

Solutions of Mock CAT – 1 2017

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Sec 1

Directions for questions 1 to 6: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

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Q.1

The main purpose of this passage is to

- 1 ☐ attempt to resolve the question of whether secular people can appreciate sacred art.
- 2 ☐ go deep into sacred art to understand its secular roots.
- 3 ☐ attempt a vivisection of Angelico's life to divide it into the secular and the sacred.
- 4 ☐ chronicle Angelico's life to understand the motivating factors for his art.

Solution:

Correct Answer : 1

Paragraph 1 introduces *The Last Judgment* and its beauty. Paragraph 2 raises the main issue of the passage - can sacred art be truly appreciated by people who do not believe. The paragraphs further provide a context to this discussion by showcasing the life and art of Angelico. This makes Option 1 correct. Options 2 and 3 are incorrect because the passage does not go into secular roots of art, or divide things into secular and sacred. Option 4 is incorrect because the passage does not cover motivating factors.

FeedBack

Bookmark

Answer key/Solution

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Q.2

The reasons for the Dominicans to hire Angelico are that

- ☐ 1 he was an observant friar and a brilliant painter.
- ☐ 2 he was a brilliant painter and his next commission would come from the Pope.
- ☐ 3 his next commission would come from the Pope.
- ☐ 4 he was an observant friar and a brilliant painter and his next commission would come from the Pope.

Solution:

Correct Answer : 1

The second last paragraph says "He was an obvious choice, being both an observant friar and a brilliant painter." This makes Option 1 correct. However, it continues "And he was well known by then: his next commission would come from the Pope." From this, we cannot conclude that the commission was to be given to him – we only know that he went on to get a commission from the Pope. Hence, Options 2, 3 and 4 are incorrect.

FeedBack

Bookmark

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Q.3

It is stated in the passage that

1 ☐ the Pope's commission was the cause of Angelico getting the commission to decorate the San Marco monastery.

2 ☐ the Dominican Order was a subset of the Dominican Observance.

3 ☐ Anna Brangwen wept with happiness on seeing a copy of the *The Crucifixion with Saints*.

4 ☐ Anna Brangwen wept with happiness on seeing a copy of 'Entry of the Blessed into Paradise'.

Solution:

Correct Answer : 4

Option 4 is found in the first paragraph, "*Overwhelmed, she weeps 'with happiness'.*" referring to Anna Brangwen. Option 3 is incorrect because it refers to the *The Crucifixion of Saints*, which is not mentioned in connection with Anna. The second last paragraph says "*He was an obvious choice, being both an observant friar and a brilliant painter.*" This makes Option 1 incorrect. Option 2 inverts the relationship – it is the other way around.

Feedback

Bookmark

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Q.4

The author of this passage is most likely to be

- 1 ☐ a Benedictine Monk who wishes to learn more about art.
- 2 ☐ an arts major with a specialisation in religious art.
- 3 ☐ an atheist who appreciates the beauty of art.
- 4 ☐ a philosopher wondering about the benefits of art.

Solution:

Correct Answer : 3

The author states in paragraph 2 "What does it mean to be moved by the beauty of a vision *you can't believe to be true*?" In paragraph 3, he talks about the secular experience of sacred art. This implies that the author does not believe in the religious concepts referred to in the passage. This makes Option 3 correct.

[Feedback](#)
[Bookmark](#)
[Answer key/Solution](#)

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Q.5

The person in a situation most similar to the author who says "What does it mean to be moved by the beauty of a vision you can't believe to be true?" is

- 1 ☐ a cancer patient who does not believe that medicine will cure him but still takes it.
- 2 ☐ a Caucasian moved by the beauty of a ritual that attempts to invoke rain, but who does not believe in it.
- 3 ☐ an Indian who participates in a ritual that attempts to invoke rain, but does not believe in it.
- 4 ☐ a nurse who does not think that a medicine will benefit a patient, but gives it anyway.

Solution:

Correct Answer : 2

[Bookmark](#)

The author is moved by the beauty of the vision in *The Last Judgment* – angels and demons, the celestial host, etc – but these are things that, as a secular person, he does not believe in. This situation is most similar to Option 2 – where the person is moved by the beauty, but does not believe in the ritual. Options 1, 3 and 4 are incorrect since they lack the element of religious faith which is present in both Option 2, and the main passage.

[Answer key/Solution](#)
[FeedBack](#)

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Q.6

Questions mentioned in the passage resonate more than usual in the Museum of San Marco because

- ☐ the Museum was home to friars for whom a painting such as this would have had the status of revealed truth.
- ☐ that is where the *The Last Judgment* hangs and it is far more than a work of art.
- ☐ the questions resonate with the emotions and feelings of Anna Brangwen.
- ☐ the Museum was home to friars who strictly followed the rules of the Dominican Observance.

Solution:

Correct Answer : 1

The questions are mentioned at the end of paragraph 2. The beginning of paragraph 3 gives us the answer, "*The museum was once a convent, home to generations of friars for whom a painting such as this would have had the status of revealed truth.*" This focuses on the contradiction in beliefs between the author and the friars. This makes option 1 correct. Options 2 and 4 may be correct in general, but do not address the questions asked. Option 3 is not supported by the passage.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)

Directions for questions 7 to 12: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

Old English had the crazy genders we would expect of a good European language – but the Scandies didn't bother with those, and so now we have none. Chalk up one of English's weirdnesses. What's more, the Vikings mastered only that one shred of a once-lovely conjugation system: hence the lonely third person singular –s, hanging on like a dead bug on a windshield.

They also followed the lead of the Celts, rendering the language in whatever way seemed most natural to them. It is amply documented that they left English with thousands of new words, including ones that seem very intimately 'us'. Sometimes they seemed to want to stake the language with 'We're here

too' signs, matching our native words with the equivalent ones from Norse, leaving doublets such as *dike* (them) and *ditch* (us), *scatter* (them) and *shatter* (us), and *ship* (us) vs *skipper* (Norse for *ship* was *skip*, and so *skipper* is 'shipper').

They also left their mark on English grammar. Blissfully, it is becoming rare to be taught that it is wrong to say *Which town do you come from?*, ending with the preposition. In English, sentences with 'dangling prepositions' are perfectly natural and clear and harm no one. Yet there is a wet-fish issue with them, too: normal languages don't dangle prepositions in this way. Every now and then a language turns out to allow this: one indigenous one in Mexico, another one in Liberia. But that's it. Overall, it's an oddity.

We can display all these bizarre Norse influences in a single sentence. Say *That's the man you walk in with*, and it's odd because 1) *the* has no specifically masculine form to match *man*, 2) there's no ending on *walk*, and 3) you don't say 'in with whom you walk'. All that strangeness is because of what Scandinavian Vikings did to good old English back in the day.

Finally, as if all this wasn't enough, English got hit by a firehose spray of words from yet more languages. After the Norse came the French. The Normans – descended from the same Vikings, as it happens – conquered England, ruled for several centuries and, before long, English had picked up 10,000 new words. Then, starting in the 16th century, educated Anglophones developed a sense of English as a vehicle of sophisticated writing, and so it became fashionable to cherry-pick words from Latin to lend the language a more elevated tone.

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Q.7

With respect to the influx of words from Norse and the influx of words from French and Latin, the statement that is least likely to be true is

1 ☐ the former happened earlier than the latter, and the latter happened later than the former.

2 ☐ the former resulted in doublets, and the latter resulted in doublets and triplets.

3 ☐ the former resulted in a simplification of grammar, while the latter reversed that.

4 ☐ the former was an influx into Old English, while the latter was an influx into English.

x

Solution:

Correct Answer : 3

Your Answer : 1

Paragraph 1 tells us that the Scandies simplified grammar, but there is no information to suggest that the second influx complicated it. This makes Option 3 not likely to be true - and hence, the correct option. Option 1 is true from paragraph 5, "After the Norse came the French." and "Then, starting in the 16th century,cherry-pick words from Latin....." Option 2 is true from paragraph 2 - which mentions Norse doublets, and the last two paras, which mention doublets and triplets for the second influx. Option 4 is true because paragraph 1 mentions the first influx in connection with Old English, while paragraph 5 mentions the second influx in connection with English.

Feedback

Bookmark

Answer key/Solution

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They also followed the lead of the Celts, rendering the language in whatever way seemed most natural to them. It is amply documented that they left English with thousands of new words, including ones that seem very intimately 'us'. Sometimes they seemed to want to stake the language with 'We're here too' signs, matching our native words with the equivalent ones from Norse, leaving doublets such as *dike* (them) and *ditch* (us), *scatter* (them) and *shatter* (us), and *ship* (us) vs *skipper* (Norse for *ship* was *skip*, and so *skipper* is 'shipper').

They also left their mark on English grammar. Blissfully, it is becoming rare to be taught that it is wrong to say *Which town do you come from?*, ending with the preposition. In English, sentences with 'dangling prepositions' are perfectly natural and clear and harm no one. Yet there is a wet-fish issue with them, too: normal languages don't dangle prepositions in this way. Every now and then a language turns out to allow this: one indigenous one in Mexico, another one in Liberia. But that's it. Overall, it's an oddity.

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Q.8

The reason for English not to have crazy genders is

- 1 ☐ the Scandies did not bother with genders, and their impact on the language caused that.
- 2 ☐ the French and the Normans added a firehose spray of words that removed the genders.
- 3 ☐ the Scandies followed the lead of the Celts, rendering the language in whatever way seemed most natural to them.
- 4 ☐ the lofty Latinates did not use crazy genders and this was the main reason.



Solution:

Correct Answer : 1

Your Answer : 1

This is answered in the first paragraph, " Old English had the crazy genders we would expect of a good European language – but the Scandies didn't bother with those, and so now we have none." Options 2 and 3 are found in the passage, but are not related to the question. Option 4 does not have support in the passage.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)

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Q.9

The passage uses an example with corresponding words in multiple languages in which of the following ways?

1 ☐ An English / French / Latin triplet to show these as better languages than English.

2 ☐ An English / French / Latin triplet to show the impact of culinary transformations.

3 ☐ A Viking / Celt doublet to show the impact of conjugation.

4 ☐ An English / French doublet to show how class distinction can have an impact.



Solution:

Correct Answer : 4

Your Answer : 2

The last paragraph says, " Especially noteworthy here are the culinary transformations: we kill a *cow* or a *pig* (English) to yield *beef* or *pork* (French).English-speaking labourers did the slaughtering for moneyed French speakers at table....., and those class distinctions have carried down to us in discreet form today." This makes Option 4 correct. Options 1 and 2 are incorrect since the passage mentions the triplets (in the penultimate paragraph) in the context of expressing varying degrees of formality. There is no Viking / Celt doublet mentioned in the passage, making Option 3 incorrect.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)

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Q.10

The effect of having thousands of new words competing for native English words for the same things is that

- 1 ☐ it helps in simplifying grammar by allowing use of appropriate words.
- 2 ☐ the ideas can be expressed with varying degrees of formality.
- 3 ☐ they are less dramatic, but fun nevertheless.
- 4 ☐ they stake the language with 'We're here, too' signs, matching native words with equivalent ones.



Solution:

Correct Answer : 2

Your Answer : 2

This is found in the penultimate paragraph, "The die was cast: English had thousands of new words.....express ideas with varying degrees of formality." Option 2 states the same thing - varying degrees of casualness - making it correct. Option 1 is not mentioned in the passage.

Options 3 and 4 are mentioned in the passage in different contexts - 3 is mentioned in the context of doublets, while 4 is mentioned in the context of Norse words.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)

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Q.11

Of all the influences on the English and the Old English language, it is correct to say that

- 1 ☐ the Vikings were similar in their influence to the Celts, in that they rendered the language in a way that seemed most natural to them.
- 2 ☐ the Norse influenced the language after the French had influenced it, but before Latin had influenced it.
- 3 ☐ apart from English, French and Latin triplets, we also have Norse, Celt and English triplets.
- 4 ☐ ending a sentence with a preposition is incorrect in today's English due to the influence of various factors.



Solution:

Correct Answer : 1

Your Answer : 1

Answer option 1 is correct from paragraph 2, "They also followed the lead of the Celts, rendering the language in whatever way seemed most natural to them." Option 2 inverts the time relationship between the Norse and the French Option 3 has no support in the passage for Norse, Celt and English triplets.

Option 4 states the opposite of what the passage suggests.

Bookmark

Answer key/Solution

FeedBack

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Q.12

The second sentence of the sixth paragraph uses

- 1 ☐ sufficiency as a standard for the English language.
- 2 ☐ self reference as a way to introduce levity.
- 3 ☐ formality as a means of driving home the point.
- 4 ☐ ideas in ascending order to impress the reader.



Solution:

Correct Answer : 2

Your Answer : 2

"These words feel sufficiently English to us today, but when they were new, many persons of letters in the 1500s (and beyond) considered them *irritatingly pretentious and intrusive*, as indeed they would have found the phrase '*irritatingly pretentious and intrusive*.'" The sentence uses a reference to its own language to create humour. Hence, Option 2 is correct.

Bookmark

Answer key/Solution

[FeedBack](#)

Directions for questions 13 to 18: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

This morning a tiny fly was, true to its name and nature, flying about in the vicinity of my desk. It really was very tiny – a fruit fly, I'd guess. At one point it landed in front of me. I brushed it aside and it resumed flitting about in its patternless path. Then it landed again, and again I aimed to brush it aside. But this time, my aim was off. It was probably a matter of only a millimetre or so, but my finger landed, not next to the fly, but on it, and so what was meant to be a brushing motion became something else instead.

The fly was so small that it didn't offer the least resistance to the pressure of my finger. Compliantly, it transformed itself into a dark smudge. Not a gory or bloody smudge; not one with the least detail or variation – not to my naked eye, anyway. Just a small, uniform, rather faint mark.

Now, I'm not a biologist, but I know that a fly is an animal, and more specifically, an insect. As such, it has (or had) wings, legs, eyes, antenna and a host of internal organs. Those parts are in turn made of cells, each one of which is hugely complex. And in those cells, among many other things, are – or were – the fly's genes, which in turn embody an astonishing intricacy and an ancient, multi-million-year history, while in the fly's gut would have been countless bacteria with their own genes, their own goals. Worlds within worlds, now squigged together into a single dark smudge that I am already finding hard to pinpoint among the scratches and coffee rings. A history of life spread out before me, if only I were able to read it.

At this point, I guess that readers will be dividing into two parties. One party, probably the majority, will be thinking, 'Get over it, it's a fly.' This, it seems to me, is a very reasonable position. Flies die in large numbers all the time – some, indeed, at my hand, whether I intend it or not (and I sometimes do). And in the summer evenings, when I sit on our terrace and watch swifts in their spectacle of swooping and screeching, this beautiful display is, of course, at the same time an orgy of insect death.

The other party of readers, probably the minority, will be horrified at my casual killing of this delicate life-form. They will be appalled at the waste and stupidity of my carelessness. To them, I must be an oaf; at best ignorant, at worst malevolent. And this, it seems to me, is also a very reasonable position. Even though I habitually write – sometimes about complex subjects – it is certain that with one mistimed finger-swipe I destroyed complexity and beauty many orders of magnitude greater than any I will ever create.

Thus, it seems to me quite reasonable to think that the death of the fly is entirely insignificant and that it is at the same time a kind of catastrophe. To entertain such contradictions is always uncomfortable, but in this case the dissonance echoes far and wide, bouncing off countless other decisions about what to buy, what to eat – what to kill; highlighting the inconsistencies in our philosophies, our attempts to make sense of our place in the world and our relations to our co-inhabitants on Earth. The reality is that we do not know what to think about death: not that of a fly, or of a dog or a pig, or of ourselves.

Which is a problem, because nature is a non-stop party of death. For example, I regularly take my children to a large park with a series of ponds, where in spring we look for frogspawn. Each batch contains many hundreds, even thousands of eggs. The next time we visit, the pond will be full of tadpoles. But the time after that, there will be many fewer. Those we find are the few survivors, whose numbers will be thinned still more before any get as far as restarting the cycle with their own spawn.

Q.13

The main reason for the author of the passage to introduce the example of the fly is to

- 1 ☐ talk about why even a fly is an important insect, with a multi-million year history.
- 2 ☐ introduce and discuss the concept of death in general, starting with that of a fly.
- 3 ☐ show how even the killing of a fly divides readers into two equal groups.
- 4 ☐ illustrate and compare the killing of flies with that of frogspawn and tadpoles.



Solution:

Correct Answer : 2

Your Answer : 3

This is a disguised main idea question. The example of the fly takes up a large chunk of the passage. The author talks about the fly, its death, its importance, and then talks further about death. The entire passage is about the significance of death. This makes option 2 correct.

Option 1 is discussed by the author, but is not the point of introducing the example.

Option 3 is incorrect, since the two groups in the passage are not equal.

Option 4 is incorrect, since the author does not undertake such a comparison in the passage.

Bookmark

Answer key/Solution

[FeedBack](#)

Directions for questions 13 to 18: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

This morning a tiny fly was, true to its name and nature, flying about in the vicinity of my desk. It really was very tiny – a fruit fly, I'd guess. At one point it landed in front of me. I brushed it aside and it resumed flitting about in its patternless path. Then it landed again, and again I aimed to brush it aside. But this time, my aim was off. It was probably a matter of only a millimetre or so, but my finger landed, not next to the fly, but on it, and so what was meant to be a brushing motion became something else instead.

The fly was so small that it didn't offer the least resistance to the pressure of my finger. Compliantly, it transformed itself into a dark smudge. Not a gory or bloody smudge; not one with the least detail or variation – not to my naked eye, anyway. Just a small, uniform, rather faint mark.

Now, I'm not a biologist, but I know that a fly is an animal, and more specifically, an insect. As such, it has (or had) wings, legs, eyes, antenna and a host of internal organs. Those parts are in turn made of cells, each one of which is hugely complex. And in those cells, among many other things, are – or were – the fly's genes, which in turn embody an astonishing intricacy and an ancient, multi-million-year history, while in the fly's gut would have been countless bacteria with their own genes, their own goals. Worlds within worlds, now squigged together into a single dark smudge that I am already finding hard to pinpoint among the scratches and coffee rings. A history of life spread out before me, if only I were able to read it.

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Q.14

The complexity and beauty mentioned in the passage refers to

- 1 ☐ the beauty of the complex subjects that the author sometimes writes about which are mentioned in the passage.
- 2 ☐ the beautiful display of the swooping and screeching of swifts which is also an orgy of insect death.
- 3 ☐ worlds within worlds inside the fly which contain organs, cells, genes and bacteria.
- 4 ☐ the conversion of the fly into a dark smudge without the least resistance from the fly.



Solution:

Correct Answer : 3

Your Answer : 3

Complexity and beauty are mentioned as being destroyed in the passage at the end of paragraph 5. The reference is to the fly – whose description is found in paragraph 3, and repeated in option 3, which is the correct option.

The other options are present in the passage, but not mentioned in this context, making them incorrect.

Feedback

Bookmark

Answer key/Solution

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bacteria with their own genes, their own goals. Worlds within worlds, now squigged together into a single dark smudge that I am already finding hard to pinpoint among the scratches and coffee rings. A history of life spread out before me, if only I were able to read it.

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Q.15

According to the author of the passage, our not knowing what to think about death

1 ☐ is a good thing, because the death of a fly is entirely insignificant.

2 ☐ is a bad thing, because death is catastrophic, even that of a fly.

3 ☐ is an issue because of the non-stop occurrence of death in nature.

4 ☐ is not a bad thing because a party of death is never bad.



Solution:

Correct Answer : 3

Your Answer : 3

From the last two paragraphs, "The reality is that we *do not know what to think about death*: not that of a fly, or of a dog or a pig, or of ourselves. *Which is a problem, because nature is a non-stop party of death.*" This makes option 3 correct.

Options 1 and 2 are mentioned by the author in the context of his thought process to the importance of the death of the fly – which is different from what is asked in the question.

Option 4 does not have support in the passage.

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Q.16

On reading the passage about the two parties of readers mentioned in the passage, it becomes clear that

- 1 ☐ one is quite likely to be reasonable, while the other is quite possibly not.
- 2 ☐ one is likely to have majority, while the other doesn't.
- 3 ☐ one is quite possibly correct in its thinking and approach, while the other is not.
- 4 ☐ one is favoured by the author due to its thinking, while the other is not.

✕

Solution:

Correct Answer : 2

Your Answer : 4

From paragraphs four and five, "One party, *probably the majority*, will be thinking, 'Get over it, it's a fly.'" and "The other party of readers, *probably the minority*, will be horrified at my casual killing of this delicate life-form." This makes option 2 correct.

The other options are incorrect, since he specifically says that he finds both the points of view to be reasonable.

FeedBack

Bookmark

Answer key/Solution

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Q.17

From a reading of the passage, it becomes clear that the author is not someone who

- 1 ☐ is averse to dividing readers into two parties.
- 2 ☐ habitually writes, sometimes about complex subjects.
- 3 ☐ visits a large park with a series of ponds.
- 4 ☐ thinks in great detail about topics others might pass up.



Solution:

Correct Answer : 1

Your Answer : 1

The author has divided readers into two parties in paragraphs four and five. This makes option 1 correct.

Options 2 and 3 are mentioned in the fifth and the last paragraph respectively. 1 reading of the passage makes it clear that the passage is about death, a topic that others might pass up – making option 4 incorrect.

FeedBack

Bookmark

Answer key/Solution

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Q.18

The author of the passage does not hold the opinion that the death of a fly

- 1 ☐ is a contradiction that is both insignificant and a catastrophe.
- 2 ☐ is insignificant since flies die in large numbers.
- 3 ☐ is a part of the nature's non-stop party of death.
- 4 ☐ always leads us to think of the meaning of death.



