

**DIRECTIONS** for questions 1 to 6: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

Beliefs are factive: to believe is to take to be true. It would be absurd to say: ‘It is raining, but I don’t believe that it is raining.’ Beliefs aspire to truth – but they do not entail it. Beliefs can be false, unwarranted by evidence or reasoned consideration. They can also be morally repugnant. Among likely candidates: beliefs that are sexist, racist or homophobic; the belief that proper upbringing of a child requires ‘breaking the will’ and severe corporal punishment; the belief that the elderly should routinely be euthanised, and so on. If we find these morally wrong, we condemn not only the potential acts that spring from such beliefs, but the content of the belief itself, the act of believing it, and thus the believer.

‘Who are you to tell me what to believe?’ says the zealot. It is a misguided challenge: it implies that certifying one’s beliefs is a matter of someone’s authority. It ignores the role of reality. Believing has what philosophers call a ‘mind-to-world direction of fit’. Our beliefs are intended to reflect the real world – and it is on this point that beliefs can go haywire. There are irresponsible beliefs; more precisely, there are beliefs that are acquired and retained in an irresponsible way. One might disregard evidence; accept gossip, rumour, or testimony from dubious sources; ignore incoherence with one’s other beliefs; embrace wishful thinking; or display a predilection for conspiracy theories.

I do not mean to revert to the stern evidentialism of the 19th-century mathematical philosopher William K Clifford, who claimed: ‘It is wrong, always, everywhere, and for anyone, to believe anything upon insufficient evidence.’ Clifford was trying to prevent irresponsible ‘overbelief’, in which wishful thinking, blind faith or sentiment (rather than evidence) stimulate or justify belief. This is too restrictive. In any complex society, one has to rely on the testimony of reliable sources, expert judgment and the best available evidence. Moreover, as the psychologist William James responded in 1896, some of our most important beliefs about the world and the human prospect must be formed without the possibility of sufficient evidence. In such circumstances (which are sometimes defined narrowly, sometimes more broadly in James’s writings), one’s ‘will to believe’ entitles us to choose to believe the alternative that projects a better life.

In exploring the varieties of religious experience, James would remind us that the ‘right to believe’ can establish a climate of religious tolerance. Those religions that define themselves by required beliefs (creeds) have engaged in repression, torture and countless wars against non-believers that can cease only with recognition of a mutual ‘right to believe’. Yet, even in this context, extremely intolerant beliefs cannot be tolerated. Rights have limits and carry responsibilities.

Unfortunately, many people today seem to take great licence with the right to believe, flouting their responsibility. The wilful ignorance and false knowledge that are commonly defended by the assertion ‘I have a right to my belief’ do not meet James’s requirements. Consider those who believe that the lunar landings or the Sandy Hook school shooting were unreal, government-created dramas; that Barack Obama is Muslim; that the Earth is flat; or that climate change is a hoax. In such cases, the right to believe is proclaimed as a negative right; that is, its intent is to foreclose dialogue, to deflect all challenges; to enjoin others from interfering with one’s belief-commitment. The mind is closed, not open for learning. They might be ‘true believers’, but they are not believers in the truth.

Believing, like willing, seems fundamental to autonomy, the ultimate ground of one’s freedom. But, as Clifford also remarked: ‘No one man’s belief is in any case a private matter which concerns himself alone.’ Beliefs shape attitudes and motives, guide choices and actions. Believing and knowing are formed within an epistemic community, which also bears their effects. There is an ethic of believing, of acquiring, sustaining, and relinquishing beliefs – and that ethic both generates and limits our right to believe. If some beliefs are false, or morally repugnant, or irresponsible, some beliefs are also dangerous. And to those, we have no right.

**Q1.** What does the statement “Beliefs aspire to truth – but they do not entail it” (para 1) imply?

- a) Even though beliefs are supposed to be true, there are a multitude of beliefs that are not true.
- b) Just because we believe that something is true, it does not necessarily mean that we are right. Your answer is correct
- c) Although beliefs aspire to be true, they do not ascertain the same.
- d) One is free to believe in anything one wants as long as one can validate it with evidence.

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>209</b>
Avg. time spent on this question by all students	<b>336</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>341</b>
% of students who attempted this question	<b>60.54</b>
% of students who got the question right of those who attempted	<b>33.74</b>

## Text Solution

### **Number of words and Explanatory notes for RC:**

Number of words: 683

In the first para, the author says that 'beliefs' are factive. The adjective 'factive' denotes a verb that assigns the status of an established fact to its object (normally a clausal object), e.g. *know, regret, resent*.

Factive (of a verb, adjective, or noun phrase) presupposes the truth of an embedded sentence that serves as the complement. eg. I didn't realize that he had left, which presupposes that it is true that he had left.

Option A: Beliefs aspire to truth – but they do not entail it. Beliefs can be false, unwarranted by evidence or reasoned consideration. They can also be morally repugnant. From these lines in the first para, we cannot infer 'a multitude of beliefs that are not true'. Hence choice A is not the implication of the given sentence in the question.

Option B: The word 'entail' in the sentence given in the question means 'involve (something) as a necessary or inevitable part or consequence'. Though beliefs hope to be true or lead to the truth, they do not necessitate the same. Beliefs can be false, unwarranted by evidence or reasoned consideration. Hence choice B is the correct implication and is the answer.

Option C: If we find these morally wrong, we condemn not only the potential acts that spring from such beliefs, but the content of the belief itself, the act of believing it, and thus the believer. So it is the believer who validates or condemns the belief. Choice C, though close, is not the answer. Choice C places the responsibility of ascertaining the truth actively on the belief itself. In the second para, we are told "One might disregard evidence; accept gossip, rumour, or testimony from dubious sources; ignore incoherence with one's other beliefs; embrace wishful thinking; or display a predilection for conspiracy theories."

Option D: One's 'will to believe' entitles us to choose to believe the alternative that projects a better life. But, one's freedom to believe in anything of one's choice is not what is implied in the question statement. Hence choice D is not the answer.

Choice (B)

undefined

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'Who are you to tell me what to believe?' says the zealot. It is a misguided challenge: it implies that certifying one's beliefs is a matter of someone's authority. It ignores the role of reality. Believing has what philosophers call a 'mind-to-world direction of fit'. Our beliefs are intended to reflect the real world – and it is on this point that beliefs can go haywire. There are irresponsible beliefs; more precisely, there are beliefs that are acquired and retained in an irresponsible way. One might disregard evidence; accept gossip, rumour, or testimony from dubious sources; ignore incoherence with one's other beliefs; embrace wishful thinking; or display a predilection for conspiracy theories.

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and countless wars against non-believers that can cease only with recognition of a mutual 'right to believe'. Yet, even in this context, extremely intolerant beliefs cannot be tolerated. Rights have limits and carry responsibilities.

Unfortunately, many people today seem to take great licence with the right to believe, flouting their responsibility. The wilful ignorance and false knowledge that are commonly defended by the assertion 'I have a right to my belief' do not meet James's requirements. Consider those who believe that the lunar landings or the Sandy Hook school shooting were unreal, government-created dramas; that Barack Obama is Muslim; that the Earth is flat; or that climate change is a hoax. In such cases, the right to believe is proclaimed as a negative right; that is, its intent is to foreclose dialogue, to deflect all challenges; to enjoin others from interfering with one's belief-commitment. The mind is closed, not open for learning. They might be 'true believers', but they are not believers in the truth.

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**Q2.** According to the author, we have no right to which kind of beliefs?

Identify all that apply and enter the corresponding number in the input box given below. You must enter your answer in increasing order only. For example, if you think that (1) and (4) apply, then enter 14 (but not 41) in the input box.

1. Beliefs that are sexist, racist or homophobic.
2. Beliefs that ignore incoherence with one's other beliefs but embrace wishful thinking.
3. Beliefs that are threatening or treacherous.
4. Beliefs such as lunar landings or the Sandy Hook school shooting were unreal, government-created dramas.

**Your Answer:**13 □ **Your answer is incorrect**

**Show Correct Answer**

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>435</b>
Avg. time spent on this question by all students	<b>236</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>242</b>
% of students who attempted this question	<b>49.6</b>
% of students who got the question right of those who attempted	<b>10.56</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 683

- (1) Beliefs that are sexist, racist or homophobic have been classified as morally repugnant. In the last para, we are told that: If some beliefs are false, or morally repugnant, or irresponsible, some beliefs are also dangerous. And to those, we have no right. So 1 applies.
- (2) There are irresponsible beliefs; more precisely, there are beliefs that are acquired and retained in an irresponsible way. One might disregard evidence; accept gossip, rumour, or testimony from dubious sources; ignore incoherence with one's other beliefs; embrace wishful thinking. Again 2 encompass a belief to which we have no right. If some beliefs are false, or morally repugnant, or irresponsible, some beliefs are also dangerous. And to those, we have no right. So 1 applies. Hence 2 is the answer.
- (3) 3 is a correct answer as can be inferred from the last two sentences of the last paragraph. 3 would mean or include dangerous beliefs. And to those (dangerous beliefs), we have no right.
- (4) Beliefs can be false, unwarranted by evidence or reasoned consideration. They can also be morally repugnant. Consider those who believe that the lunar landings or the Sandy Hook school shooting were unreal, government-created dramas; that Barack Obama is Muslim; that the Earth is flat; or that climate change is a hoax. In such cases, the right to believe is proclaimed as a negative right. If some beliefs are false, or morally repugnant, or irresponsible, some beliefs are also dangerous. And to those, we have no right. So (4) also applies.

Ans: (1234)

undefined

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In exploring the varieties of religious experience, James would remind us that the 'right to believe' can establish a climate of religious tolerance. Those religions that define themselves by required beliefs (creeds) have engaged in repression, torture

and countless wars against non-believers that can cease only with recognition of a mutual 'right to believe'. Yet, even in this context, extremely intolerant beliefs cannot be tolerated. Rights have limits and carry responsibilities.

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**Q3.** Which of the following statements about irresponsible beliefs can be inferred to be false?

- a) All such beliefs are based on hearsay. Your answer is correct
- b) The source of such beliefs is not reliable.
- c) They may be far from reality.
- d) Such beliefs do not examine their own authenticity.

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	137
Avg. time spent on this question by all students	124
Difficulty Level	D
Avg. time spent on this question by students who got this question right	114
% of students who attempted this question	49.16
% of students who got the question right of those who attempted	37.41

[Video Solution](#)

[Text Solution](#)

#### Number of words and Explanatory notes for RC:

Number of words: 683

Option A: There are irresponsible beliefs; more precisely, there are beliefs that are acquired and retained in an irresponsible way. One might disregard evidence; accept gossip, rumour, or testimony from dubious sources; ignore incoherence with one's other beliefs; embrace wishful thinking; or display a predilection for conspiracy theories. But choice A which says "All such beliefs are based on hearsay" is out of scope. Choice A is false and is the answer.

Option B: One might disregard evidence; accept gossip, rumour, or testimony from dubious sources. In any complex society, one has to rely on the testimony of reliable sources, expert judgment and the best available evidence. Hence we can say that choice B is true of irresponsible beliefs. Choice B is not the answer.

Option C: Believing has what philosophers call a 'mind-to-world direction of fit'. Our beliefs are intended to reflect the real world – and it is on this point that beliefs can go haywire. So irresponsible beliefs may be far from reality. So choice C is true and is not the answer.

Option D: One might disregard evidence; accept gossip, rumour, or testimony from dubious sources; ignore incoherence with one's other beliefs; embrace wishful thinking; or display a predilection for conspiracy theories. Choice D is true and is not the answer.

Choice (A)

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**Q4.** Harlan believes that the points she made on euthanasia in a group discussion are true because nobody in the discussion contradicted them. What kind of a belief is this?

- a) Morally repugnant belief
- b) Irresponsible belief
- c) Overbelief Your answer is incorrect
- d) All of the above

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	151
Avg. time spent on this question by all students	105
Difficulty Level	D

### Time spent / Accuracy Analysis

Avg. time spent on this question by students who got this question right **107**

% of students who attempted this question **46.18**

% of students who got the question right of those who attempted **14.09**

[Video Solution](#)

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#### Number of words and Explanatory notes for RC:

Number of words: 683

Option A: Morally repugnant beliefs are those beliefs that are sexist, racist or homophobic; the belief that proper upbringing of a child requires 'breaking the will' and severe corporal punishment; the belief that the elderly should routinely be euthanised. Harlan's beliefs on euthanasia are considered true by her because they were not contradicted by others. Choice A does not fit the definition of a morally repugnant belief.

Option B: Irresponsible beliefs ignore the role of reality. There are irresponsible beliefs; more precisely, there are beliefs that are acquired and retained in an irresponsible way. One might disregard evidence; accept gossip, rumour, or testimony from dubious sources; ignore incoherence with one's other beliefs; embrace wishful thinking; or display a predilection for conspiracy theories. Harlan's beliefs on euthanasia are considered true by her because they were not contradicted by others. These beliefs can be considered to be acquired and retained in an irresponsible way. Choice B is a correct answer.

Option C: Overbelief means 'beyond justification'. In 'overbelief', wishful thinking, blind faith or sentiment (rather than evidence) stimulate or justify belief. There is nothing in the question to indicate Harlan's personal views on euthanasia. We do not know whether in Harlan's belief, there is wishful thinking or blind faith. When one says "blind faith" or "wishful thinking" (the attribution of reality to what one wishes to be true or the tenuous justification of what one wants to believe), these would point to extreme views and then one may not budge from these views even if evidence to the contrary is presented. So we can infer that Harlan's beliefs as mentioned in the question do not fall under this category viz 'wishful thinking' or 'blind faith'. Choice C does not apply.

Hence choice B is the answer.

Choice (B)

undefined

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**Q5.** How are Clifford's and James's views regarding beliefs different from each other?

- a) James believes that one has the right to believe anything they want to in the absence of evidence while Clifford believes that one should never ever believe anything if there is no evidence.
- b) Clifford's views, which are too restrictive, advocate disbelief, while James's views, which are liberal, advocate responsible beliefs.
- c) Clifford states that any belief that is not backed by substantial evidence should be discarded while James states that one should believe in certain things in the absence of evidence.
- d) Clifford opines that it is wrong for someone to believe in something without any basis or justification while James opines that in some situations, one may believe something even if there is not enough evidence to corroborate it. **Your answer is correct**

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	196
Avg. time spent on this question by all students	154
Difficulty Level	D
Avg. time spent on this question by students who got this question right	151
% of students who attempted this question	45.59
% of students who got the question right of those who attempted	53.72

[Video Solution](#)

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**Number of words and Explanatory notes for RC:**

Number of words: 683

Option A: "believe anything they want to in the absence of evidence" would be a wrong interpretation of James' view regarding beliefs. James says that some of our most important beliefs about the world and the human prospect must be formed without the possibility of sufficient evidence. Choice A is not the answer.

Option B: Clifford was trying to prevent irresponsible 'overbelief', in which wishful thinking, blind faith or sentiment (rather than evidence) stimulate or justify belief. This is too restrictive. But we cannot say that Clifford's views advocate disbelief. Neither can we conclude that James's views, which are liberal, advocate responsible beliefs. Choice B is extreme in tone and is not a correct representation of the difference between Clifford's and James's views regarding beliefs.

Option C: While Clifford claimed: 'It is wrong, always, everywhere, and for anyone, to believe anything upon insufficient evidence', we cannot infer "any belief that is not backed by substantial evidence should be discarded" as given in choice C. Also James reserved his comments (without the possibility of sufficient evidence) for some of our most important beliefs about the world and the human prospect, not all. Choice C is not the correct answer.

Option D: William K Clifford claimed: 'It is wrong, always, everywhere, and for anyone, to believe anything upon insufficient evidence.' Wishful thinking, blind faith or sentiment (rather than evidence) are too restrictive. One needs to rely on the testimony of reliable sources, expert judgment and the best available evidence.

According to William James, some of our most important beliefs about the world and the human prospect must be formed without the possibility of sufficient evidence. In such circumstances (which are sometimes defined narrowly, sometimes more broadly in James's writings), one's 'will to believe' entitles us to choose to believe the alternative that projects a better life. Only choice D correctly captures the essence of the difference between Clifford's and James's views regarding beliefs. Choice D is the correct answer.

Choice (D)

undefined

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Beliefs are factive: to believe is to take to be true. It would be absurd to say: 'It is raining, but I don't believe that it is raining.' Beliefs aspire to truth – but they do not entail it. Beliefs can be false, unwarranted by evidence or reasoned consideration. They can also be morally repugnant. Among likely candidates: beliefs that are sexist, racist or homophobic; the belief that proper upbringing of a child requires 'breaking the will' and severe corporal punishment; the belief that the elderly should routinely be euthanised, and so on. If we find these morally wrong, we condemn not only the potential acts that spring from such beliefs, but the content of the belief itself, the act of believing it, and thus the believer.

