The maximum number of units of all six materials used in any product was what percentage more than the minimum number of units of all six materials used in any product?

1 **24.11%**

2 **25.97%**

3 **22.39%**

4 **29.57%**

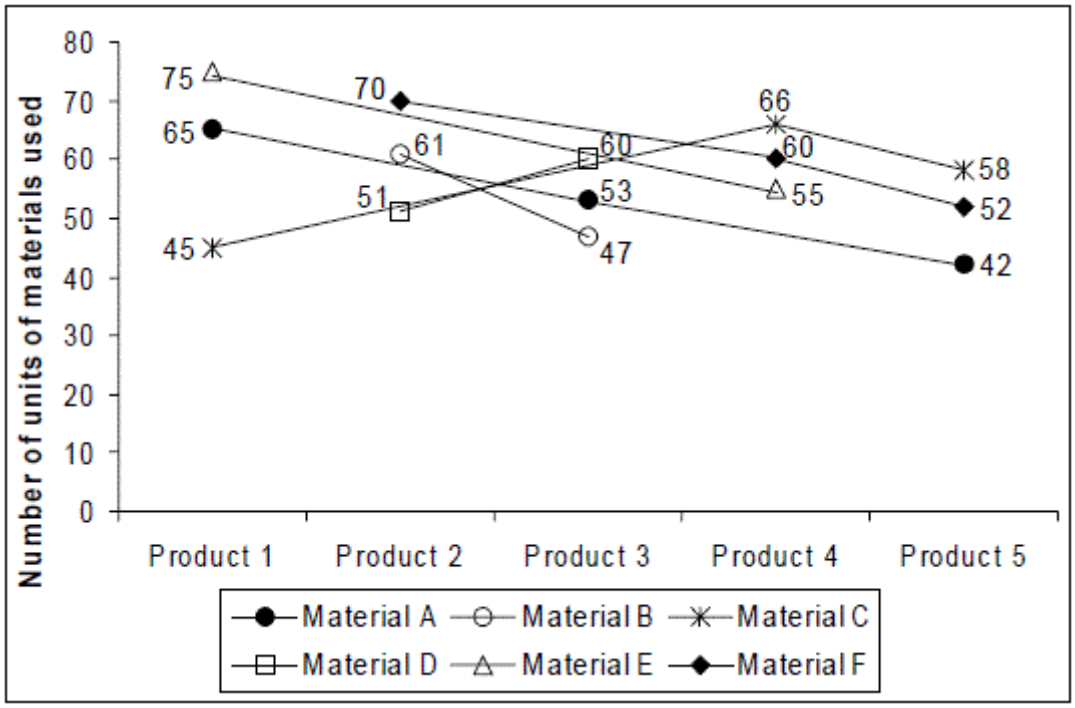
FeedBack

Bookmark

Answer key/Solution

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

Each of the five products – product 1, product 2, product 3, product 4 and product 5 – are made up of six different materials – A, B, C, D, E and F – having different combinations in each product. The price (per unit) of these six materials are Rs.70, Rs.60, Rs. 72, Rs.65, Rs.58 and Rs.86 respectively. The partial information about the number of units of these six materials used to produce required number of pieces of each product is depicted below:



Some other information about the products and materials used, for producing each product, is as given below:
I. Total number of units of materials used in product 5 was equal to the number of units of material B used in making all the products. The sum of units of materials B and D used in product 4 was 53 more than that of material A used in product 2.
II. Total cost of making product 4 was equal to that of product 5.
III. Number of units of material B used in product 1 and product 4 was equal. Total amount spent on using material B in making of these 5 products was Rs.21,000.
IV. The sum of units of material C used in product 2 and that of material E used in product 3 was 100.
Total units of material E used was equal to that of total of all six materials used in product 2.
V. Equal number of units of material D and E were used in product 5. The number of units of material E used in product 5 was neither more than 65 nor less than 60. The number of units of material D used in product 4 was more than 50.
VI. Two out of the five products, except product 2, each were made by using a total of 288 units of these six materials.
VII. Material C used in product 3 was 39 units more than the material E used in product 2.

[Note: Zero unit of a material may be used in any particular product and the number of units of any material of all products are integers.]

Q.49
If the number of units of material D used in product 1 was 8, then the number of units of material F used in that product was