Solution:

Correct Answer : 4

Your Answer : 4

The second last paragraph says, "Thus, it seems to me quite reasonable to think that the death of the fly is entirely insignificant

Bookmark

Answer key/Solution

and that it is at the same time a kind of catastrophe." making options 1 and 2 incorrect.

The last paragraph says "nature is a non-stop party of death." making option 3 incorrect.

Option 4 does not have support in the passage, especially due to the use of the word "always". This makes option 4 correct.

FeedBack

Directions for questions 19 to 21: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

He arrived at the party wearing a blazer over a black T-shirt. He sported one of those fancy, new-age haircuts and wore jeans that revealed nearly half his legs. I instantly knew what I was looking at, a campus archetype more than an individual: The ripped-jeans revolutionary. His name was Sam, and as I soon discovered, Sam was a Communist — a Maoist, he quickly added, presumably worried that I might mistake him for one of those sellout Trotskyists. I knew how to proceed. Let him talk and keep a running mental tab of his most hilarious quotes. "You can't deny the industrial achievements of the USSR," he remarked. Or better, name-dropping three philosophers in one sentence: "Zizek, though he understood Hegel much better than he understood Lacan, makes a good point." There was the curious: "Doesn't Judaism make so much more sense without God?" And my personal favorite: "Do you really think our wage-slavery is any better?" Ah yes, I had forgotten: Who are we to judge the Soviet gulag system?

Luke is a Clintonite, shot all the way through. But unlike the ripped-jeans revolutionary, the bloodless Clintonite's flaws do not usually emerge unless they are drawn out. For his Achilles' heel is that he has no vision — unless you consider center-left, incrementalist technocracy a vision. Luke opposes the \$15 minimum wage, finding Hillary's suggestion of \$12.50 to be "a more reasonable compromise." He wants "commonsense regulation of Wall Street" but thinks that Bernie Sanders's antagonism is "unhelpful to the cause." He called his congressman to register his opposition to Betsy DeVos but has no suggestions of his own for improving education other than "we need to invest more in our children." The campus Clintonite is hyper-politically active but has no idea what he wants from politics. The Clintonite has no vision because he cannot escape the present. This is what Irving Kristol was getting at when he asked, "Who, for example, reads Harold Laski today?" Because the present is always becoming more beneficent than the past, the non-revolutionary Left inevitably finds past thinkers — even its own progressive champions such as Laski — inadequate, retrograde, or boring. It finds nothing of value when it looks back into the past and soon stops looking at all. These two campus leftists are worth examining for the factions they represent. The edgy, ripped-jeans revolutionary might go on to comfortably rage against the machine in the pages of Jacobin, or perhaps he'll give in to his parents and attend law school. The intellectually impoverished Clintonite is destined to work on Capitol Hill and continue striving. Should he gain the power he so desperately seeks, he will not have the faintest idea what to do with it.

Q.19

It can be inferred that a cause for the author to find the quotes by the Maoist hilarious is that

- 1 ☐ the author most likely subscribes to a different political philosophy - possibly being a Trotskyist himself - and hence enjoys logical flaws in his statements.
- 2 ☐ the author most likely subscribes to a different political philosophy and hence enjoys flaws in the Maoist's statements.
- 3 ☐ the author compares the Maoist to the Bloodless Clintonite, and finds that the Clintonite is incapable of humour.
- 4 ☐ the author finds the fact that the Maoist's flaws do not need to be drawn out to emerge (in contrast to the Clintonite's) hilarious.

Solution:

Correct Answer : 2

A thorough reading of the passage shows that the author does not agree with the political views of the two persons he meets — the comments he makes regarding the Soviet gulag system, his negative views on the future of the people he has met. This makes option 2 correct.

There is nothing in the passage to suggest that the author is a Trotskyist — rather the passage suggests the opposite — that the author has capitalist views. This makes option 1 incorrect.

Option 3 has no support in the passage.

Option 4 points out a difference between Luke and Sam, but this is not the reason for the author finding the quotes hilarious.

FeedBack

Bookmark

Answer key/Solution

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Q.20

It is true that

- 1 ☐ the Clintonite is working on reducing his intellectual impoverishment.
- 2 ☐ Sam can name-drop three or more philosophers in a sentence.
- 3 ☐ Luke has vision because he can think beyond the present.
- 4 ☐ the Maoist has two futures envisaged for him by the author of the passage.

Solution:

Correct Answer : 4

"The edgy, ripped-jeans revolutionary might go on to comfortably rage against the machine in the pages of Jacobin, or perhaps he'll give in to his parents and attend law school." makes Option 4 true.

Option 1 has no support in the passage.

Option 2 has a problem because of the "more".

Option 3 states the opposite of the passage.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)

Directions for questions 19 to 21: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

He arrived at the party wearing a blazer over a black T-shirt. He sported one of those fancy, new-age haircuts and wore jeans that revealed nearly half his legs. I instantly knew what I was looking at, a campus archetype more than an individual: The ripped-jeans revolutionary. His name was Sam, and as I soon discovered, Sam was a Communist — a Maoist, he quickly added, presumably worried that I might mistake him for one of those sellout Trotskyists. I knew how to proceed. Let him talk and keep a running mental tab of his most hilarious quotes. "You can't deny the industrial achievements of the USSR," he remarked. Or better, name-dropping three philosophers in one sentence: "Zizek, though he understood Hegel much better than he understood Lacan, makes a good point." There was the curious: "Doesn't Judaism make so much more sense without God?" And my personal favorite: "Do you really think our wage-slavery is any better?" Ah yes, I had forgotten: Who are we to judge the Soviet gulag system?

Luke is a Clintonite, shot all the way through. But unlike the ripped-jeans revolutionary, the bloodless Clintonite's flaws do not usually emerge unless they are drawn out. For his Achilles' heel is that he has no vision — unless you consider center-left, incrementalist technocracy a vision. Luke opposes the \$15 minimum wage, finding Hillary's suggestion of \$12.50 to be "a more reasonable compromise." He wants "commonsense regulation of Wall Street" but thinks that Bernie Sanders's antagonism is "unhelpful to the cause." He called his congressman to register his opposition to Betsy DeVos but has no suggestions of his own for improving education other than "we need to invest more in our children." The campus Clintonite is hyper-politically active but has no idea what he wants from politics. The Clintonite has no vision because he cannot escape the present. This is what Irving Kristol was getting at when he asked, "Who, for example, reads Harold Laski today?" Because the present is always becoming more beneficent than the past, the non-revolutionary Left inevitably finds past thinkers — even its own progressive champions such as Laski — inadequate, retrograde, or boring. It finds nothing of value when it looks back into the past and soon stops looking at all. These two campus leftists are worth examining for the factions they represent. The edgy, ripped-jeans revolutionary might go on to comfortably rage against the machine in the pages of Jacobin, or perhaps he'll give in to his parents and attend law school. The intellectual impoverished Clintonite is destined to work on Capitol Hill and continue striving. Should he gain the power he so desperately seeks, he will not have the faintest idea what to do with it.

Q.21

A difference between the Maoist and the bloodless Clintonite is

- 1 ☐ one of them is bloodless, while the other has blood on his hands.
- 2 ☐ one of them has left of centre views, while the other has right of centre views.
- 3 ☐ based on the author's comments, the Clintonite has less clarity than the Maoist.
- 4 ☐ that the author knew how to proceed with one, but not with the other.

Solution:

Correct Answer : 3

The passage shows that Sam has views on a variety of subjects acquired through reading and voices his opinions, while Luke is "intellectually impoverished". This makes option 3 true. There is nothing in the passage to suggest that Sam has blood on his hands, making option 1 incorrect.

Option 2 is incorrect, since both Sam and Luke have views left of centre.

The author does know how to proceed with Luke, since he goes on to draw out his flaws. This makes option 4 incorrect.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)

Directions for questions 22 to 24: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

Every time you flip a light switch, you tap into a gigantic invisible web, the electrical grid. Somewhere, at the other end of the high-voltage transmission lines carrying power to your house, there's a power plant (likely burning coal or, increasingly, natural gas) churning out electricity to replace the electrons that you and everyone else are draining at that moment.

The amount of power in our grid at any one time is carefully maintained—too much or too little and things start to break. Grid operators make careful observations and predictions to determine how much electricity power plants should produce, minute by minute, hour by hour. But sometimes they're wrong, and a plant has to power up in a hurry to make up the difference.

Lucky for us, it's a big, interconnected system, so we rarely notice changes in the quality or quantity of electricity. Imagine the difference between stepping into a bucket of water versus stepping into the ocean. In a small system, any change in the balance between supply and demand is obvious — the bucket overflows. But because the grid is so big—ocean-like—fluctuations are usually imperceptible. Only when something goes very wrong do we notice, because the lights go out.

Renewable energy is less obedient than a coal- or gas-fired power plant—you can't just fire up a solar farm if demand spikes suddenly. Solar power peaks during the day, varies as clouds move across the sun, and disappears at night, while wind power is even less predictable. Too much of that kind of intermittency on the grid could make it more difficult to balance supply and demand, which could lead to more blackouts.

Storing energy is a safety valve. If you could dump extra energy somewhere, then draw from it when supply gets low again, you can power a whole lot more stuff with renewable energy, even when the sun isn't shining and the wind isn't blowing. What's more, the grid itself becomes more stable and efficient, as batteries would allow communities and regions to manage their own power supply. Our aging and overtaxed power infrastructure would go a lot further. Instead of installing new transmission lines in places where existing lines are near capacity, you could draw power during off-peak times and stash it in batteries until you need it.

Just like that, the bucket can behave a lot more like the ocean. That would mean—at least in theory—more distributed power generation and storage, more renewables, and less reliance on giant fossil-fueled power plants.

Q.22

It cannot be inferred from the passage that

- 1 ☐ non renewable energy sources are more obedient than renewable ones since they can be switched on and off at will to meet demand spikes.
- 2 ☐ safety valves ensure that the grid becomes more stable and efficient since power can be dumped when extra, and drawn when required.
- 3 ☐ a smaller grid would have more perceptible fluctuations than a larger one because in a large grid fluctuations are less perceptible.
- 4 ☐ The amount of power in the grid can be measured by grid operators.

x

Solution:

Correct Answer : 2

Your Answer : 4

Option 1 can be inferred from paragraph4, "Renewable energy is less obedient than a coal- or gas-fired power plant..."

Option 3 can be inferred from paragraph3, "Imagine the difference between stepping into a bucket of water.....the bucket overflows."

Option 4 can be inferred from paragraph2 - the observations that grid operators make that tell them whether the grid needs more power would require them to know the amount of power in the grid.

Option 2 cannot be inferred since the passage talks about storing energy as a type of safety valve. There can be other types of safety valves.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 22 to 24: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

Every time you flip a light switch, you tap into a gigantic invisible web, the electrical grid. Somewhere, at the other end of the high-voltage transmission lines carrying power to your house, there's a power plant (likely burning coal or, increasingly, natural gas) churning out electricity to replace the electrons that you and everyone else are draining at that moment.

The amount of power in our grid at any one time is carefully maintained—too much or too little and things start to break. Grid operators make careful observations and predictions to determine how much electricity power plants should produce, minute by minute, hour by hour. But sometimes they're wrong, and a plant has to power up in a hurry to make up the difference.

Lucky for us, it's a big, interconnected system, so we rarely notice changes in the quality or quantity of electricity. Imagine the difference between stepping into a bucket of water versus stepping into the ocean. In a small system, any change in the balance between supply and demand is obvious — the bucket overflows. But because the grid is so big—ocean-like—fluctuations are usually imperceptible. Only when something goes very wrong do we notice, because the lights go out.

Renewable energy is less obedient than a coal- or gas-fired power plant—you can't just fire up a solar farm if demand spikes suddenly. Solar power peaks during the day, varies as clouds move across the sun, and disappears at night, while wind power is even less predictable. Too much of that kind of intermittency on the grid could make it more difficult to balance supply and demand, which could lead to more blackouts.

Storing energy is a safety valve. If you could dump extra energy somewhere, then draw from it when supply gets low again, you can power a whole lot more stuff with renewable energy, even when the sun isn't shining and the wind isn't blowing. What's more, the grid itself becomes more stable and efficient, as

batteries would allow communities and regions to manage their own power supply. Our aging and overtaxed power infrastructure would go a lot further. Instead of installing new transmission lines in places where existing lines are near capacity, you could draw power during off-peak times and stash it in batteries until you need it.

Just like that, the bucket can behave a lot more like the ocean. That would mean—at least in theory—more distributed power generation and storage, more renewables, and less reliance on giant fossil-fueled power plants.

Q.23

The thematic highlight of this passage is

- 1 ☐ to cover the differences between renewable and non-renewable energy and highlight how one is better than the other.
- 2 ☐ to highlight the drawbacks of having too many renewable sources on the grid since they create perceptible fluctuations in the grid.
- 3 ☐ to talk about ways to improve the grid, by using methods that help balance renewable and non-renewable sources in mix.
- 4 ☐ to talk about the advantages of batteries as a way of bringing about better stability in the grid and making better use of the power infrastructure.

✕

Solution:

Correct Answer : 4

Your Answer : 1

The passage talks about the grid as a whole, and the penultimate paragraph focuses on the main point- use of batteries will enable better use of it, including the power infrastructure. This makes Answer Option 4 correct. The other points are covered in the passage, but are not the focus of the passage.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 22 to 24: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

Every time you flip a light switch, you tap into a gigantic invisible web, the electrical grid. Somewhere, at the other end of the high-voltage transmission lines carrying power to your house, there's a power plant (likely burning coal or, increasingly, natural gas) churning out electricity to replace the electrons that you and everyone else are draining at that moment.

The amount of power in our grid at any one time is carefully maintained—too much or too little and things start to break. Grid operators make careful observations and predictions to determine how much electricity power plants should produce, minute by minute, hour by hour. But sometimes they're wrong, and a plant has to power up in a hurry to make up the difference.

Lucky for us, it's a big, interconnected system, so we rarely notice changes in the quality or quantity of electricity. Imagine the difference between stepping into a bucket of water versus stepping into the ocean. In a small system, any change in the balance between supply and demand is obvious — the bucket overflows. But because the grid is so big—ocean-like—fluctuations are usually imperceptible. Only when something goes very wrong do we notice, because the lights go out.

Renewable energy is less obedient than a coal- or gas-fired power plant—you can't just fire up a solar farm if demand spikes suddenly. Solar power peaks during the day, varies as clouds move across the sun, and disappears at night, while wind power is even less predictable. Too much of that kind of intermittency on the grid could make it more difficult to balance supply and demand, which could lead to more blackouts.

Storing energy is a safety valve. If you could dump extra energy somewhere, then draw from it when supply gets low again, you can power a whole lot more stuff with renewable energy, even when the sun isn't shining and the wind isn't blowing. What's more, the grid itself becomes more stable and efficient, as batteries would allow communities and regions to manage their own power supply. Our aging and overtaxed power infrastructure would go a lot further. Instead of installing new transmission lines in places where existing lines are near capacity, you could draw power during off-peak times and stash it in batteries until you need it.

Just like that, the bucket can behave a lot more like the ocean. That would mean—at least in theory—more distributed power generation and storage, more renewables, and less reliance on giant fossil-fueled power plants.

Q.24

Based on the passage, storing energy is a safety valve because

- 1 ☐ extra energy can be stored somewhere, and then used as required.
- 2 ☐ storing energies would allow communities to manage their own power supply.
- 3 ☐ it removes the dependence on non-renewable energy.
- 4 ☐ in a big, it is an inter-connected system that improves the quality of electricity.

✕

Solution:

Correct Answer : 1

Your Answer : 3

Bookmark

The answer is found in paragraph 4, " If you could dump extra energy somewhere, then draw from it when supply gets low again...". Option 2 is stated in the passage, but does not answer the question asked. Option 3 is not the right reason. In any case, it goes beyond the passage by using "remove". Option 4 mixes the concepts up, since the energy is stored in batteries, not in the system. Also, improving quality is not connected to why storing energy is a safety valve.

[Answer key/Solution](#)
[FeedBack](#)

Directions for questions 25 to 27: The following question consists of a paragraph which is followed by four options. Among the given options, choose the one which captures the essence of the paragraph accurately and clearly. Type in that option as the answer in the space provided below the question.

Q.25

Every month or so, I see a patient called Fraser in my primary care clinic, a soldier who was deployed in Afghanistan. Fifteen years after coming home, he is still haunted by flashbacks of burning buildings and sniper fire. When Fraser began coming to see me, I was reading *Redeployment* (2014) by Phil Klay – short stories about US military operations, not in Afghanistan, but in Iraq. No book can substitute for direct experience, but Klay's stories gave me a way to start talking about what Fraser was going through; when I finished the book, I offered it to him. He found reassurance in what I'd found illuminating; our conversations took new directions as we discussed aspects of the book.

Which of the following best summarizes the given paragraph?

- (1) Reading the book *Redeployment* based on the US military operations in Iraq helped the author treat Fraser, an American soldier deployed in Afghanistan fifteen years back in a better way from the menacingly painful hounding war reminiscence.
- (2) Reading the book *Redeployment* based on the US military operations in Iraq helped the author treat Fraser, an American soldier deployed in Afghanistan fifteen years back in a better way from the menacingly painful hounding war wounds.
- (3) Reading the book *Redeployment* fifteen years back based on the US military operations in Iraq helped the author treat Fraser, an American soldier deployed in Afghanistan fifteen years back in a better way from the menacingly painful hounding war reminiscence.
- (4) Reading the book *Redeployment* based on the US military operations in Iraq helped the author completely cure Fraser, an American soldier deployed in Afghanistan fifteen years back in a better way from the menacingly painful hounding war reminiscence.

Solution:

Correct Answer : 1

Option 1 covers the essence of the passage. Option 2 is incorrect because the book was based on Iraq and war memories were hounding Fraser and not the war wounds. Option 3 is incorrect because the author was not reading the book fifteen years back. Option 4 is incorrect because "to get completely cured" is a farfetched assumption.

[Bookmark](#)
[Answer key/Solution](#)
[FeedBack](#)

Directions for questions 25 to 27: The following question consists of a paragraph which is followed by four options. Among the given options, choose the one which captures the essence of the paragraph accurately and clearly. Type in that option as the answer in the space provided below the question.

Q.26

When it comes to immigration, not all foreigners are the same. The treatment of non-citizen legal residents, for example, raises very different moral and political questions from the larger debate about who should, and who should not, be allowed to enter. Through the state's official procedures, it has entered an agreement with the non-citizen, an agreement that brings obligations and limitations on the conduct of both parties. A state that, without due process, simply ignores the rights and obligations it has extended to that legal resident makes a serious breach of its moral authority and the rule of law. This is why the state's treatment of its non-citizen legal residents – its visa-holders and permanent resident aliens – can say as much about its health as its treatment of citizens.

Which of the following best summarizes the given paragraph?

- (1) The authenticity of the moral authority and the rule of law of all states when legal resident rights to the non-citizens can be challenged after analyzing the treatment the state renders in the form of rights and obligations to its non-citizens.
- (2) The veracity of the moral authority and the rule of law of any state when it grants legal resident rights to the non-citizens can be ascertained after analyzing the treatment the state renders in the form of rights and obligations to its citizens by birth.
- (3) The veracity of the moral authority and the rule of law of any state when it grants legal resident privileges and honors to the non-citizens can be ascertained after analyzing the treatment the state renders in the form of rights and obligations to its citizens by birth.
- (4) The veracity of the moral authority and the rule of law of any state when it grants legal resident rights to the non-citizens can be accurately ascertained after analyzing the treatment the state renders in the form of rights and obligations to its citizens by birth.

x

Solution:

Correct Answer : 2

Your Answer : 1

Option 2 covers the essence of the passage. Option 1 is incorrect because the veracity cannot be challenged and can be either verified or proven; also it depends on the treatment of the natives and not the non-citizens. Option 3 is incorrect because the passage does not mention the privilege and honors a non-citizen is granted after the citizenship of a foreign state. Option 4 is incorrect because it says the extreme expression 'accurately ascertained.'

[Bookmark](#)
[Answer key/Solution](#)
[FeedBack](#)

Directions for questions 25 to 27: The following question consists of a paragraph which is followed by four options. Among the given options, choose the one which captures the essence of the paragraph accurately and clearly. Type in that option as the answer in the space provided below the question.

Q.27

Last night, most of us went to the safety and comfort of our beds before drifting off to a night's sleep. For some, this was the last conscious action before a episode of sleepwalking. Recent research from Stanford University shows that up to 4 per cent of adults might have had such an experience. In fact, sleepwalking is on the rise, in part due to increased use of pharmacologically based sleep aids – notably Ambien. Often, the episodes are harmless. Sometimes, of course, sleepwalking is dangerous. Somnambulists are in an irrational state during which they could harm themselves or others. Patient committed the act – if that's the right word – despite an agreeable relationship with the victim and a lack of motive.

Which of the following best summarizes the given paragraph?

- (1) Pharmacological sleeping aids are seminal in worsening the sound sleep of the sleepwalking patient and the recent research from the Stanford University unveils the apparently dangerous effects of somnambulism where the patient may either get creative or harm himself as well as others.
- (2) Pharmacological sleeping aids are seminal in worsening the aftermath of the sleepwalking patient and the recent research from the Stanford University unveils the apparently dangerous effects of somnambulism where the patient may either get creative or harm himself as well as others fatally.
- (3) Pharmacological sleeping aids are seminal in worsening the aftermath of the sleepwalking patient and the recent research from the Stanford University unveils the apparently dangerous effects of somnambulism where the patient may either get creative or harm himself as well as others.
- (4) Pharmacological sleeping aids are seminal in alleviating the aftermath of the sleepwalking patient and the recent research from the Stanford University unveils the apparently dangerous effects of somnambulism where the patient may either get creative or harm himself as well as others fatally.