'Who are you to tell me what to believe?' says the zealot. It is a misguided challenge: it implies that certifying one's beliefs is a matter of someone's authority. It ignores the role of reality. Believing has what philosophers call a 'mind-to-world direction of fit'. Our beliefs are intended to reflect the real world – and it is on this point that beliefs can go haywire. There are irresponsible beliefs; more precisely, there are beliefs that are acquired and retained in an irresponsible way. One might disregard evidence; accept gossip, rumour, or testimony from dubious sources; ignore incoherence with one's other beliefs;

embrace wishful thinking; or display a predilection for conspiracy theories.

I do not mean to revert to the stern evidentialism of the 19th-century mathematical philosopher William K Clifford, who claimed: 'It is wrong, always, everywhere, and for anyone, to believe anything upon insufficient evidence.' Clifford was trying to prevent irresponsible 'overbelief', in which wishful thinking, blind faith or sentiment (rather than evidence) stimulate or justify belief. This is too restrictive. In any complex society, one has to rely on the testimony of reliable sources, expert judgment and the best available evidence. Moreover, as the psychologist William James responded in 1896, some of our most important beliefs about the world and the human prospect must be formed without the possibility of sufficient evidence. In such circumstances (which are sometimes defined narrowly, sometimes more broadly in James's writings), one's 'will to believe' entitles us to choose to believe the alternative that projects a better life.

In exploring the varieties of religious experience, James would remind us that the 'right to believe' can establish a climate of religious tolerance. Those religions that define themselves by required beliefs (creeds) have engaged in repression, torture and countless wars against non-believers that can cease only with recognition of a mutual 'right to believe'. Yet, even in this context, extremely intolerant beliefs cannot be tolerated. Rights have limits and carry responsibilities.

Unfortunately, many people today seem to take great licence with the right to believe, flouting their responsibility. The wilful ignorance and false knowledge that are commonly defended by the assertion 'I have a right to my belief' do not meet James's requirements. Consider those who believe that the lunar landings or the Sandy Hook school shooting were unreal, government-created dramas; that Barack Obama is Muslim; that the Earth is flat; or that climate change is a hoax. In such cases, the right to believe is proclaimed as a negative right; that is, its intent is to foreclose dialogue, to deflect all challenges; to enjoin others from interfering with one's belief-commitment. The mind is closed, not open for learning. They might be 'true believers', but they are not believers in the truth.

Believing, like willing, seems fundamental to autonomy, the ultimate ground of one's freedom. But, as Clifford also remarked: 'No one man's belief is in any case a private matter which concerns himself alone.' Beliefs shape attitudes and motives, guide choices and actions. Believing and knowing are formed within an epistemic community, which also bears their effects. There is an ethic of believing, of acquiring, sustaining, and relinquishing beliefs – and that ethic both generates and limits our right to believe. If some beliefs are false, or morally repugnant, or irresponsible, some beliefs are also dangerous. And to those, we have no right.

**Q6.** In which of the following cases is the 'right to believe' a negative right?

- a) Football fans arguing over which club is the best among Real Madrid, Juventus and Bayern Munich.
- b) Selling products online because you believe that it will help you make more money than you would by selling offline.
- c) Asserting that there is no extraterrestrial life because no alien species has ever visited our planet. Your answer is correct
- d) Reading a particular book just because a friend of yours said that it was fantastic in the middle of a conversation.

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	131
Avg. time spent on this question by all students	94
Difficulty Level	D
Avg. time spent on this question by students who got this question right	91
% of students who attempted this question	46.58
% of students who got the question right of those who attempted	68.98

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 683

The right to believe is a negative right in cases involving wilful ignorance and false knowledge commonly defended by the assertion "I have a right to believe". In such cases, the mind is closed and not open for learning, thus, putting an end to any potential conversation that may lead to learning anything new. As mentioned in the passage, they do not believe in the truth, which makes them wrong, in the first place. But they choose to believe the contrary anyway just because they have the 'right to believe'. This makes the right to believe a negative right.

In options (A), (B) and (D), the right to believe is not a negative right because the point of conflict is subjective. Real Madrid being the best club, Selling online being the best bet, The book being fantastic – these things are subjective and it cannot be said that one person is speaking the truth and the others are not. Since these things vary from person to person and every one of them are entitled to their opinion and there will always be discussions and debates on such issues. Hence, we cannot say that these are negative rights.

In option (C), each person may have different opinions but the truth is that either there is extra terrestrial life or there is no extra terrestrial life. In this case, no alien species ever visiting earth cannot be taken as proof for the absence of extraterrestrial life. Besides, by asserting the same, one completely forecloses a conversation on the numerous possibilities that are perceived as proof for the existence of extraterrestrial life. Just because one believes that it does not exist, it does not mean that it is true, considering the various promising sightings and other information that may shed light on the issue. Hence, in this case, it is a negative right. Choice C is the answer.

Choice (C)

undefined

**DIRECTIONS** for questions 7 to 12: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

The decisions the IMF and World Bank make – or don't make – about Somalia matter. They obviously matter to the 400,000 Somali children with acute malnutrition and 3 million people living in crisis or emergency food security conditions. Both institutions are keen to demonstrate that they are now truly progressive and dedicated to the elimination of poverty and tackling inequality. Somalia is a good test of whether the grand plans and the lofty rhetoric actually amount to anything, because this is a country that needs help – and it needs it now.

Somalia narrowly averted a famine earlier this year thanks to an impressive humanitarian effort. The World Bank was part of the effort, because it managed to persuade its board to provide \$50m (£37m) through the crisis response window of the International Development Association (IDA), the division of the bank that provides grants and soft loans to the world's poorest countries.

But the drought and near-famine have left Somalia's already weak economy in a parlous state. The World Bank has pledged to make a priority of helping fragile and conflict states, of which Somalia is a classic example. When the bank was rattling the tin for a big increase in donor funding for the IDA, one reason it said it needed \$75bn to spend over three years was so it could help countries like Somalia. There is, however, a problem. Somalia is not eligible for IDA funds because it owes the bank and the IMF just over \$800m – part of a \$5bn debt mountain owed to multilateral and bilateral creditors. These debts were incurred in the 1980s when most of Somalia's current population – 70% of which is under 30 – was not even born. Creditors long ago realised they would never get their money back and 90% of the debt has been written off.

So, the obvious way forward would be for Somalia to get debt relief under the heavily indebted poor country initiative (HIPC) established by the IMF and World Bank in 1996. HIPC was designed to free poor countries from unpayable debts, but there were a few countries in which conflict, civil war or ungovernability meant they never qualified. Somalia was one of them.

The two Washington-based multilateral organisations like Somalia's president, Mohamed Abdullahi Mohamed, who they

think is changing Somalia for the better, implementing the right sort of reforms. Somalia will have to wait for another two years before it reaches decision point – the moment under HIPC when its debt arrears will be cleared. The fund wants Somalia to establish a longer track record of reform before it gives the green light to debt relief.

This is the safety-first approach guaranteed not to cause any problems for the World Bank president, Jim Yong Kim, and the IMF's managing director, Christine Lagarde, with their executive boards. It is also a fundamentally daft approach. By fast-tracking Somalia through the debt relief process, the two institutions would provide the country's government with extra resources that would help it improve the resilience of the economy and so make it more likely that the reform process will continue...

In Somalia's case that could be done in one of two ways. The World Bank and the IMF could bring forward Somalia's decision point and write off its arrears, providing access to multi-year funding under the IDA. Alternatively, the bank could decide that Somalia is moving toward the point at which it will qualify for debt relief and so allocate a pre-arrears clearance grant.

There is a precedent for the World Bank and the IMF getting a move on, because Liberia was fast-tracked in 2004. That, though, was with the support of the US treasury, which is not minded to be as generous to Somalia. So, speeding up help for Somalia will only happen if Kim and Lagarde are prepared to have a fight with the US. A test of their commitment is whether they are prepared to defend the weak against the strong. It means showing leadership by standing up for what is right. Talk, by contrast, is cheap.

Q7. The central idea of this passage is:

- a) Somalia is in dire straits while the World Bank and the IMF are sitting on their hands doing nothing. Your answer is incorrect
- b) Somalia's present condition is largely because of the lack of good decision-making on the part of international organisations like the World Bank and the IMF.
- c) While the rest of the world including the World Bank and the IMF want to rescue Somalia, they are too scared to confront the US.
- d) Somalia's attempts at reform can be positively influenced if the IMF and the World Bank choose to act despite US resistance.

Show Correct Answer

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>621</b>
Avg. time spent on this question by all students	<b>365</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>363</b>
% of students who attempted this question	<b>55.34</b>
% of students who got the question right of those who attempted	<b>75.88</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 674

The main sub-ideas in the passage include: (a) Somalia's bad situation (b) The World Bank and IMF's intention to help its ongoing reform (c) The complications that prevent help from reaching Somalia with its low creditability, including the US not being generous enough to write off Somalia's debt.

Option A: Saying that the IMF and World Bank are sitting on their hands (rhetoric – always a bad sign for the right answer) doing nothing is an extreme opinion. The two organisations are hand-tied, true, but the passage certainly indicates they have helped and are trying to help. Hence, choice A is incorrect.

Option B: 'Somalia is not eligible for IDA funds because it owes the bank and the IMF just over \$800m – part of a \$5bn debt mountain owed to multilateral and bilateral creditors. These debts were incurred in the 1980s when most of Somalia's current population – 70% of which is under 30 – was not even born.' The underlined part clearly suggests that it is extremely incorrect to blame the IMF and World Bank for Somalia's bad condition. Yes, reforms in Somalia are not going at the rate achievable if the World Bank and IMF act faster. But, that has no bearing on the reason why Somalia is in this bad place. Choice B is therefore, incorrect.

Option C: The first half of the sentence is partially true. However, 'scared of the USA' is too strong an expression to summarise the problem. The USA is probably, stonewalling reform-related decisions because of the money Somalia owes it (only an inference). However, that action is not being taken because organisations are scared of the US, is pushing the truth too far. Also, this line - 'speeding up help for Somalia will only happen if Kim and Lagarde are prepared to have a fight with the US' – points that organisations have to fight the US and the decision on whether to fight the US or not is still pending. Choice C is incorrect.

Option D: This option talks about Somalia's path to reform and how that is dependent to a certain extent on the IMF and World Bank's actions, which in turn have to take place despite the US trying to stonewall such efforts. Since, all the sub-ideas have been covered in this option, choice D is the answer.

Choice (D)

undefined

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The two Washington-based multilateral organisations like Somalia's president, Mohamed Abdullahi Mohamed, who they think is changing Somalia for the better, implementing the right sort of reforms. Somalia will have to wait for another two years before it reaches decision point – the moment under HIPC when its debt arrears will be cleared. The fund wants Somalia to establish a longer track record of reform before it gives the green light to debt relief.

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In Somalia's case that could be done in one of two ways. The World Bank and the IMF could bring forward Somalia's decision point and write off its arrears, providing access to multi-year funding under the IDA. Alternatively, the bank could decide that Somalia is moving toward the point at which it will qualify for debt relief and so allocate a pre-arrears clearance grant.

There is a precedent for the World Bank and the IMF getting a move on, because Liberia was fast-tracked in 2004. That, though, was with the support of the US treasury, which is not minded to be as generous to Somalia. So, speeding up help for Somalia will only happen if Kim and Lagarde are prepared to have a fight with the US. A test of their commitment is whether they are prepared to defend the weak against the strong. It means showing leadership by standing up for what is right. Talk, by contrast, is cheap.

**Q8.** Which of the following actions cannot confirm whether 'the lofty rhetoric actually amounts to something'?

- a) Bringing forward Somalia's decision point and writing off its arrears.
- b) The USA writing off the Somalian debt as a sign of goodwill. **Your answer is correct**
- c) Allocating a pre-arrears clearance grant to Somalia as reward for the reforms undertaken by the country so far.
- d) Fast-tracking Somalia through the debt relief process as in the case of Liberia.

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>193</b>
Avg. time spent on this question by all students	<b>137</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>132</b>
% of students who attempted this question	<b>41.83</b>
% of students who got the question right of those who attempted	<b>57.85</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 674

*'Both institutions are keen to demonstrate that they are now truly progressive and dedicated to the elimination of poverty and tackling inequality. Somalia is a good test of whether the grand plans and the lofty rhetoric actually amount to anything.'* From this line, it can be inferred that the lofty rhetoric is alluding to the vision of IMF and the World Bank. We are looking for an option that doesn't demonstrate IMF and World Bank's commitment.

*"In Somalia's case that could be done in one of two ways. The World Bank and the IMF could bring forward Somalia's decision point and write off its arrears, providing access to multi-year funding under the IDA. Alternatively, the bank could decide that Somalia is moving toward the point at which it will qualify for debt relief and so allocate a pre-arrears clearance grant."*

From the penultimate para it can be understood that the IMF and World Bank can demonstrate their vision by helping Somalia in multiple ways (underlined).

Option A: This is one of the underlined parts above and hence, is a step in the right direction to prove it is not all lofty rhetoric. Choice A is not the answer.

Option B: The passage does not discuss Somalia's debts to the US, but Somalia's debts to the World Bank and the IMF. So, the US doing something out of goodwill doesn't tell us really if it is part of the IMF and World Bank's efforts to help Somalia. Such inferences may not be made unless there is direct evidence. Hence, the US' actions cannot really help us identify action being taken in line with the 'lofty rhetoric' (of the World Bank and IMF). Hence, choice B is the answer.

Option C: This is one of the underlined portions above. Hence, it does show that the IMF and the World Bank are serious about their missions. Choice C is not the answer.

Option D: 'By fast-tracking Somalia through the debt relief process, the two institutions would provide the country's government with extra resources'(6<sup>th</sup> para) shows that this option also shows the commitment of the two institutions and hence, not the answer.

Choice (B)

undefined

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established by the IMF and World Bank in 1996. HIPC was designed to free poor countries from unpayable debts, but there were a few countries in which conflict, civil war or ungovernability meant they never qualified. Somalia was one of them.

The two Washington-based multilateral organisations like Somalia's president, Mohamed Abdullahi Mohamed, who they think is changing Somalia for the better, implementing the right sort of reforms. Somalia will have to wait for another two years before it reaches decision point – the moment under HIPC when its debt arrears will be cleared. The fund wants Somalia to establish a longer track record of reform before it gives the green light to debt relief.

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**Q9.** Which of the following cannot be inferred as a reason why Somalia didn't benefit from HIPC?

- a) The country has been tormented by never-ending civil wars amongst multiple ethnicities.
- b) No government has been stable in Somalia until recently, with constant military coups.
- c) Somalia has an ungovernable mountain of debt that needs to be repaid. **Your answer is correct**
- d) Somalia hasn't had a peaceful climate in three decades.

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>79</b>
Avg. time spent on this question by all students	<b>98</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>91</b>
% of students who attempted this question	<b>56.91</b>
% of students who got the question right of those who attempted	<b>41.54</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 674

'HIPC was designed to free poor countries from unpayable debts, but there were a few countries in which conflict, civil war or ungovernability meant they never qualified. Somalia was one of them.' From this line, we can infer Somalia has one or more of the three problems underlined. We are looking for an option that doesn't fit amongst these three parameters.

Option A: This refers to the second problem in the underlined portion. Hence, it is not a false inference. Choice A is not the answer.

Option B: This refers to the third factor in the underlined portion – the difficulty in governing the country. Hence, choice B is not the answer.

Option C: Somalia's debt is not the reason why it didn't get HIPC help. In fact, debt is the reason why it needs HIPC help. The HIPC is in place to help poor countries with unpayable debts. This reason has not been listed as one of the factors that disqualify Somalia. Hence, choice C is the answer. (It is important not to be confused by the use of the word 'ungovernable' which means 'unmanageable' here.)

Option D: This option directly points to 'conflict', the first of the three parameters. Hence, choice D is not the answer.

Choice (C)

undefined

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**Q10.** Which of the following explains why the author called the World Bank and the IMF's approach fundamentally daft?

- a) HIPC is unhappy with the current government in Somalia and is hence, reluctant to provide debt relief.
- b) Somalia may not be able to establish a longer track record of reform required to receive debt relief without help. **Your answer is correct**
- c) The safety-first approach is guaranteed not to cause any problems for the World Bank president and the IMF's managing director with their executive boards.
- d) The IMF and World Bank talk is exactly that – talk.