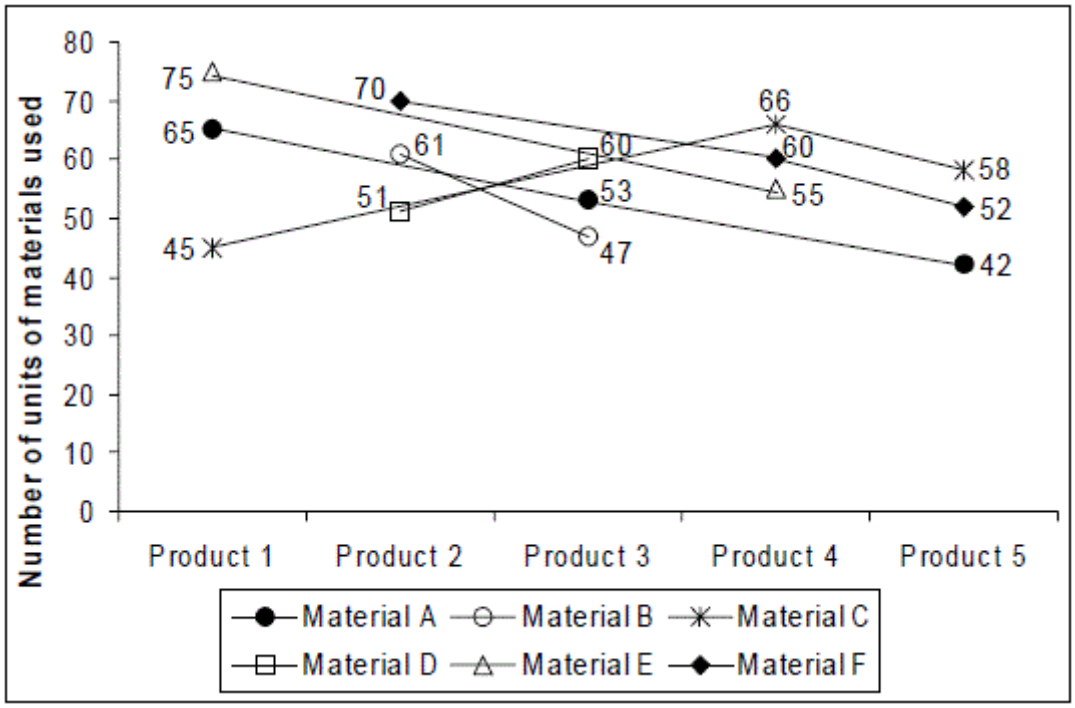
FeedBack

Bookmark

Answer key/Solution

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

Each of the five products – product 1, product 2, product 3, product 4 and product 5 – are made up of six different materials – A, B, C, D, E and F – having different combinations in each product. The price (per unit) of these six materials are Rs.70, Rs.60, Rs. 72, Rs.65, Rs.58 and Rs.86 respectively. The partial information about the number of units of these six materials used to produce required number of pieces of each product is depicted below:



Some other information about the products and materials used, for producing each product, is as given below:
I. Total number of units of materials used in product 5 was equal to the number of units of material B used in making all the products. The sum of units of materials B and D used in product 4 was 53 more than that of material A used in product 2.
II. Total cost of making product 4 was equal to that of product 5.
III. Number of units of material B used in product 1 and product 4 was equal. Total amount spent on using material B in making of these 5 products was Rs.21,000.
IV. The sum of units of material C used in product 2 and that of material E used in product 3 was 100.
Total units of material E used was equal to that of total of all six materials used in product 2.
V. Equal number of units of material D and E were used in product 5. The number of units of material E used in product 5 was neither more than 65 nor less than 60. The number of units of material D used in product 4 was more than 50.
VI. Two out of the five products, except product 2, each were made by using a total of 288 units of these six materials.
VII. Material C used in product 3 was 39 units more than the material E used in product 2.

[Note: Zero unit of a material may be used in any particular product and the number of units of any material of all products are integers.]

Q.50

Total expenses on using material D for making these five products taken together can be

I. Less than Rs.15,500.

II. More than Rs.16,180.

III. More than Rs.16,500.

1 only I

2 only II

3 both I and II

4 either I or III

FeedBack

Bookmark

Answer key/Solution

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

Twenty stalls numbered as ST1, ST2, ST3, ..., ST19, ST20 are opened in a fair. They all are arranged consecutively, as per their number, along the circumference of a circle. Based on the material and things these stalls sell, they are divided into three categories. Nine stalls numbered from ST1- ST9 fall under Retail Shop Category, 6 stalls numbered from ST10 - ST15 are under Art and Craft Category, and 5 stalls from ST16 - ST20 are under Eatery Outlets Category. Additional information about these stalls, known to us, is as follows:

(i) Each of these 20 stalls are marked as either Priority Stall (PS) or Super Priority Stall (SPS) but not both.

(ii) No two stalls, marked as SPS, are adjacent to each other.

(iii) At least 4 stalls, under Retail Shop Category, are marked as SPS; at least 2, under Art and craft category, are marked as SPS; and at least 3, under Eatery Outlets Category, are marked as SPS.

Q.51

If stall ST9 is marked as Super Priority Stall, then which of the following statements can be true?

A. Both stalls ST12 and ST13 are marked as Priority Stalls.

B. In stalls numbered as ST6, ST7, ..., ST13, there are exactly 3 Super Priority Stalls.

C. If ST7 and ST17 are marked as Priority Stalls, then ST5 and ST12 are marked as Super Priority Stall.

1 Only A and C

2 Only B and C

3 Only A and B

4 All the statements can be true.

FeedBack

Bookmark

Answer key/Solution

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

Twenty stalls numbered as ST1, ST2, ST3, ..., ST19, ST20 are opened in a fair. They all are arranged consecutively, as per their number, along the circumference of a circle. Based on the material and things these stalls sell, they are divided into three categories. Nine stalls numbered from ST1- ST9 fall under Retail Shop Category, 6 stalls numbered from ST10 - ST15 are under Art and Craft Category, and 5 stalls from ST16 - ST20 are under Eatery Outlets Category. Additional information about these stalls, known to us, is as follows:
(i) Each of these 20 stalls are marked as either Priority Stall (PS) or Super Priority Stall (SPS) but not both.
(ii) No two stalls, marked as SPS, are adjacent to each other.
(iii) At least 4 stalls, under Retail Shop Category, are marked as SPS; at least 2, under Art and craft category, are marked as SPS; and at least 3, under Eatery Outlets Category, are marked as SPS.