Solution:

Correct Answer : 3

Option 3 covers the essence of the passage. Option 1 is incorrect because the passage does not deal with the sound sleep the patient gets after pharmacological aid rather disturbances one faces after using them. Option 2 is incorrect because 'fatally' is an extreme expression that the passage does not mention. Option 4 is incorrect because it is exactly the opposite of what has been stated in the passage.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 28 to 31: In the questions below, rearrange the given set of statements and type in the right sequence as your answer.

Q.28

1. When one considers our distant, pre-human ancestors, answers begin to take shape.
2. We need a restful sleep – would it not be more beneficial if the brain went totally 'comatose' until that rest was achieved?
3. But why would our brains enter into such a mixed state, representative of neither wakefulness nor sleeping?
4. For aeons, the safety provided by the spot where our predecessors chose to lay their heads for the night was, in many ways, compromised compared with the safety of our current bedroom spaces.

Solution:

Correct Answer : 3214

Statements 3 and 2 make a pair because the conversation starts with why the brain behaves in a certain way with an answer that wouldn't it be better if it behaved like this. Statements 1 and 4 make a pair because 'the answers begin to take shape' is linked with the reason stated in 4. 32 has to come before 14 because 321 makes a series. The answer mentioned in 2 has been extended in Statement 1. Hence, the correct sequence is 3214.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 28 to 31: In the questions below, rearrange the given set of statements and type in the right sequence as your answer.

Q.29

1. In today's data-driven educational enterprise, faculty who do not entertain frequently do not get promoted – or even retained – because of the influence of student evaluations.
2. The same goes for information technology workshops and conferences I attend, where questions such as 'I found the speaker interesting' on evaluation forms help to determine who is invited back in subsequent years.
3. TED talks are the logical conclusion of this fashion, inspiring lectures with high production values and well-rehearsed presentations.
4. They hold one's interest, but they convey little information.

Solution:

Correct Answer : 1234

Statement 1 is clearly the opening idea because it introduces us to the main idea of importance of entertaining faculty among students. Statement 2 elaborates that this is required even in other professions. Statements 3 and 4 make a pair because "they" in Statement 4 refers to "TED talks" in Statement 3. Hence, the correct sequence is 1234.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 28 to 31: In the questions below, rearrange the given set of statements and type in the right sequence as your answer.

Q.30

1. New brain-machine interfaces will improve our memory and cognition, extend our senses, and confer direct control over an array of semi-intelligent gadgets.
2. Genetic and epigenetic modification will allow us to change our physical appearance and capabilities, as well as to tweak some of the more intangible aspects of our being such as emotion, creativity or sociability.
3. Within the lifetimes of most children today, bio-enhancement is likely to become a basic feature of human society.
4. Personalized pharmaceuticals will enable us to modify our bodies and minds in powerful and precise ways, with far fewer side-effects than today's drug.

Solution:

Correct Answer : 3412

Statement 3 introduces us to an alternative medical treatment 'bio-enhancement'. Statement 4 is an extension to the idea mentioned in Statement 3. Statement 1 follows the pair 34 because it talks about the new mechanism that would happen and Statement 2 is the result how this mechanism works on the body in various ways. Hence, the correct sequence is 3412.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 28 to 31: In the questions below, rearrange the given set of statements and type in the right sequence as your answer.

Q.31

1. There is also what I call 'the big-picture defense', claiming that evil only appears as such from our limited perspectives.
2. Others have argued that certain kinds of moral goodness – compassion, for instance – are not possible in a world without evil, and the value of these types of goodness outweighs the evils on which their existence depends.
3. There is the argument of free will, attributing evil not to God but to humanity's misuse of its own freedom.
4. Many solutions to the problem of evil – called 'theodicies' – have been proposed.

Solution:

Correct Answer : 4321

Statements 321 become a series because in Statement 3 the main reason for the argument is mentioned. Statement 2 follows because it presents what others argue on. Statement 1 follows 32 because the word "also" proves that it is an extension of the idea stated in Statement 2. The proposal happens in Statement 4; so it is the opening sentence. Hence, the correct sequence is 4321.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 32 to 34: In each of the following questions, five sentences are given. Of these, four sentences need to be in logical order to make coherent paragraph. From the given options, choose the one that does not fit the sequence.

Q.32

1. Well I remember a girl, but I don't remember her specific features, and just a blurred face.
2. This was Misha speaking about his sister who was shot in front of him by the Nazis when he was just four years old.
3. After her execution, an 'anti-Semitic priest' ran up to the Nazi officers and told them not to shoot the remaining Jews who were awaiting a bullet.
4. Palestine's Jews had no illusions about what to expect from German occupation.
5. 'They used to ask me if I remembered her... I don't.

Solution:

Correct Answer : 4

Option 4 is the odd sentence. The un-jumbled part is— 'They used to ask me if I remembered her... I don't. Well I remember a girl, but I don't remember her specific features, and just a blurred face. This was Misha speaking about his sister who was shot in front of him by the Nazis when he was just four years old. After her execution, an 'anti-Semitic priest' ran up to the Nazi officers and told them not to shoot the remaining Jews who were awaiting a bullet.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 32 to 34: In each of the following questions, five sentences are given. Of these, four sentences need to be in logical order to make coherent paragraph. From the given options, choose the one that does not fit the sequence.

Q.33

1. If they probe any further, I tell them that I work with the great apes at Leipzig zoo.
2. I get apprehensive whenever someone asks me about my job.
3. Apes are humanity's closest living relatives.
4. I'm a philosopher who works on the question of how language evolved, I reply.
5. But some people, I've discovered, have big problems with zoos; and plenty of philosophers and primatologists agree with them.

Solution:

Correct Answer : 3

Option 3 is the odd sentence. The un-jumbled part is—I get apprehensive whenever someone asks me about my job. I'm a philosopher who works on the question of how language evolved, I reply. If they probe any further, I tell them that I work with the great apes at Leipzig zoo. But some people, I've discovered, have big problems with zoos; and plenty of philosophers and primatologists agree with them.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 32 to 34: In each of the following questions, five sentences are given. Of these, four sentences need to be in logical order to make coherent paragraph. From the given options, choose the one that does not fit the sequence.

Q.34

1. Not only is God the creator and ruler of the things and beings within those two realms, but He is also the creator of the realms themselves.
2. The philosopher Gottfried Leibniz's simple solution was to argue in 1710 that this world is necessarily the best of all possible worlds.
3. Because He is a loving God, the one He chooses to create is surely the 'best of all possible worlds'.
4. Leibniz depicts God assessing in His infinite mind all the various possible worlds that He could create.
5. His argument suggests that it is ultimately meaningless to complain about this evil or that injustice; because this is the best of all possible worlds.

Solution:

Correct Answer : 1

Option 1 is the odd sentence. The un-jumbled part is—The philosopher Gottfried Leibniz's simple solution was to argue in 1710 that this world is necessarily the best of all possible worlds. Leibniz depicts God assessing in His infinite mind all the various possible worlds that He could create. Because He is a loving God, the one He chooses to create is surely the 'best of all possible worlds'. His argument suggests that it is ultimately meaningless to complain about this evil or that injustice; because this is the best of all possible worlds.

FeedBack

Bookmark

Answer key/Solution

Sec 2

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

Five companies were vying with each other in their bid to take-over Mittal Steel, the largest steel-maker of the world. The companies initially offered a price per share of Mittal Steel which is termed as 'offer price'. The offer prices of the respective companies as on 1st February 2017 morning was as follow

Sl.No	Name of the Company	Offer price in Rs. as on 1st Feb 2017
1	Tata Steel	594
2	JK Steel	592
3	Essar Steel	591
4	Modi Steel	596
5	Nippon Steel	598

The bidding process continued for six days from 1st to 6th February. During this period, all the companies followed a simple rule for revising their offer prices.

- I. If the closing price of the share of a particular company on Bombay Stock Exchange (BSE) on any day was higher than the previous day's closing price, the offer price was revised upwards the next day by Rupee 1/- per share.
- II. If the closing price of the share of a particular company on BSE on any day was lower than the previous day's closing price, the offer price was revised downwards by Rs. 2 per share the next day.
- III. Each day, the offer prices of the companies were revised starting with the first revision on 2nd February and the final revision on 6th February.

The Table below shows the closing share prices on BSE for the 5 companies mentioned. Data for the closing price of Tata Steel on 3rd February and of Modi Steel on 2nd February are not available.

Sl.No	Name of the Company	Closing Share Price in Rs. as on					
		31/01/2017	1/2/2017	2/2/2017	3/2/2017	4/2/2017	5/2/2017
1	Tata Steel	519	520	527.5		527	522
2	JK Steel	703	700	690	695	700	705
3	Essar Steel	248	250	253	255	260	265
4	Modi Steel	858		865	867	870	867
5	Nippon Steel	154	150	154	156	158	153

Following additional information is available:

- A. For Tata Steel, the number of days on which the share price increased was one more than the number of days on which the share price decreased over the previous day, from 1st to 5th February, 2017. Also, the share price of Tata Steel neither decreased nor increased on more than two consecutive days during the given period.
- B. The share price of Modi Steel increased on 4 days and decreased on 1 day, over the previous day, from 1st to 5th February, 2017.

Q.35

Mittal Steel was taken over by the company that offered the maximum offer price as on 6th February. Identify the company that was successful in taking over Mittal Steel.

1 ☐ Tata Steel

2 ☐ Modi Steel3 ☐ Essar Steel4 ☐ Nippon Steel**Solution:****Correct Answer : 2****Your Answer : 2**

- The number of days for which Tata Steel's share witnessed an increase was one more than the number of days on which it witnessed a decrease. Therefore in 5 consecutive days, there were 3 increments and 2 decrements. But if the price would have been higher than 527.5 on 3rd February, then there would have been 3 consecutive increments and 2 consecutive decrements. Therefore, the share price on 3rd February was lower than the price on 2nd February and even lower than Rs. 527.5.
- Also, since the price of Modi steel increased on 4 days and decreased on 1 day, therefore the share price would have increased on 1st February because there is already a decrease from 4th to 5th February.
Based on 1 and 2 above, the following is the offer price of the companies from 1st February to 6th February.

S.N.	Name of the Company	Industry	Group	Offer price of the Companies					6th February 2017
				1/2/2017	2/2/2017	3/2/2017	4/2/2017	5/2/2017	
1	Tata Steel	Steel	Tata	594	595	596	594	595	593
2	JK Steel	Steel	JK	592	590	588	589	590	591
3	Essar Steel	Steel	Essar	591	592	593	594	595	596
4	Modi Steel	Steel	Modi	596	597	598	599	600	598
5	Nippon Steel	Steel	Nippon	598	596	597	598	599	597

Based on the above table, all the questions can be answered.

Modi Steel had the highest offer price of Rs. 598 as on February 6th.

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

Five companies were vying with each other in their bid to take-over Mittal Steel, the largest steel-maker of the world. The companies initially offered a price per share of Mittal Steel which is termed as 'offer price'. The offer prices of the respective companies as on 1st February 2017 morning was as follow

Sl.No	Name of the Company	Offer price in Rs. as on 1st Feb 2017
1	Tata Steel	594
2	JK Steel	592
3	Essar Steel	591
4	Modi Steel	596
5	Nippon Steel	598

The bidding process continued for six days from 1st to 6th February. During this period, all the companies followed a simple rule for revising their offer prices.

- If the closing price of the share of a particular company on Bombay Stock Exchange (BSE) on any day was higher than the previous day's closing price, the offer price was revised upwards the next day by Rupee 1/- per share.
- If the closing price of the share of a particular company on BSE on any day was lower than the previous day's closing price, the offer price was revised downwards by Rs. 2 per share the next day.
- Each day, the offer prices of the companies were revised starting with the first revision on 2nd February and the final revision on 6th February.

The Table below shows the closing share prices on BSE for the 5 companies mentioned. Data for the closing price of Tata Steel on 3rd February and of Modi Steel on 2nd February are not available.

Sl.No	Name of the Company	Closing Share Price in Rs. as on					
		31/01/2017	1/2/2017	2/2/2017	3/2/2017	4/2/2017	5/2/2017
1	Tata Steel	519	520	527.5		527	522
2	JK Steel	703	700	690	695	700	705
3	Essar Steel	248	250	253	255	260	265
4	Modi Steel	858		865	867	870	867
5	Nippon Steel	154	150	154	156	158	153

Following additional information is available:

A. For Tata Steel, the number of days on which the share price increased was one more than the number of days on which the share price decreased over the previous day, from 1st to 5th February, 2017. Also, the share price of Tata Steel neither decreased nor increased on more than two consecutive days during the given period.

B. The share price of Modi Steel increased on 4 days and decreased on 1 day, over the previous day, from 1st to 5th February, 2017.

Q.36

Which group of companies had the same absolute change in the offer price on 6th February with respect to 1st February?

1 ☐ Tata, JK and Nippon Steel

2 ☐ Tata and JK Steel

3 ☐ JK and Nippon Steel

4 ☐ Tata and Nippon Steel



Solution:

Correct Answer : 1

Your Answer : 1

- The number of days for which Tata Steel's share witnessed an increase was one more than the number of days on which it witnessed a decrease. Therefore in 5 consecutive days, there were 3 increments and 2 decrements. But if the price would have been higher than 527.5 on 3rd February, then there would have been 3 consecutive increments and 2 consecutive decrements. Therefore, the share price on 3rd February was lower than the price on 2nd February and even lower than Rs. 527.5.
- Also, since the price of Modi steel increased on 4 days and decreased on 1 day, therefore the share price would have increased on 1st February because there is already a decrease from 4th to 5th February.
Based on 1 and 2 above, the following is the offer price of the companies from 1st February to 6th February.

S.N.	Name of the Company	Industry	Group	Offer price of the Companies					6th February 2017
				1/2/2017	2/2/2017	3/2/2017	4/2/2017	5/2/2017	
1	Tata Steel	Steel	Tata	594	595	596	594	595	593
2	JK Steel	Steel	JK	592	590	588	589	590	591
3	Essar Steel	Steel	Essar	591	592	593	594	595	596
4	Modi Steel	Steel	Modi	596	597	598	599	600	598
5	Nippon Steel	Steel	Nippon	598	596	597	598	599	597

Based on the above table, all the questions can be answered.

Tata Steel, JK Steel and Nippon Steel each had a price difference of Rs. 1 per share on 6th February as compared to 1st February.

FeedBack

Bookmark

Answer key/Solution

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

Five companies were vying with each other in their bid to take-over Mittal Steel, the largest steel-maker of the world. The companies initially offered a price per share of Mittal Steel which is termed as 'offer price'. The offer prices of the respective companies as on 1st February 2017 morning was as follow

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The bidding process continued for six days from 1st to 6th February. During this period, all the companies followed a simple rule for revising their offer prices.

- If the closing price of the share of a particular company on Bombay Stock Exchange (BSE) on any day was higher than the previous day's closing price, the offer price was revised upwards the next day by Rupee 1/- per share.
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- Each day, the offer prices of the companies were revised starting with the first revision on 2nd February and the final revision on 6th February.

The Table below shows the closing share prices on BSE for the 5 companies mentioned. Data for the closing price of Tata Steel on 3rd February and of Modi Steel on 2nd February are not available.

Sl.No	Name of the Company	Closing Share Price in Rs. as on					
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Following additional information is available:

A. For Tata Steel, the number of days on which the share price increased was one more than the number of days on which the share price decreased over the previous day, from 1st to 5th February, 2017. Also, the share price of Tata Steel neither decreased nor increased on more than two consecutive days during the given period.

B. The share price of Modi Steel increased on 4 days and decreased on 1 day, over the previous day, from 1st to 5th February, 2017.

Q.37

Had the bidding concluded on 5th February, and companies with the top two offer prices not showed interest in taking over the company, which company could have taken over Mittal Steel?

1 ☐ Modi Steel

2 ☐ JK Steel

3 ☐ There will be a tie between Tata Steel and Essar Steel

4 ☐ Tata Steel



Solution:

Correct Answer : 3

Your Answer : 3

- The number of days for which Tata Steel's share witnessed an increase was one more than the number of days on which it witnessed a decrease. Therefore in 5 consecutive days, there were 3 increments and 2 decrements. But if the price would have been higher than 527.5 on 3rd February, then there would have been 3 consecutive increments and 2 consecutive decrements. Therefore, the share price on 3rd February was lower than the price on 2nd February and even lower than Rs. 527.5.
- Also, since the price of Modi steel increased on 4 days and decreased on 1 day, therefore the share price would have increased on 1st February because there is already a decrease from 4th to 5th February.
Based on 1 and 2 above, the following is the offer price of the companies from 1st February to 6th February.

S.N.	Name of the Company	Industry	Group	Offer price of the Companies					6th February 2017
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2	JK Steel	Steel	JK	592	590	588	589	590	591
3	Essar Steel	Steel	Essar	591	592	593	594	595	596
4	Modi Steel	Steel	Modi	596	597	598	599	600	598
5	Nippon Steel	Steel	Nippon	598	596	597	598	599	597

Based on the above table, all the questions can be answered.

As on 5th February, the top two price offers were from Modi Steel and Nippon Steel and therefore these two companies dropped out. That means the next highest bid was Rs. 595 which indicates a tie between Essar Steel and Tata Steel.

FeedBack

Bookmark

Answer key/Solution

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

Five companies were vying with each other in their bid to take-over Mittal Steel, the largest steel-maker of the world. The companies initially offered a price per share of Mittal Steel which is termed as 'offer price'. The offer prices of the respective companies as on 1st February 2017 morning was as follow

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The bidding process continued for six days from 1st to 6th February. During this period, all the companies followed a simple rule for revising their offer prices.

- I. If the closing price of the share of a particular company on Bombay Stock Exchange (BSE) on any day was higher than the previous day's closing price, the offer price was revised upwards the next day by Rupee 1/- per share.
- II. If the closing price of the share of a particular company on BSE on any day was lower than the previous day's closing price, the offer price was revised downwards by Rs. 2 per share the next day.
- III. Each day, the offer prices of the companies were revised starting with the first revision on 2nd February and the final revision on 6th February.

The Table below shows the closing share prices on BSE for the 5 companies mentioned. Data for the closing price of Tata Steel on 3rd February and of Modi Steel on 2nd February are not available.

Sl.No	Name of the Company	Closing Share Price in Rs. as on					
		31/01/2017	1/2/2017	2/2/2017	3/2/2017	4/2/2017	5/2/2017
1	Tata Steel	519	520	527.5		527	522
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3	Essar Steel	248	250	253	255	260	265
4	Modi Steel	858		865	867	870	867
5	Nippon Steel	154	150	154	156	158	153

Following additional information is available:

- A. For Tata Steel, the number of days on which the share price increased was one more than the number of days on which the share price decreased over the previous day, from 1st to 5th February, 2017. Also, the share price of Tata Steel neither decreased nor increased on more than two consecutive days during the given period.
- B. The share price of Modi Steel increased on 4 days and decreased on 1 day, over the previous day, from 1st to 5th February, 2017.

Q.38

Only those companies with an offer price of more than Rs. 595 on 4th February were considered for further participation. How many companies were not eligible for making bid on 6th February?

1 ☐ 3

2 ☐ 4

3 ☐ 1

4 ☐ 2

Solution:

Correct Answer : 1

- The number of days for which Tata Steel's share witnessed an increase was one more than the number of days on which it witnessed a decrease. Therefore in 5 consecutive days, there were 3 increments and 2 decrements. But if the price would have been higher than 527.5 on 3rd February, then there would have been 3 consecutive increments and 2 consecutive decrements. Therefore, the share price on 3rd February was lower than the price on 2nd February and even lower than Rs. 527.5.
- Also, since the price of Modi steel increased on 4 days and decreased on 1 day, therefore the share price would have increased on 1st February because there is already a decrease from 4th to 5th February.
Based on 1 and 2 above, the following is the offer price of the companies from 1st February to 6th February.

S.N.	Name of the Company	Industry	Group	Offer price of the Companies					6th February 2017
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1	Tata Steel	Steel	Tata	594	595	596	594	595	593
2	JK Steel	Steel	JK	592	590	588	589	590	591
3	Essar Steel	Steel	Essar	591	592	593	594	595	596
4	Modi Steel	Steel	Modi	596	597	598	599	600	598
5	Nippon Steel	Steel	Nippon	598	596	597	598	599	597

Based on the above table, all the questions can be answered.

As on 4th February, only two companies had an offer price that is higher than Rs. 595, which happened to be Modi Steel and Nippon Steel. Therefore the remaining 3 companies were not eligible for further participation.

FeedBack

Bookmark

Answer key/Solution

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

The following table gives details related to the number of runs scored by four players – Kemp, Kallis, Klusener and Kevin – in four different tournaments – Standard Bank Series, Afro-Asia Cup, Natwest Series and Benson & Hedges Series. However, the names of the players are disguised as P, Q, R, S and the names of the tournaments are disguised as A, B, C, D, not necessarily in the same order.

	P	Q	R	S
A	225	300	250	350
B	250	325	275	400
C	275	250	300	125
D	300	275	200	200

It is also known that:

- The total number of runs scored by the 4 players, put together, in Afro-Asia Cup was greater than that in the other three tournaments.
- The absolute difference between the total runs scored in Afro-Asia Cup and Benson & Hedges Series and the total runs scored in Natwest Series and Standard Bank Series by the 4 players was 100.
- When the total runs scored by individual players in the four tournaments, put together, are arranged in descending order (from top to bottom), Kevin and Kemp occupy the top two positions.

Q.39

What can be said regarding the following two statements?

Statement X: Kallis's 2nd highest score was in Natwest Series.

Statement Y: The absolute difference between the highest individual scores in Afro-Asia Cup and Standard Bank Series was 100.