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>245</b>
Avg. time spent on this question by all students	<b>122</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>130</b>
% of students who attempted this question	<b>44.67</b>
% of students who got the question right of those who attempted	<b>41.79</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 674

'By fast-tracking Somalia through the debt relief process, the two institutions would provide the country's government with extra resources that would help it improve the resilience of the economy and so make it more likely that the reform process will continue...'. From this line it can be understood that the author calls their approach daft (foolish, silly) because only debt relief can help Somalia improve. Otherwise, it stands the risk of not even making it to the point when it becomes eligible for debt relief.

Option A: From the line – 'The two Washington-based multilateral organisations like Somalia's president, Mohamed Abdullahi Mohamed, who they think is changing Somalia for the better', it can be understood that the Somalian government is doing a good job. Therefore, HIPC is not unhappy with the Somalian government. The option is therefore, factually incorrect and will not justify the author calling the two organisations, IMF and the World Bank, foolish. Choice A is not the answer.

Option B: This line explains the author's biggest fear. That is why the author wants fast-tracking of debt relief as understood from the passage. The underlined portion above explains that the author wants more resources for Somalia as that will make it more likely that the reform will be pursued and a track record established. Hence, choice B is the answer.

Option C: The given line in the passage is followed by: 'It is also a fundamentally daft approach'. That proves this line doesn't explain what the daftness is. This line points out that the IMF and the World Bank are following a safety-first approach. The author calls that approach daft, which means there has to be another reason. (What he calls daft cannot be the same as 'why' he calls it daft). So, choice C cannot be the answer.

Option D: The author hopes that the World Bank and IMF talk is not just talk but more than talk and that it is backed up by proper action. The author is still waiting for an action. Also, this option doesn't explain the daftness of the current approach by IMF and the World Bank. Hence, choice D is incorrect.

Choice (B)

undefined

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The decisions the IMF and World Bank make – or don't make – about Somalia matter. They obviously matter to the 400,000 Somali children with acute malnutrition and 3 million people living in crisis or emergency food security conditions. Both institutions are keen to demonstrate that they are now truly progressive and dedicated to the elimination of poverty and tackling inequality. Somalia is a good test of whether the grand plans and the lofty rhetoric actually amount to anything, because this is a country that needs help – and it needs it now.

Somalia narrowly averted a famine earlier this year thanks to an impressive humanitarian effort. The World Bank was part of the effort, because it managed to persuade its board to provide \$50m (£37m) through the crisis response window of the International Development Association (IDA), the division of the bank that provides grants and soft loans to the world's poorest countries.

But the drought and near-famine have left Somalia's already weak economy in a parlous state. The World Bank has pledged

to make a priority of helping fragile and conflict states, of which Somalia is a classic example. When the bank was rattling the tin for a big increase in donor funding for the IDA, one reason it said it needed \$75bn to spend over three years was so it could help countries like Somalia. There is, however, a problem. Somalia is not eligible for IDA funds because it owes the bank and the IMF just over \$800m – part of a \$5bn debt mountain owed to multilateral and bilateral creditors. These debts were incurred in the 1980s when most of Somalia's current population – 70% of which is under 30 – was not even born. Creditors long ago realised they would never get their money back and 90% of the debt has been written off.

So, the obvious way forward would be for Somalia to get debt relief under the heavily indebted poor country initiative (HIPC) established by the IMF and World Bank in 1996. HIPC was designed to free poor countries from unpayable debts, but there were a few countries in which conflict, civil war or ungovernability meant they never qualified. Somalia was one of them.

The two Washington-based multilateral organisations like Somalia's president, Mohamed Abdullahi Mohamed, who they think is changing Somalia for the better, implementing the right sort of reforms. Somalia will have to wait for another two years before it reaches decision point – the moment under HIPC when its debt arrears will be cleared. The fund wants Somalia to establish a longer track record of reform before it gives the green light to debt relief.

This is the safety-first approach guaranteed not to cause any problems for the World Bank president, Jim Yong Kim, and the IMF's managing director, Christine Lagarde, with their executive boards. It is also a fundamentally daft approach. By fast-tracking Somalia through the debt relief process, the two institutions would provide the country's government with extra resources that would help it improve the resilience of the economy and so make it more likely that the reform process will continue...

In Somalia's case that could be done in one of two ways. The World Bank and the IMF could bring forward Somalia's decision point and write off its arrears, providing access to multi-year funding under the IDA. Alternatively, the bank could decide that Somalia is moving toward the point at which it will qualify for debt relief and so allocate a pre-arrears clearance grant.

There is a precedent for the World Bank and the IMF getting a move on, because Liberia was fast-tracked in 2004. That, though, was with the support of the US treasury, which is not minded to be as generous to Somalia. So, speeding up help for Somalia will only happen if Kim and Lagarde are prepared to have a fight with the US. A test of their commitment is whether they are prepared to defend the weak against the strong. It means showing leadership by standing up for what is right. Talk, by contrast, is cheap.

**Q11.** Which of the following statements is not true based on the evidence given in the passage?

- a) **70% of Somalia's current population is under 30.**
- b) **Somalia owes \$800m to the World Bank and the IMF.**
- c) **Somalia received \$50mn from the IDA as debt relief.** □ **Your answer is incorrect**
- d) **The World Bank needs \$75bn over three years to rescue Somalia.**

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>332</b>
Avg. time spent on this question by all students	<b>106</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>98</b>
% of students who attempted this question	<b>57.92</b>
% of students who got the question right of those who attempted	<b>37.85</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 674

Option A: 'These debts were incurred in the 1980s when most of Somalia's current population – 70% of which is under 30 – was not even born.' (Third para) This line shows choice A is true and hence, not the answer.

Option B: 'Somalia is not eligible for IDA funds because it owes the bank and the IMF just over \$800m – part of a \$5bn debt mountain' – this line (third para) shows that choice B is true and hence, not the answer.

Option C: 'The World Bank was part of the effort, because it managed to persuade its board to provide \$50m (£37m) from the crisis response window of the International Development Association (IDA).' (Para 2) This sentence shows that choice C is true, and hence, not the answer.

Option D: 'When the bank was rattling the tin for a big increase in donor funding for the IDA, one reason it said it needed \$75bn to spend over three years was so it could help countries like Somalia.' This line clearly shows that the \$75bn was not just for Somalia but for other countries like Somalia as well. Hence, choice D is incorrect, and therefore, the answer.

Choice (D)

undefined

**DIRECTIONS** for questions 7 to 12: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

The decisions the IMF and World Bank make – or don't make – about Somalia matter. They obviously matter to the 400,000 Somali children with acute malnutrition and 3 million people living in crisis or emergency food security conditions. Both institutions are keen to demonstrate that they are now truly progressive and dedicated to the elimination of poverty and tackling inequality. Somalia is a good test of whether the grand plans and the lofty rhetoric actually amount to anything, because this is a country that needs help – and it needs it now.

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But the drought and near-famine have left Somalia's already weak economy in a parlous state. The World Bank has pledged to make a priority of helping fragile and conflict states, of which Somalia is a classic example. When the bank was rattling the tin for a big increase in donor funding for the IDA, one reason it said it needed \$75bn to spend over three years was so it could help countries like Somalia. There is, however, a problem. Somalia is not eligible for IDA funds because it owes the bank and the IMF just over \$800m – part of a \$5bn debt mountain owed to multilateral and bilateral creditors. These debts were incurred in the 1980s when most of Somalia's current population – 70% of which is under 30 – was not even born. Creditors long ago realised they would never get their money back and 90% of the debt has been written off.

So, the obvious way forward would be for Somalia to get debt relief under the heavily indebted poor country initiative (HIPC) established by the IMF and World Bank in 1996. HIPC was designed to free poor countries from unpayable debts, but there were a few countries in which conflict, civil war or ungovernability meant they never qualified. Somalia was one of them.

The two Washington-based multilateral organisations like Somalia's president, Mohamed Abdullahi Mohamed, who they think is changing Somalia for the better, implementing the right sort of reforms. Somalia will have to wait for another two years before it reaches decision point – the moment under HIPC when its debt arrears will be cleared. The fund wants Somalia to establish a longer track record of reform before it gives the green light to debt relief.

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In Somalia's case that could be done in one of two ways. The World Bank and the IMF could bring forward Somalia's decision point and write off its arrears, providing access to multi-year funding under the IDA. Alternatively, the bank could decide that Somalia is moving toward the point at which it will qualify for debt relief and so allocate a pre-arrears clearance grant.

There is a precedent for the World Bank and the IMF getting a move on, because Liberia was fast-tracked in 2004. That, though, was with the support of the US treasury, which is not minded to be as generous to Somalia. So, speeding up help for Somalia will only happen if Kim and Lagarde are prepared to have a fight with the US. A test of their commitment is whether they are prepared to defend the weak against the strong. It means showing leadership by standing up for what is right. Talk, by contrast, is cheap.

**Q12.** The author's tone while ending this passage, as evident from the last paragraph, is one of?

- a) **Provocation** Your answer is correct
- b) **Sarcasm**
- c) **Scepticism**
- d) **Anticipation**

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>34</b>
Avg. time spent on this question by all students	<b>59</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>58</b>
% of students who attempted this question	<b>47.33</b>
% of students who got the question right of those who attempted	<b>39.18</b>

[Video Solution](#)

[Text Solution](#)

#### Number of words and Explanatory notes for RC:

Number of words: 674

Refer to the last para of the passage, especially the last three sentences.

Option A: The author is not picking a fight with anyone or addressing anyone in particular. However, the tone in the last para is not unbiased, straight or neutral. The author seems to dare the IMF and the World Bank to take the right decision from the line 'It means showing leadership by standing up for what is right. Talk, by contrast, is cheap'. This needling is best represented by the word 'provocation'. Therefore, choice A is the answer.

Option B: Sarcasm is observed when authors say one thing, but mean the exact opposite, often to poke fun or to criticise. Here, the author is talking straight. So, the tone of the last para is not sarcastic. Choice B is not the answer.

Option C: This is close, but scepticism involves a hint of negativity, when you are questioning if something is true/will happen/is possible. Here, the author seems objective and neutral and doesn't really say that things may not pan out well. Choice C is not the answer.

Option D: Anticipation is when you are awaiting something with bated breath, without being optimistic (excited) or pessimistic (sceptical) about it. This option is very close since, the author is indeed expectant as to the path which will be taken by IMF and the World Bank. Nevertheless, anticipation doesn't fully reflect the author's tone which also holds a subtle hint of sarcasm/contempt for the World Bank and IMF for being a little wary of aiding the Somalian reform. That negativity with which the author challenges the two organisations is not conveyed by 'anticipation'. Choice D is not the answer.

Choice (A)

**DIRECTIONS** for questions 13 to 15: The passage given below is accompanied by a set of three questions. Choose the best answer to each question.

Anthropocentrism could be clouding our appraisal of the nautilus – and perhaps other members of the animal kingdom – in more subtle ways, too. Basil, who has dedicated her life to studying the intelligence of the nautilus, has used aquatic mazes to test the creature's response to various stimuli and successfully demonstrated that the nautilus has an impressive memory. That makes it one of the oldest existing species known to be capable of learning. Whether they reside in a research tank, or in the nautilus's natural habitat about 1,500 feet under the ocean's rippled surface, the species has an unnervingly ancient appearance.

"They're not highly visual," she says of the nautilus. "We see nautiluses in the aquarium in the daytime, which is when they sleep," Basil says. These nocturnal habits, combined with their unusual eyes, may make us less inclined to consider the nautilus as impressive as lab tests have proven it to be.

Some animals are so visibly weird, humans seem compelled to create equally weird theories to explain their existence. In May, researchers published a dubious paper arguing the octopus came from space, instead of evolving on Earth like its cousin, the nautilus. Despite being lambasted by fellow scientists the world over, the authors continue to say that octopuses – with their blue blood, arms for brains, and squishy ability to squeeze into any crevice – must come from space. But as Sara Chodosh wrote, "We have to stop taking away Mother Nature's achievements." While this branch of the cephalopod family is eye-popping, its genome is certainly a product of Earth and its unique evolutionary contexts.

Looking at a nautilus, you might be inclined to dismiss it as just another beautiful shell. But looks can be deceiving – especially in the natural world. In reality, the nautilus has an unusually large brain to body ratio and incredible olfactory abilities. It can survive at depths as low as 2,500 feet without exploding. And they're a magnet for metaphors, helping humans navigate math, medicine, and the mysteries of the open ocean. If none of that persuades you to look beyond that spiralling shell, then maybe the nautilus's capacity for memory will.

**Q13.** Which of the following is the main theme of the passage?

- a) To demonstrate that some impressive species are underappreciated due to anthropocentrism. Your answer is correct
- b) To discuss why the nautilus, an ancient creature, has managed to survive for so long.
- c) To implore the reader to appreciate some animal species using the same lens as the one used for human beings.
- d) To identify how certain species have evolved to be smarter in nature.

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	228
Avg. time spent on this question by all students	235
Difficulty Level	M
Avg. time spent on this question by students who got this question right	232
% of students who attempted this question	42.08
% of students who got the question right of those who attempted	64.48

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 356

The passage tries to achieve two goals: To prove that the nautilus has intelligence and should be looked at as an impressive species and secondly, to drive home the point that sometimes, human beings disregard certain impressive evolutionary characteristics thanks to their anthropocentrism (looking at everything from a human value perspective).

Option A: This is true especially for uncharacteristically different species like the octopus and the nautilus which are judged based on their predominant visual aspects rather than how they have come to evolve. Anthropocentrism could be clouding our appraisal of the nautilus – and perhaps other members of the animal kingdom – in more subtle ways, too. Hence choice A is the answer.

Option B: While the passage does mention that the nautilus is one of the oldest existing species capable of learning, the age is not the main theme. The passage is more focused on how smart the nautilus is and how humans don't generally look beyond its beautiful shell or unusual eyes. Choice B is incorrect.

Option C: The option states the exact opposite of what the passage suggests. The passage implores us to not be anthropocentric. In other words, we need to avoid looking at animals from a human lens, not apply our standards on them to judge them. So "appreciate some animal species using the same lens as the one used for human beings" in choice C is incorrect.

Option D: The passage doesn't discuss, anywhere, how smartness/intelligence of some species has evolved. We discuss the nautilus' intelligence, but not how it has evolved into becoming intelligent. Choice D is not the answer.

Choice (A)

undefined

**DIRECTIONS** for questions 13 to 15: The passage given below is accompanied by a set of three questions. Choose the best answer to each question.

Anthropocentrism could be clouding our appraisal of the nautilus – and perhaps other members of the animal kingdom – in more subtle ways, too. Basil, who has dedicated her life to studying the intelligence of the nautilus, has used aquatic mazes to test the creature's response to various stimuli and successfully demonstrated that the nautilus has an impressive memory. That makes it one of the oldest existing species known to be capable of learning. Whether they reside in a research tank, or in the nautilus's natural habitat about 1,500 feet under the ocean's rippled surface, the species has an unnervingly ancient appearance.

"They're not highly visual," she says of the nautilus. "We see nautiluses in the aquarium in the daytime, which is when they sleep," Basil says. These nocturnal habits, combined with their unusual eyes, may make us less inclined to consider the nautilus as impressive as lab tests have proven it to be.

Some animals are so visibly weird, humans seem compelled to create equally weird theories to explain their existence. In May, researchers published a dubious paper arguing the octopus came from space, instead of evolving on Earth like its cousin, the nautilus. Despite being lambasted by fellow scientists the world over, the authors continue to say that octopuses – with their blue blood, arms for brains, and squishy ability to squeeze into any crevice – must come from space. But as Sara Chodosh wrote, "We have to stop taking away Mother Nature's achievements." While this branch of the cephalopod family is eye-popping, its genome is certainly a product of Earth and its unique evolutionary contexts.

Looking at a nautilus, you might be inclined to dismiss it as just another beautiful shell. But looks can be deceiving – especially in the natural world. In reality, the nautilus has an unusually large brain to body ratio and incredible olfactory abilities. It can survive at depths as low as 2,500 feet without exploding. And they're a magnet for metaphors, helping humans navigate math, medicine, and the mysteries of the open ocean. If none of that persuades you to look beyond that

spiralling shell, then maybe the nautilus's capacity for memory will.

**Q14.** The main purpose behind providing the example of the octopus in the passage is:

- a) To draw a contrast between the octopus and its cousin, the Nautilus.
- b) To explain how some advanced species didn't evolve on earth but came from space.
- c) To demonstrate how weird features like blue blood and arms for brains are signs of extra-terrestrial origins.
- d) To prove that weird theories are largely fuelled by the weirdness of an animal species and not true evidence.