Q.52
If ST2 is marked as Priority Stall and ST12 is marked as Super Priority Stall, then how many different combinations of PS and SPS marked stalls are possible?

FeedBack

Bookmark

Answer key/Solution

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

Twenty stalls numbered as ST1, ST2, ST3, ..., ST19, ST20 are opened in a fair. They all are arranged consecutively, as per their number, along the circumference of a circle. Based on the material and things these stalls sell, they are divided into three categories. Nine stalls numbered from ST1- ST9 fall under Retail Shop Category, 6 stalls numbered from ST10 - ST15 are under Art and Craft Category, and 5 stalls from ST16 - ST20 are under Eatery Outlets Category. Additional information about these stalls, known to us, is as follows:
(i) Each of these 20 stalls are marked as either Priority Stall (PS) or Super Priority Stall (SPS) but not both.
(ii) No two stalls, marked as SPS, are adjacent to each other.
(iii) At least 4 stalls, under Retail Shop Category, are marked as SPS; at least 2, under Art and craft category, are marked as SPS; and at least 3, under Eatery Outlets Category, are marked as SPS.

Q.53
If except Eatery Outlets Category stalls, other category stalls can have adjacent Super Priority Stalls, then how many different combinations of PS and SPS marked stalls are possible?

FeedBack

Bookmark

Answer key/Solution

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

Twenty stalls numbered as ST1, ST2, ST3, ..., ST19, ST20 are opened in a fair. They all are arranged consecutively, as per their number, along the circumference of a circle. Based on the material and things these stalls sell, they are divided into three categories. Nine stalls numbered from ST1- ST9 fall under Retail Shop Category, 6 stalls numbered from ST10 - ST15 are under Art and Craft Category, and 5 stalls from ST16 - ST20 are under Eatery Outlets Category. Additional information about these stalls, known to us, is as follows:
(i) Each of these 20 stalls are marked as either Priority Stall (PS) or Super Priority Stall (SPS) but not both.
(ii) No two stalls, marked as SPS, are adjacent to each other.
(iii) At least 4 stalls, under Retail Shop Category, are marked as SPS; at least 2, under Art and craft category, are marked as SPS; and at least 3, under Eatery Outlets Category, are marked as SPS.

Q.54
If two more stalls are added in Eatery Outlets Category i.e., ST21 and ST22, next to ST20, satisfying all the conditions given above and also ST22 is marked as Super Priority Stall, then how many different combinations of PS and SPS marked stalls are possible?

FeedBack

Bookmark

Answer key/Solution

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

The table given below depicts the partial information about the electric power consumption (in units) by six home appliances – Air conditioner (AC), Fan, Bulb, Washing Machine, Refrigerator and TV – used by five families – F1, F2, F3, F4 and F5 – in a particular month.

Appliances / Family	AC	Fan	Bulb	Washing Machine	Refrigerator	TV
F1	870		80	169		
F2	1125	536			470	
F3		570	96	235		120
F4	781		72		160	113
F5		319		144	152	145

(**Note:-** All values given in the above table must be integers only.)

The additional information is as follows:-
(i) Total power consumption by these families altogether for that month was 10,000 units.
(ii) Power consumed by any family is represented by P(F). And P(F1) : P(F2) = 2 : 3, P(F2) : P(F3) = 54 : 47, P(F3) : P(F4) = 235 : 163 and P(F4) : P(F5) = 163 : 152.
(iii) Power consumed by AC, fan, bulb, washing machine, refrigerator and TV for all five families taken together were 4398 units, 2202 units, 491 units, 954 units, 1310 units and 645 units respectively.
(iv) The electricity board charges the bill at Rs. 3/unit for first 200 units and thereafter, Rs. 5/unit. Each family gets electricity bill for each appliance separately and has to pay the bill equal to the sum of the bills for each appliances used by them.
(v) The sum of P(F5) for AC and P(F3) for refrigerator was 971 units. The bill paid by F4 for fan and washing machine together was Rs. 1,868.

Q.55

By what percentage was the total bills paid by F1, F2 and F3 taken together more than that paid by F3, F4 and F5 taken together?

1 **28.68%**

2 **23.57%**

3 **29.32%**

4 **25.82%**

FeedBack

Bookmark

Answer key/Solution

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

The table given below depicts the partial information about the electric power consumption (in units) by six home appliances – Air conditioner (AC), Fan, Bulb, Washing Machine, Refrigerator and TV – used by five families – F1, F2, F3, F4 and F5 – in a particular month.

Appliances / Family	AC	Fan	Bulb	Washing Machine	Refrigerator	TV
F1	870		80	169		
F2	1125	536			470	
F3		570	96	235		120
F4	781		72		160	113
F5		319		144	152	145

(**Note:-** All values given in the above table must be integers only.)