1 ☐ If Statement X is true, then Statement Y is necessarily true.

2 ☐ Statement X is false and Statement Y is true.

3 ☐ Statement X is false but Statement Y may be true.

4 ☐ Both Statements X and Y are necessarily false.

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

	P	Q	R	S	Total Runs in the Tournament
A	225	300	250	350	1125
B	250	325	275	400	1250
C	275	250	300	125	950
D	300	275	200	200	975
Total Runs by Player	1050	1150	1025	1075	

From the additional information,

- B is Afro-Asia Cup.
- C is Benson & Hedges Series and A and D could be either Natwest Series or the Standard Bank Series.
- (Kevin and Kemp) are (Q and S) and (Kallis and Klusener) are (P and R) in any order.

Kallis is either P or R. P's second highest score (275) is in Benson & Hedges series and R's second highest score (275) is in Afro Asia Cup.

Thus, Statement X is definitely false.

Highest individual score in Afro Asia cup = 400. A or D could be Standard Bank series. If D is Standard Bank Series, difference would be 100.

Hence, Statement Y could be true.

Feedback

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

The following table gives details related to the number of runs scored by four players – Kemp, Kallis, Klusener and Kevin – in four different tournaments – Standard Bank Series, Afro-Asia Cup, Natwest Series and Benson & Hedges Series. However, the names of the players are disguised as P, Q, R, S and the names of the tournaments are disguised as A, B, C, D, not necessarily in the same order.

	P	Q	R	S
A	225	300	250	350
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C	275	250	300	125
D	300	275	200	200

It is also known that:

- The total number of runs scored by the 4 players, put together, in Afro-Asia Cup was greater than that in the other three tournaments.
- The absolute difference between the total runs scored in Afro-Asia Cup and Benson & Hedges Series and the total runs scored in Natwest Series and Standard Bank Series by the 4 players was 100.
- When the total runs scored by individual players in the four tournaments, put together, are arranged in descending order (from top to bottom), Kevin and Kemp occupy the top two positions.

Q.40

What can be said regarding the following two statements?

Statement X: Klusener's highest score was in Natwest Series.

Statement Y: Kallis's second lowest score was in Standard Bank Series.

1 ☐ If one of the statements is false, then the other is definitely false.

2 ☐ If Statement X is true, then Statement Y is necessarily false.

3 ☐ If Statement Y is true, then Statement X is necessarily false.

4 ☐ Both Statements X and Y are true independently.

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution

	P	Q	R	S	Total Runs in the Tournament
A	225	300	250	350	1125
B	250	325	275	400	1250
C	275	250	300	125	950
D	300	275	200	200	975
Total Runs by Player	1050	1150	1025	1075	

From the additional information,

- B is Afro-Asia Cup.
- C is Benson & Hedges Series and A and D could be either Natwest Series or the Standard Bank Series.
- (Kevin and Kemp) are (Q and S) and (Kallis and Klusener) are (P and R) in any order.

Klusener = P or R. Natwest Series = A or D.

According to Statement X, Klusener = P and Natwest Series = D. Hence, Standard Bank Series = A and Kallis = R.

Thus, Statement Y is true.

Hence, if one of these statements becomes false, other automatically turns false.

FeedBack

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

The following table gives details related to the number of runs scored by four players – Kemp, Kallis, Klusener and Kevin – in four different tournaments – Standard Bank Series, Afro-Asia Cup, Natwest Series and Benson & Hedges Series. However, the names of the players are disguised as P, Q, R, S and the names of the tournaments are disguised as A, B, C, D, not necessarily in the same order.

	P	Q	R	S
A	225	300	250	350
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C	275	250	300	125
D	300	275	200	200

It is also known that:

- The total number of runs scored by the 4 players, put together, in Afro-Asia Cup was greater than that in the other three tournaments.
- The absolute difference between the total runs scored in Afro-Asia Cup and Benson & Hedges Series and the total runs scored in Natwest Series and Standard Bank Series by the 4 players was 100.
- When the total runs scored by individual players in the four tournaments, put together, are arranged in descending order (from top to bottom), Kevin and Kemp occupy the top two positions.

Q.41

What can be said regarding the following statements?

Statement X: Kevin's lowest score was in Benson & Hedges series.

Statement Y: Kemp's highest score was in Afro-Asia Cup.

1 ☐ Statement X may be false but Statement Y is necessarily true.

2 ☐ Statement Y may be false but Statement X is necessarily true.

3 ☐ Both Statement X and Statement Y are necessarily true.

4 ☐ Both Statements X and Y may be false together.

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

	P	Q	R	S	Total Runs in the Tournament
A	225	300	250	350	1125
B	250	325	275	400	1250
C	275	250	300	125	950
D	300	275	200	200	975
Total Runs by Player	1050	1150	1025	1075	

From the additional information,

- B is Afro-Asia Cup.
- C is Benson & Hedges Series and A and D could be either Natwest Series or the Standard Bank Series.
- (Kevin and Kemp) are (Q and S) and (Kallis and Klusener) are (P and R) in any order.

Kevin = Q or S. In both the cases, Kevin's lowest score is in Benson & Hedges Series. Thus, Statement X is definitely true.

Kemp = Q or S. In both the cases, Kemp's highest score is in Afro Asia Cup. Thus, Statement Y is definitely true.

Both Statement X and Statement Y are necessarily true.

FeedBack

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

The following table gives details related to the number of runs scored by four players – Kemp, Kallis, Klusener and Kevin – in four different tournaments – Standard Bank Series, Afro-Asia Cup, Natwest Series and Benson & Hedges Series. However, the names of the players are disguised as P, Q, R, S and the names of the tournaments are disguised as A, B, C, D, not necessarily in the same order.

	P	Q	R	S
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It is also known that:

- The total number of runs scored by the 4 players, put together, in Afro-Asia Cup was greater than that in the other three tournaments.
- The absolute difference between the total runs scored in Afro-Asia Cup and Benson & Hedges Series and the total runs scored in Natwest Series and Standard Bank Series by the 4 players was 100.
- When the total runs scored by individual players in the four tournaments, put together, are arranged in descending order (from top to bottom), Kevin and Kemp occupy the top two positions.

Q.42

What can be said regarding the following two statements?

Statement X: The total runs scored by Kevin in the four tournaments, put together, was highest.

Statement Y: The number of runs scored by Kemp in the Natwest Series was highest.

1 ☐ If statement X is true, then statement Y is necessarily true.

2 ☐ If statement Y is true, then statement X is necessarily false.

3 ☐ Statement Y is definitely false but statement X may be true.

4 ☐ If statement Y is false, then statement X is necessarily true.

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

	P	Q	R	S	Total Runs in the Tournament
A	225	300	250	350	1125
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C	275	250	300	125	950
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From the additional information,

- B is Afro-Asia Cup.
- C is Benson & Hedges Series and A and D could be either Natwest Series or the Standard Bank Series.
- (Kevin and Kemp) are (Q and S) and (Kallis and Klusener) are (P and R) in any order.

If statement X is true then Q is Kevin and S is Kemp, but nothing can be said regarding statement Y.

The highest score by Kemp must be in Afro-Asia Cup.

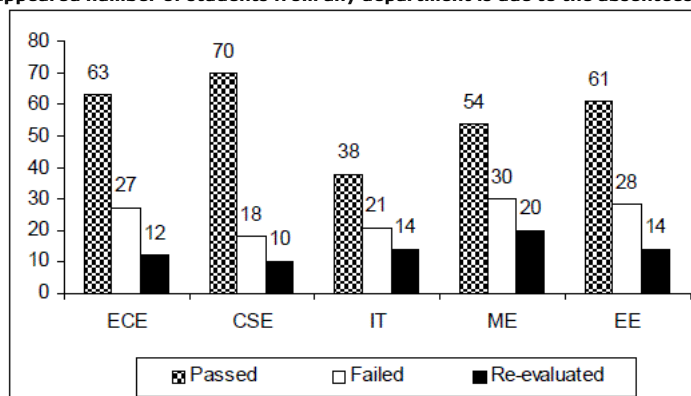
It cannot be in Natwest Series.

Hence, statement Y must be false, while statement X may be true.

FeedBack

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

In a particular batch of an Engineering college, there are 90 students each in four different departments viz. ECE, CSE, ME and EE. The IT department has only 60 students. The following graph shows the number of students passed and failed in the English paper of the second semester examination. It also shows the number of students who applied for re-evaluation of the same paper. Only the students who initially failed in the paper, were eligible to apply for a re-evaluation. After re-evaluation, some students passed while the others could not pass even after the re-evaluation. All the failed students along with the absentees have to clear the English paper next year. The number of passed and failed students, as captured in the following bar-chart, only indicate the situation before re-evaluation. The passed and failed students taken together indicate the number of students who appeared in that paper. Difference, if any, between the total number and the appeared number of students from any department is due to the absentees.



Q.43

What was the pass percentage of all the streams taken together before re-evaluation ?

1 ☐ 66.5%

2 ☐ 69.3%

3 ☐ 64.7%

4 ☐ 68.1%



Solution:

Correct Answer : 4

Your Answer : 4

Pass percentage of the whole batch

$$= \frac{63 + 70 + 38 + 54 + 61}{90 + 90 + 60 + 90 + 90} \times 100 = \frac{286}{420} \times 100 = 68.1\%.$$

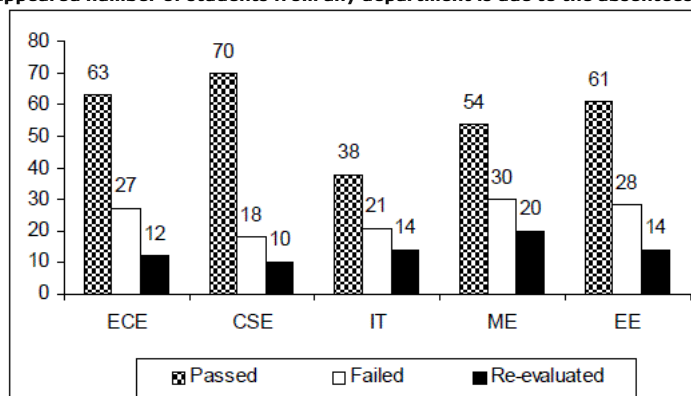
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Answer key/Solution

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Q.44

If less than 70% of the students who applied for re-evaluation, pass after the re-evaluation from each department, then for which department the ratio of passed students to failed students was the maximum after the re-evaluation?

- 1 ☐ ECE
- 2 ☐ CSE
- 3 ☐ ME
- 4 ☐ Cannot be determined



Solution:

Correct Answer : 4

Your Answer : 4

Maximum number of additional students who passed from ECE is (less than 70% of 12) = 8

Maximum number of additional students who passed from CSE is (less than 70% of 10) = 6

Maximum number of additional students who passed from IT is (less than 70% of 14) = 9

Maximum number of additional students who passed from ME is (less than 70% of 20) = 13

Maximum number of additional students who passed from EE is (less than 70% of 14) = 9

Number of students who passed in ECE = $63 + 8 = 71$

Number of students who passed in CSE = $70 + 6 = 76$

Number of students who passed in IT = $38 + 9 = 47$

Number of students who passed in ME = $54 + 13 = 67$

Number of students who passed in EE = $61 + 9 = 70$

Ratio of students who passed to students who failed in ECE = $71 : 19$

Ratio of students who passed to students who failed in CSE = $76 : 12$

Ratio of students who passed to students who failed in IT = $47 : 12$

Ratio of students who passed to students who failed in ME = $67 : 17$

Ratio of students who passed to students who failed in EE = $70 : 19$

Clearly ratio is the maximum for CSE in this case. But if we assume that no additional student passed from CSE, then the ratio is maximum for ME department. So correct answer is option (4).

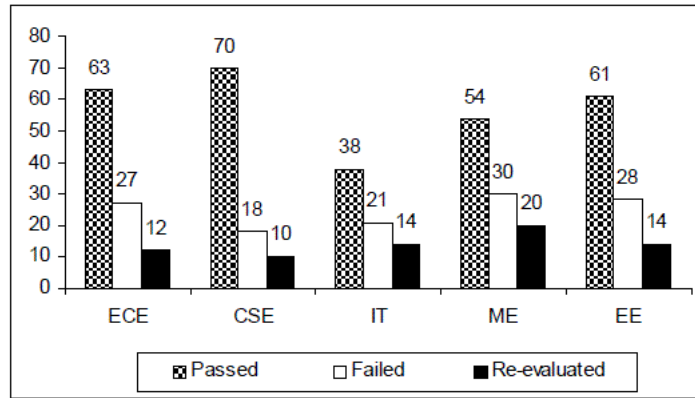
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Bookmark

Answer key/Solution

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

In a particular batch of an Engineering college, there are 90 students each in four different departments viz. ECE, CSE, ME and EE. The IT department has only 60 students. The following graph shows the number of students passed and failed in the English paper of the second semester examination. It also shows the number of students who applied for re-evaluation of the same paper. Only the students who initially failed in the paper, were eligible to apply for a re-evaluation. After re-evaluation, some students passed while the others could not pass even after the re-evaluation. All the failed students along with the absentees have to clear the English paper next year. The number of passed and failed students, as captured in the following bar-chart, only indicate the situation before re-evaluation. The passed and failed students taken together indicate the number of students who appeared in that paper. Difference, if any, between the total number and the appeared number of students from any department is due to the absentees.



Q.45

From each department, exactly 50% of the students who applied for re-evaluation failed even after re-evaluation. For which department, the percentage of failed students with respect to the total number of students is the minimum after the re-evaluation?

1 ☐ ECE2 ☐ CSE3 ☐ IT4 ☐ ME**Solution:****Correct Answer : 2****Your Answer : 2**

Number of students who failed in ECE = $27 - 6 = 21$
 Number of students who failed in CSE = $18 - 5 = 13$
 Number of students who failed in IT = $21 - 7 = 14$
 Number of students who failed in ME = $30 - 10 = 20$
 Number of students who failed in EE = $28 - 7 = 21$
 Percentage of students who failed in ECE

$$= \frac{21}{90} \times 100 = 23.3\%$$

Percentage of students who failed in CSE

$$= \frac{13}{90} \times 100 = 14.4\%$$

Percentage of students who failed in IT

$$= \frac{14}{60} \times 100 = 23.3\%$$

Percentage of students who failed in ME

$$= \frac{20}{90} \times 100 = 22.2\%$$

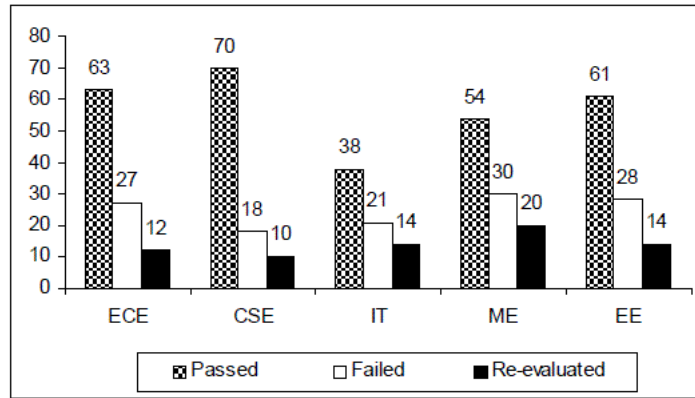
$$\text{Percentage of students who failed in EE} = \frac{21}{90} \times 100$$

$$= 23.3\%$$

\therefore Minimum percentage of students who failed is from CSE.

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

In a particular batch of an Engineering college, there are 90 students each in four different departments viz. ECE, CSE, ME and EE. The IT department has only 60 students. The following graph shows the number of students passed and failed in the English paper of the second semester examination. It also shows the number of students who applied for re-evaluation of the same paper. Only the students who initially failed in the paper, were eligible to apply for a re-evaluation. After re-evaluation, some students passed while the others could not pass even after the re-evaluation. All the failed students along with the absentees have to clear the English paper next year. The number of passed and failed students, as captured in the following bar-chart, only indicate the situation before re-evaluation. The passed and failed students taken together indicate the number of students who appeared in that paper. Difference, if any, between the total number and the appeared number of students from any department is due to the absentees.



Q.46
From each department, exactly 50% of the students who applied for re-evaluation failed even after re-evaluation. How many students from this batch will have to clear the paper next year?

1 ☐ 45

2 ☐ 89

3 ☐ 95

4 ☐ 99



Solution:

Correct Answer : 4

Your Answer : 4

Total students who failed even after applying for reevaluation

= 21 + 13 + 14 + 20 + 21 = 89

Total number of students who would appear next year

= failed + absentees = 89 + (2 + 1 + 6 + 1) = 99.

FeedBack

Bookmark

Answer key/Solution

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

A survey was conducted among 600 CAT 2012 aspirants to gauge the popularity of four different Test Series – T1, T2, T3 and T4. It was found that the number of aspirants who had joined T1, T2, T3 and T4 was 209, 217, 288 and 284 respectively. It is also known that:

(i) The number of aspirants who had joined T1, T2 and T3 but not T4 was equal to that of those who had joined T1, T2 and T4 but not T3, which, in turn, was 2 less than that of those who had joined all the four Test Series.

(ii) The number of aspirants who had joined only T1, only T2, only T3 and only T4 was 30, 30, 80 and 60 respectively.

(iii) The number of aspirants who had joined exactly three of the four Test Series was 100.

(iv) The number of aspirants who had joined both T1 and T3 but neither T2 nor T4 was 5 less than that of those who had joined both T1 and T4 but neither T2 nor T3.

(v) The number of aspirants who had joined both T3 and T4 but not T2 was equal to that of those who had joined both T3 and T4 but not T1.

(vi) The number of aspirants who had joined both T1 and T2 was 96 and that of those who had joined both T1 and T2 but neither T3 nor T4 was 28.

(vii) The number of aspirants who had joined both T3 and T4 but neither T1 nor T2 was 55.

Q.47

How many aspirants had joined exactly two of the four Test Series?

Solution:

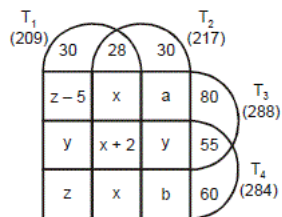
Correct Answer : 201

Bookmark

Answer key/Solution

Let the number of aspirants who joined T1, T2 and T3 but not T4, that of those who had joined T3, T4 and T1 but not T2, that of those who had joined both T1 and T4 but neither T2 nor T3, that of those who had joined both T2 and T3 but neither T1 nor T4 and that of those who joined both T2 and T4 but neither T1 nor T3 be x , y , z , a and b respectively.

Now, the given information can be depicted as shown below.



Now from statement (vi),

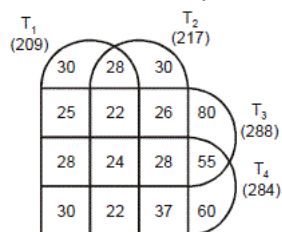
$$28 + x + (x + 2) + x = 96 \Rightarrow x = 22$$

From statement (iii),

$$2x + 2y = 100 \Rightarrow y = 28$$

Similarly, $z = 30$, $a = 26$, $b = 37$

Using the above conclusions, the final break-up of the aspirants across the four Test Series can be depicted as:



The number of aspirants who had joined exactly two test series = $28 + 26 + 55 + 37 + 30 + 25 = 201$.

FeedBack

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

A survey was conducted among 600 CAT 2012 aspirants to gauge the popularity of four different Test Series – T1, T2, T3 and T4. It was found that the number of aspirants who had joined T1, T2, T3 and T4 was 209, 217, 288 and 284 respectively. It is also known that:

- The number of aspirants who had joined T1, T2 and T3 but not T4 was equal to that of those who had joined T1, T2 and T4 but not T3, which, in turn, was 2 less than that of those who had joined all the four Test Series.
- The number of aspirants who had joined only T1, only T2, only T3 and only T4 was 30, 30, 80 and 60 respectively.
- The number of aspirants who had joined exactly three of the four Test Series was 100.
- The number of aspirants who had joined both T1 and T3 but neither T2 nor T4 was 5 less than that of those who had joined both T1 and T4 but neither T2 nor T3.
- The number of aspirants who had joined both T3 and T4 but not T2 was equal to that of those who had joined both T3 and T4 but not T1.
- The number of aspirants who had joined both T1 and T2 was 96 and that of those who had joined both T1 and T2 but neither T3 nor T4 was 28.
- The number of aspirants who had joined both T3 and T4 but neither T1 nor T2 was 55.

Q.48

How many aspirants had joined both T3 and T4?

Solution:

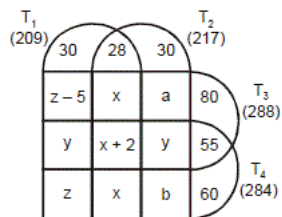
Correct Answer : 135

Bookmark

Answer key/Solution

Let the number of aspirants who joined T1, T2 and T3 but not T4, that of those who had joined T3, T4 and T1 but not T2, that of those who had joined both T1 and T4 but neither T2 nor T3, that of those who had joined both T2 and T3 but neither T1 nor T4 and that of those who joined both T2 and T4 but neither T1 nor T3 be x , y , z , a and b respectively.

Now, the given information can be depicted as shown below.



Now from statement (vi),

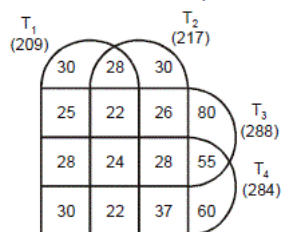
$$28 + x + (x + 2) + x = 96 \Rightarrow x = 22$$

From statement (iii),

$$2x + 2y = 100 \Rightarrow y = 28$$

Similarly, $z = 30$, $a = 26$, $b = 37$

Using the above conclusions, the final break-up of the aspirants across the four Test Series can be depicted as:



The number of aspirants who had joined both T3 and T4 = $28 + 24 + 28 + 55 = 135$.