**Your answer is correct**

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	82
Avg. time spent on this question by all students	67
Difficulty Level	M
Avg. time spent on this question by students who got this question right	60
% of students who attempted this question	45.32
% of students who got the question right of those who attempted	82.93

[Video Solution](#)

[Text Solution](#)

#### Number of words and Explanatory notes for RC:

Number of words: 356

Option A: The octopus and the nautilus weren't compared anywhere in the passage. The only line that mentions them 'the octopus came from space, instead of evolving on Earth like its cousin, the nautilus' was actually a fallacious statement that the author doesn't agree to. Hence, choice A is not the answer.

Option B: But as Sara Chodosh wrote, "We have to stop taking away Mother Nature's achievements." This line clearly shows that as advanced as a species like the octopus may seem, we shouldn't come up with weird theories and should believe that they are a result of evolution. Hence, choice B is not the answer.

Option C: Once again, this option is clearly wrong because blue blood and arms for brains (octopus' weird characteristics) are not proof that the octopus came from space as is suggested by the underlined portion above and in 'Despite being lambasted by fellow scientists the world over'. Choice C is incorrect.

Option D: The octopus example was mentioned with respect to this line – Some animals are so visibly weird, humans seem compelled to create equally weird theories to explain their existence. The weirdness of the octopus ('with their blue blood, arms for brains, and squishy ability to squeeze into any crevice – must come from space') has led some to come up with strange theories. Hence, choice D is the answer.

Choice (D)

undefined

**DIRECTIONS for questions 13 to 15:** The passage given below is accompanied by a set of three questions. Choose the best answer to each question.

Anthropocentrism could be clouding our appraisal of the nautilus – and perhaps other members of the animal kingdom – in more subtle ways, too. Basil, who has dedicated her life to studying the intelligence of the nautilus, has used aquatic mazes to test the creature's response to various stimuli and successfully demonstrated that the nautilus has an impressive memory. That makes it one of the oldest existing species known to be capable of learning. Whether they reside in a research tank, or in the nautilus's natural habitat about 1,500 feet under the ocean's rippled surface, the species has an unnervingly ancient appearance.

"They're not highly visual," she says of the nautilus. "We see nautiluses in the aquarium in the daytime, which is when they sleep," Basil says. These nocturnal habits, combined with their unusual eyes, may make us less inclined to consider the

nautilus as impressive as lab tests have proven it to be.

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Looking at a nautilus, you might be inclined to dismiss it as just another beautiful shell. But looks can be deceiving – especially in the natural world. In reality, the nautilus has an unusually large brain to body ratio and incredible olfactory abilities. It can survive at depths as low as 2,500 feet without exploding. And they’re a magnet for metaphors, helping humans navigate math, medicine, and the mysteries of the open ocean. If none of that persuades you to look beyond that spiralling shell, then maybe the nautilus’s capacity for memory will.

**Q15.** All of the following can be inferred from the passage EXCEPT:

- a) Anthropocentrism is a reason that humans believe in weird theories such as ‘octopuses came from space’.
- b) There is more to the nautilus, beyond its eyes, than meets our eye.
- c) An unusually large brain to body ratio is a sign of an animal that is capable of learning. **Your answer is correct**
- d) Response to stimuli and an impressive memory can help prove that an animal is capable of learning.

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	147
Avg. time spent on this question by all students	94
Difficulty Level	D
Avg. time spent on this question by students who got this question right	93
% of students who attempted this question	40.69
% of students who got the question right of those who attempted	54.99

[Video Solution](#)

[Text Solution](#)

#### Number of words and Explanatory notes for RC:

Number of words: 356

Option A: The two sentences – ‘Some animals are so visibly weird, humans seem compelled to create equally weird theories to explain their existence’ and ‘Anthropocentrism could be clouding our appraisal of the nautilus – and perhaps other members of the animal kingdom – in more subtle ways, too’ explain why we try to fit animals based on our understanding and our standards. When something doesn’t fit our standards, like the octopus, we tend to come up with weird theories. Hence, choice A can be inferred.

Option B: These nocturnal habits, combined with their unusual eyes, may make us less inclined to consider the nautilus as impressive as lab tests have proven it to be. Based on this line we can understand that humans are too preoccupied with the unusual eyes of the nautilus to observe how impressive they actually are (‘more to it than what meets the eye’ means there is something to notice beyond the superficial looks). Hence, choice B can be inferred.

Option C: While the nautilus’ large brain to body ratio has been mentioned in the fourth para, its ability to learn, connected to its memory has been mentioned in the first para. There is no way to infer that both are connected. Choice C cannot be inferred, and hence, is the answer.

Option D: ‘Basil, who has dedicated her life to studying the intelligence of the nautilus, has used aquatic mazes to test the creature’s response to various stimuli and successfully demonstrated that the nautilus has an impressive memory. That makes it one of the oldest existing species known to be capable of learning.’ From the underlined portions, it can be inferred that based on how the nautilus responded to certain stimuli, it was proven that it is capable of learning. Choice D is true and is not the answer.

Choice (C)

undefined

**DIRECTIONS** for questions 16 to 18: The passage given below is accompanied by a set of three questions. Choose the best answer to each question.

Within the cardboard boxes and reams of microfilm that hold the last century of Pulitzer Prize-winning journalism lies a troubling story about a group of journalistic underdogs: the women and people of colour who are being shut out of American journalism's most prestigious award.

The ranks of Pulitzer winners have grown more diverse, but progress has been so slow that the percentage of non-white winners over the last decade is essentially identical to the percentage over the last 100 years. The news is better for women, who are winning Prizes in a range of categories often thought to be heavily male-dominated, such as investigative and international reporting. 16% of Prize-winners over the last century have been women, but that is changing. In the last decade, women have taken home nearly a third of journalism Prizes. However, only 30 named African Americans have won Pulitzers.

To compile these pieces of data, two CJR researchers spent weeks analyzing winners over the past century. 84% of Pulitzer winners over the last 100 years have been white, and Caucasians continue to dominate the Prizes. In the last decade, the percentage of white winners has hardly budged when compared to the 100-year figure.

The demise of small and mid-size newspapers coupled with the growth of national outlets has led to a concentration of Prize power among the field's leaders. In the decade that ended 40 years ago, The New York Times won 6.8 percent of Pulitzers. In the last 10 years, the paper's share has more than doubled, to 16 percent.

Only six Pulitzers have been awarded for coverage of South and Central America: two for stories about Mexico, two for stories about Cuba, one for reports from Argentina, and one for dispatches from Central America. Stories about war, conflict, and political strife accounted for nearly 60 percent of Pulitzer-winning international coverage. Africa watchers have long said that the continent only makes news as a site of war, famine, and disease. The 14 Prizes for Africa coverage make that point starkly, with small exceptions for political strife, human rights, and daily life. Stories about economics and business, diplomacy, corruption, justice systems, and other topics in Africa don't win Pulitzers – at least not yet.

**Q16.** Which of the following points is the author trying to drive home in this passage?

- a) Pulitzer prizes are generally not equitably distributed to represent various sections of American society.
- b) While the percentage of women Pulitzer prize-winners has gone up, African and American representation has barely increased in a century.
- c) Pulitzer awards are prejudiced in nature preferring Caucasians over women and journalists of colour.
- d) The compiled data of Pulitzer winners of the last century shows strong biases towards certain categories.

Your answer is correct

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	174
Avg. time spent on this question by all students	239
Difficulty Level	D
Avg. time spent on this question by students who got this question right	234
% of students who attempted this question	39.63
% of students who got the question right of those who attempted	60.48

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 368

Option A: We are not well-informed in the passage about all the sections of American society. The passage does bemoan the lack of representation for women and African-Americans, pointing to the majority of Pulitzer winners, who are white. However, generalizing that to the entire American society is not the main idea of the passage. Also, such a theory will not be supported by the discussion about the origin of the stories – Central and South America and about The New York Times – rather than about the winners. Hence, choice A is not the answer.

Option B: The passage bewails the low number of African-Americans who have won the Pulitzer. The option is talking about African and American representation. These are not the same. That makes this an easy option to eliminate. Even if the option included the word 'African-American' instead of the obvious trick, choice B will still not be the main idea of the passage as the piece is not all about women and African-Americans. Hence, choice B is not the answer.

Option C: The expression, 'a troubling story about a group of journalistic underdogs: the women and people of colour who are being shut out of American journalism's most prestigious award' does indicate a prejudice or bias. However, this is not the main theme of the passage, which also discusses awards for African stories, awards for Central and South American stories (discussion about where the stories are from, rather than who has won the awards). This is one of the biggest ideas of this passage – to show women and journalists of colour being shut out. But, it is not the main idea. Hence, choice C is not the answer.

Option D: Almost every segment that was discussed in the passage had a pattern. National outlets like The New York Times winning a big chunk of the awards, women and journalists of colour not winning enough awards, African stories about war and strife winning awards but Central and South American stories not winning awards – all these point to the fact that the awards have biases with a very clear demarcation. That has been brought out in the passage with the help of numbers. Hence, choice D is the answer.

Choice (D)

undefined

**DIRECTIONS for questions 16 to 18:** The passage given below is accompanied by a set of three questions. Choose the best answer to each question.

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The ranks of Pulitzer winners have grown more diverse, but progress has been so slow that the percentage of non-white winners over the last decade is essentially identical to the percentage over the last 100 years. The news is better for women, who are winning Prizes in a range of categories often thought to be heavily male-dominated, such as investigative and international reporting. 16% of Prize-winners over the last century have been women, but that is changing. In the last decade, women have taken home nearly a third of journalism Prizes. However, only 30 named African Americans have won Pulitzers.

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that the continent only makes news as a site of war, famine, and disease. The 14 Prizes for Africa coverage make that point starkly, with small exceptions for political strife, human rights, and daily life. Stories about economics and business, diplomacy, corruption, justice systems, and other topics in Africa don't win Pulitzers – at least not yet.

**Q17.** All of the following are true based on the information given in the passage EXCEPT:

- a) More Pulitzer prizes have been awarded for stories covering Africa than for stories covering Central and South America.
- b) 16% of the Pulitzer winners in the last century are of non-white origin. Your answer is incorrect
- c) Around 30% of the Pulitzer winners in the last decade are women.
- d) The New York Times' share of Pulitzer winners has more than doubled in the last decade to make it the frontrunner amongst national newspapers.

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	137
Avg. time spent on this question by all students	121
Difficulty Level	M
Avg. time spent on this question by students who got this question right	135
% of students who attempted this question	43.24
% of students who got the question right of those who attempted	20.54

[Video Solution](#)

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**Number of words and Explanatory notes for RC:**

Number of words: 368

Option A: 'Only six Pulitzers have been awarded for coverage of South and Central America.' 'The 14 Prizes for Africa coverage make that point starkly.' From these two lines, it can be understood that more Pulitzer prizes have been awards for stories covering Africa than for stories covering South and Central America. Choice A is true. Therefore, choice A is not the answer.

Option B: '84% of Pulitzer winners over the last 100 years have been white.' From this, we can understand that 16% of the Pulitzer winners in the last century are of non-white origin. Hence, choice B is not the answer.

Option C: 'In the last decade, women have taken home nearly a third of journalism Prizes.' From this line, we can understand that more than 30% of the Pulitzer winners are women. (33.33% to be precise). Hence, choice C is not the answer.

Option D: 'The demise of small and mid-size newspapers coupled with the growth of national outlets has led to a concentration of Prize power among the field's leaders.' From this line, we can understand that The New York Times is one of the field leaders but there is no evidence to suggest that it is the frontrunners amongst national newspapers. Hence, choice D is the answer.

Choice (D)

undefined

**DIRECTIONS** for questions 16 to 18: The passage given below is accompanied by a set of three questions. Choose the best answer to each question.

Within the cardboard boxes and reams of microfilm that hold the last century of Pulitzer Prize-winning journalism lies a troubling story about a group of journalistic underdogs: the women and people of colour who are being shut out of American journalism's most prestigious award.

The ranks of Pulitzer winners have grown more diverse, but progress has been so slow that the percentage of non-white winners over the last decade is essentially identical to the percentage over the last 100 years. The news is better for women,

who are winning Prizes in a range of categories often thought to be heavily male-dominated, such as investigative and international reporting. 16% of Prize-winners over the last century have been women, but that is changing. In the last decade, women have taken home nearly a third of journalism Prizes. However, only 30 named African Americans have won Pulitzers.

To compile these pieces of data, two CJR researchers spent weeks analyzing winners over the past century. 84% of Pulitzer winners over the last 100 years have been white, and Caucasians continue to dominate the Prizes. In the last decade, the percentage of white winners has hardly budged when compared to the 100-year figure.

The demise of small and mid-size newspapers coupled with the growth of national outlets has led to a concentration of Prize power among the field's leaders. In the decade that ended 40 years ago, The New York Times won 6.8 percent of Pulitzers. In the last 10 years, the paper's share has more than doubled, to 16 percent.

Only six Pulitzers have been awarded for coverage of South and Central America: two for stories about Mexico, two for stories about Cuba, one for reports from Argentina, and one for dispatches from Central America. Stories about war, conflict, and political strife accounted for nearly 60 percent of Pulitzer-winning international coverage. Africa watchers have long said that the continent only makes news as a site of war, famine, and disease. The 14 Prizes for Africa coverage make that point starkly, with small exceptions for political strife, human rights, and daily life. Stories about economics and business, diplomacy, corruption, justice systems, and other topics in Africa don't win Pulitzers – at least not yet.

**Q18.** All of the following are inferences that can be drawn from the passage EXCEPT:

- a) **Stories about diplomacy, corruption and justice systems sometimes include a discourse on political strife, human rights and daily life.**
- b) **International coverage of ‘events of or relating to discord’ has a higher probability of garnering the Pulitzer prizes.**
- c) **The percentage of Caucasian winners in the last decade has barely budged.**
- d) **The New York Times is a national outlet that has benefited from the demise of small and mid-size newspapers.**

You did not answer this question

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>68</b>
Avg. time spent on this question by all students	<b>108</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>109</b>
% of students who attempted this question	<b>35.54</b>
% of students who got the question right of those who attempted	<b>63</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 368

Option A: 'The 14 Prizes for Africa coverage make that point starkly, with small exceptions for political strife, human rights, and daily life. Stories about economics and business, diplomacy, corruption, justice systems, and other topics in Africa don't win Pulitzers – at least not yet.' Small exceptions have been made for political strife, human rights and daily life. However, stories about diplomacy, corruption and justice systems don't win. From this, we can infer that these two groups of stories are mutually exclusive and hence, the sets don't overlap. Therefore, one set of stories including the other set of stories cannot be inferred. Hence, choice A is the answer.

Option B: 'Stories about war, conflict, and political strife accounted for nearly 60 percent of Pulitzer-winning international coverage.' From this line, it can be inferred that coverage of negative events like war and conflict gets greater mileage when it comes to winning the Pulitzer awards. Hence, choice B is not the answer.

Option C: '84% of Pulitzer winners over the last 100 years have been white, and Caucasians continue to dominate the Prizes. In the last decade, the percentage of white winners has hardly budged when compared to the 100-year figure.' While the jury is still out on whether whites could be referred to as Caucasians, the author of this passage seems to have done so. Since, the author alternately mentions 'white' and 'Caucasians', it can be inferred that the percentage of Caucasian winners is the percentage of white winners, which has barely budged in the last 100 years. Hence, choice C is not the answer.

Option D: The demise of small and mid-size newspapers coupled with the growth of national outlets has led to a concentration of Prize power among the field's leaders. From the two underscored parts, we can infer that The New York Times did benefit from the demise of small and mid-size papers, winning more awards and also becoming a focal point for prize-power. Hence, choice D is not the answer.

Choice (A)

undefined

**DIRECTIONS** for questions 19 to 24: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

If one departed from Earth in a spaceship that accelerated continuously at 1 g (equal to the gravity on Earth's surface), one would approach the speed of light relative to Earth within a year. The clocks on the spaceship would appear to run at a slower rate relative to Earth. A round trip to our galaxy's center and back--60,000 light-years--could be completed in 40 years of ship time. Back on Earth, the astronaut would be only 40 years older, while 60,000 years would have passed on Earth. (Note that there is no 'twin paradox,' it is unambiguous that the space traveler has felt the constant acceleration for 40 years and has aged less, while a hypothetical twin left behind on a spaceship circling Earth has not experienced both). Such a trip would pose formidable engineering problems: the more mass you can concentrate at a single point, the more you can bend the flow of time but the amount of energy required is greater than a planetary mass.