The additional information is as follows:-
(i) Total power consumption by these families altogether for that month was 10,000 units.
(ii) Power consumed by any family is represented by P(F). And P(F1) : P(F2) = 2 : 3, P(F2) : P(F3) = 54 : 47, P(F3) : P(F4) = 235 : 163 and P(F4) : P(F5) = 163 : 152.
(iii) Power consumed by AC, fan, bulb, washing machine, refrigerator and TV for all five families taken together were 4398 units, 2202 units, 491 units, 954 units, 1310 units and 645 units respectively.
(iv) The electricity board charges the bill at Rs. 3/unit for first 200 units and thereafter, Rs. 5/unit. Each family gets electricity bill for each appliance separately and has to pay the bill equal to the sum of the bills for each appliances used by them.
(v) The sum of P(F5) for AC and P(F3) for refrigerator was 971 units. The bill paid by F4 for fan and washing machine together was Rs. 1,868.

Q.56

Total bill paid for bulbs by all the five families taken together was less than that paid for TV by F1, F2, F3 and F5 taken together by

1 **7.70%**

2 **7.50%**

3 **6.98%**

4 **6.89%**

FeedBack

Bookmark

Answer key/Solution

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

The table given below depicts the partial information about the electric power consumption (in units) by six home appliances – Air conditioner (AC), Fan, Bulb, Washing Machine, Refrigerator and TV – used by five families – F1, F2, F3, F4 and F5 – in a particular month.

Appliances / Family	AC	Fan	Bulb	Washing Machine	Refrigerator	TV
F1	870		80	169		
F2	1125	536			470	
F3		570	96	235		120
F4	781		72		160	113
F5		319		144	152	145

(**Note:-** All values given in the above table must be integers only.)

The additional information is as follows:-
(i) Total power consumption by these families altogether for that month was 10,000 units.
(ii) Power consumed by any family is represented by P(F). And P(F1) : P(F2) = 2 : 3, P(F2) : P(F3) = 54 : 47, P(F3) : P(F4) = 235 : 163 and P(F4) : P(F5) = 163 : 152.
(iii) Power consumed by AC, fan, bulb, washing machine, refrigerator and TV for all five families taken together were 4398 units, 2202 units, 491 units, 954 units, 1310 units and 645 units respectively.
(iv) The electricity board charges the bill at Rs. 3/unit for first 200 units and thereafter, Rs. 5/unit. Each family gets electricity bill for each appliance separately and has to pay the bill equal to the sum of the bills for each appliances used by them.
(v) The sum of P(F5) for AC and P(F3) for refrigerator was 971 units. The bill paid by F4 for fan and washing machine together was Rs. 1,868.

Q.57
Due to some technical error in billing system, the bill for each family was calculated for all the appliances together, but with the same rate as per actual. Which family would have to pay minimum additional amount?

1 **F1**

2 **F3**

3 **F4**

4 **F5**

FeedBack

Bookmark

Answer key/Solution

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

The table given below depicts the partial information about the electric power consumption (in units) by six home appliances – Air conditioner (AC), Fan, Bulb, Washing Machine, Refrigerator and TV – used by five families – F1, F2, F3, F4 and F5 – in a particular month.

Appliances / Family	AC	Fan	Bulb	Washing Machine	Refrigerator	TV
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F5		319		144	152	145

(**Note:-** All values given in the above table must be integers only.)

The additional information is as follows:-
(i) Total power consumption by these families altogether for that month was 10,000 units.
(ii) Power consumed by any family is represented by P(F). And P(F1) : P(F2) = 2 : 3, P(F2) : P(F3) = 54 : 47, P(F3) : P(F4) = 235 : 163 and P(F4) : P(F5) = 163 : 152.
(iii) Power consumed by AC, fan, bulb, washing machine, refrigerator and TV for all five families taken together were 4398 units, 2202 units, 491 units, 954 units, 1310 units and 645 units respectively.
(iv) The electricity board charges the bill at Rs. 3/unit for first 200 units and thereafter, Rs. 5/unit. Each family gets electricity bill for each appliance separately and has to pay the bill equal to the sum of the bills for each appliances used by them.
(v) The sum of P(F5) for AC and P(F3) for refrigerator was 971 units. The bill paid by F4 for fan and washing machine together was Rs. 1,868.

Q.58
What was the average value of bills paid per unit by all families together for all appliances?

1 **Rs. 3.75**

2 **Rs. 3.25**

3 **Rs. 4.00**

4 **Rs. 4.25**

FeedBack

Bookmark

Answer key/Solution

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

An organisation named HobbyLobby received a large order for handicraft items from the two companies – Sun Empires and Shiksha International – as a gift for their employees.
HobbyLobby has two cutters who will cut the wood, five tailors who will do the stitching, and two assistants to decorate the wood and do the pasting. Each of these 9 people works for 10 hours in a day (though their working hours may not be the same). Each of the handicrafts of Sun empires requires 20 minutes for cutting the wood, 1 hour for stitching, and 15 minutes for decorating the wood and pasting, whereas each handicraft of Shiksha International requires 30 minutes, 1 hour, and 30 minutes respectively for these activities.
Following steps are followed, to complete the work:
Step I: Cutter will cut the wood.
Step II: Tailor will do the stitching.
Step III: Assistant will decorate the wood and do the pasting.

Q.59
Find the maximum number of handicrafts of Sun Empires that HobbyLobby can complete in a day.