FeedBack

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

A survey was conducted among 600 CAT 2012 aspirants to gauge the popularity of four different Test Series – T1, T2, T3 and T4. It was found that the number of aspirants who had joined T1, T2, T3 and T4 was 209, 217, 288 and 284 respectively. It is also known that:

- The number of aspirants who had joined T1, T2 and T3 but not T4 was equal to that of those who had joined T1, T2 and T4 but not T3, which, in turn, was 2 less than that of those who had joined all the four Test Series.
- The number of aspirants who had joined only T1, only T2, only T3 and only T4 was 30, 30, 80 and 60 respectively.
- The number of aspirants who had joined exactly three of the four Test Series was 100.
- The number of aspirants who had joined both T1 and T3 but neither T2 nor T4 was 5 less than that of those who had joined both T1 and T4 but neither T2 nor T3.
- The number of aspirants who had joined both T3 and T4 but not T2 was equal to that of those who had joined both T3 and T4 but not T1.
- The number of aspirants who had joined both T1 and T2 was 96 and that of those who had joined both T1 and T2 but neither T3 nor T4 was 28.
- The number of aspirants who had joined both T3 and T4 but neither T1 nor T2 was 55.

Q.49

The number of aspirants who had not joined any of the four Test Series was

Solution:

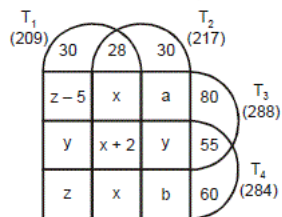
Correct Answer : 75

Bookmark

Answer key/Solution

Let the number of aspirants who joined T1, T2 and T3 but not T4, that of those who had joined T3, T4 and T1 but not T2, that of those who had joined both T1 and T4 but neither T2 nor T3, that of those who had joined both T2 and T3 but neither T1 nor T4 and that of those who joined both T2 and T4 but neither T1 nor T3 be x , y , z , a and b respectively.

Now, the given information can be depicted as shown below.



Now from statement (vi),

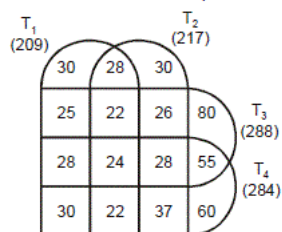
$$28 + x + (x + 2) + x = 96 \Rightarrow x = 22$$

From statement (iii),

$$2x + 2y = 100 \Rightarrow y = 28$$

Similarly, $z = 30$, $a = 26$, $b = 37$

Using the above conclusions, the final break-up of the aspirants across the four Test Series can be depicted as:



From the diagram, we can calculate that the total number of aspirants who had joined at least one of the four Test Series was 525.

Hence, the required number of the aspirants
 $= 600 - 525 = 75$.

FeedBack

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

A survey was conducted among 600 CAT 2012 aspirants to gauge the popularity of four different Test Series – T1, T2, T3 and T4. It was found that the number of aspirants who had joined T1, T2, T3 and T4 was 209, 217, 288 and 284 respectively. It is also known that:

- The number of aspirants who had joined T1, T2 and T3 but not T4 was equal to that of those who had joined T1, T2 and T4 but not T3, which, in turn, was 2 less than that of those who had joined all the four Test Series.
- The number of aspirants who had joined only T1, only T2, only T3 and only T4 was 30, 30, 80 and 60 respectively.
- The number of aspirants who had joined exactly three of the four Test Series was 100.
- The number of aspirants who had joined both T1 and T3 but neither T2 nor T4 was 5 less than that of those who had joined both T1 and T4 but neither T2 nor T3.
- The number of aspirants who had joined both T3 and T4 but not T2 was equal to that of those who had joined both T3 and T4 but not T1.
- The number of aspirants who had joined both T1 and T2 was 96 and that of those who had joined both T1 and T2 but neither T3 nor T4 was 28.
- The number of aspirants who had joined both T3 and T4 but neither T1 nor T2 was 55.

Q.50

If the price of T1, T2, T3 and T4 was Rs. 4000, Rs. 4500, Rs. 3800 and Rs. 6000 respectively, what was the total amount (in Rs. 00') spent by the aspirants who joined exactly three Test Series?

Solution:

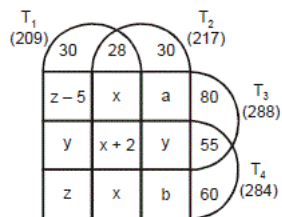
Correct Answer : 13764

Bookmark

Answer key/Solution

Let the number of aspirants who joined T1, T2 and T3 but not T4, that of those who had joined T3, T4 and T1 but not T2, that of those who had joined both T1 and T4 but neither T2 nor T3, that of those who had joined both T2 and T3 but neither T1 nor T4 and that of those who joined both T2 and T4 but neither T1 nor T3 be x , y , z , a and b respectively.

Now, the given information can be depicted as shown below.



Now from statement (vi),

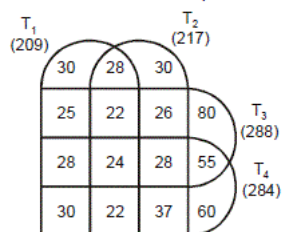
$$28 + x + (x + 2) + x = 96 \Rightarrow x = 22$$

From statement (iii),

$$2x + 2y = 100 \Rightarrow y = 28$$

Similarly, $z = 30$, $a = 26$, $b = 37$

Using the above conclusions, the final break-up of the aspirants across the four Test Series can be depicted as:



Test Series joined	Cost
$T_1 T_2 T_3$	$22 \times (4000 + 4500 + 3800) = 270600$
$T_1 T_2 T_4$	$22 \times (4000 + 4500 + 6000) = 319000$
$T_1 T_3 T_4$	$28 \times (4000 + 3800 + 6000) = 386400$
$T_2 T_3 T_4$	$28 \times (4500 + 3800 + 6000) = 400400$

Hence, the total cost = Rs. 1376400.

FeedBack

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

There are ten students: A, B, C, D, E, F, G, H, J and K. At least five of them will register for Correspondence MBA course and at least five of them will register for Correspondence Java course. The following conditions apply:

- I. At least four students register for both the courses.
- II. A registers for either Correspondence Java course or Correspondence MBA course, but not both.
- III. H registers for Correspondence Java course only.
- IV. For at least one of the two courses, E and G both are registered.
- V. K and B register for different course.
- VI. D and C register for both the courses.
- VII. If J registers for both the courses, then E and F will also register for both the courses.

Q.51

If G registers for one of the two courses then what is the minimum number of students who register for Correspondence Java course?

1 ☐ 5

2 ☐ 6

3 ☐ 7

4 ☐ 8

Solution:

Correct Answer : 2

Bookmark

Answer key/Solution

By the question, we require minimum number of students. Either K or B will take Correspondence Java course. C, D and H also take Correspondence Java course. We need four students for both courses. So E and F will take correspondence Java course. Hence, there are six students who register for Correspondence Java course.

Alternate Method:

4 students (in both courses) + H + (K or B) = 6 students.

FeedBack

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

There are ten students: A, B, C, D, E, F, G, H, J and K. At least five of them will register for Correspondence MBA course and at least five of them will register for Correspondence Java course. The following conditions apply:

I. At least four students register for both the courses.

II. A registers for either Correspondence Java course or Correspondence MBA course, but not both.

III. H registers for Correspondence Java course only.

IV. For at least one of the two courses, E and G both are registered.

V. K and B register for different course.

VI. D and C register for both the courses.

VII. If J registers for both the courses, then E and F will also register for both the courses.

Q.52

If A and B register for different courses then what is the maximum number of students who register for Correspondence MBA course?

1 ☐ 6

2 ☐ 7

3 ☐ 8

4 ☐ 9

Solution:

Correct Answer : 3

By the question, we require maximum number of students who register for Correspondence MBA course. So, A and K will register for Correspondence MBA course. C, D, E, F and J will register for both courses. Also, G will register for Correspondence Java course. Hence, there are eight students who register for Correspondence MBA course.

Alternate Method:

10 – H (Java only) – (B) = 8 students.

FeedBack

Bookmark

Answer key/Solution

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

There are ten students: A, B, C, D, E, F, G, H, J and K. At least five of them will register for Correspondence MBA course and at least five of them will register for Correspondence Java course. The following conditions apply:

I. At least four students register for both the courses.

II. A registers for either Correspondence Java course or Correspondence MBA course, but not both.

III. H registers for Correspondence Java course only.

IV. For at least one of the two courses, E and G both are registered.

V. K and B register for different course.

VI. D and C register for both the courses.

VII. If J registers for both the courses, then E and F will also register for both the courses.

Q.53

If 6 students register for Correspondence Java course, then which of the following could be a complete list of students registered for Correspondence Java course?

1 ☐ A, C, D, E, F and H

2 ☐ A, C, D, E, H and K

3 ☐ B, C, D, E, F and H

4 ☐ C, D, E, H, J and K

Solution:

Bookmark

Correct Answer : 3

It would be best to approach this question by checking the options.

Option (1): Either B or K has to register for Correspondence Java course. But none of them is in the list. Thus, it is not the right list.

Option (2): At least four students should register for both courses. But A, H, K cannot register for more than one course. Thus, it is not the right list.

Option (3): Either B or K will register for Correspondence Java course. So B is a part of the list. H is also a part of the list. C, D, E and F can register for both the courses. Hence, it could be the right list.

Option (4): Here, H and K can register for only one course. The other four students have to register for both the courses. If J registers for both the courses, then E and F necessarily register for both the courses. However, since F is not in the list, it is not the right list.

[FeedBack](#)
[Answer key/Solution](#)

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

There are ten students: A, B, C, D, E, F, G, H, J and K. At least five of them will register for Correspondence MBA course and at least five of them will register for Correspondence Java course. The following conditions apply:

I. At least four students register for both the courses.

II. A registers for either Correspondence Java course or Correspondence MBA course, but not both.

III. H registers for Correspondence Java course only.

IV. For at least one of the two courses, E and G both are registered.

V. K and B register for different course.

VI. D and C register for both the courses.

VII. If J registers for both the courses, then E and F will also register for both the courses.

Q.54

If 7 students register for Correspondence MBA course, then which of the following could be the list of students registered for Correspondence MBA course?

I. A, B, C, D, E, F and G

II. B, C, D, E, F, J and G

III. C, D, E, F, G, J and K

IV. A, C, D, E, G, J and K

1 ☐ Only II and III

2 ☐ Only I, II and III

3 ☐ Only II and IV

4 ☐ All I, II, III and IV

Solution:

Correct Answer : 4

It would be best to approach this question by checking the options.

By going through options we find that all the lists are possible.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)

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

In a B-school named ITK, having 3 batches, a workshop was held on March 22, 2017. In the workshop, the sessions were taken by CEOs of a few top companies. The details of the CEOs are as follows:

CEO Name	Companies
Narayan Murthy	Infosys
Andy Grove	Intel
Kiran Deshpande	MBT
S. G. Pitroda	WorldTel
Kishor Bayani	Pantaloons

It is also known that:

(i) The batches are denoted as I, II and III.

(ii) Narayan Murthy & Andy Grove, Andy Grove & Kiran Deshpande, Kiran Deshpande & S. G. Pitroda, S. G. Pitroda & Kishor Bayani, Kishor Bayani & Narayan Murthy are experts in Leading, Following and Team Dynamics (LFTD); Strategic Management (SM); Information Technology and Systems (ITS); Services Marketing (SMkt); and International Brand Marketing (IBM) respectively.

(iii) In each batch, 5 sessions on five different subjects were held, and each session was taken by a different CEO.

- (iv) No CEO took session in two or more batches at the same time.
 (v) Each CEO took sessions only on the subjects in which he was expert.

The partial session plan is given below:

Session	Timings	Batch					
		I		II		III	
		CEO	Subject	CEO	Subject	CEO	Subject
1	9:00 am - 11:00 am				ITS	Kishor Bayani	
2	11:00 am - 1:00 pm	Kiran Deshpande				Narayan Murthy	
3	2:00 pm - 4:00 pm			Andy Grove			ITS
4	4:00 pm - 6:00 pm	S.G.Pitroda			IBM		
5	6:30 pm - 8:30 pm		IBM				SM

Q.55

In batch I, SM and ITS are taught respectively by

- 1 ☐ Andy Grove and Kiran Deshpande
 2 ☐ Kiran Deshpande and S.G. Pitroda
 3 ☐ Andy Grove and S. G. Pitroda
 4 ☐ Cannot be determined

Solution:

Correct Answer : 1

🔖 Bookmark

🔍 Answer key/Solution

For batch I,
Andy Grove cannot take session 3 as he is busy with batch II at same time. He cannot take session 5 also, as he is not an expert in IBM. So, he will take session 1 of batch I.

For batch III,
S.G. Pitroda cannot take session 4 as he is already occupied with batch I and he cannot take session 5 as he is not an expert in SM. So, he will take session 3 of batch III.

Now, session 5 can be taken by either Kiran Deshpande or Andy Grove. If Andy Grove takes session 5 of SM, then Kiran Deshpande will have to take ITS, which is not possible as S.G. Pitroda is already scheduled for session 3 of ITS. Therefore, Kiran Deshpande will take session 5 and Andy Grove will take session 4.

Andy Grove is an expert in LFTD and SM but SM is already scheduled with Kiran Deshpande, so Andy Grove will take LFTD. Similarly, Narayan Murthy will take IBM and Kishor Bayani will take SMkt.

So the table will look like:

Session	Batch					
	I		II		III	
	Faculty	Subject	Faculty	Subject	Faculty	Subject
1	Andy Grove			ITS	Kishor Bayani	SMkt
2	Kiran Deshpande				Narayan Murthy	IBM
3			Andy Grove		S.G. Pitroda	ITS
4	S.G. Pitroda			IBM	Andy Grove	LFTD
5		IBM			Kiran Deshpande	SM

Case I: Andy Grove teaching LFTD to batch II in session 3.

If Andy Grove teaches LFTD to batch II in session 3, SM will be taken by Kiran Deshpande. But Kiran Deshpande is not available for batch II in session 2 or session 5. Thus, this case is not possible.

Case II: Andy Grove teaching SM to batch II in session 3.

Batch II: Thus, LFTD can be taught by Narayan Murthy only. But he is with batch III in session 2. Hence, he can be with batch II in session 5 only.

⇒ IBM in session 4 will be taught by Bayani.

⇒ Pitroda teaches SMkt in session 2.

⇒ Kiran Deshpande teaches ITS in session 1.

Batch I:

IBM in session 5 can be taught by Kishor Bayani only, because Narayan Murthy is busy with batch II.

⇒ Narayan Murthy teaches LFTD in session 3. ⇒ Andy Grove teaches SM in session 1.

⇒ Kiran Deshpande teaches ITS in session 2. ⇒ S.G. Pitroda teaches SMkt in session 4.

Session	Batch					
	I		II		III	
	Faculty	Subject	Faculty	Subject	Faculty	Subject
1	Andy Grove	SM	Kiran Deshpande	ITS	Kishor Bayani	SMkt
2	Kiran Deshpande	ITS	S.G. Pitroda	SMkt	Narayan Murthy	IBM
3	Narayan Murthy	LFTD	Andy Grove	SM	S.G. Pitroda	ITS
4	S.G. Pitroda	SMkt	Kishor Bayani	IBM	Andy Grove	LFTD
5	Kishor Bayani	IBM	Narayan Murthy	LFTD	Kiran Deshpande	SM

In batch I, SM and ITS are taught by Andy Grove and Kiran Deshpande respectively.

FeedBack

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

In a B-school named ITK, having 3 batches, a workshop was held on March 22, 2017. In the workshop, the sessions were taken by CEOs of a few top companies. The details of the CEOs are as follows:

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(iv) No CEO took session in two or more batches at the same time.

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The partial session plan is given below:

Session	Timings	Batch					
		I		II		III	
		CEO	Subject	CEO	Subject	CEO	Subject
1	9:00 am - 11:00 am				ITS	Kishor Bayani	
2	11:00 am - 1:00 pm	Kiran Deshpande				Narayan Murthy	
3	2:00 pm - 4:00 pm			Andy Grove			ITS
4	4:00 pm - 6:00 pm	S.G.Pitroda			IBM		
5	6:30 pm - 8:30 pm		IBM				SM

Q.56

For batch III, IBM and SM are taught respectively by

- 1 ☐ Narayan Murthy and Andy Grove
- 2 ☐ Kishor Bayani and Andy Grove
- 3 ☐ Narayan Murthy and Kiran Deshpande
- 4 ☐ Kiran Deshpande and Kishor Bayani

Solution:

Correct Answer : 3

For batch I,

Andy Grove cannot take session 3 as he is busy with batch II at same time. He cannot take session 5 also, as he is not an expert in IBM. So, he will take session 1 of batch I.

For batch III,

S.G. Pitroda cannot take session 4 as he is already occupied with batch I and he cannot take session 5 as he is not an expert in SM. So, he will take session 3 of batch III.

Now, session 5 can be taken by either Kiran Deshpande or Andy Grove. If Andy Grove takes session 5 of SM, then Kiran Deshpande will have to take ITS, which is not possible as S.G. Pitroda is already scheduled for session 3 of ITS. Therefore, Kiran Deshpande will take session 5 and Andy Grove will take session 4.

Andy Grove is an expert in LFTD and SM but SM is already scheduled with Kiran Deshpande, so Andy Grove will take LFTD. Similarly, Narayan Murthy will take IBM and Kishor Bayani will take SMkt.

So the table will look like:

Session	Batch					
	I		II		III	
	Faculty	Subject	Faculty	Subject	Faculty	Subject
1	Andy Grove			ITS	Kishor Bayani	SMkt
2	Kiran Deshpande				Narayan Murthy	IBM
3			Andy Grove		S.G. Pitroda	ITS
4	S.G. Pitroda			IBM	Andy Grove	LFTD
5		IBM			Kiran Deshpande	SM

Case I: Andy Grove teaching LFTD to batch II in session 3.

If Andy Grove teaches LFTD to batch II in session 3, SM will be taken by Kiran Deshpande. But Kiran Deshpande is not available for batch II in session 2 or session 5. Thus, this case is not possible.

Case II: Andy Grove teaching SM to batch II in session 3.

Batch II: Thus, LFTD can be taught by Narayan Murthy only. But he is with batch III in session 2. Hence, he can be with batch II in session 5 only.

⇒ IBM in session 4 will be taught by Bayani.

⇒ Pitroda teaches SMkt in session 2.

⇒ Kiran Deshpande teaches ITS in session 1.

Batch I:

IBM in session 5 can be taught by Kishor Bayani only, because Narayan Murthy is busy with batch II.

⇒ Narayan Murthy teaches LFTD in session 3. ⇒ Andy Grove teaches SM in session 1.

⇒ Kiran Deshpande teaches ITS in session 2. ⇒ S.G. Pitroda teaches SMkt in session 4.

Session	Batch					
	I		II		III	
	Faculty	Subject	Faculty	Subject	Faculty	Subject
1	Andy Grove	SM	Kiran Deshpande	ITS	Kishor Bayani	SMkt
2	Kiran Deshpande	ITS	S.G. Pitroda	SMkt	Narayan Murthy	IBM
3	Narayan Murthy	LFTD	Andy Grove	SM	S.G. Pitroda	ITS
4	S.G. Pitroda	SMkt	Kishor Bayani	IBM	Andy Grove	LFTD
5	Kishor Bayani	IBM	Narayan Murthy	LFTD	Kiran Deshpande	SM

In batch III, IBM and SM are taught by Narayan Murthy and Kiran Deshpande respectively.

Bookmark

Answer key/Solution

[FeedBack](#)

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

In a B-school named ITK, having 3 batches, a workshop was held on March 22, 2017. In the workshop, the sessions were taken by CEOs of a few top companies. The details of the CEOs are as follows:

CEO Name	Companies
Narayan Murthy	Infosys
Andy Grove	Intel
Kiran Deshpande	MBT
S. G. Pitroda	WorldTel
Kishor Bayani	Pantaloons

It is also known that:

- (i) The batches are denoted as I, II and III.
- (ii) Narayan Murthy & Andy Grove, Andy Grove & Kiran Deshpande, Kiran Deshpande & S. G. Pitroda, S. G. Pitroda & Kishor Bayani, Kishor Bayani & Narayan Murthy are experts in Leading, Following and Team Dynamics (LFTD); Strategic Management (SM); Information Technology and Systems (ITS); Services Marketing (SMkt); and International Brand Marketing (IBM) respectively.
- (iii) In each batch, 5 sessions on five different subjects were held, and each session was taken by a different CEO.
- (iv) No CEO took session in two or more batches at the same time.
- (v) Each CEO took sessions only on the subjects in which he was expert.

The partial session plan is given below:

Session	Timings	Batch					
		I		II		III	
		CEO	Subject	CEO	Subject	CEO	Subject
1	9:00 am - 11:00 am				ITS	Kishor Bayani	
2	11:00 am - 1:00 pm	Kiran Deshpande				Narayan Murthy	
3	2:00 pm - 4:00 pm			Andy Grove			ITS
4	4:00 pm - 6:00 pm	S.G.Pitroda			IBM		
5	6:30 pm - 8:30 pm		IBM				SM

Q.57

Kishor Bayani and Narayan Murthy taught which subjects to batch I?

- 1 ☐ SMkt and LFTD
- 2 ☐ IBM and LFTD
- 3 ☐ SMkt and IBM
- 4 ☐ Cannot be determined

Solution:

Correct Answer : 2

For batch I,
Andy Grove cannot take session 3 as he is busy with batch II at same time. He cannot take session 5 also, as he is not an expert in IBM. So, he will take session 1 of batch I.