How could one build a time machine to travel through time? Is it possible to manipulate matter and the geometry of space-time in such a way as to create new paths that circle back in time? One simple hypothesis is to take a wormhole (a tunnel

connecting spatially separated regions of space-time) and give one mouth of the wormhole a substantial velocity with respect to the other. Passage through the wormhole would then allow travel to the past.... Although the theoretical properties of wormholes have been extensively studied over the past decade, little is known about how to form a macroscopic wormhole, large enough for a human or a spaceship to pass through. Some speculative theories of quantum gravity tell us that space-time has a complicated, foamlike structure of wormholes on the smallest scales-- $10^{-33}$  centimeter, or a billion billion times smaller than an electron. Some physicists believe it may be possible to enlarge these microscopic wormholes to usable size (using laser to inject immense amount of negative energy), but at present these ideas are hypothetical. Stephen Hawking has formulated a "Chronology Protection Conjecture," which states that the laws of nature prevent the creation of a time machine using a wormhole. At the moment, this is just a conjecture. However, it is known that the radiation effects created by gravitons or particles of gravity might fry you as you enter the worm hole. ....

Perhaps the biggest surprise of the work of the decade is that it is not obvious that the laws of physics forbid time travel. Within the Theory of Special Relativity, the fact that particles cannot move faster than light prevents one from returning after a high-speed trip to a time earlier than the time of departure. Once gravity is included, however, spacetime is curved, so there are solutions to the equations of General Relativity in which particles can travel in paths that take them back to earlier times. Other features of the geometries that solve the equations of General Relativity include gravitational lenses, gravitational waves and black holes. But there do not appear to be regions of spacetime that allow time travel, raising the fundamental question of what forbids them.

Time travel poses all sorts of problems, both technical as well as social. The moral, legal and ethical issues are raised by Larry Dwyer, who notes, 'Should a time traveller who punches his younger self (or vice versa) be charged with assault? If he marries in the past can he be tried for bigamy even though his other wife will not be born for almost 5,000 years?'.... A recent surprise is that one can circumvent the 'grandfather paradox,' the idea that it is logically inconsistent for particle paths to loop back to earlier times, because, for example, a granddaughter could go back in time to do away with her grandfather. For several simple physical systems, solutions to the equations of physics exist for any starting condition. In these model systems, something always intervenes to prevent inconsistencies analogous to murdering one's grandfather.

"Then why do there seem to be no time machines? Two different answers are consistent with our knowledge. The first is simply that the classical theory has a much broader set of solutions than the correct theory of quantum gravity. It is not implausible that causal structure enters in a fundamental way in quantum gravity and that classical spacetimes with time loops are spurious--in other words, that they do not approximate any states of the complete theory. A second possible answer is provided by recent results that go by the name chronology protection: One supposes that quantum gravity allows microscopic structures that violate causality, and one shows that the character of macroscopic matter forbids the existence of regions with macroscopically large time loops. To create a time machine would require negative energy, and quantum mechanics appears to allow only extremely small regions of negative energy. And the forces needed to create an ordinary-sized region with time loops appear to be extremely large.

**Q19.** According to the passage, travelling into the past would hypothetically involve accomplishing three of the following and/ or removing the accompanying difficulties or limitations associated with them. Pick the exception.

- a) Building a 'wormhole' that will travel through time.
- b) Gathering a very large amount of mass in one spot.
- c) Travelling in a spacecraft going at a speed which approaches the speed of light.
- d) Warping the geometry of spacetime and tinkering with matter.

You did not answer this question

Show Correct Answer

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	1
Avg. time spent on this question by all students	406
Difficulty Level	D
Avg. time spent on this question by students who got this question right	379
% of students who attempted this question	35.89
% of students who got the question right of those who attempted	11.69

[Video Solution](#)

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**Number of words and Explanatory notes for RC:**

Number of words: 837

Option A: One simple hypothesis is to take a wormhole (a tunnel connecting spatially separated regions of space-time) and give one mouth of the wormhole a substantial velocity with respect to the other. (Para 2 onwards). Wormholes are the tunnels that connect regions of space-time, i.e. with one end (mouth) in one region, and the other in the connected region. So, wormholes do not travel themselves, but are the entry and exit points for objects travelling through the tunnel from one time region to another, (and, therefore through time.) So, time travel happens through wormholes, i.e. wormholes would facilitate time travel. But there isn't enough in the passage to indicate that the wormhole will travel through time.

The concept of 'velocity of or at the mouth of a wormhole' has not been explained. So, the best that one can infer from the rest of the context is that it is the velocity at which that time space (in which the opening is resides) operates. So, if the entry opening is in a time space that operates at a greater velocity than the time space in which the exit opening is, this would facilitate travel into an earlier time (the past). So, statement A wouldn't work because a time machine would travel through the wormhole (tunnel), it cannot be a wormhole or be like a wormhole. So, choice A is the exception.

Option B: Such a (time travel) trip would pose formidable engineering problems: the more mass you can concentrate at a single point, the more you can bend the flow of time but the amount of energy required is greater than a planetary mass. Choice B is correct and is not the answer. {In saying 'formidable engineering difficulties' the author is referring to those that would be exceptionally difficult to overcome, but that's not the same thing as saying they would not be possible to overcome. The author says that the amount of energy required to overcome the difficulty is greater than a planetary mass. (Though physicists may know otherwise) the passage doesn't tell us that it's not possible to generate/accumulate energy greater than a planetary mass. So, theoretically, it may be possible.}

Option C: The first para talks about travelling in a spaceship at a speed which approaches the speed of light. Hence choice C is true and is not the answer to the question.

Option D: How could one build a time machine to travel through time? Is it possible to manipulate matter and the geometry of space-time in such a way as to create new paths that circle back in time. From these lines, choice D is also true and is not the answer.

Choice (A)

undefined

**DIRECTIONS** for questions 19 to 24: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

If one departed from Earth in a spaceship that accelerated continuously at 1 g (equal to the gravity on Earth's surface), one would approach the speed of light relative to Earth within a year. The clocks on the spaceship would appear to run at a slower rate relative to Earth. A round trip to our galaxy's center and back--60,000 light-years--could be completed in 40 years of ship time. Back on Earth, the astronaut would be only 40 years older, while 60,000 years would have passed on Earth. (Note that there is no 'twin paradox,' it is unambiguous that the space traveler has felt the constant acceleration for 40 years and has aged less, while a hypothetical twin left behind on a spaceship circling Earth has not experienced both). Such a trip would pose formidable engineering problems: the more mass you can concentrate at a single point, the more you can bend the flow of time but the amount of energy required is greater than a planetary mass.

How could one build a time machine to travel through time? Is it possible to manipulate matter and the geometry of space-time in such a way as to create new paths that circle back in time? One simple hypothesis is to take a wormhole (a tunnel connecting spatially separated regions of space-time) and give one mouth of the wormhole a substantial velocity with respect to the other. Passage through the wormhole would then allow travel to the past.... Although the theoretical properties of wormholes have been extensively studied over the past decade, little is known about how to form a macroscopic wormhole, large enough for a human or a spaceship to pass through. Some speculative theories of quantum gravity tell us that space-time has a complicated, foamlike structure of wormholes on the smallest scales-- $10^{-33}$  centimeter, or a billion billion times smaller than an electron. Some physicists believe it may be possible to enlarge these microscopic wormholes to usable size (using laser to inject immense amount of negative energy), but at present these ideas are hypothetical. Stephen Hawking has formulated a "Chronology Protection Conjecture," which states that the laws of nature prevent the creation of a time machine using a wormhole. At the moment, this is just a conjecture. However, it is known that the radiation effects created by gravitons or particles of gravity might fry you as you enter the worm hole. ....

Perhaps the biggest surprise of the work of the decade is that it is not obvious that the laws of physics forbid time travel.

Within the Theory of Special Relativity, the fact that particles cannot move faster than light prevents one from returning after a high-speed trip to a time earlier than the time of departure. Once gravity is included, however, spacetime is curved, so there are solutions to the equations of General Relativity in which particles can travel in paths that take them back to earlier times. Other features of the geometries that solve the equations of General Relativity include gravitational lenses, gravitational waves and black holes. But there do not appear to be regions of spacetime that allow time travel, raising the fundamental question of what forbids them.

Time travel poses all sorts of problems, both technical as well as social. The moral, legal and ethical issues are raised by Larry Dwyer, who notes, 'Should a time traveller who punches his younger self (or vice versa) be charged with assault? If he marries in the past can he be tried for bigamy even though his other wife will not be born for almost 5,000 years?'.... A recent surprise is that one can circumvent the 'grandfather paradox,' the idea that it is logically inconsistent for particle paths to loop back to earlier times, because, for example, a granddaughter could go back in time to do away with her grandfather. For several simple physical systems, solutions to the equations of physics exist for any starting condition. In these model systems, something always intervenes to prevent inconsistencies analogous to murdering one's grandfather.

"Then why do there seem to be no time machines? Two different answers are consistent with our knowledge. The first is simply that the classical theory has a much broader set of solutions than the correct theory of quantum gravity. It is not implausible that causal structure enters in a fundamental way in quantum gravity and that classical spacetimes with time loops are spurious--in other words, that they do not approximate any states of the complete theory. A second possible answer is provided by recent results that go by the name chronology protection: One supposes that quantum gravity allows microscopic structures that violate causality, and one shows that the character of macroscopic matter forbids the existence of regions with macroscopically large time loops. To create a time machine would require negative energy, and quantum mechanics appears to allow only extremely small regions of negative energy. And the forces needed to create an ordinary-sized region with time loops appear to be extremely large.

**Q20.** Which of the following statements can be inferred from the passage?

- a) A person who remains at rest would age more quickly than his partner who goes on a roundtrip in a spaceship at or near the speed of light.
- b) Time travel is an asymmetric lump that ruins the otherwise perfect beauty of the cosmos.
- c) The theory of Special Relativity can help explain how travel in the past is possible while the theory of General Relativity can explain how travel in the future is possible.
- d) Gravitational lenses, gravitational waves, black holes and time travel are some features of space-time geometry for which the equations of general relativity hold true.

You did not answer this question

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>117</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>110</b>
% of students who attempted this question	<b>31.03</b>
% of students who got the question right of those who attempted	<b>52.97</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 837

Option A: If one departed from Earth in a spaceship that accelerated continuously at 1 g (equal to the gravity on Earth's surface), one would approach the speed of light relative to Earth within a year. The clocks on the spaceship would appear to run at a slower rate relative to Earth. A round trip to our galaxy's center and back--60,000 light-years--could be completed in 40 years of ship time. Back on Earth, the astronaut would be only 40 years older, while 60,000 years would have passed on Earth. Choice A is true and is the answer. The travel has to be at a speed that approaches (since there's continuous acceleration) the speed of light.

Option B: The author does not portray time travel in a negative light. So the view about time travel mentioned in choice B is incorrect as it cannot be inferred from the passage. Choice B is not the answer.

Option C: Within the Theory of Special Relativity, the fact that particles cannot move faster than light prevents one from returning after a high-speed trip to a time earlier than the time of departure. Once gravity is included, however, spacetime is curved, so there are solutions to the equations of General Relativity in which particles can travel in paths that take them back to earlier times. So both the Theory of Special Relativity and the equations of General Relativity have been mentioned to discuss time travel in the past. Choice C is distorted as "theory of General Relativity can explain how travel in the future is possible" is incorrect and "theory of Special Relativity can help explain how travel in the past is possible" is also false. Choice C is not the answer.

Option D: Features of the geometries that solve the equations of General Relativity include gravitational lenses, gravitational waves and black holes. But there do not appear to be regions of spacetime that allow time travel, raising the fundamental question of what forbids them. So choice D which includes time travel in the list is incorrect.

Choice (A)

undefined

**DIRECTIONS** for questions 19 to 24: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

If one departed from Earth in a spaceship that accelerated continuously at 1 g (equal to the gravity on Earth's surface), one would approach the speed of light relative to Earth within a year. The clocks on the spaceship would appear to run at a slower rate relative to Earth. A round trip to our galaxy's center and back--60,000 light-years--could be completed in 40 years of ship time. Back on Earth, the astronaut would be only 40 years older, while 60,000 years would have passed on Earth. (Note that there is no 'twin paradox,' it is unambiguous that the space traveler has felt the constant acceleration for 40 years and has aged less, while a hypothetical twin left behind on a spaceship circling Earth has not experienced both). Such a trip would pose formidable engineering problems: the more mass you can concentrate at a single point, the more you can bend the flow of time but the amount of energy required is greater than a planetary mass.

How could one build a time machine to travel through time? Is it possible to manipulate matter and the geometry of space-time in such a way as to create new paths that circle back in time? One simple hypothesis is to take a wormhole (a tunnel connecting spatially separated regions of space-time) and give one mouth of the wormhole a substantial velocity with respect to the other. Passage through the wormhole would then allow travel to the past.... Although the theoretical properties of wormholes have been extensively studied over the past decade, little is known about how to form a macroscopic wormhole, large enough for a human or a spaceship to pass through. Some speculative theories of quantum gravity tell us that space-time has a complicated, foamlike structure of wormholes on the smallest scales-- $10^{-33}$  centimeter, or a billion billion times smaller than an electron. Some physicists believe it may be possible to enlarge these microscopic

wormholes to usable size (using laser to inject immense amount of negative energy), but at present these ideas are hypothetical. Stephen Hawking has formulated a "Chronology Protection Conjecture," which states that the laws of nature prevent the creation of a time machine using a wormhole. At the moment, this is just a conjecture. However, it is known that the radiation effects created by gravitons or particles of gravity might fry you as you enter the worm hole. ....

Perhaps the biggest surprise of the work of the decade is that it is not obvious that the laws of physics forbid time travel. Within the Theory of Special Relativity, the fact that particles cannot move faster than light prevents one from returning after a high-speed trip to a time earlier than the time of departure. Once gravity is included, however, spacetime is curved, so there are solutions to the equations of General Relativity in which particles can travel in paths that take them back to earlier times. Other features of the geometries that solve the equations of General Relativity include gravitational lenses, gravitational waves and black holes. But there do not appear to be regions of spacetime that allow time travel, raising the fundamental question of what forbids them.

Time travel poses all sorts of problems, both technical as well as social. The moral, legal and ethical issues are raised by Larry Dwyer, who notes, 'Should a time traveller who punches his younger self (or vice versa) be charged with assault? If he marries in the past can he be tried for bigamy even though his other wife will not be born for almost 5,000 years?'.... A recent surprise is that one can circumvent the 'grandfather paradox,' the idea that it is logically inconsistent for particle paths to loop back to earlier times, because, for example, a granddaughter could go back in time to do away with her grandfather. For several simple physical systems, solutions to the equations of physics exist for any starting condition. In these model systems, something always intervenes to prevent inconsistencies analogous to murdering one's grandfather.

"Then why do there seem to be no time machines? Two different answers are consistent with our knowledge. The first is simply that the classical theory has a much broader set of solutions than the correct theory of quantum gravity. It is not implausible that causal structure enters in a fundamental way in quantum gravity and that classical spacetimes with time loops are spurious--in other words, that they do not approximate any states of the complete theory. A second possible answer is provided by recent results that go by the name chronology protection: One supposes that quantum gravity allows microscopic structures that violate causality, and one shows that the character of macroscopic matter forbids the existence of regions with macroscopically large time loops. To create a time machine would require negative energy, and quantum mechanics appears to allow only extremely small regions of negative energy. And the forces needed to create an ordinary-sized region with time loops appear to be extremely large.

**Q21.** All of the following are current problems associated with the use of a wormhole EXCEPT?

- a) It is difficult to obtain a wormhole large enough for a human or a spaceship to pass through.
- b) One may burn in the radiation of the particles of gravity in the entrance of a wormhole.
- c) There is a lack of consensus among physicists regarding many theoretical features of wormholes.
- d) Even if we had a wormhole, the laws of physics may not permit its conversion into a time machine.

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>100</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>98</b>
% of students who attempted this question	<b>37.64</b>
% of students who got the question right of those who attempted	<b>55.88</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 837

Option A: Little is known about how to form a macroscopic wormhole, large enough for a human or a spaceship to pass through. Some physicists believe it may be possible to grab one of these truly microscopic wormholes and enlarge it to usable size using laser to inject immense amount of negative energy, but at present these ideas are all very hypothetical. Choice A is true of the current status on wormholes and is not the answer.

Option B: It is known that the radiation effects created by gravitons or particles of gravity might fry you as you enter the worm hole. Choice B is true and is not the answer.

Option C: The theoretical properties of wormholes have been extensively studied over the past decade. There is no indication of the uniformity, or lack thereof, of findings. Since there isn't enough therefore to support choice C, it's the answer.

Option D: Stephen Hawking has formulated a "Chronology Protection Conjecture," which states that the laws of nature prevent the creation of a time machine using a wormhole. At the moment, however, this is just a conjecture, not proven. Choice D is true and is not the answer.