1 **50**

2 **20**

3 **40**

4 **60**

FeedBack

Bookmark

Answer key/Solution

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

An organisation named HobbyLobby received a large order for handicraft items from the two companies – Sun Empires and Shiksha International – as a gift for their employees.
HobbyLobby has two cutters who will cut the wood, five tailors who will do the stitching, and two assistants to decorate the wood and do the pasting. Each of these 9 people works for 10 hours in a day (though their working hours may not be the same). Each of the handicrafts of Sun empires requires 20 minutes for cutting the wood, 1 hour for stitching, and 15 minutes for decorating the wood and pasting, whereas each handicraft of Shiksha International requires 30 minutes, 1 hour, and 30 minutes respectively for these activities.
Following steps are followed, to complete the work:
Step I: Cutter will cut the wood.
Step II: Tailor will do the stitching.
Step III: Assistant will decorate the wood and do the pasting.

Q.60
On a particular day, HobbyLobby decided to complete 20 handicrafts of Shiksha International. How many handicrafts of Sun Empires can it complete on that day?

FeedBack

Bookmark

Answer key/Solution

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

An organisation named HobbyLobby received a large order for handicraft items from the two companies – Sun Empires and Shiksha International – as a gift for their employees.
HobbyLobby has two cutters who will cut the wood, five tailors who will do the stitching, and two assistants to decorate the wood and do the pasting. Each of these 9 people works for 10 hours in a day (though their working hours may not be the same). Each of the handicrafts of Sun empires requires 20 minutes for cutting the wood, 1 hour for stitching, and 15 minutes for decorating the wood and pasting, whereas each handicraft of Shiksha International requires 30 minutes, 1 hour, and 30 minutes respectively for these activities.
Following steps are followed, to complete the work:
Step I: Cutter will cut the wood.
Step II: Tailor will do the stitching.
Step III: Assistant will decorate the wood and do the pasting.

Q.61
If HobbyLobby decides to complete 30 handicrafts of Shiksha International only and no other handicraft on a particular day, then how many total man-hours will remain un-utilized?
(Man-hours for a task = number of men who can do the task × number of hours for task)

1 **20**

2 **30**

3 **5**

4 **25**

FeedBack

Bookmark

Answer key/Solution

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

An organisation named HobbyLobby received a large order for handicraft items from the two companies – Sun Empires and Shiksha International – as a gift for their employees.
HobbyLobby has two cutters who will cut the wood, five tailors who will do the stitching, and two assistants to decorate the wood and do the pasting. Each of these 9 people works for 10 hours in a day (though their working hours may not be the same). Each of the handicrafts of Sun empires requires 20 minutes for cutting the wood, 1 hour for stitching, and 15 minutes for decorating the wood and pasting, whereas each handicraft of Shiksha International requires 30 minutes, 1 hour, and 30 minutes respectively for these activities.
Following steps are followed, to complete the work:
Step I: Cutter will cut the wood.
Step II: Tailor will do the stitching.
Step III: Assistant will decorate the wood and do the pasting.

Q.62
What is the maximum total number of handicrafts HobbyLobby can complete in a day, if he has to deliver at least 15 handicrafts to both the companies every day?

1 **80**

2 **40**

3 **60**

4 **50**

FeedBack

Bookmark

Answer key/Solution

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

Twelve friends – Ankit, Bimal, Chetan, Devendra, Emly, Faizan, Ghanshyam, Harish, Ishan, Jayant, Kamal and Lalit – live in four cities among Delhi, Mumbai, Lucknow and Chennai, and at least ten friends among them like any political party among VJP, BNC, TMP and VP. Any two friends who like VJP and BNC cannot live in the same city. Ghanshyam and Ishan live in a same city and no other friend lives in that city. Only two friends among Ankit, Devendra, Harish and Lalit live in the same city i.e., Delhi. At least one friend who likes TMP live(s) in each of the four cities. The party which is liked by maximum number of friends is VJP. Each political party is liked by at least one friend. If Bimal likes any political party, then that party is liked by both Bimal and Kamal but that party can't be VJP. A friend, who lives in Mumbai, likes BNC and exactly two other friends also live in that city. Delhi is the most diversified city in terms of politics i.e., friends liking maximum possible number of parties live in this city. Bimal and Kamal live in the same city.

Q.63
Maximum number of friends that can live in Chennai is

1 **3**

2 **4**

3 **5**

4 **6**

FeedBack

Bookmark

Answer key/Solution

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

Twelve friends – Ankit, Bimal, Chetan, Devendra, Emly, Faizan, Ghanshyam, Harish, Ishan, Jayant, Kamal and Lalit – live in four cities among Delhi, Mumbai, Lucknow and Chennai, and at least ten friends among them like any political party among VJP, BNC, TMP and VP. Any two friends who like VJP and BNC cannot live in the same city. Ghanshyam and Ishan live in a same city and no other friend lives in that city. Only two friends among Ankit, Devendra, Harish and Lalit live in the same city i.e., Delhi. At least one friend who likes TMP live(s) in each of the four cities. The party which is liked by maximum number of friends is VJP. Each political party is liked by at least one friend. If Bimal likes any political party, then that party is liked by both Bimal and Kamal but that party can't be VJP. A friend, who lives in Mumbai, likes BNC and exactly two other friends also live in that city. Delhi is the most diversified city in terms of politics i.e., friends liking maximum possible number of parties live in this city. Bimal and Kamal live in the same city.