For batch III,
S.G. Pitroda cannot take session 4 as he is already occupied with batch I and he cannot take session 5 as he is not an expert in SM. So, he will take session 3 of batch III.

Now, session 5 can be taken by either Kiran Deshpande or Andy Grove. If Andy Grove takes session 5 of SM, then Kiran Deshpande will have to take ITS, which is not possible as S.G. Pitroda is already scheduled for session 3 of ITS. Therefore, Kiran Deshpande will take session 5 and Andy Grove will take session 4.

Andy Grove is an expert in LFTD and SM but SM is already scheduled with Kiran Deshpande, so Andy Grove will take LFTD. Similarly, Narayan Murthy will take IBM and Kishor Bayani will take SMkt.

So the table will look like:

Session	Batch					
	I		II		III	
	Faculty	Subject	Faculty	Subject	Faculty	Subject
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2	Kiran Deshpande				Narayan Murthy	IBM
3			Andy Grove		S.G. Pitroda	ITS
4	S.G. Pitroda			IBM	Andy Grove	LFTD
5		IBM			Kiran Deshpande	SM

Case I: Andy Grove teaching LFTD to batch II in session 3.

If Andy Grove teaches LFTD to batch II in session 3, SM will be taken by Kiran Deshpande. But Kiran Deshpande is not available for batch II in session 2 or session 5. Thus, this case is not possible.

Case II: Andy Grove teaching SM to batch II in session 3.

Batch II: Thus, LFTD can be taught by Narayan Murthy only. But he is with batch III in session 2. Hence, he can be with batch II in session 5 only.

- ⇒ IBM in session 4 will be taught by Bayani.
 ⇒ Pitroda teaches SMkt in session 2.
 ⇒ Kiran Deshpande teaches ITS in session 1.

Batch I:

- IBM in session 5 can be taught by Kishor Bayani only, because Narayan Murthy is busy with batch II.
 ⇒ Narayan Murthy teaches LFTD in session 3. ⇒ Andy Grove teaches SM in session 1.
 ⇒ Kiran Deshpande teaches ITS in session 2. ⇒ S.G. Pitroda teaches SMkt in session 4.

Session	Batch					
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	Faculty	Subject	Faculty	Subject	Faculty	Subject
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2	Kiran Deshpande	ITS	S.G. Pitroda	SMkt	Narayan Murthy	IBM
3	Narayan Murthy	LFTD	Andy Grove	SM	S.G. Pitroda	ITS
4	S.G. Pitroda	SMkt	Kishor Bayani	IBM	Andy Grove	LFTD
5	Kishor Bayani	IBM	Narayan Murthy	LFTD	Kiran Deshpande	SM

In batch I, Kishor Bayani taught IBM and Narayan Murthy taught LFTD.

[FeedBack](#)
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[Answer key/Solution](#)

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

In a B-school named ITK, having 3 batches, a workshop was held on March 22, 2017. In the workshop, the sessions were taken by CEOs of a few top companies. The details of the CEOs are as follows:

CEO Name	Companies
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Kiran Deshpande	MBT
S. G. Pitroda	WorldTel
Kishor Bayani	Pantaloons

It is also known that:

- (i) The batches are denoted as I, II and III.
- (ii) Narayan Murthy & Andy Grove, Andy Grove & Kiran Deshpande, Kiran Deshpande & S. G. Pitroda, S. G. Pitroda & Kishor Bayani, Kishor Bayani & Narayan Murthy are experts in Leading, Following and Team Dynamics (LFTD); Strategic Management (SM); Information Technology and Systems (ITS); Services Marketing (SMkt); and International Brand Marketing (IBM) respectively.
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3	2:00 pm - 4:00 pm			Andy Grove			ITS
4	4:00 pm - 6:00 pm	S.G.Pitroda			IBM		
5	6:30 pm - 8:30 pm		IBM				SM

Q.58

Who among the following takes the last two lectures of batch II?

- 1 ☐ Narayan Murthy and Kishor Bayani
- 2 ☐ Kishor Bayani and S. G. Pitroda
- 3 ☐ Kiran Deshpande and Kishor Bayani
- 4 ☐ Cannot be determined

Solution:

Correct Answer : 1

 Bookmark

 Answer key/Solution

For batch I,

Andy Grove cannot take session 3 as he is busy with batch II at same time. He cannot take session 5 also, as he is not an expert in IBM. So, he will take session 1 of batch I.

For batch III,

S.G. Pitroda cannot take session 4 as he is already occupied with batch I and he cannot take session 5 as he is not an expert in SM. So, he will take session 3 of batch III.

Now, session 5 can be taken by either Kiran Deshpande or Andy Grove. If Andy Grove takes session 5 of SM, then Kiran Deshpande will have to take ITS, which is not possible as S.G. Pitroda is already scheduled for session 3 of ITS. Therefore, Kiran Deshpande will take session 5 and Andy Grove will take session 4.

Andy Grove is an expert in LFTD and SM but SM is already scheduled with Kiran Deshpande, so Andy Grove will take LFTD. Similarly, Narayan Murthy will take IBM and Kishor Bayani will take SMkt.

So the table will look like:

Session	Batch					
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	Faculty	Subject	Faculty	Subject	Faculty	Subject
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3			Andy Grove		S.G. Pitroda	ITS
4	S.G. Pitroda			IBM	Andy Grove	LFTD
5		IBM			Kiran Deshpande	SM

Case I: Andy Grove teaching LFTD to batch II in session 3.

If Andy Grove teaches LFTD to batch II in session 3, SM will be taken by Kiran Deshpande. But Kiran Deshpande is not available for batch II in session 2 or session 5. Thus, this case is not possible.

Case II: Andy Grove teaching SM to batch II in session 3.

Batch II: Thus, LFTD can be taught by Narayan Murthy only. But he is with batch III in session 2. Hence, he can be with batch II in session 5 only.

⇒ IBM in session 4 will be taught by Bayani.

⇒ Pitroda teaches SMkt in session 2.

⇒ Kiran Deshpande teaches ITS in session 1.

Batch I:

IBM in session 5 can be taught by Kishor Bayani only, because Narayan Murthy is busy with batch II.

⇒ Narayan Murthy teaches LFTD in session 3. ⇒ Andy Grove teaches SM in session 1.

⇒ Kiran Deshpande teaches ITS in session 2. ⇒ S.G. Pitroda teaches SMkt in session 4.

Session	Batch					
	I		II		III	
	Faculty	Subject	Faculty	Subject	Faculty	Subject
1	Andy Grove	SM	Kiran Deshpande	ITS	Kishor Bayani	SMkt
2	Kiran Deshpande	ITS	S.G. Pitroda	SMkt	Narayan Murthy	IBM
3	Narayan Murthy	LFTD	Andy Grove	SM	S.G. Pitroda	ITS
4	S.G. Pitroda	SMkt	Kishor Bayani	IBM	Andy Grove	LFTD
5	Kishor Bayani	IBM	Narayan Murthy	LFTD	Kiran Deshpande	SM

The last two lectures of batch II were taken by Narayan Murthy and Kishor Bayani.

FeedBack

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

Sixteen teams – named A to P in the English alphabet – participated in a football tournament named Diamond Cup. In the first round of the tournament, the teams were divided into two groups – X and Y – with eight teams in each group. In this round, a total of eight matches were played and all the teams played a match each; each team of Group X played against one of the teams of Group Y. Further information about the matches played in the first round is given below:

- The matches were numbered 1 to 8 according to the order in which they were played.
- A, H and L were in the same group. The same was true for M, J and E.
- H was in Group X.
- P was in Group Y and played against F.
- The 6th match was played between M and C; the 8th match was played between H and J.
- D was not in the group which had C, K and O. G was not in the group which had B, N and I.
- B played its match just before P's match and immediately after I's match.
- G and K played the 1st match and 2nd match respectively.
- L did not play the 1st, 3rd, 5th or 7th match.

Q.59

If D and F played the 1st match and the 5th match respectively, then B played against

1 ○ A

2 ☐ L3 ☐ O4 ☐ Either (1), (2) or (3)**Solution:****Correct Answer : 2**

Using statements (ii), (iv), (v), and (vi), we can get the distribution of the teams in groups X and Y as:

Group	X	Y
Teams	F, A, H, L, C, K, O, G	P, J, M, E, D, B, N, I

From statements (iv), (v), (vii), (viii) and (ix), we can draw the table showing order in which the matches were played as:

Teams playing matches against each other		Match No.
X	Y	
F	P	
A		
H	J	8 th
L		4 th
C	M	6 th
K		2 nd
O		
G		1 st

As F played the 5th match, P must have played the 5th match. Since B played its match just before P, he must have played 4th match. Also, L played the 4th match and thus B played its match again L.
Bookmark **Answer key/Solution****Directions for questions 59 to 62: Answer the questions on the basis of the information given below.**

Sixteen teams – named A to P in the English alphabet – participated in a football tournament named Diamond Cup. In the first round of the tournament, the teams were divided into two groups – X and Y – with eight teams in each group. In this round, a total of eight matches were played and all the teams played a match each; each team of Group X played against one of the teams of Group Y. Further information about the matches played in the first round is given below:

- (i) The matches were numbered 1 to 8 according to the order in which they were played.
- (ii) A, H and L were in the same group. The same was true for M, J and E.
- (iii) H was in Group X.
- (iv) P was in Group Y and played against F.
- (v) The 6th match was played between M and C; the 8th match was played between H and J.
- (vi) D was not in the group which had C, K and O. G was not in the group which had B, N and I.
- (vii) B played its match just before P's match and immediately after I's match.
- (viii) G and K played the 1st match and 2nd match respectively.
- (ix) L did not play the 1st, 3rd, 5th or 7th match.

Q.60

If A played against I, then O could have played its match against how many teams?

1 ☐ 22 ☐ 33 ☐ 44 ☐ 5**Solution:****Correct Answer : 2** **Bookmark** **Answer key/Solution**

Using statements (ii), (iv), (v), and (vi), we can get the distribution of the teams in groups X and Y as:

Group	X	Y
Teams	F, A, H, L, C, K, O, G	P, J, M, E, D, B, N, I

From statements (iv), (v), (vii), (viii) and (ix), we can draw the table showing order in which the matches were played as:

Teams playing matches against each other		Match No.
X	Y	
F	P	
A		
H	J	8 th
L		4 th
C	M	6 th
K		2 nd
O		
G		1 st

From the table and statement (vii), it can be concluded that I played the 3rd match, and B and P played the 4th and 5th matches respectively. The only possible match in which O participated was 7th match. The other player who participated in 7th match was either E, D or N. Hence, O could have played against 3 teams.

FeedBack

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

Sixteen teams – named A to P in the English alphabet – participated in a football tournament named Diamond Cup. In the first round of the tournament, the teams were divided into two groups – X and Y – with eight teams in each group. In this round, a total of eight matches were played and all the teams played a match each; each team of Group X played against one of the teams of Group Y. Further information about the matches played in the first round is given below:

- (i) The matches were numbered 1 to 8 according to the order in which they were played.
- (ii) A, H and L were in the same group. The same was true for M, J and E.
- (iii) H was in Group X.
- (iv) P was in Group Y and played against F.
- (v) The 6th match was played between M and C; the 8th match was played between H and J.
- (vi) D was not in the group which had C, K and O. G was not in the group which had B, N and I.
- (vii) B played its match just before P's match and immediately after I's match.
- (viii) G and K played the 1st match and 2nd match respectively.
- (ix) L did not play the 1st, 3rd, 5th or 7th match.

Q.61

If A played against I, then which of the following statements was definitely true?

- 1 ☐ B played against L
- 2 ☐ M played its match before P's match
- 3 ☐ Neither (1) nor (2)
- 4 ☐ Both (1) and (2)

Solution:

Correct Answer : 1

Using statements (ii), (iv), (v), and (vi), we can get the distribution of the teams in groups X and Y as:

Group	X	Y
Teams	F, A, H, L, C, K, O, G	P, J, M, E, D, B, N, I

From statements (iv), (v), (vii), (viii) and (ix), we can draw the table showing order in which the matches were played as:

Teams playing matches against each other		Match No.
X	Y	
F	P	
A		
H	J	8 th
L		4 th
C	M	6 th
K		2 nd
O		
G		1 st

B played the 4th match against L.

FeedBack

Bookmark

Answer key/Solution

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

Sixteen teams – named A to P in the English alphabet – participated in a football tournament named Diamond Cup. In the first round of the tournament, the teams were divided into two groups – X and Y – with eight teams in each group. In this round, a total of eight matches were played and all the teams played a match each; each team of Group X played against one of the teams of Group Y. Further information about the matches played in the first round is given below:

- (i) The matches were numbered 1 to 8 according to the order in which they were played.
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- (iii) H was in Group X.
- (iv) P was in Group Y and played against F.
- (v) The 6th match was played between M and C; the 8th match was played between H and J.
- (vi) D was not in the group which had C, K and O. G was not in the group which had B, N and I.
- (vii) B played its match just before P's match and immediately after I's match.
- (viii) G and K played the 1st match and 2nd match respectively.
- (ix) L did not play the 1st, 3rd, 5th or 7th match.

Q.62

In which of the following match did F participate?

1 ☐ 3rd

2 ☐ 5th

3 ☐ 7th

4 ☐ Either (1) or (2)

Solution:

Correct Answer : 4

Using statements (ii), (iv), (v), and (vi), we can get the distribution of the teams in groups X and Y as:

Group	X	Y
Teams	F, A, H, L, C, K, O, G	P, J, M, E, D, B, N, I

From statements (iv), (v), (vii), (viii) and (ix), we can draw the table showing order in which the matches were played as:

Teams playing matches against each other		Match No.
X	Y	
F	P	
A		
H	J	8 th
L		4 th
C	M	6 th
K		2 nd
O		
G		1 st

F played its match against P, who could play 3rd or 5th match.

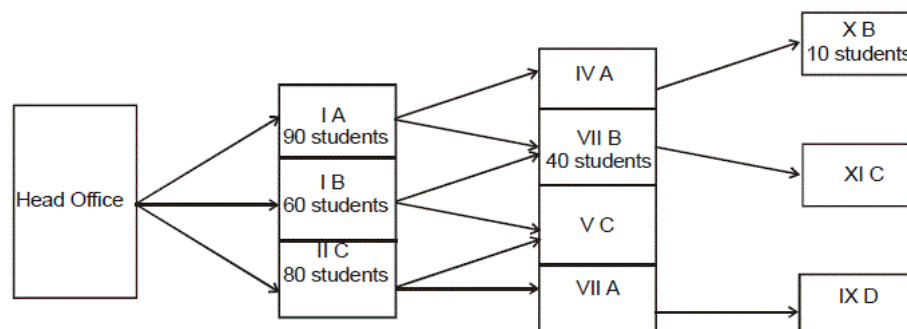
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[Answer key/Solution](#)

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

KAT examination was conducted in the Indus World School yesterday. The number of students who have appeared in the exam in each classroom is observed to be always a multiple of ten. Question papers are distributed from the Head-Office to all the classrooms. Number of students taking the exam in some classrooms is known. The following figure provides information about the route through which the question papers are distributed to each classroom



Additional Information given:

- (i) Question papers from one classroom to another classroom can be passed only when question paper is distributed to every student in the previous classroom.
- (ii) There are 450 question papers in the Head-Office and 150 question papers are sent through each route originating from the Head-Office.
- (iii) Each and every students gets exactly one question paper.
- (iv) In the end all the question papers were distributed.

Q.63

If the number of students in classroom XI C is not less than 50 then what could be the maximum number of question papers that can come to classroom V C



Solution:

Correct Answer : 90

Your Answer : 90

For finding the maximum number of question papers coming to V C. The number of students in IV A, VII A, IX D and XI C has to be minimum i.e. 10, 50, 10 and 10 respectively.

Sum of minimum number of question papers required in I A, IV A, X B and VII B = $90 + 10 + 10 + 40 = 150$

Let us assume that requirement of classes I A, IV A, X B and VII B is fulfilled by 150 question papers coming to class I A.

Hence, requirements of classes XI C and V C are to be fulfilled by question papers coming from I B.

Since class XI C can receive question papers only from class VII B, therefore 50 question papers from class I B should come to class VII B.

Maximum number of question papers that can come to V C from II C = $(150 - (80 + 10 + 10)) = 50$

Maximum number of question papers that can come to class V C from class I B = $150 - (60 + 50) = 40$.

∴ Maximum number of question papers that can come to class V C = $50 + 40 = 90$.

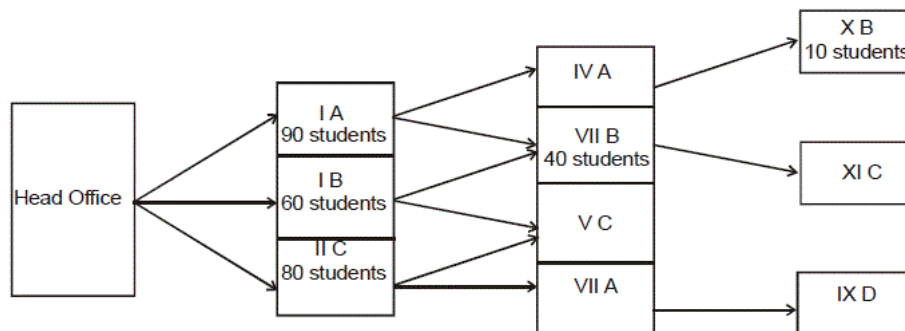
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Answer key/Solution

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

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- (iii) Each and every students gets exactly one question paper.
- (iv) In the end all the question papers were distributed.

Q.64

If the number of students in classroom IX D is least possible, then a minimum of how many students are there in classroom IV A such that number of students in classrooms XI C and V C are equal and number of students in classroom VII A is 40?



Solution:

Correct Answer : 20

Your Answer : 20

Let the number of students in each of the classes V C and XI C be 'x' each.

Least possible number of students in IX D = 10

Hence total number of students in classes IV A, V C and XI C = $(3 \times 150) - (90 + 60 + 80 + 40 + 40 + 10 + 10)$
 $= 450 - 330 = 120$

As number of students in each class is a multiple of 10

∴ x is a multiple of 10 and 2x is a multiple of 20

Hence, minimum number of students in class IV A will be when x = 50,

∴ Minimum number of students in IV A = $120 - 100 = 20$.

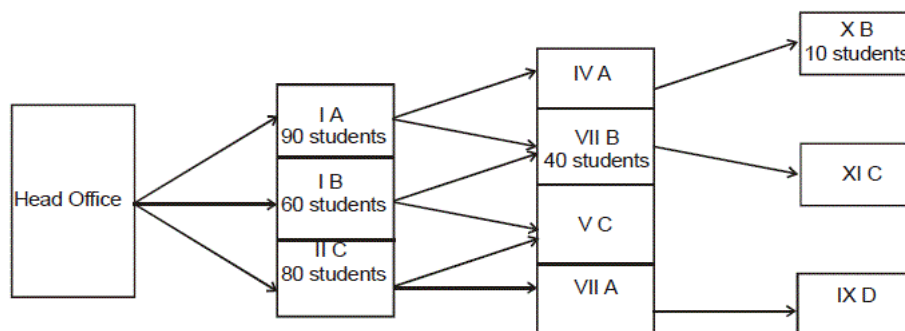
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Bookmark

Answer key/Solution

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KAT examination was conducted in the Indus World School yesterday. The number of students who have appeared in the exam in each classroom is observed to be always a multiple of ten. Question papers are distributed from the Head-Office to all the classrooms. Number of students taking the exam in some classrooms is known. The following figure provides information about the route through which the question papers are distributed to each classroom



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- (iv) In the end all the question papers were distributed.

Q.65

If time taken (in seconds) to distribute the question papers in a classroom is equal to the number of students in the classroom, then find the maximum time (in seconds) in which the question papers will be distributed in V C? (Assume that the time taken to travel from one classroom to other or Head-office to a classroom is negligible)



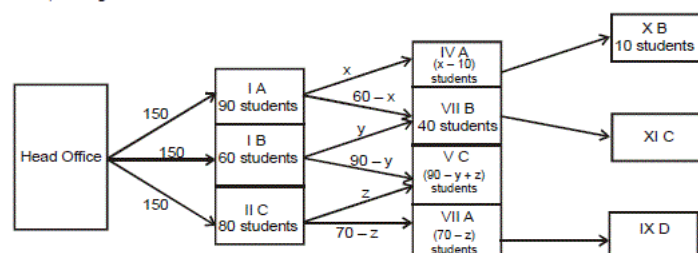
Solution:

Correct Answer : 130

Your Answer : 130

Let the number of question papers going from classroom I A to classroom IV A be x .
Therefore, the number of question papers going from classroom I A to classroom VII B will be $60 - x$.
Let the number of question papers going from classroom I B to classroom VII B be y and
let the number of question papers going from classroom II C to classroom V C be z .
 \therefore The number of question papers going from classroom I B to classroom V C will be $90 - y$ and
the number of question papers going from classroom II C to classroom VII A will be $70 - z$.

Thus, the figure would be as follows:



The question can be interpreted as; find the maximum number of student in classroom V C,

i.e. maximize $(90 - y + z)$.

In order to do so, y should be minimum possible and z should be maximum possible.

Minimum number of students in classrooms VII A and IX D is 10 each.

\therefore Maximum value of $z = 50$.

Also, minimum number of students in classrooms IV A and XI C is 10 each.

\therefore Total number of students in classrooms IV A, X B, XI C and VII B combined = 70.

\therefore Minimum value of $y = 70 - 60 = 10$.

\therefore Maximum value of $(90 - y + z) = 90 - 10 + 50 = 130$.