Choice (C)

undefined

**DIRECTIONS** for questions 19 to 24: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

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Perhaps the biggest surprise of the work of the decade is that it is not obvious that the laws of physics forbid time travel. Within the Theory of Special Relativity, the fact that particles cannot move faster than light prevents one from returning after a high-speed trip to a time earlier than the time of departure. Once gravity is included, however, spacetime is curved, so there are solutions to the equations of General Relativity in which particles can travel in paths that take them back to earlier times. Other features of the geometries that solve the equations of General Relativity include gravitational lenses, gravitational waves and black holes. But there do not appear to be regions of spacetime that allow time travel, raising the

fundamental question of what forbids them.

Time travel poses all sorts of problems, both technical as well as social. The moral, legal and ethical issues are raised by Larry Dwyer, who notes, 'Should a time traveller who punches his younger self (or vice versa) be charged with assault? If he marries in the past can he be tried for bigamy even though his other wife will not be born for almost 5,000 years?'.... A recent surprise is that one can circumvent the 'grandfather paradox,' the idea that it is logically inconsistent for particle paths to loop back to earlier times, because, for example, a granddaughter could go back in time to do away with her grandfather. For several simple physical systems, solutions to the equations of physics exist for any starting condition. In these model systems, something always intervenes to prevent inconsistencies analogous to murdering one's grandfather.

"Then why do there seem to be no time machines? Two different answers are consistent with our knowledge. The first is simply that the classical theory has a much broader set of solutions than the correct theory of quantum gravity. It is not implausible that causal structure enters in a fundamental way in quantum gravity and that classical spacetimes with time loops are spurious--in other words, that they do not approximate any states of the complete theory. A second possible answer is provided by recent results that go by the name chronology protection: One supposes that quantum gravity allows microscopic structures that violate causality, and one shows that the character of macroscopic matter forbids the existence of regions with macroscopically large time loops. To create a time machine would require negative energy, and quantum mechanics appears to allow only extremely small regions of negative energy. And the forces needed to create an ordinary-sized region with time loops appear to be extremely large.

**Q22.** "Such a trip would pose formidable engineering problems." (para 1). How does the author substantiate or develop on this claim in the course of the passage?

- a) He merely mentions theoretical models that make it possible to manipulate matter and the geometry of space-time in such a way as to create new paths that circle back in time.
- b) He suggests that scientists should develop an adequate theory of quantum gravity so as to reconsider and remove the practical barriers in building a time machine.
- c) He counters the claim by suggesting that it is not obvious that the laws of physics forbid time travel and harps on the idea that advances in engineering can convert the time travel fantasy into a reality.
- d) He expands on the claim by explaining the unlikelihood of machines that could transport us into the future or past.

You did not answer this question

Show Correct Answer

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	0
Avg. time spent on this question by all students	122
Difficulty Level	D
Avg. time spent on this question by students who got this question right	119
% of students who attempted this question	20.49
% of students who got the question right of those who attempted	36.83

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 837

Option A: At the outset, the author explains that mathematically time travel is possible when a body is sufficiently large to warp space and time, or when it can approximate the velocity of light, or when it can traverse through a wormhole. Thus, theoretically it is possible to travel through time. But the author does not stop there. In the penultimate para, he discusses the technical and social problems associated with time travel. In the last para, he addresses the question: "Then why do there seem to be no time machines?" Choice A is incomplete and incorrect.

Option B: The author has mentioned the theoretical models that make time travel possible. In the last para, he has used the theoretical basis of quantum gravity to arrive at the understanding that the laws of physics may rule out the possibility of macroscopic time machines. So "develop an adequate theory of quantum gravity so as to reconsider and remove the practical barriers in building a time machine" is unnecessary. Choice B is convoluted and distorted. Choice B is not the answer.

Option C: Even though the author presents the idea (in para 3) that perhaps the biggest surprise of the work of the decade is that it is not obvious that the laws of physics forbid time travel, he concludes (at the end of the same para) that there do not appear to be regions of spacetime that allow time travel, raising the fundamental question of what forbids them. Hence we cannot say that the author contradicts the claim suggesting that it is not obvious that the laws of physics forbid time travel. Further "advances in engineering can convert the time travel fantasy into a reality" is far-fetched and out of scope. Choice C is not the answer.

Option D: But there do not appear to be regions of spacetime that allow time travel, raising the fundamental question of what forbids them. ... Then why do there seem to be no time machines? Two different answers are consistent with our knowledge. In the last para, he says that the laws of physics forbids or prevents the possibility of macroscopic time machines. (To create a time machine would require negative energy, and quantum mechanics appears to allow only extremely small regions of negative energy. And the forces needed to create an ordinary-sized region with time loops appear to be extremely large.) Hence we can say that the author is in agreement with the fact that a time travel trip would cause formidable engineering problems. Hence choice D is the correct answer.

Choice (D)

undefined

**DIRECTIONS** for questions 19 to 24: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

If one departed from Earth in a spaceship that accelerated continuously at 1 g (equal to the gravity on Earth's surface), one would approach the speed of light relative to Earth within a year. The clocks on the spaceship would appear to run at a slower rate relative to Earth. A round trip to our galaxy's center and back--60,000 light-years--could be completed in 40 years of ship time. Back on Earth, the astronaut would be only 40 years older, while 60,000 years would have passed on Earth. (Note that there is no 'twin paradox,' it is unambiguous that the space traveler has felt the constant acceleration for 40 years and has aged less, while a hypothetical twin left behind on a spaceship circling Earth has not experienced both). Such a trip would pose formidable engineering problems: the more mass you can concentrate at a single point, the more you can bend the flow of time but the amount of energy required is greater than a planetary mass.

How could one build a time machine to travel through time? Is it possible to manipulate matter and the geometry of space-time in such a way as to create new paths that circle back in time? One simple hypothesis is to take a wormhole (a tunnel connecting spatially separated regions of space-time) and give one mouth of the wormhole a substantial velocity with

respect to the other. Passage through the wormhole would then allow travel to the past.... Although the theoretical properties of wormholes have been extensively studied over the past decade, little is known about how to form a macroscopic wormhole, large enough for a human or a spaceship to pass through. Some speculative theories of quantum gravity tell us that space-time has a complicated, foamlike structure of wormholes on the smallest scales-- $10^{-33}$  centimeter, or a billion billion times smaller than an electron. Some physicists believe it may be possible to enlarge these microscopic wormholes to usable size (using laser to inject immense amount of negative energy), but at present these ideas are hypothetical. Stephen Hawking has formulated a "Chronology Protection Conjecture," which states that the laws of nature prevent the creation of a time machine using a wormhole. At the moment, this is just a conjecture. However, it is known that the radiation effects created by gravitons or particles of gravity might fry you as you enter the worm hole. ....

Perhaps the biggest surprise of the work of the decade is that it is not obvious that the laws of physics forbid time travel. Within the Theory of Special Relativity, the fact that particles cannot move faster than light prevents one from returning after a high-speed trip to a time earlier than the time of departure. Once gravity is included, however, spacetime is curved, so there are solutions to the equations of General Relativity in which particles can travel in paths that take them back to earlier times. Other features of the geometries that solve the equations of General Relativity include gravitational lenses, gravitational waves and black holes. But there do not appear to be regions of spacetime that allow time travel, raising the fundamental question of what forbids them.

Time travel poses all sorts of problems, both technical as well as social. The moral, legal and ethical issues are raised by Larry Dwyer, who notes, 'Should a time traveller who punches his younger self (or vice versa) be charged with assault? If he marries in the past can he be tried for bigamy even though his other wife will not be born for almost 5,000 years?'.... A recent surprise is that one can circumvent the 'grandfather paradox,' the idea that it is logically inconsistent for particle paths to loop back to earlier times, because, for example, a granddaughter could go back in time to do away with her grandfather. For several simple physical systems, solutions to the equations of physics exist for any starting condition. In these model systems, something always intervenes to prevent inconsistencies analogous to murdering one's grandfather.

"Then why do there seem to be no time machines? Two different answers are consistent with our knowledge. The first is simply that the classical theory has a much broader set of solutions than the correct theory of quantum gravity. It is not implausible that causal structure enters in a fundamental way in quantum gravity and that classical spacetimes with time loops are spurious--in other words, that they do not approximate any states of the complete theory. A second possible answer is provided by recent results that go by the name chronology protection: One supposes that quantum gravity allows microscopic structures that violate causality, and one shows that the character of macroscopic matter forbids the existence of regions with macroscopically large time loops. To create a time machine would require negative energy, and quantum mechanics appears to allow only extremely small regions of negative energy. And the forces needed to create an ordinary-sized region with time loops appear to be extremely large.

**Q23.** The author of the passage is least likely to be a

- a) Historian
- b) Physicist
- c) Science fiction writer
- d) Philosopher

You did not answer this question

**Show Correct Answer**

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>38</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>40</b>
% of students who attempted this question	<b>39.21</b>
% of students who got the question right of those who attempted	<b>33.9</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 837

Option A: There are no clues to suggest that the author may be a historian. The author discusses science associated with time travel, the present understanding in physics, and the seemingly unsurmountable problems that would render time travel unlikely in the future. He has not discussed the history thereof. Choice A is the required answer.

Option B: It is possible that the author is a physicist. There is enough of Physics discussed in the passage. There are also beliefs and conjectures of other scientists mentioned with relation to the possibility of time travel. Choice B is not the answer.

Option C: How could one build a time machine to travel through time? Is it possible to manipulate matter and the geometry of space-time in such a way as to create new paths that circle back in time? It is quite likely that the author may be a science fiction writer, exploring aspects of time travel to be used in his books. Choice C is not the answer.

Option D: Time travel poses all sorts of problems, both technical as well as social. The moral, legal and ethical issues are raised by Larry Dwyer, who notes, 'Should a time traveller who punches his younger self (or vice versa) be charged with assault? .... In these model systems, something always intervenes to prevent inconsistencies analogous to murdering one's grandfather. The author could be a philosopher, exploring the moral, legal, ethical and logical dilemmas (paradoxes) raised by the concept of time travel. Choice D is not the answer.

Choice (A)

undefined

**DIRECTIONS** for questions 19 to 24: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

If one departed from Earth in a spaceship that accelerated continuously at 1 g (equal to the gravity on Earth's surface), one would approach the speed of light relative to Earth within a year. The clocks on the spaceship would appear to run at a slower rate relative to Earth. A round trip to our galaxy's center and back--60,000 light-years--could be completed in 40 years of ship time. Back on Earth, the astronaut would be only 40 years older, while 60,000 years would have passed on Earth. (Note that there is no 'twin paradox,' it is unambiguous that the space traveler has felt the constant acceleration for 40 years and has aged less, while a hypothetical twin left behind on a spaceship circling Earth has not experienced both). Such a trip would pose formidable engineering problems: the more mass you can concentrate at a single point, the more you can bend the flow of time but the amount of energy required is greater than a planetary mass.

How could one build a time machine to travel through time? Is it possible to manipulate matter and the geometry of space-time in such a way as to create new paths that circle back in time? One simple hypothesis is to take a wormhole (a tunnel connecting spatially separated regions of space-time) and give one mouth of the wormhole a substantial velocity with respect to the other. Passage through the wormhole would then allow travel to the past.... Although the theoretical properties of wormholes have been extensively studied over the past decade, little is known about how to form a macroscopic wormhole, large enough for a human or a spaceship to pass through. Some speculative theories of quantum gravity tell us that space-time has a complicated, foamlike structure of wormholes on the smallest scales-- $10^{-33}$  centimeter, or a billion billion times smaller than an electron. Some physicists believe it may be possible to enlarge these microscopic wormholes to usable size (using laser to inject immense amount of negative energy), but at present these ideas are hypothetical. Stephen Hawking has formulated a "Chronology Protection Conjecture," which states that the laws of nature prevent the creation of a time machine using a wormhole. At the moment, this is just a conjecture. However, it is known that the radiation effects created by gravitons or particles of gravity might fry you as you enter the worm hole. ....

Perhaps the biggest surprise of the work of the decade is that it is not obvious that the laws of physics forbid time travel. Within the Theory of Special Relativity, the fact that particles cannot move faster than light prevents one from returning after a high-speed trip to a time earlier than the time of departure. Once gravity is included, however, spacetime is curved, so there are solutions to the equations of General Relativity in which particles can travel in paths that take them back to earlier times. Other features of the geometries that solve the equations of General Relativity include gravitational lenses, gravitational waves and black holes. But there do not appear to be regions of spacetime that allow time travel, raising the fundamental question of what forbids them.

Time travel poses all sorts of problems, both technical as well as social. The moral, legal and ethical issues are raised by

Larry Dwyer, who notes, 'Should a time traveller who punches his younger self (or vice versa) be charged with assault? If he marries in the past can he be tried for bigamy even though his other wife will not be born for almost 5,000 years?'.... A recent surprise is that one can circumvent the 'grandfather paradox,' the idea that it is logically inconsistent for particle paths to loop back to earlier times, because, for example, a granddaughter could go back in time to do away with her grandfather. For several simple physical systems, solutions to the equations of physics exist for any starting condition. In these model systems, something always intervenes to prevent inconsistencies analogous to murdering one's grandfather.

"Then why do there seem to be no time machines? Two different answers are consistent with our knowledge. The first is simply that the classical theory has a much broader set of solutions than the correct theory of quantum gravity. It is not implausible that causal structure enters in a fundamental way in quantum gravity and that classical spacetimes with time loops are spurious--in other words, that they do not approximate any states of the complete theory. A second possible answer is provided by recent results that go by the name chronology protection: One supposes that quantum gravity allows microscopic structures that violate causality, and one shows that the character of macroscopic matter forbids the existence of regions with macroscopically large time loops. To create a time machine would require negative energy, and quantum mechanics appears to allow only extremely small regions of negative energy. And the forces needed to create an ordinary-sized region with time loops appear to be extremely large.

**Q24.** Which of the following cannot be understood from the passage?

- a) If one of a pair of twins makes a long journey at or near the speed of light and then returns, he or she will have aged less than the twin who remains behind on earth.
- b) It is possible that space-time is filled with microscopic time loops.
- c) In the Grandfather paradox, inconsistencies emerge through changing the past, which may prevent the time traveller's existence.
- d) A moving clock appears to tick more slowly the closer it approaches the speed of light while quantum particles travelling in circles at nearly the speed of light decay faster than those at rest.

You did not answer this question

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>100</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>104</b>
% of students who attempted this question	<b>26.31</b>
% of students who got the question right of those who attempted	<b>51.1</b>

[Video Solution](#)

[Text Solution](#)

**Number of words and Explanatory notes for RC:**

Number of words: 837

Option A: Refer to the first para. Back on Earth, the astronaut would be only 40 years older, while 60,000 years would have passed on Earth. (Note that there is no 'twin paradox,' it is unambiguous that the space traveler has felt the constant acceleration for 40 years and has aged less, while a hypothetical twin left behind on a spaceship circling Earth has not experienced both). Hence choice A is true as it describes the Twin Paradox of time travel. Choice A is not the answer.

Option B: A second possible answer is provided by recent results that go by the name chronology protection: One supposes that quantum gravity allows microscopic structures that violate causality, and one shows that the character of macroscopic matter forbids the existence of regions with macroscopically large time loops. Choice B is correct and is not the answer.

Option C: A recent surprise is that one can circumvent the 'grandfather paradox,' the idea that it is logically inconsistent for particle paths to loop back to earlier times, because, for example, a granddaughter could go back in time to do away with her grandfather. For several simple physical systems, solutions to the equations of physics exist for any starting condition. In these model systems, something always intervenes to prevent inconsistencies analogous to murdering one's grandfather. Choice C can be understood and is not the answer.

Option D: The first part of choice D is true. If one departed from Earth in a spaceship that accelerated continuously at 1 g (equal to the gravity on Earth's surface), one would approach the speed of light relative to Earth within a year. The clocks on the spaceship would appear to run at a slower rate relative to Earth. But the second part is not. People as well as quantum particles moving in circles at nearly the speed of light would decay or age more slowly than those at rest. Choice D is incorrect and is the answer.

Choice (D)

undefined

**Q25. DIRECTIONS for question 25:** The sentences given in the following question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in the sequence of five numbers as your answer, in the input box given below the question.

1. A new team was brought into being to write the actual proposal.
2. When a leading manufacturer set out to win a certain large contract from the National Aeronautics and Space Agency, it assembled a team of approximately one hundred people borrowed from various functional divisions of the company.

3. When the time came to prepare a formal bid – a “proposal”, as it is known in the industry – the “pre-proposal project team” was dissolved and its members sent back to their functional divisions.
4. The project team worked for about a year and a half to gather data and analyze the job even before the government formally requested bids.
5. Project organization is widespread in the aerospace industries.