Q.64

If number of friends living in Chennai is more than that living in Delhi, then how many friend/s from Chennai support VJP?

1 **2**

2 **3**

3 **4**

4 **1**

FeedBack

Bookmark

Answer key/Solution

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

Twelve friends – Ankit, Bimal, Chetan, Devendra, Emly, Faizan, Ghanshyam, Harish, Ishan, Jayant, Kamal and Lalit – live in four cities among Delhi, Mumbai, Lucknow and Chennai, and at least ten friends among them like any political party among VJP, BNC, TMP and VP. Any two friends who like VJP and BNC cannot live in the same city. Ghanshyam and Ishan live in a same city and no other friend lives in that city. Only two friends among Ankit, Devendra, Harish and Lalit live in the same city i.e., Delhi. At least one friend who likes TMP live(s) in each of the four cities. The party which is liked by maximum number of friends is VJP. Each political party is liked by at least one friend. If Bimal likes any political party, then that party is liked by both Bimal and Kamal but that party can't be VJP. A friend, who lives in Mumbai, likes BNC and exactly two other friends also live in that city. Delhi is the most diversified city in terms of politics i.e., friends liking maximum possible number of parties live in this city. Bimal and Kamal live in the same city.

Q.65
Bimal lives in

1 Chennai

2 Lucknow

3 Mumbai

4 Delhi

FeedBack

Bookmark

Answer key/Solution

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

Twelve friends – Ankit, Bimal, Chetan, Devendra, Emly, Faizan, Ghanshyam, Harish, Ishan, Jayant, Kamal and Lalit – live in four cities among Delhi, Mumbai, Lucknow and Chennai, and at least ten friends among them like any political party among VJP, BNC, TMP and VP. Any two friends who like VJP and BNC cannot live in the same city. Ghanshyam and Ishan live in a same city and no other friend lives in that city. Only two friends among Ankit, Devendra, Harish and Lalit live in the same city i.e., Delhi. At least one friend who likes TMP live(s) in each of the four cities. The party which is liked by maximum number of friends is VJP. Each political party is liked by at least one friend. If Bimal likes any political party, then that party is liked by both Bimal and Kamal but that party can't be VJP. A friend, who lives in Mumbai, likes BNC and exactly two other friends also live in that city. Delhi is the most diversified city in terms of politics i.e., friends liking maximum possible number of parties live in this city. Bimal and Kamal live in the same city.

Q.66
Maximum number of friends that can live in Delhi is

FeedBack

Bookmark

Answer key/Solution

Sec 3

Q.67
Ravi, Rohit and Chetan scored 45%, 70% and 50% of maximum marks respectively in subject A and 55%, 85% and 70% of maximum marks respectively in subject B. Had Ravi scored 40 more marks in subject A, his score in subject A would have been equal to his score in subject B. If Chetan scored 60 marks less in subject A as compared to his marks in subject B, then what is the sum of maximum marks of both the subjects?

FeedBack

Bookmark

Answer key/Solution

Q.68

A boy in a boat went downstream for 32 km and returned immediately. While returning, it took him five times as long as he took while going downstream. If the velocity of the stream was reduced to half, then the total time taken while going upstream and downstream would be 480 minutes. Find the speed of the boat in still water and velocity of stream respectively.

1 **9 km/hr, 6 km/hr**

2 **3 km/hr, 6 km/hr**

3 **6 km/hr, 9 km/hr**

4 **6 km/hr, 3 km/hr**

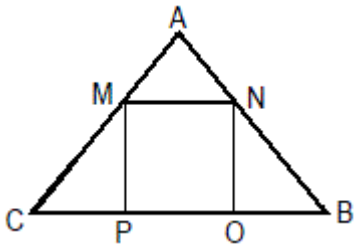
FeedBack

Bookmark

Answer key/Solution

Q.69

In the figure given below, MNOP is a square inscribed in the triangle ABC such that the base OP of the square lies on the side BC. If AB = 20 cm, BC = 25 cm and AC = 15 cm, then find the length (in cm) of the side of the square.



1 $8\frac{4}{37}$

2 $4\frac{14}{29}$

3 **5**

4 **7**

FeedBack

Bookmark

Answer key/Solution

Q.70

Find the remainder when 37! is divided by 41.

1 **7**

2 **9**

3 **11**

4 **13**

FeedBack

Bookmark

Answer key/Solution

Q.71

If $f(x) = x^2 + ax + b$, where $a, b \neq 0$, is a quadratic expression such that the positive difference between the roots of $f(x) = 0$ is three times of that of $f(x) = -2$, then which of the following is the minimum value of $f(x)$?

1 **4/3**

2 **−9/4**

3 **2**

4 **Cannot be determined**

FeedBack

Bookmark

Answer key/Solution

Q.72

Deepa takes 10 more days than Aman to complete a work. Deepa and Aman start this work together and Aman leaves the work 10 days before the work is completed. Aman completes 40% of the overall work. How long would Deepa have taken to complete the work if she had worked alone?

FeedBack

Bookmark

Answer key/Solution

Q.73

An experiment was conducted with a certain population consisted of 'x' living organisms in the starting of a month. At the end of each month, the population size increased by twice of its size which was at the beginning of that month. If the total population at the end of five months is greater than 1000, then what is the minimum possible value of x?