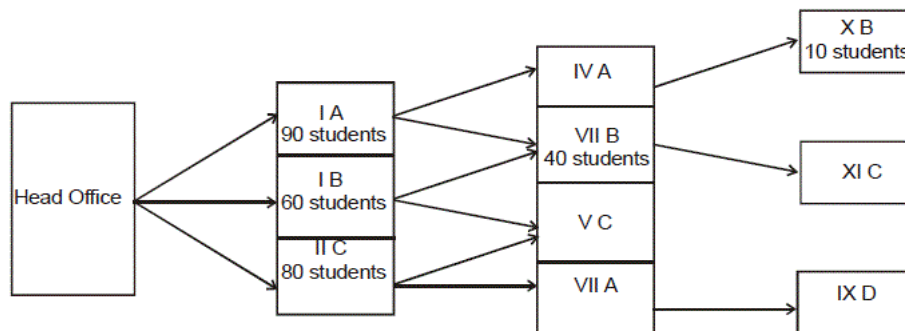
FeedBack

Bookmark

Answer key/Solution

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

KAT examination was conducted in the Indus World School yesterday. The number of students who have appeared in the exam in each classroom is observed to be always a multiple of ten. Question papers are distributed from the Head-Office to all the classrooms. Number of students taking the exam in some classrooms is known. The following figure provides information about the route through which the question papers are distributed to each classroom



Additional Information given:

- (i) Question papers from one classroom to another classroom can be passed only when question paper is distributed to every student in the previous classroom.
- (ii) There are 450 question papers in the Head-Office and 150 question papers are sent through each route originating from the Head-Office.
- (iii) Each and every students gets exactly one question paper.
- (iv) In the end all the question papers were distributed.

Q.66

If number of students taking the exam in classroom VII A is 50 then find the maximum possible number of students in classroom IV A?



Solution:

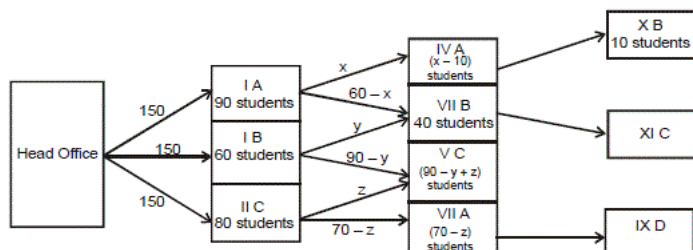
Correct Answer : 50

Your Answer : 50

Bookmark

Answer key/Solution

Let the number of question papers going from classroom I A to classroom IV A be x .
 Therefore, the number of question papers going from classroom I A to classroom VII B will be $60 - x$.
 Let the number of question papers going from classroom I B to classroom VII B be y and
 let the number of question papers going from classroom II C to classroom V C be z .
 \therefore The number of question papers going from classroom I B to classroom V C will be $90 - y$ and
 the number of question papers going from classroom II C to classroom VII A will be $70 - z$.
 Thus, the figure would be as follows:



The question asks us to maximize the value of $(x - 10)$.

By the problem, $70 - z = 50$

$\Rightarrow z = 20$.

In order to maximize the value of $(x - 10)$ we must maximize the value of x .

The number of students in classroom V C = $90 - y + z = 110 - y$.

The number of question papers going from classroom I B to classroom V C = $90 - y$.

$\therefore 90 - y \geq 0$.

$\Rightarrow y \leq 90$.

\therefore Maximum value of $y = 90$.

Thus, question papers coming from classroom I B can be distributed to all students of classrooms VII B and XI C.

Hence, no paper needs to go from classroom I A to classroom VII B.

\therefore Number of papers going from classroom I A to classroom IV A is maximum.

Thus, number of students in classroom IV A = $(150 - 90) - 10 = 50$.

FeedBack

Sec 3

Q.67

Veer adds ' x ' litres water to pure milk to make a 104-litre milk-water solution. He sells this solution at a price that is 10% more than the cost price of pure milk and makes a profit of 43% on this transaction. If he adds ' x ' litres water to 120 litres pure milk and sells the resulting solution at the cost price of pure milk, then what is his profit percentage in this transaction? (Assume that water comes free of cost)

1 ☐ 25%

2 ☐ 32%

3 ☐ 30%

4 ☐ 20%**Solution:****Correct Answer : 4**

Let the original cost price of milk per litre = Rs.y
 Total cost price of the solution = Rs.((104 - x) × y)
 Total selling price of the solution = Rs.(104 × 1.1 × y)
 Profit percentage

$$= \frac{(104 \times 1.1 \times y) - ((104 - x) \times y)}{((104 - x) \times y)} = \frac{43}{100}$$

⇒ x = 24 litres

Total cost price of the solution when 24 litres of water is added to 120 litres of pure milk = Rs.(120 × y)
 Total selling price of the solution when 24 litres of water is added to 120 litres of pure milk = Rs.(144 × y)

$$\therefore \text{Profit percentage} = \left(\frac{144 - 120}{120} \right) \times 100 = 20\%$$

Q.68

Each of Aman, Bhuvesh and Chandan has a certain number of coins with him. The ratio of the number of coins with Aman to that with Chandan is 2 : 3 and the ratio of the number of coins with Chandan to that with Bhuvesh is 5 : 9. If the number of coins with Bhuvesh is 35 more than 2 times the number of coins with Aman, then find the total number of coins with Aman, Bhuvesh and Chandan put together.

**Solution:****Correct Answer : 260****Your Answer : 260**

Let the number of coins with Aman, Bhuvesh and Chandan be 'a', 'b' and 'c' respectively.

a : c = 2 : 3

c : b = 5 : 9

⇒ a : b : c = 10 : 27 : 15

Let a = 10x, b = 15x and c = 27x

Now 27x = 20x + 35

⇒ x = 5

∴ Total number of coins = (10 + 15 + 27) × 5 = 260.

Q.69

100 litres of a cocktail of vodka and 'lime cordial' contains 64 litres of vodka. Initially, 20 litres of the cocktail is taken out and is replaced with water, and then, 40 litres of resulting cocktail is taken out and is replaced with lime cordial. The percentage of vodka in the final cocktail is

1 ☐ 25.62%2 ☐ 22.56%3 ☐ 34.64%4 ☐ 30.72%**Solution:****Correct Answer : 4**

The important thing to understand here is that in order to determine the concentration of vodka, it does not matter that the replaced fluid is water or lime cordial or any other fluid as this does not affect the concentration of vodka. What matters is the quantity of mixture replaced only.

$$\text{Initial concentration of vodka} = \frac{64}{100} = \frac{16}{25}$$

After the first operation, it becomes

$$\left(\frac{16}{25} \right) \times \left\{ \frac{(100 - 20)}{100} \right\} = \left(\frac{16}{25} \right) \times \left(\frac{4}{5} \right) = \frac{64}{125}$$

After the second operation, it becomes

$$\left(\frac{64}{125} \right) \times \left\{ \frac{(100 - 40)}{100} \right\} = \left(\frac{64}{125} \right) \times \left(\frac{3}{5} \right) = \frac{192}{625}$$

= 30.72%.

Q.70

A survey was conducted among 1200 people to gauge the popularity of three teams – Mumbai Indian, Chennai Superking and Delhi Daredevils. After the survey, the following observations were made about the number of supporters:

Mumbai Indian: 300; Both Mumbai Indian and Chennai Superking: 10; Both Chennai Superking and Delhi Daredevils: 206; Only Chennai Superking: 160.

The ratio of the number of supporters of Mumbai Indian to the number of supporters of Delhi Daredevils was 1 : 2. It is also known that the number of people who supported all the three teams was 6. The number of people who did not support any of the three teams is 194.

How many people supported Mumbai Indian and Delhi Daredevils but not Chennai Superking?

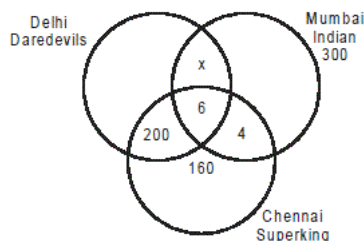
Solution:

Correct Answer : 48

The number of people supported all the three teams is 6.

The number of people who did not support any team was 194. So the number of people who supported at least one team was $1200 - 194 = 1006$.

The derived conclusions can be depicted as follows:



The number of people supporting only Delhi Daredevils = $1006 - (300 + 200 + 160) = 346$

Total number of Delhi Daredevils supporters = $2 \times 300 = 600$

$\therefore 1006 - 160 = 600 + 300 - (x + 6)$

$\Rightarrow x = 48$.

FeedBack

Bookmark

Answer key/Solution

Q.71

If the sum of three of the sides of a rectangle is 200 units, what is the maximum possible area of the rectangle?

1 ☐ 4444.44 sq. units

2 ☐ 5000 sq. unit

3 ☐ 3960 sq. units

4 ☐ 4048 sq. units

Solution:

Correct Answer : 2

Given $2a + b = 200$ and area = ab
Assuming, $2a = s$

$\Rightarrow s + b = 200$ and area = $\frac{1}{2}sb$

For Area to be maximum, s and b should be equal.

So, $b = 100$ units, $a = 50$ units

So, Area = $100 \times 50 = 5000$ sq. units.

FeedBack

Bookmark

Answer key/Solution

Q.72

A triangular field has to be fenced with iron wire. The cost of fencing is Rs.12 per meter. If the sum of lengths of two of the three sides of the triangular field is 30 meters, then which of the following cannot be the cost of fencing the field?

1 ☐ Rs.724

2 ☐ Rs.708

3 ☐ Rs.560

4 ☐ Rs.362

**Solution:****Correct Answer : 1****Your Answer : 1**

Given that the sum of length of any two sides of the triangular field = 30 meters.

Let the length of sides of the triangular field be a , b and c .

If $a + b = 30$ meters, then $0 < c < 30$.

$\Rightarrow 30 < (a + b + c) < 60$.

Therefore, the range of values of the cost incurred on

fencing the triangular field is Rs. $30 \times 12 < \text{Cost} < \text{Rs.}$

60×12 .

$\Rightarrow \text{Rs. } 360 < \text{Cost} < \text{Rs. } 720$.

Hence, option (1) is the correct choice.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)
Q.73

There are three natural numbers a , b and c , such that the LCM of $(a, 120)$ is 1320, the LCM of $(b, 120)$ is 1680 and the LCM of $(c, 120)$ is 1800. Which of the following statements is definitely true?

1 ☐ Only a and c can be perfect squares.

2 ☐ Only b can be a perfect square as well as a perfect cube.

3 ☐ c is definitely a perfect square.

4 ☐ c can be a perfect square.

**Solution:****Correct Answer : 4****Your Answer : 4**

Factorizing the numbers:

$120 = 2^3 \times 3^1 \times 5^1$

$1320 = 120 \times 11 = 2^3 \times 3^1 \times 5^1 \times 11$

Thus, a has to be a multiple of 11 but it cannot be a perfect square as 1320 does not contain 11^2 .

$1680 = 120 \times 2 \times 7 = 2^4 \times 3^1 \times 5^1 \times 7^1$

Also, b should be a multiple of $2^4 \times 7^1$ but it cannot be a perfect square as 1680 does not contain 7^2 .

$1800 = 120 \times 3 \times 5 = 2^3 \times 3^2 \times 5^2$.

Since the LCM of 120 and c is 1800, c can be a perfect square. One of the possible values of c can be $3^2 \times 5^2$.

But it is not necessary that c has to be perfect square as it can be a multiple of $3^2 \times 5^2$ like $2 \times 3^2 \times 5^2$.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)
Q.74

Let p , q , r and s be distinct real numbers. $\text{Max}(a,b)$ = larger number between a and b , and $\text{Min}(a,b)$ = smaller number between a and b . If $N = \text{Max}[\text{Min}(p,q), \text{Min}(r,s)]$ and $S = \text{Min}[\text{Max}(p,r), \text{Max}(q,s)]$, which of the following is definitely true?

1 ☐ $N \leq S$, for all values of p , q , r and s

2 ☐ $N \geq S$, for all values of p , q , r and s

3 ☐ $N \neq S$, for all values of p , q , r and s

4 ☐ No specific relation exists between N and S

Solution:**Correct Answer : 1**
[Bookmark](#)
[Answer key/Solution](#)

When p, q, r and s are placed in ascending order depending upon their values, N is either the second highest number or the third highest number and S is also either the second highest number or the third highest number.

If N is the second highest number, then S is also the second highest number.

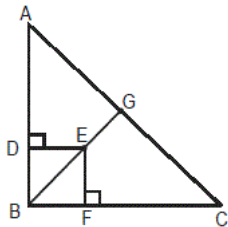
However, if N is the third highest number then S is either the second highest number or the third highest number.

$\Rightarrow N \leq S$.

FeedBack

Q.75

In the figure given below, triangle ABC is a right angled triangle, in which $\angle B = 90^\circ$, $AB = 4$ cm, $BC = 3$ cm and $DE = EF$. If BE is extended to meet AC at G, find the length of AG.



1 ☐ $\frac{15}{7}$ cm

2 ☐ $\frac{20}{7}$ cm

3 ☐ $\frac{35}{14}$ cm

4 ☐ $\frac{5}{2}$ cm

Solution:

Correct Answer : 2

By the problem, $DE = EF$.

\therefore BE must be the angular bisector of $\angle B$. BE extended meets AC at G.

Thus, using angular bisector theorem :

$$\frac{AG}{GC} = \frac{AB}{BC} \Rightarrow \frac{AG}{GC} = \frac{4}{3}$$

$$AC = \sqrt{3^2 + 4^2} = 5 \text{ cm.}$$

$$\therefore AG = \frac{4}{7} \times 5 = \frac{20}{7} \text{ cm.}$$

FeedBack

Bookmark

Answer key/Solution

Q.76

Find the remainder when 7777 (upto 37 digits) is divided by 19.

Solution:

Correct Answer : 7

Bookmark

Answer key/Solution

Let the given number $7(1111\dots)$ 37 digits be denoted by N.

$$\therefore N = \frac{7}{9}(10^{37} - 1) = \frac{7}{9}(10^{37} - 10 + 10 - 1)$$

$$= \frac{7}{9}(10(10^{36} - 1) + 9) = \frac{7}{9} [10(10^{18} - 1)(10^{18} + 1)] + 7$$

Since $(10^{18} - 10)$ is divisible by 19, $(10^{18} - 1)$ is divisible by 19.

[We know that $(a^p - a)$ is divisible by 'p', where 'p' is prime and a is any natural number > 1]

So, remainder is 7 when it is divided by 19.

Alternative method:

Let the given number $7(1111\dots)$ 37 digits be denoted by N.

$$\therefore N = \frac{7}{9}(10^{37} - 1)$$

By Euler's theorem, $\text{Rem}\left(\frac{10^{18}}{19}\right) = 1$

$$\Rightarrow \text{Rem}\left(\frac{10^{36}}{19}\right) = 1$$

$$\Rightarrow \text{Rem}\left(\frac{10^{37}}{19}\right) = 10$$

$$\Rightarrow \text{Rem}\left(\frac{10^{37} - 1}{19}\right) = 9$$

$$\Rightarrow \text{Rem}\left[\frac{\frac{7}{9} \times (10^{37} - 1)}{19}\right] = \text{Rem}\left[\frac{\frac{7}{9} \times 9}{19}\right] = 7.$$

FeedBack

Q.77

$$P(a, b) = \begin{cases} P(a - b, b) & \text{if } a \geq b \\ a & \text{if } a < b \end{cases}$$

It is given that $P(a, 7) = 4$; $P(a, 11) = 6$ and $P(a, 13) = 3$. If 'a' is a positive integer between 2000 and 3000, find the value of $P(a, 17)$.

1 ☐ 6

2 ☐ 8

3 ☐ 11

4 ☐ 12

Solution:

Correct Answer : 1

The defined function is a function for finding remainder when a is divided by b.

$\therefore P(a, 7) = 4$ implies $a = 7x + 4$, where $x \in \mathbb{N}$.

Similarly, $a = 11y + 6$, $y \in \mathbb{N}$.

$a = 13z + 3$, $z \in \mathbb{N}$.

Solving for a,

$a = 1001p + 809$, $p \in \mathbb{N}$.

As a lies between 2000 and 3000, $p = 2$.

Thus, $a = 2811$.

Hence, $P(2811, 17) = 6$.

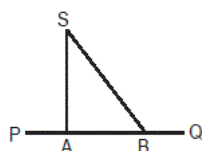
FeedBack

Bookmark

Answer key/Solution

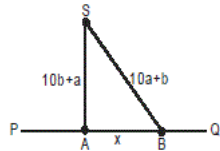
Q.78

Shalini and Swati start running from S towards a platform PQ, as shown below. Shalini, who is slower between the two, is given an advantage of running along line SA which is perpendicular to PQ, while Swati runs along line SB. The speed (in km/hr) of each of the two is a two-digit natural number. The speed of Swati is obtained by reversing the digits of the speed of Shalini. Each of them takes 1 hr to reach the platform. If the distance between them along the platform, when they are reached to it, is also a two digit integer, find that distance between A and B.



1 ☐ 33 kms2 ☐ 44 kms3 ☐ 56 kms4 ☐ 65 kms**Solution:****Correct Answer : 1**

Let the speed of Swati and Shalini be 'ab' and 'ba' km/hr respectively and the distance between them along the platform, when they just reach to it, be 'x' km.
So in 1 hr they can cover $(10b + a)$ and $(10a + b)$ km respectively.



In $\triangle SAB$ we have $x^2 = (10a + b)^2 - (10b + a)^2$

$$\Rightarrow x^2 = 9(a - b)(11(a + b))$$

$$\Rightarrow x = 3\sqrt{11(a - b)(a + b)}$$

Since x is an integer, $[11 \times (a - b) \times (a + b)]$ must be the square of a natural number.

'a' and 'b' are non-zero digits.

$$\therefore 2 \leq a + b \leq 18$$

If $[11 \times (a - b) \times (a + b)]$ is a perfect square then $(a - b) \times (a + b) = 11$ or 44.

The only possibility is $a + b = 11$ and $a - b = 1$

$$x = 3\sqrt{11 \times 11 \times 1}$$

$$\therefore x = 33.$$

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)
Q.79

There are four positive integers a, b, c and d such that $a + b + c + d + abcd = m$ and $(abc + bcd + acd + abd) + (ab + bc + bd + ac + ad + cd) = (1154 - m)$. Find the value of m.

Solution:**Correct Answer : 502**

Let Σa , Σab and Σabc represent the sum of terms taken one at a time, two at a time and three at a time respectively.

Adding both the equations, we get

$$1 + \Sigma a + \Sigma ab + \Sigma abc + abcd = 1155$$

$$\Rightarrow (1 + a)(1 + b)(1 + c)(1 + d) = 3 \times 5 \times 7 \times 11$$

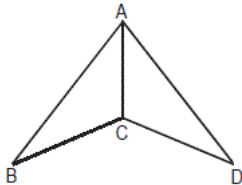
\therefore a, b, c and d can take values 2, 4, 6 and 10 in any order.

Hence, the value of m

$$= 2 + 4 + 6 + 10 + 2 \times 4 \times 6 \times 10 = 22 + 480 = 502.$$

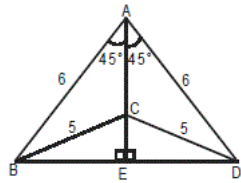
[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)
Q.80

In the figure given below, ABCD is a concave quadrilateral, and $\angle BAD = 90^\circ$, $BA = AD = 6$ cm and $BC = CD = 5$ cm. What is the length (in cm) of the line segment AC?

1 ☐ $3\sqrt{2}$ 2 ☐ $3\sqrt{2} - \sqrt{5}$ 3 ☐ $3\sqrt{2} - \sqrt{7}$ 4 ☐ $2\sqrt{2} - 3$

**Solution:****Correct Answer : 3****Your Answer : 3**

Extend AC to meet BD at point E.
It can be clearly understood that triangle ABC is congruent to triangle ADC.



Also, in the right angle triangle BAD, $AE = BE = ED$.

Therefore, $AE = BE = 6 \cos 45^\circ = 3\sqrt{2}$ units

$$CE = \sqrt{BC^2 - BE^2} = \sqrt{25 - 18} = \sqrt{7} \text{ units}$$

Therefore, $AC = AE - CE = 3\sqrt{2} - \sqrt{7}$ units.

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)
Q.81

If $a = 2^x \times 3^y$ and $b = 2^l \times 3^m$, where x, y, l and m are distinct positive integers lying between 1 and 5, both inclusive, what is the probability that a/b is an integer?

1 ☐ 1/22 ☐ 1/63 ☐ 1/44 ☐ 3/4**Solution:****Correct Answer : 3**

$$\frac{a}{b} = \frac{2^x \cdot 3^y}{2^l \cdot 3^m} = 2^{x-l} \cdot 3^{y-m}$$

Possibilities of $(x - l)$ are negative or non negative and $(y - m)$ are also negative or non-negative.

$2^{x-l} \cdot 3^{y-m}$ fails to be an integer when one or both of $x - l, y - m$ are negative.

$$\therefore \text{Possibility} = \frac{1}{4}$$

[FeedBack](#)
[Bookmark](#)
[Answer key/Solution](#)
Q.82

If $\log_a \left\{ \frac{a}{(1+a^2)} \right\} > 0$ and $\log_a b > \log_a c$, which of the following is definitely true?

1 ☐ $a > b$ 2 ☐ $b > c$ 3 ☐ $c > a$ 4 ☐ None of these**Solution:****Correct Answer : 4****Your Answer : 4**
[Bookmark](#)
[Answer key/Solution](#)

Given $\log_a \frac{a}{(1+a^2)} > 0$

As 'a' is the base of logarithm, it can either:

- (i) be greater than 1 i.e. $a > 1$ or
- (ii) lie between 0 and 1 i.e. $0 < a < 1$.