**You did not answer this question**

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>187</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>173</b>
% of students who attempted this question	<b>47.23</b>
% of students who got the question right of those who attempted	<b>54.24</b>

[Video Solution](#)

[Text Solution](#)

On a careful reading of the sentences, it can be observed that sentence 5 is a general sentence that begins the paragraph. It introduces the topic of discussion: project organization in aerospace industries. Sentence 5 is followed by sentence 2. “National Aeronautics and Space Agency” in sentence 2 points to “aerospace industries” in sentence 5. Also “it assembled a team of approximately one hundred people borrowed from various functional divisions of the company” in sentence 2 links with “project organization” given in sentence 5 and “pre-proposal project team” in sentence 3 that is yet to follow. Sentence 2 is followed by sentence 4. “The project team worked for about a year and a half” in sentence 4 links with “it assembled a team of approximately one hundred people borrowed from various functional divisions of the company” in sentence 2. Also “leading manufacturer set out to win a certain large contract from the National Aeronautics and Space Agency” in sentence 2 links with “even before the government formally requested bids” in sentence 4. Sentence 4 is followed by sentence 3. “before the government formally requested bids” in sentence 4 is followed by “When the time came to prepare a formal bid – a “proposal”” in sentence 3. Also ““pre-proposal project team” was dissolved and its members sent back to their functional divisions” in sentence 3 links with “one hundred people borrowed from various functional divisions of the company” given earlier in sentence 2. Sentence 3 is followed by sentence 1. ““pre-proposal project team” was dissolved” in sentence 3 links with “A new team was brought into being” in sentence 1. Also “actual proposal” in sentence 1 contrasts “formal bid – a proposal” in sentence 3. So, 52431.

Ans: (52431)

undefined

**Q26. DIRECTIONS for question 26:** The following question has a paragraph from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.

Anxiety, the next gumption trap, is, in a sense, the opponent of ego – you’re so sure you’ll do everything wrong that you’re afraid to do anything at all. Often this, rather than ‘laziness’ is the real reason you find it hard to get started. This gumption trap of anxiety, which results from over-motivation, can lead to all kinds of errors of excessive fussiness. You fix things that don’t need fixing, and chase after imaginary ailments. You jump to wild conclusions and build all kinds of errors into the machine because of your own nervousness. These errors, when made, tend to confirm your original underestimation of

yourself. \_\_\_\_\_

- a) It's just that the personality that it responds to is your real personality, the one that genuinely feels and reasons and acts, rather than any false, blown-up personality images your ego may conjure up.
- b) If you just deliberately assume you're not much good, then your gumption gets a boost when the facts prove this assumption is correct.
- c) This leads to more errors, which lead to more underestimation, in a self-stoking cycle.
- d) It all sounds so far out and esoteric when it's put like that, it comes as a shock to discover that it is one of the most homespun, down-to-earth views of reality you can have.

You did not answer this question

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	0
Avg. time spent on this question by all students	146
Difficulty Level	M
Avg. time spent on this question by students who got this question right	136
% of students who attempted this question	43.96
% of students who got the question right of those who attempted	61.64

[Video Solution](#)

[Text Solution](#)

The paragraph introduces 'anxiety' to us and then focuses on different errors that one can make when one is anxious.

Option A: Choice A is out of scope. The pronoun "it" in choice A has no referent in the penultimate sentence of the para. Also choice A talks about a positive personality that is responded to by the subject rather than some negative personality images. Choice A which is positive in tone does not gel with the negative view given in the penultimate sentence of the para. Choice A is not the answer.

Option B: "deliberately assume you're not much good" in choice B seems to be in line with "confirm your original underestimation of yourself" given in the penultimate sentence of the para. But there is no way one can infer "when the facts prove this assumption (you're not much good) is correct" as given in choice B. Choice B focuses on an assumption rather than the errors arising out of nervousness or anxiety. Choice B is not the answer.

Option C: Choice C continues the line of thought given in the penultimate sentence of the para. Choice C best completes and concludes the given para. Errors tending to confirm one's original underestimation of oneself are followed by more errors, which lead to more underestimation, in a self-stoking cycle. Choice C is the answer.

Option D: Choice D is too general. It goes on a tangent to the given para and talks about an esoteric sounding perception being shockingly real. This is not the crux or focus of the given para. Choice D would need a precedent and more substantiation.

Choice (C)

undefined

**Q27. DIRECTIONS** for question 27: The sentences given in the following question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in the sequence of five numbers as your answer, in the input box given below the question.

1. How tall do you think the final stack is going to be?

2. This is an example of what in mathematics is called a geometric progression.
  
3. But the real answer is that the height of the stack would approximate the distance to the sun and if you folded it over one more time, the stack would be as high as the distance to the sun and back.
  
4. Consider, for example, the following puzzle: I give you a large piece of paper, and I ask you to fold it over once, and then take that folded paper and fold it over again, and then again, and again, until you have refolded the original paper 50 times.
  
5. In answer to that question, most people will fold the sheet in their mind's eye, and guess that the pile would be as thick as a phone book or, if they're really courageous, they'll say that it would be as tall as a refrigerator.

**You did not answer this question**

**Show Correct Answer**

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>142</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>136</b>
% of students who attempted this question	<b>51.16</b>
% of students who got the question right of those who attempted	<b>55.46</b>

[Video Solution](#)

[Text Solution](#)

On a careful reading of the sentences, it can be observed that sentence 4 is a general sentence that begins the paragraph. It introduces the puzzle which is the topic of discussion. Sentence 4 is followed by sentence 1. "folded and refolded the original paper 50 times" in sentence 4 links with "How tall the final stack will be?" in sentence 1. Sentence 1 is followed by sentence 5. The query in sentence 1 is answered in sentence 5 (In answer to that question). "pile would be as thick as a phone book or as tall as a refrigerator" in sentence 5 links with "how tall the final stack is going to be?" in sentence 1. Sentence 5 is followed by sentence 3. "But the real answer is" in sentence 3 contrasts "most people will fold the sheet in their mind's eye, and guess that" in sentence 5. Sentence 2 concludes the para. "example of a geometric progression in mathematics" in sentence 2 is parallel to "height of the stack would approximate the distance to the sun and if you folded it over one more time, the stack would be as high as the distance to the sun and back" in sentence 3. So, 41532. Ans: (41532)

undefined

**Q28. DIRECTIONS for question 28:** Five sentences related to a topic are given in the question below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. The subsequent reconstruction effort hit an unexpected roadblock: missing landowners.
  
2. The tsunami of 2011 left gaping holes reminiscent of war zones in the landscape along the coast of Tohoku, in the north-east of Honshu, Japan's main island.

3. Those who inherit land often do not bother to update the records.
4. Officials were stunned to find that hundreds of plots were held in the names of people who were dead or unknown.
5. Car navigation systems gave directions to landmarks that had vanished into the sea.

**You did not answer this question**

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>110</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>108</b>
% of students who attempted this question	<b>58.07</b>
% of students who got the question right of those who attempted	<b>16.13</b>

[Video Solution](#)

[Text Solution](#)

On a careful reading of the sentences, it can be observed that sentence 2 is a general sentence that begins the paragraph. It introduces the topic of discussion: tsunami of 2011. It also mentions the location: along the coast of Tohoku, in the north-east of Honshu, Japan's main island. Sentence 2 is followed by sentence 5. "gaping holes reminiscent of war zones in the landscape" in sentence 2 links with "landmarks that had vanished into the sea" in sentence 5. Sentence 5 is followed by sentence 1. "subsequent reconstruction effort" in sentence 1 follows "gaping holes reminiscent of war zones in the landscape" in sentence 2 and "landmarks that had vanished into the sea" in sentence 5. Sentence 1 is followed by sentence 4. "plots were held in the names of people who were dead or unknown" in sentence 4 links with "missing landowners" in sentence 1. So, 2514. Sentence 3 is the odd sentence out. It talks about a limiting problem that can be a part of another para. Sentence 3 needs a precedent and more substantiation.

Ans: (3)

undefined

**Q29. DIRECTIONS for question 29:** The sentences given in the following question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in the sequence of five numbers as your answer, in the input box given below the question.

1. The pages crackle as he does so, specks of parchment falling to the ground like snowflakes.
2. Wrapped in a white shawl, the book open on his knees on a velvet cloth, Father Teklehaimanot turns the sheets fastidiously lest the leather ligature tear them.
3. Inside the text is dull and faded but the illustrations are brilliant, rich purples and blues that brighten the gloom of the monastery.

4. This is where one of the world's most precious religious artefacts is kept, as it has been for as long as the monks of the monastery can remember.
5. On the floor of the monastery, lies another embroidered velvet cloth in which the volume is usually enfolded; beside it, the pile of boxes on which it rests.

**You did not answer this question**

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>165</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>176</b>
% of students who attempted this question	<b>35.22</b>
% of students who got the question right of those who attempted	<b>24.46</b>

[Video Solution](#)

**Text Solution**

On a careful reading of the sentences, it can be observed that sentence 2 is a general sentence that begins the paragraph. It introduces the person to us: Father Teklehaimanot who is turning the pages of a book. Sentence 2 is followed by sentence 1. "The pages crackle as he does so" in sentence 1 links with "Father Teklehaimanot turns the sheets fastidiously" in sentence 2. Here, 'fastidiously' means "very attentive to and concerned about the pages not getting torn". Sentence 1 is followed by sentence 3. Sentence 3 provides us with a description of the text and the illustrations of the book. Sentence 3 is followed by sentence 5. "On the floor of the monastery" in sentence 5 links with "the gloom of the monastery" in sentence 3. "lies another embroidered velvet cloth" in sentence 5 points to "a velvet cloth" in sentence 2. "beside it (velvet cloth), the pile of boxes on which it (the book) rests" in sentence 5 tells us where the book is kept when no one is going through it. Sentences 5 and 4 form a mandatory pair. "beside it, the pile of boxes on which it rests" in sentence 5 links with "This is where one of the world's most precious religious artefacts is kept" in sentence 4. So, 21354.

Ans: (21354)

undefined

**Q30. DIRECTIONS for question 30:** Five sentences related to a topic are given in the question below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. In countries like Germany, as many as 15% of the population are foreigners.
2. Immigration has led to violent protests and a general strike, locals have begun rounding up suspected illegal immigrants, and the island is descending into chaos.
3. Many Europeans feel their homelands have too many immigrants.
4. But on Mayotte, a small French island in the Indian Ocean with a population of under 500, the share is more than half.

5. France's policy of *droit du sol* (birthright citizenship) means they are entitled to French nationality.

You did not answer this question [Show Correct Answer](#)

Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>104</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>96</b>
% of students who attempted this question	<b>57.37</b>
% of students who got the question right of those who attempted	<b>50.62</b>

[Video Solution](#)

[Text Solution](#)

On a careful reading of the sentences, it can be observed that sentence 3 is a general sentence that begins the paragraph. It introduces the topic of discussion: too many immigrants (in Europe). Sentence 3 is followed by sentence 1. "In Germany, 15% of the population are foreigners" in sentence 1 strengthens "Europeans feel their homelands have too many immigrants" in sentence 3. Sentence 1 is followed by sentence 4. The contrast conjunction "but" in sentence 4 helps to contrast two facts: a) "In Germany, 15% of the population are foreigners" and b) On Mayotte, the share is more than half. Sentence 2, which talks about the consequences of immigration on Mayotte, the French island in the Indian Ocean, closes the para. "the island" in sentence 2 refers to "Mayotte, a small French island in the Indian Ocean" mentioned in sentence 4. So, 3142. Sentence 5 is the odd sentence out. It runs tangent to the para formed by sentences 3, 1, 4 and 2 which speak about the negative feeling of the natives towards immigrants and the consequences of immigration. Sentence 5 can be a part of another para.

Ans: (5)

undefined

**Q31. DIRECTIONS** for question 31: The sentences given in the following question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in the sequence of five numbers as your answer, in the input box given below the question.

1. Its name means "heavenly palace".
2. A few months later, China's space agency appeared to confirm what amateur skywatchers had already suspected, that it had lost control of the station.
3. But Tiangong-1, an eight-tonne Chinese space station launched in 2011, will not remain in the heavens much longer.
4. It said it expected Tiangong-1 to fall from the sky sometime late in 2017.

5.

After visits from crews in 2012 and 2013, Tiangong-1's mission officially ended in March 2016.

You did not answer this question

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>175</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>169</b>
% of students who attempted this question	<b>42.94</b>
% of students who got the question right of those who attempted	<b>13.21</b>

[Video Solution](#)

[Text Solution](#)

On a careful reading of the sentences, it can be observed that sentence 1 is a general sentence that begins the paragraph. It introduces the meaning of the name to us. The referent and its description are given in sentence 3. "Its name means 'heavenly palace'" in sentence 3 is contrasted by "will not remain in the heavens much longer" in sentence 1. Sentence 5 follows sentence 3. "After visits from crews in 2012 and 2013" in sentence 5 follows "launched in 2011" in sentence 3. Sentence 5 is followed by sentence 2. "A few months later" in sentence 2 points to "March 2016" in sentence 5. Also "appeared to confirm what amateur skywatchers had already suspected, that it had lost control of the station" in sentence 2 links with "Tiangong-1's mission officially ended in March 2016" in sentence 5. Sentence 2 is followed by sentence 4. The pronoun "it" in sentence 4 points to "China's space agency" in sentence 2. "expected Tiangong-1 to fall from the sky sometime late in 2017" in sentence 4 links with "confirm what amateur skywatchers had already suspected, that it had lost control of the station" in sentence 2. So, 13524.

Ans: (13524)

undefined

**Q32. DIRECTIONS for question 32:** Five sentences related to a topic are given in the question below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. While some claim the link between economic growth and greenhouse emissions has been broken – or “decoupled” – it’s only been weakened.
2. To handle this, climatologists use four greenhouse gas concentration trajectories called RCPs, each of which describes a different possible climate future, depending on how much greenhouse gases are emitted in the years to come.
3. It now seems that RCP8.5 may have underestimated the emissions that would result if we follow the economic path it describes.
4. How much the climate will change depends on how much greenhouse gas we emit, which in turn depends on the choices we make as a society – including how the global economy behaves.
5. The RCP8.5 scenario is the worst for the climate and it assumes rapid, unfettered economic growth and rampant burning of fossil fuels.

You did not answer this question

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>123</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>119</b>
% of students who attempted this question	<b>42.57</b>
% of students who got the question right of those who attempted	<b>35.29</b>

[Video Solution](#)

[Text Solution](#)

On a careful reading of the sentences, it can be observed that sentence 4 is a general sentence that begins the paragraph. It introduces the topic of discussion: How much the climate will change depends on how much greenhouse gas we emit. Sentence 4 and sentence 2 form a mandatory pair. "climatologists use four greenhouse gas concentration trajectories called RCPs" and "depending on how much greenhouse gases are emitted in the years to come" in sentence 2 links with "depends on how much greenhouse gas we emit" in sentence 4. "describes a different possible climate future" in sentence 2 links with "How much the climate will change" in sentence 4. Sentences 5 and 3 in that order highlight features of "the RCP8.5 scenario" which is "one of the four greenhouse gas concentration trajectories called RCPs" given in sentence 2. So, 4253. Sentence 1 is the odd sentence out. It runs tangent to the discussion. "economic growth and greenhouse emissions has not been broken – or "decoupled" – but it's only been weakened" in sentence 1 runs contrary to "climate change depends on how much greenhouse gas we emit, how the global economy behaves" in the introductory sentence 4.

Ans: (1)

undefined

**Q33. DIRECTIONS** for question 33: The sentences given in the following question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in the sequence of five numbers as your answer, in the input box given below the question.

1. As Williams wrote of Blanche in his stage directions, "There is something about her uncertain manner...that suggests a moth."
2. The women tended to be decorative – nagging mothers, put-upon wives or melancholic sisters.
3. American playwrights of the 20th century were a macho bunch.
4. On a rare occasion when one claimed centre stage, such as Blanche DuBois in Tennessee Williams's "A Streetcar Named Desire", she was a tragic figure, too fragile, too hysterical for the brutality of this world.
5. Their stages were full of overbearing fathers, frustrated sons, fast-talking salesmen and broken dreams.