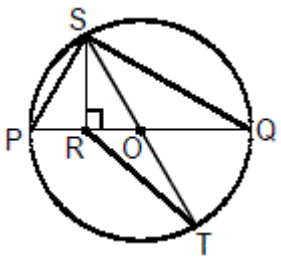
FeedBack

Bookmark

Answer key/Solution

Q.74

Let PQ be a diameter of a circle, having centre at O, and R be a point on PQ with 3PR = QR. Let S and T be points on the circle such that SR is perpendicular to PQ and ST passes through the centre O. What is the ratio of the area of triangle SRT to the area of triangle PQS?



1 **1 : 3**

2 **1 : 4**

3 **1 : 2**

4 **1 : 6**

FeedBack

Bookmark

Answer key/Solution

Q.75

If under compound interest, a certain sum becomes eight times itself in 27 years, after how many more years will it become 16 times itself?

1 **3**

2 **4**

3 **6**

4 **9**

FeedBack

Bookmark

Answer key/Solution

Q.76

If $f(x)=\sqrt{(x+2)(x-3)(x-7)(x-11)}$ is a real valued function, then how many integers are not in the domain of f(x)?

×

FeedBack

Bookmark

Answer key/Solution

Q.77

One liter of p% milk is mixed with 4 liters of q% milk to give 70% milk. If p > q, then how many integral values can p take?

1 **6**

2 **7**

3 **8**

4 **9**

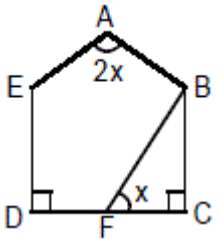
FeedBack

Bookmark

Answer key/Solution

Q.78

In a pentagon ABCDE as shown below, F is the mid point of CD and 2∠BFC = ∠EAB. If BC = DE = 12 cm, CD = 10 cm and AB = AE, then find the approximate area (to the nearest integer, in sq. cm) of pentagon ABCDE.



FeedBack

Bookmark

Answer key/Solution

Q.79

If p, q, r and s are real numbers greater than zero but not equal to 1 such that $p = q^2 = r^3 = s^4$, then which of the following expressions is/are true?

(i) $\log_p qrs + \log_q rsp + \log_r spq + \log_s pqr > \frac{50}{3}$

(ii) $\frac{\log_{pq} rs}{\log_{rs} pq} = \frac{9}{4}$

1 **Only (i)**

2 **Only (ii)**

3 **Both (i) and (ii)**

4 **Neither (i) nor (ii)**

FeedBack

Bookmark

Answer key/Solution

Q.80

A wholesale vendor mixes sesame oil with mustard oil and sells the mixture at 20% profit. If he had mixed 2 litres more of sesame oil, his profit would have been doubled to 40%. Find the respective possible quantities (in litres) in which mustard oil and sesame oil could be mixed initially, if sesame oil is available to him at free of cost and in abundant quantity.

1 **5, 2**

2 **10, 2**

3 **20, 4**

4 **30, 6**

FeedBack

Bookmark

Answer key/Solution

Q.81

Ram and Sita started travelling towards Janakpur and Ayodhya from Ayodhya and Janakpur respectively, at the same time. They meet at Begusarai and after that they started to travel at 3/4th of their usual speed and hence reach at their respective destinations after 16 minutes and 9 minutes respectively. If Ram's usual speed is 12 km/hr, then find the usual speed (in km/hr) of Sita?

FeedBack

Bookmark

Answer key/Solution

Q.82

How many odd numbers exist between 2000 and 8000 such that all the four digits of that number are distinct?

1 **1000**

2 **1236**

3 **1339**

4 **1512**

FeedBack

Bookmark

Answer key/Solution

Q.83

If A_P is the sum of the first p terms of the series A = $12^{144} + 12^{143} + 12^{142} + \ldots$, then find B_P which is defined as the sum of the first p terms of the series $A_1 + A_2 + A_3 + \ldots$

1 $\frac{12^{145}}{196}\left[\left(\frac{1}{12}\right)^{p}+14p+1\right]$

2 $\frac{12^{148}}{169}\left[\left(\frac{1}{12}\right)^{p}+14p+1\right]$

3 $\frac{12^{145}}{121}\left[\left(\frac{1}{12}\right)^{p}+11p-1\right]$

4 $12^{145}\left[\left(\frac{1}{12}\right)^{p}+14p+1\right]$

FeedBack

Bookmark

Answer key/Solution

Q.84

Each of the two government employees, A and B, received pension for his service after the retirement. A served there for eight years more than B and received Rs.36,000as his monthly pension. The pension amount, for any employee, is directly proportional to the square root of the duration (in years) of his service. Had A served for $13\frac{1}{3}$ years more than B, their pension amounts would have been in the ratio 11 : 9. For how long (in years) did A serve as a government employee?

FeedBack

Bookmark

Answer key/Solution

Q.85

Twenty one circular rings having radius 2 cm each are packed without overlapping in an equilateral triangular wooden plank of minimum possible perimeter. Find the perimeter of the plank.