Case I: $a > 1$

For $\log_a \frac{a}{(1+a^2)} > 0$, we must have $\frac{a}{(1+a^2)} > 1$

i.e. $a^2 - a + 1 < 0$ which is not possible for any real values of a.

So a cannot be greater than 1.

Case II: $0 < a < 1$

$\log_a \frac{a}{(1+a^2)} > 0 \Rightarrow 0 < \frac{a}{(1+a^2)} < 1$

Hence, for $\log_a \frac{a}{(1+a^2)} > 0$, we have $0 < a < 1$ i.e. the

base of the logarithm lies between 0 and 1.

It is also given that $\log_a b > \log_a c$. As a lies between 0 and 1, b must be less than c.

Now, we have two results with us now:

- 1) $0 < a < 1$
- 2) $b < c$

We can only compare b and c, but we cannot compare either of them with a, conclusively. So none of the options (1), (2) or (3) can definitely be true. Hence option (4) is correct.

FeedBack

Q.83

For which of the following values of m, does the inequality $8y^3 + x^3y^3 \geq my^2x - 1$, where x and y are real numbers greater than zero, definitely hold true?

1 ☐ 4.8

2 ☐ 6

3 ☐ 5

4 ☐ 5.9

Solution:

Correct Answer : 2

$$\frac{8y^3 + x^3y^3 + 1}{y^2x} \geq m$$

Since $AM \geq GM$, we can write

$$\frac{8\frac{y}{x} + x^2y + \frac{1}{y^2x}}{3} \geq \left[8\frac{y}{x} \times x^2y \times \frac{1}{y^2x} \right]^{\frac{1}{3}}$$

$$\Rightarrow \frac{8y}{x} + x^2y + \frac{1}{y^2x} \geq 3[8]^{\frac{1}{3}}$$

$$\Rightarrow \frac{8y}{x} + x^2y + \frac{1}{y^2x} \geq 6.$$

The value of the expression is definitely greater than or equal to 6.

FeedBack

Bookmark

Answer key/Solution

Q.84

On the bank of a river, there are two temples A and B. The river has some magical powers by which it triples the quantity of flowers put into it. Pankaj take some flowers and puts them into the river. Then he divides them into n equal groups and offers one of the groups at temple A. He puts the remaining flowers into the river again. Then, again, forms n equal groups and offers one of these groups at temple B. The ratio of the number of flowers offered at temple A and the number of flowers remaining after being offered at temple B is 1 : 12.5. Find the value of n.



Solution:

Correct Answer : 6

Your Answer : 6

Bookmark

Answer key/Solution

Let x be the number of flowers in the beginning.
When put into river, they become $3x$.

The number of flowers after the offering at temple A

$$= 3x \times \left(\frac{n-1}{n}\right)$$

When again put into river they become $9x \times \left(\frac{n-1}{n}\right)$.

The number of flowers after the offering at temple B

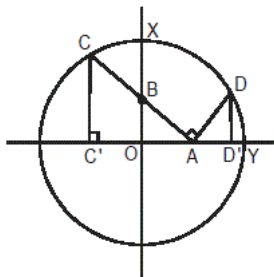
$$= 9x \times \left(\frac{n-1}{n}\right) \left(\frac{n-1}{n}\right) = 9x \times \left(\frac{n-1}{n}\right)^2$$

According to the question,

$$\frac{3x \times \left(\frac{1}{n}\right)}{9x \times \left(\frac{n-1}{n}\right)^2} = \frac{1}{12.5} \Rightarrow \frac{n}{3(n-1)^2} = \frac{1}{12.5} \Rightarrow n = 6.$$

FeedBack

Q.85



In the figure, O is the centre of the circle. A and B are the midpoints of OY and OX respectively. AB is extended to meet the circle at C. A line is drawn perpendicular to AC meeting the circle at D. D' and C' are the feet of the perpendiculars from D and C on the diameter respectively. Find the sum of the areas of $\Delta ACC'$ and $\Delta ADD'$, given that the radius of the circle is $2R$ cm.

1 ☐ $5\sqrt{2} R^2 \text{ cm}^2$

2 ☐ $\sqrt{8} (R^2) \text{ cm}^2$

3 ☐ $4R^2 \text{ cm}^2$

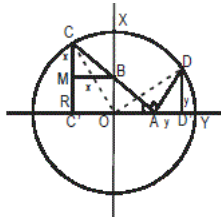
4 ☐ $2R^2 \text{ cm}^2$

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution



By the problem,

$OB = BX = R$ cm.

and $OA = AY = R$ cm.

$\therefore OB = OA = R$ cm.

$\Rightarrow \angle OAB = 45^\circ$

$\Rightarrow \angle ACC' = 45^\circ$

Join OC & OD.

Let, $BM = x$ cm, then $CM = x$ cm (\because BCM is a 90° - 45° - 45° triangle)

$\Rightarrow MC' = OB = R$ cm

For $\Delta OCC'$,

$$(2R)^2 = (R+x)^2 + x^2 \quad \dots (i)$$

Let $AD' = y$ cm, then $D'D = y$ cm.

For $\Delta ODD'$,

$$(2R)^2 = (R+y)^2 + y^2$$

$\Rightarrow x = y.$

$$\text{Area of } \Delta ACC' + \Delta ADD' = \frac{1}{2}(R+x)^2 + \frac{1}{2}y^2$$

$$= \frac{1}{2}[(R+x)^2 + x^2] = \frac{1}{2}[2R^2] \quad \dots \text{ by (i)}$$

$$\therefore \text{Area of } \Delta ACC' + \Delta ADD' = 2R^2.$$

FeedBack

Q.86

Find the coefficient of x^{51} in the expansion of the following expression:

$$(x - 2) \cdot [x(x + 4)(x + 8)(x + 12) \dots (x + 200)]$$

1 ☐ 50982 ☐ 51003 ☐ 51024 ☐ 5000

Solution:

Correct Answer : 1

$$\begin{aligned} & (x - 2)(x)(x + 4)(x + 8)(x + 12) \dots (x + 200) \\ &= (x - 2)[x^{51} + (0 + 4 + 8 + 12 + \dots + 200)x^{50} + \dots] \\ & \text{Coefficient of term involving } x^{51} \\ &= -2 + (0 + 4 + 8 + \dots + 200) \end{aligned}$$

$$= -2 + 51 \times \left(\frac{0 + 200}{2} \right) = -2 + 5100 = 5098.$$

Q.87

On 21 June 2006, the product of Anuj's age (in months) as on his last birthday and his present age (in months) was 2640. Find Anuj's date of birth.

1 ☐ 21 November 20012 ☐ 21 January 20013 ☐ 21 November 20024 ☐ 21 January 2002

Solution:

Correct Answer : 1

Your Answer : 1

The difference between Anuj's age as on his last birthday and his current age (both in months) is less than 12 months.

It can be observed that $(2640 = 48 \times 55)$ is the only possibility.

Hence, when Anuj celebrated his last birthday he was 48 months old which was 7 months back.

Thus, Anuj's birth date is November 21, 2001.

Q.88

If x , y and z are positive integers, such that $x + y + z = 60$ and $x^2 + y^2 = z^2$, then how many such triplets (x, y, z) exist?

Solution:

Correct Answer : 2

By the problem, x , y and z are the sides of a right angled triangle with z as the length of the hypotenuse. Thus, it is required to find the number of right angled triangles whose perimeter is 60.

If we concentrate on basic Pythagorean triplets, we can observe that $(3, 4, 5)$ is such a triplet, in which sum of the terms is a factor of 60.

Similarly, we can see that $(5, 12, 13)$ is other such triplet in which sum of the terms is a factor of 60.

Thus, finally we get 2 triplets of (x, y, z) , viz. $(15, 20, 25)$ and $(10, 24, 26)$.

It is also observed that there are no other triplets conforming to the given condition.

Q.89

Find the rightmost non-zero digit in 11!.



Solution:

Correct Answer : 8

Your Answer : 8

$11! = 2^8 \times 3^4 \times 5^2 \times 7 \times 11 = (2^2 \times 5^2) \times (2^6 \times 3^4 \times 7 \times 11)$
 Since $(2^2 \times 5^2)$ ends in zero, the rightmost non-zero digit in 11! will be the units' digit of $(2^6 \times 3^4 \times 7 \times 11)$
 i.e. 8.

FeedBack

Bookmark

Answer key/Solution

Q.90

Six men and two boys working together can complete a piece of work in $2\frac{1}{4}$ days. If the number of days taken by 5 boys to complete the same work is 4 more than that taken by 3 men, then the efficiency of a boy is what percent that of a man?

1 ☐ 252 ☐ 503 ☐ $33\frac{1}{3}$ 4 ☐ 40

Solution:

Correct Answer : 3

Let the work done by a man and a boy in a day be 'a' and 'b' units respectively, and the total work be 'W' units.

$$\therefore 6a + 2b = \frac{W}{9/4} \quad \dots (i)$$

Let the number of days taken by 3 men to complete the same work be p.

$$\Rightarrow 3a = \frac{W}{p} \text{ and } 5b = \frac{W}{p+4} \quad \dots (ii)$$

Substituting the value obtained from (ii) into equation (i), we get,

$$\frac{2W}{p} + \frac{2}{5} \frac{W}{p+4} = \frac{W}{9/4}$$

$$\Rightarrow 5p^2 - 7p - 90 = 0$$

$$\Rightarrow p = 5 \text{ or } -\frac{18}{5}$$

Since p cannot be negative, p = 5.

Substituting the value of p in (ii),

$$a = \frac{W}{15} \text{ and } b = \frac{W}{45}$$

Hence, the efficiency of a boy as a percentage of a

$$\text{man} = \frac{W/45}{W/15} \times 100 = 33.33.$$

FeedBack

Bookmark

Answer key/Solution

Q.91

The sum of the roots of the quadratic equation $ax^2 + bx + c = 0$ is equal to the sum of the squares of their reciprocals. If a, b and c are real numbers, and a ≠ 0, then bc^2 , ca^2 and ab^2 are in

1 ☐ G.P.2 ☐ A.P.3 ☐ H.P.4 ☐ None of these

**Solution:****Correct Answer : 2****Your Answer : 2**Let the roots of the equation be x_1 and x_2 .

$$x_1 + x_2 = -\frac{b}{a} \text{ and } x_1 \times x_2 = \frac{c}{a}$$

By the question,

$$x_1 + x_2 = \left(\frac{1}{x_1}\right)^2 + \left(\frac{1}{x_2}\right)^2$$

$$\Rightarrow x_1 + x_2 = \frac{x_1^2 + x_2^2}{x_1^2 \times x_2^2}$$

$$\Rightarrow x_1 + x_2 = \frac{(x_1 + x_2)^2 - 2x_1 \times x_2}{(x_1 \times x_2)^2}$$

$$\Rightarrow \frac{-b}{a} = \frac{\left(\frac{-b}{a}\right)^2 - 2 \times \frac{c}{a}}{\left(\frac{c}{a}\right)^2} \Rightarrow 2ca^2 = ab^2 + bc^2$$

 $\Rightarrow bc^2, ca^2$ and ab^2 are in AP.

Bookmark

Answer key/Solution

Q.92 $4x + 2y + z = 35$, where 'x', 'y' and 'z' are positive real numbers. Find the maximum value of

$$\frac{1}{x^2} \times \frac{1}{y^4} \times \frac{1}{z^8}.$$

1 ☐ $\frac{3}{5^4}$

2 ☐ $\frac{7}{5^8}$

3 ☐ $\frac{4}{5^3}$

4 ☐ $\frac{8}{5^7}$

Solution:**Correct Answer : 2**

$$4x + 2y + z = 35.$$

$$\Rightarrow x + x + x + x + y + y + y + z = 35$$

Using the inequality $A.M \geq G.M$,

$$\frac{x + x + x + x + y + y + y + z}{7} \geq (x^4 y^2 z)^{\frac{1}{7}}$$

$$\Rightarrow \frac{35}{7} \geq (x^4 y^2 z)^{\frac{1}{7}} \Rightarrow 5^7 \geq (x^4 y^2 z)$$

$$\Rightarrow \left(\frac{1}{x^2} \times \frac{1}{y^4} \times \frac{1}{z^8}\right) \leq \frac{1}{5^8}.$$

Bookmark

Answer key/Solution

Q.93

Manjul bought 5 diamond rings – R1, R2, R3, R4 and R5 – to gift to five of his female friends on their weddings. He also bought five boxes – B1, B2, B3, B4 and B5 – to keep the rings, where B1 was for R1; B2 was for R2; and so on. Then he asked her wife Nalini to pack the rings in the boxes accordingly. Nalini, miffed at his husband's decision to gift diamond rings to his female friends, decided not to follow the instructions. If she chose to put just two of the five rings into the correct boxes, then in how many ways could she have packed the rings?

**Solution:**

Correct Answer : 20**Your Answer : 10**

The number of ways in which she could have packed the rings

$$= {}^5C_3 \times 3! \left(1 - \frac{1}{1!} + \frac{1}{2!} - \frac{1}{3!} \right) = 20$$

(Using de-arrangement principle.)

Alternative method:

The number of ways to select three rings out of five
 $= {}^5C_3 = 10$

The number of ways in which three rings can be put into three boxes such that none of them is placed into its corresponding box = 2

Hence, the required number of ways = $10 \times 2 = 20$.

FeedBack

Bookmark

Answer key/Solution

Q.94

The water level in a rectangular pond (with uniform depth) of dimensions $110 \text{ m} \times 100 \text{ m}$ was 'h' m. An inlet pipe, in which the water flows at the rate of 30 km/h , was opened into the pond for 30 minutes. After the pipe was removed, a group of 220 people took a dip into the pond simultaneously, making the water level in the pond rise to 'H' m. If the average displacement of water by each person was 0.05 m^3 and the diameter of the inlet pipe was 14 cm , then what was the absolute difference (in cm) between 'H' and 'h'?

1 ☐ 1.8

2 ☐ 2

3 ☐ 1.1

4 ☐ 2.2

Solution:**Correct Answer : 4**

The volume of water initially in the pond

$$= (110 \times 100 \times h) \text{ m}^3$$

The volume of water filled in the pond by the pipe

$$= \left(\frac{22}{7} \times (7 \times 10^{-2})^2 \times \left(\frac{30 \times 10^3}{2} \right) \right) = 231 \text{ m}^3$$

Total displacement of water due to the dip taken by

$$220 \text{ people} = 220 \times 0.05 = 11 \text{ m}^3$$

$$\therefore 11000h + 231 + 11 = 110 \times 100 \times H$$

$$\Rightarrow (H - h) = \frac{242}{11000} = 2.2 \text{ cm.}$$

FeedBack

Bookmark

Answer key/Solution

Q.95

$$F(a, b) = \frac{\text{HCF}(a, b)}{\text{LCM}(a, b)}$$

$$F\left(\frac{1}{F(a, b)}, c\right) = \frac{1}{12}$$

If a, b and c are distinct positive integers such that numbers in any pair formed out of a, b, c are coprime to each other, then what is the sum of a, b and c?

Solution:**Correct Answer : 8**

a, b and c are distinct positive integers such that numbers in every pair formed out of a, b, c are co-prime to each other.

$$\therefore \text{HCF}(a, b) = 1 \text{ and } \text{LCM}(a, b) = ab$$

$$\therefore F(a, b) = \frac{1}{ab}$$

$$\text{Now, } F\left[\frac{1}{F(a, b)}, c\right] = F(ab, c) = \frac{1}{abc} = \frac{1}{12}$$

$$\Rightarrow abc = 12 = 1 \times 3 \times 4$$

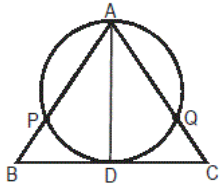
Hence, the sum of a, b and c = $1 + 3 + 4 = 8$.

FeedBack

Bookmark

Answer key/Solution

Q.96



In the figure given above, $\triangle ABC$ is an equilateral triangle with side equal to 1 unit and AD is one of its medians. A circle, having diameter equal to AD, is drawn such that it touches BC at point D. Find the area (in square units) of the part of the triangle that lies outside the circle.

1 ☐ $\frac{6\sqrt{3} - 3\pi}{32}$

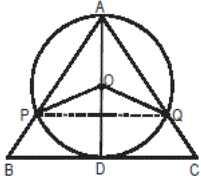
2 ☐ $\frac{8\sqrt{3} - 5\pi}{32}$

3 ☐ $\frac{9\sqrt{3} - 6\pi}{32}$

4 ☐ $\frac{5\sqrt{3} - 2\pi}{32}$

Solution:

Correct Answer : 4

[Bookmark](#)
[Answer key/Solution](#)


Join PO, OQ and PQ, where O is the center of the circle

The length of each side of $\triangle ABC$ is 1 unit.

The length of AD = $\frac{\sqrt{3}}{2} \times 1 = \frac{\sqrt{3}}{2}$ units.

$\therefore AO = OD = \frac{\sqrt{3}}{4}$ units and $\angle AOP = 120^\circ$

Area of $\triangle AOP$ = Area of $\triangle AOQ$

$$= \frac{1}{2} \times \frac{\sqrt{3}}{4} \times \frac{\sqrt{3}}{4} \times \sin 120^\circ = \frac{3\sqrt{3}}{64} \text{ sq. units.}$$

Area of the minor sector OPDQ

$$= \frac{1}{3} \times \pi \times \left(\frac{\sqrt{3}}{4}\right)^2 = \frac{\pi}{16} \text{ sq. units.}$$

Area of the part of the triangle that lies outside the circle

$$= \triangle ABC - [\triangle AOP + \triangle AOQ + \text{minor sector OPDQ}]$$

$$= \frac{\sqrt{3}}{4} - \left(\frac{3\sqrt{3}}{32} + \frac{\pi}{16} \right) = \frac{5\sqrt{3} - 2\pi}{32} \text{ sq. units.}$$

[FeedBack](#)

Q.97

If the sum of the digits of a three-digit number is subtracted from that number, the result obtained is a two-digit number. This process of subtracting the sum of digits of number from that number is continued till we get a factor of the original three-digit number. Which of the following is a factor of the original three-digit number?

1 ☐ 5

2 ☐ 6

3 ☐ 7

4 ☐ 11

Solution:

Correct Answer : 2

[Bookmark](#)

When the sum of digits is subtracted from the original three-digit number, it can result in a two-digit number only if the three digit number lies in the range [100, 109]. In each case the resulting two-digit number will be 99. If we continue the process further, we will get 81, 72, 63, 54 and so on. Note that in each case we are getting a multiple of 9. Since, one of them is a factor of the original three-digit number, the original number must be a multiple of 9. Thus, the only multiple of 9 lying in the range [100, 109] is 108 and that is divisible by 6.

FeedBack

Answer key/Solution

Q.98

In a colony, there are 350 residents. At least 40% of them smoke cigar, at least 30% of them smoke hookah and at least 22% of them smoke cigarette. If p is the number of residents smoking all of the cigar, hookah and cigarette, which of the following is true?

1 ☐ $28 \leq p \leq 77$

2 ☐ $0 \leq p \leq 100$

3 ☐ $0 \leq p \leq 7$

4 ☐ $0 \leq p \leq 350$

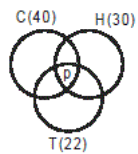
Solution:

Correct Answer : 4

Cigarette – T

Hookah – H

Cigar – C



$40 + 30 + 22 < 100$.

Hence, minimum value of $p = 0$.

However, at least 40% of them smoke cigar, at least 30% of them smoke hookah and at least 22% of them smoke cigarette,

\Rightarrow maximum number of residents smoking all three can be $100\% = 350$ people.

FeedBack

Bookmark

Answer key/Solution

Q.99

Ramcharan drove to Phoenix Mall from his villa at a speed of 10 m/s. While returning to his villa, he drove at a speed of 18 km/hr. The total travel time was 3 hours. Find the distance between his villa and Phoenix Mall.

1 ☐ 72 km

2 ☐ 18 km

3 ☐ 36 km

4 ☐ 135/7 Km



Solution:

Correct Answer : 3

Your Answer : 3

Let the distance between Phoenix Mall and the Villa be

x km.

Speed of Ramchandran while going to the mall

$$= 10 \text{ m/s} = 10 \times \frac{18}{5} \text{ km/hr} = 36 \text{ km/hr.}$$

The total traveling time was 3 hours.

$$\therefore \frac{x}{36} + \frac{x}{18} = 3 \Rightarrow x = 36 \text{ km.}$$

FeedBack

Bookmark

Answer key/Solution

Q.100

A regular octagon is inscribed in a square in such a way that alternate sides of the octagon lie on the sides of the square. If the ratio of the side of the octagon to that of the square is 1 : P, then what is the value of P?

1 ☐ $\sqrt{2} + 1$

2 ☐ $\frac{1}{\sqrt{2} + 1}$

3 ☐ $\frac{2}{\sqrt{2} + 1}$

4 ☐ $\frac{\sqrt{2}}{\sqrt{2} + 1}$

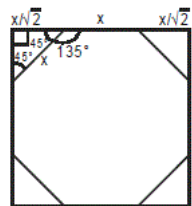
☐ **x**

Solution:

Correct Answer : 1

Your Answer : 2

Let the length of the side of the octagon be x units.



Using Pythagoras theorem, we can calculate the length of the equal sides of the triangles at the corners of the

square, which comes out to be $\frac{x}{\sqrt{2}}$.

The side of the square = $\frac{x}{\sqrt{2}} + \frac{x}{\sqrt{2}} + x = (\sqrt{2} + 1)x$

Now, $\frac{x}{(\sqrt{2} + 1)x} = \frac{1}{P} \Rightarrow P = \sqrt{2} + 1$.

FeedBack

Bookmark

Answer key/Solution