1 **$(6\sqrt{3}+30)$cm**

2 **$(6\sqrt{3}+60)$cm**

3 **$(3\sqrt{3}+60)$cm**

4 **$(12\sqrt{3}+60)$cm**

FeedBack

Bookmark

Answer key/Solution

Q.86

If P is a perfect square of a natural number, such that exactly 11 factors of P are less than $\sqrt{P}$, then find the number of factors of P^2.

1 **23**

2 **45**

3 **89**

4 **100**

FeedBack

Bookmark

Answer key/Solution

Q.87

Interest at the end of three years was Rs. 18,252 more than that at the end of the second year on a sum of money borrowed at compound interest. If Rs. 24,840 was the interest at the end of the second year, then the amount borrowed was equal to

1 **Rs. 30,000**

2 **Rs. 32,000**

3 **Rs. 36,000**

4 **Rs. 40,000**

FeedBack

Bookmark

Answer key/Solution

Q.88

A can complete a work in x days and B can complete the same work in kx days, where k is a positive integer. If the number of days taken by A and B together to complete the work is an integer less than 5, then how many possible values of (k, x) exist?

FeedBack

Bookmark

Answer key/Solution

Q.89

Find the value of $(22)_3 + (22)_4 + (22)_5 + \ldots + (22)_n$ in decimal system.

1 $3n^2 - 2n - 1$

2 $2n^4 - 3n - 1$

3 $n^3 - 3n^2 + 3n + 2$

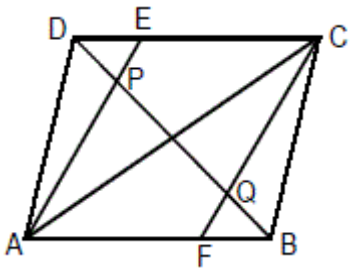
4 $n^2 + 3n - 10$

FeedBack

Bookmark

Answer key/Solution

Q.90



In the figure shown above, ABCD is a parallelogram, where DE : EC = BF : FA = 2 : 5. If BD = 18 cm, then find the length (in cm) of PQ?

FeedBack

Bookmark

Answer key/Solution

Q.91

Given that, $-3 < x \leq 1/2$ and $-1/2 < y \leq 7$. Which of the following statements is/are true?

1 $\max\{(x + y)(x - y)\} - \min\{(x + y)(x - y)\} = 57\frac{1}{2}$

2 max{$(x + y)^2$} = 169/4

3 min{$(x - y)^2$} = 1

4 None of the above

FeedBack

Bookmark

Answer key/Solution

Q.92

Find the least value of $\frac{48}{|8-|11-x||}$.

1 6

2 12

3 24

4 None of these

FeedBack

Bookmark

Answer key/Solution

Q.93

In a fruit market, the price of apples of variety B is one-third of that of variety A. A fruit seller had bought 15 kg of variety A apples and 30 kg of variety B apples from the market and then sold both the varieties at a fixed price which is 80% more than the price at which he bought the apples of variety B. Find his overall profit percentage in selling all these apples.

FeedBack

Bookmark

Answer key/Solution

Q.94

If t is a real number such that on dividing $81^{(t+1)}$ by $27^{(t-1)}$ gives $243^{(t-1)}$, then find t.

1 2

2 **3**

3 **1/2**

4 **1/3**

FeedBack

Bookmark

Answer key/Solution

Q.95

Two runners - A and B - starting simultaneously from the same point on a circular track, will meet each other for the first time after 24 seconds, if travelled in the same direction and after 8 seconds if travelled in the opposite directions. The speed of the faster runner is what times the speed of the slower runner?

1 **2/3**

2 **3/2**

3 **5/2**

4 **2**

FeedBack

Bookmark

Answer key/Solution

Q.96

In how many ways can four friends - Bheem, Chutki, Raju and Jaggu - share 50 laddoos among themselves such that each of them gets an odd number of laddoos?

1 **2000**

2 **2400**

3 **2600**

4 **3000**

FeedBack

Bookmark

Answer key/Solution

Q.97

If $\log_b a = \frac{1}{5}$ and $\log_c b^{1/5} = \frac{1}{6}$, then how many integral value(s) of (b + c) less than 1000 are possible?

FeedBack

Bookmark

Answer key/Solution

Q.98

Three pipes X, Y and Z can fill a cistern in 20, 30 and 40 hours respectively. Pipe 'X' is kept open for the whole time while pipe Y and Z are open for two hours each alternatively starting with pipe 'Y'. Find the total time taken to fill the cistern.

1 **9 hours**

2 **10 hours 36 minutes**

3 **11 hours 24 minutes**

4 **12 hours 36 minutes**

FeedBack

Bookmark

Answer key/Solution

Q.99

Sixteen squares of dimension 1 × 1 are chosen at random on a chessboard, having 64 squares of dimension 1 × 1. What is the probability that a square of 4 × 4 is formed?

1 $\frac{{}^8C_5 \times {}^8C_5}{{}^{64}C_{16}}$

2 $\frac{{}^8C_4 \times {}^8C_4}{{}^{64}C_{16}}$

3 $\frac{16}{{}^{64}C_{16}}$

4 $\frac{25}{{}^{64}C_{16}}$

FeedBack

Bookmark

Answer key/Solution

Q.100

Find the number of integral solutions for the inequality: $(|x - 1| - 4)(|x + 2| - 5) < 0$.

FeedBack

Bookmark

Answer key/Solution