You did not answer this question

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>131</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>119</b>
% of students who attempted this question	<b>32.49</b>
% of students who got the question right of those who attempted	<b>45.36</b>

[Video Solution](#)

[Text Solution](#)

On a careful reading of the sentences, it can be observed that sentence 3 is a general sentence that begins the paragraph. Macho means "behaving forcefully or showing no emotion in a way traditionally thought to be typical of a man". Sentence 3 is followed by sentence 5. "Their stages" in sentence 5 links with "American playwrights" in sentence 3. Also "overbearing fathers, frustrated sons, fast-talking salesmen" in sentence 5 qualifies "macho bunch" in sentence 3. Sentence 5 is followed by sentence 2. "nagging mothers, put-upon wives or melancholic sisters" in sentence 2 contrasts "overbearing fathers, frustrated sons, fast-talking salesmen" in sentence 5 and again qualifies "macho bunch" in sentence 3. The word "put-upon" in sentence 2 means "be taken advantage of through having one's good nature exploited". Sentence 2 is followed by sentence 4. "On a rare occasion when one (woman) claimed centre stage" in sentence 4 contrasts "nagging mothers, put-upon wives" in sentence 2. Also "tragic figure, too fragile, too hysterical for the brutality of this world" in sentence 4 parallels "nagging mothers, put-upon wives or melancholic sisters" in sentence 2. Sentences 4 and 1 form a mandatory pair. "one claimed centre stage, such as Blanche DuBois in Tennessee Williams's "A Streetcar Named Desire"" in sentence 4 links with " As Williams wrote of Blanche in his stage directions" in sentence 1. "tragic figure, too fragile, too hysterical for the brutality of this world" in sentence 4 links with "There is something about her uncertain manner...that suggests a moth" in sentence 1. So sentence 1 follows sentence 4 and closes the para. Hence, 35241.

Ans: (35241)

undefined

**Q34. DIRECTIONS for question 34:** The following question has a paragraph from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.

The widespread use of antibiotics encourages the pathogens they are directed against to become inured to their effects. That is well known. But antibiotics cause damage to non-target species as well, so these, too, tend to evolve immunity. Since most antibiotics are administered by mouth, the many bacteria that live peacefully in the human gut are particularly susceptible to such evolutionary pressures. The medical consequences of this are ill-understood, in part because most gut bacteria are anaerobes (they flourish only in the absence of oxygen) and so are difficult to culture. But Lisa Maier of the European Molecular Biology Laboratory, in Heidelberg, and her colleagues have, nevertheless, grown 40 of the most common strains of them in anaerobic conditions. They have then gone on to expose those cultures to hundreds of antibiotic drugs for a range of ailments, at the sorts of concentrations that might be encountered in the human intestine.

- 
- a) The researchers noticed too that the strains of bacteria most resistant to the effects of drugs not aimed at them were also those most resistant to antibiotics.
  - b) Some strains they looked at which were resistant to antibiotics nevertheless succumbed to one or more of the non-antibiotic drugs thrown at them.
  - c) This could be a starting point for the development of new antimicrobial agents which would eliminate bacteria that have proved intractable to other means.

C d) Their study has revealed an unexpected avenue by which gut bacteria can become resistant to antibiotics: exposure to drugs that were designed to act on human cells rather than microbial ones.

You did not answer this question

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	0
Avg. time spent on this question by all students	231
Difficulty Level	D
Avg. time spent on this question by students who got this question right	223
% of students who attempted this question	24.59
% of students who got the question right of those who attempted	45.28

[Video Solution](#)

[Text Solution](#)

Option A: Choice A talks about an additional finding which can be a point of discussion in a subsequent para. Choice A does not bring the given para to a close. The primary finding of the steps mentioned in the last two sentences of the para (just before the blank) is missed out in choice A.

Option B: Choice B unnecessarily focuses on another classification of drugs – non-antibiotic drugs (thrown at the bacteria). The penultimate sentence of the para talks about the exposure of cultures to hundreds of antibiotic drugs for a range of ailments. Choice B cannot complete the blank in the para as it is not specifically related to the discussion at hand. It will also need further elaboration.

Option C: "This" in choice C has no referent in the penultimate sentence of the para. Choice C sounds far-fetched and cannot serve as a conclusion for the procedure mentioned in the penultimate sentence of the para. Choice C is out of scope. It can come much later in the flow after discussion of positive experimental facts or discoveries.

Option D: An important premise in the para is: But antibiotics cause damage to non-target species as well, so these, too, tend to evolve immunity. Choice D explains how (in a nutshell) by providing an unexpected observation. "unexpected avenue by which gut bacteria can become resistant to antibiotics" in choice D contrasts "that is well known" given early on in the para and strengthens "Since most antibiotics are administered by mouth, the many bacteria that live peacefully in the human gut (non target species) are particularly susceptible to such evolutionary pressures (of evolving immunity to antibiotics)" given in the para. "exposure to drugs that were designed to act on human cells rather than microbial ones" is related to "non-target pathogen species". Hence choice D best completes the blank in the para. Choice D is the answer.

Choice (D)

undefined

**DIRECTIONS** for questions 1 to 4: Answer the questions on the basis of the information given below.

In a company, five employees – Angus, Billy, Charlie, David and Eric – were ranked from 1 to 5 based on two parameters – Sincerity and Approachability – such that in any parameter, a numerically lower rank is considered better than a numerically higher rank. For any employee, the sum of the ranks across the two parameters is referred to as the Overall Rank and it is known that the Overall Rank of each employee was distinct. Further, it is also known that

- i.  
no employee received the same rank across the two parameters.
- ii.  
Angus was ranked better than Charlie in each of the two parameters.

iii.

Billy, who was ranked third in Sincerity, had the numerically highest Overall Rank.

iv.

the difference in ranks of Charlie and David in Approachability is one.

**Q1. DIRECTIONS** for questions 1 to 4: Select the correct alternative from the given choices.

Who was ranked first in Sincerity?

- a) **Angus**
- b) **David**
- c) **Eric**
- d) **Cannot be determined**

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>22</b>
Avg. time spent on this question by all students	<b>546</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>701</b>
% of students who attempted this question	<b>44.27</b>
% of students who got the question right of those who attempted	<b>31.54</b>

[Video Solution](#)

[Text Solution](#)

From (iii), Billy was ranked 3<sup>rd</sup> in Sincerity and had the highest Overall rank. Billy's rank in Approachability cannot be 1<sup>st</sup> or 2<sup>nd</sup> or 3<sup>rd</sup> (since the person who was ranked 5<sup>th</sup> will have a minimum Overall rank of 6). If Billy's rank in approachability is 4, his overall rank will be 7. In this case, the person who was ranked 5 in approachability must have rank 1 in sincerity (for Overall rank to be lower than 7). But the person ranked 5 in sincerity cannot have a rank of 1 (since the Overall rank will be the same as the person who was ranked 5 in approachability) and also cannot have any other rank (as he will end up with an overall rank greater than or equal to Billy's). Hence, Billy's rank in Approachability cannot be 4 and it has to be 5.

Therefore, the highest Overall rank has to be 8. The person with rank 5 in Sincerity must have a rank 1 or 2 in Approachability (to have a distinct Overall rank lower than 8). If this person has a rank of 1 in Approachability, then the person ranked 4 in Sincerity must have a rank of 3 in Approachability. The person ranked 4 in Approachability must be ranked 1 in Sincerity. The fifth person will have rank of 2 in both the parameters. This will violate condition (i). Hence, the person with rank 5 in Sincerity must have a rank of 2 in Approachability.

The person with rank 4 in Sincerity can have a rank of 1 or 3 in Approachability. But if he has a rank of 3, he will have the same Overall rank as the person above (ranked 5<sup>th</sup> in Sincerity and 2<sup>nd</sup> in Approachability). Hence, the person with rank 4 in Sincerity must have a rank of 1 in Approachability. The person with rank 2 in Sincerity must have a rank of 4 in Approachability. The other person must have a rank of 1 in Sincerity and 3 in Approachability.

The ranks of the five persons in Sincerity and Approachability are 3 and 5; 5 and 2; 4 and 1; 2 and 4; 1 and 3. We need to map these ranks to the five persons.

Billy got 3<sup>rd</sup> rank in Sincerity and 5<sup>th</sup> rank in Approachability. From (ii), Angus can be ranked 2<sup>nd</sup> and 4<sup>th</sup> in Sincerity and Approachability. In this case, Charlie cannot be ranked 5<sup>th</sup> in Approachability since Billy is ranked 5<sup>th</sup> in that parameter. Hence, this is not possible.

Angus can be ranked 1<sup>st</sup> in Sincerity and 3<sup>rd</sup> in Approachability. Charlie would be ranked 2<sup>nd</sup> in Sincerity and 4<sup>th</sup> in Approachability. From (iv), David must be ranked either 5<sup>th</sup> or 3<sup>rd</sup> in Approachability. But Billy is ranked 5<sup>th</sup> in Approachability and Angus is ranked 3<sup>rd</sup> in Approachability. Hence, this case is not possible.

Angus must be ranked 4<sup>th</sup> in Sincerity and 1<sup>st</sup> in Approachability. Charlie will be ranked 5<sup>th</sup> in Sincerity and 2<sup>nd</sup> in Approachability. David will be ranked 3<sup>rd</sup> in Approachability (and 1<sup>st</sup> in Sincerity). Eric will be ranked 2<sup>nd</sup> in Sincerity and 4<sup>th</sup> in Approachability.

The following table presents the ranks of the five employees:

Employee	Sincerity	Approachability	Overall Rank
Angus	4	1	5
Billy	3	5	8
Charlie	5	2	7
David	1	3	4
Eric	2	4	6

David was ranked first in Sincerity.

Choice (B)

undefined

**DIRECTIONS for questions 1 to 4:** Answer the questions on the basis of the information given below.

In a company, five employees – Angus, Billy, Charlie, David and Eric – were ranked from 1 to 5 based on two parameters – Sincerity and Approachability – such that in any parameter, a numerically lower rank is considered better than a numerically higher rank. For any employee, the sum of the ranks across the two parameters is referred to as the Overall Rank and it is known that the Overall Rank of each employee was distinct. Further, it is also known that

- i. no employee received the same rank across the two parameters.
- ii. Angus was ranked better than Charlie in each of the two parameters.
- iii. Billy, who was ranked third in Sincerity, had the numerically highest Overall Rank.

iv.

- the difference in ranks of Charlie and David in Approachability is one.

**Q2. DIRECTIONS** for questions 1 to 4: Select the correct alternative from the given choices.

How many of the five employees were ranked better than Eric in Approachability?

- a) 0
- b) 1
- c) 2
- d) 3

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>120</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>113</b>
% of students who attempted this question	<b>35.22</b>
% of students who got the question right of those who attempted	<b>49.83</b>

[Video Solution](#)

[Text Solution](#)

From (iii), Billy was ranked 3<sup>rd</sup> in Sincerity and had the highest Overall rank. Billy's rank in Approachability cannot be 1<sup>st</sup> or 2<sup>nd</sup> or 3<sup>rd</sup> (since the person who was ranked 5<sup>th</sup> will have a minimum Overall rank of 6). If Billy's rank in approachability is 4, his overall rank will be 7. In this case, the person who was ranked 5 in approachability must have rank 1 in sincerity (for Overall rank to be lower than 7). But the person ranked 5 in sincerity cannot have a rank of 1 (since the Overall rank will be the same as the person who was ranked 5 in approachability) and also cannot have any other rank (as he will end up with an overall rank greater than or equal to Billy's). Hence, Billy's rank in Approachability cannot be 4 and it has to be 5.

Therefore, the highest Overall rank has to be 8. The person with rank 5 in Sincerity must have a rank 1 or 2 in Approachability (to have a distinct Overall rank lower than 8). If this person has a rank of 1 in Approachability, then the person ranked 4 in Sincerity must have a rank of 3 in Approachability. The person ranked 4 in Approachability must be ranked 1 in Sincerity. The fifth person will have rank of 2 in both the parameters. This will violate condition (i). Hence, the person with rank 5 in Sincerity must have a rank of 2 in Approachability.

The person with rank 4 in Sincerity can have a rank of 1 or 3 in Approachability. But if he has a rank of 3, he will have the same Overall rank as the person above (ranked 5<sup>th</sup> in Sincerity and 2<sup>nd</sup> in Approachability). Hence, the person with rank 4 in Sincerity must have a rank of 1 in Approachability. The person with rank 2 in Sincerity must have a rank of 4 in Approachability. The other person must have a rank of 1 in Sincerity and 3 in Approachability.

The ranks of the five persons in Sincerity and Approachability are 3 and 5; 5 and 2; 4 and 1; 2 and 4; 1 and 3. We need to map these ranks to the five persons.

Billy got 3<sup>rd</sup> rank in Sincerity and 5<sup>th</sup> rank in Approachability. From (ii), Angus can be ranked 2<sup>nd</sup> and 4<sup>th</sup> in Sincerity and Approachability. In this case, Charlie cannot be ranked 5<sup>th</sup> in Approachability since Billy is ranked 5<sup>th</sup> in that parameter. Hence, this is not possible.

Angus can be ranked 1<sup>st</sup> in Sincerity and 3<sup>rd</sup> in Approachability. Charlie would be ranked 2<sup>nd</sup> in Sincerity and 4<sup>th</sup> in Approachability. From (iv), David must be ranked either 5<sup>th</sup> or 3<sup>rd</sup> in Approachability. But Billy is ranked 5<sup>th</sup> in Approachability and Angus is ranked 3<sup>rd</sup> in Approachability. Hence, this case is not possible.

Angus must be ranked 4<sup>th</sup> in Sincerity and 1<sup>st</sup> in Approachability. Charlie will be ranked 5<sup>th</sup> in Sincerity and 2<sup>nd</sup> in Approachability. David will be ranked 3<sup>rd</sup> in Approachability (and 1<sup>st</sup> in Sincerity). Eric will be ranked 2<sup>nd</sup> in Sincerity and 4<sup>th</sup> in Approachability.

The following table presents the ranks of the five employees:

Employee	Sincerity	Approachability	Overall Rank
Angus	4	1	5
Billy	3	5	8
Charlie	5	2	7
David	1	3	4
Eric	2	4	6

Three employees are ranked better than Eric in Approachability.

Choice (D)

undefined

**DIRECTIONS for questions 1 to 4:** Answer the questions on the basis of the information given below.

In a company, five employees – Angus, Billy, Charlie, David and Eric – were ranked from 1 to 5 based on two parameters – Sincerity and Approachability – such that in any parameter, a numerically lower rank is considered better than a numerically higher rank. For any employee, the sum of the ranks across the two parameters is referred to as the Overall Rank and it is known that the Overall Rank of each employee was distinct. Further, it is also known that

- i. no employee received the same rank across the two parameters.
- ii. Angus was ranked better than Charlie in each of the two parameters.
- iii. Billy, who was ranked third in Sincerity, had the numerically highest Overall Rank.

iv.

the difference in ranks of Charlie and David in Approachability is one.

**Q3. DIRECTIONS** for questions 1 to 4: Select the correct alternative from the given choices.

For which employee was the Overall Rank the second best?

- a) **Angus**
- b) **David**
- c) **Charlie**
- d) **Eric**

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>77</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>67</b>
% of students who attempted this question	<b>31.66</b>
% of students who got the question right of those who attempted	<b>43.58</b>

[Video Solution](#)

[Text Solution](#)

From (iii), Billy was ranked 3<sup>rd</sup> in Sincerity and had the highest Overall rank. Billy's rank in Approachability cannot be 1<sup>st</sup> or 2<sup>nd</sup> or 3<sup>rd</sup> (since the person who was ranked 5<sup>th</sup> will have a minimum Overall rank of 6). If Billy's rank in approachability is 4, his overall rank will be 7. In this case, the person who was ranked 5 in approachability must have rank 1 in sincerity (for Overall rank to be lower than 7). But the person ranked 5 in sincerity cannot have a rank of 1 (since the Overall rank will be the same as the person who was ranked 5 in approachability) and also cannot have any other rank (as he will end up with an overall rank greater than or equal to Billy's). Hence, Billy's rank in Approachability cannot be 4 and it has to be 5.

Therefore, the highest Overall rank has to be 8. The person with rank 5 in Sincerity must have a rank 1 or 2 in Approachability (to have a distinct Overall rank lower than 8). If this person has a rank of 1 in Approachability, then the person ranked 4 in Sincerity must have a rank of 3 in Approachability. The person ranked 4 in Approachability must be ranked 1 in Sincerity. The fifth person will have rank of 2 in both the parameters. This will violate condition (i). Hence, the person with rank 5 in Sincerity must have a rank of 2 in Approachability.

The person with rank 4 in Sincerity can have a rank of 1 or 3 in Approachability. But if he has a rank of 3, he will have the same Overall rank as the person above (ranked 5<sup>th</sup> in Sincerity and 2<sup>nd</sup> in Approachability). Hence, the person with rank 4 in Sincerity must have a rank of 1 in Approachability. The person with rank 2 in Sincerity must have a rank of 4 in Approachability. The other person must have a rank of 1 in Sincerity and 3 in Approachability.

The ranks of the five persons in Sincerity and Approachability are 3 and 5; 5 and 2; 4 and 1; 2 and 4; 1 and 3. We need to map these ranks to the five persons.

Billy got 3<sup>rd</sup> rank in Sincerity and 5<sup>th</sup> rank in Approachability. From (ii), Angus can be ranked 2<sup>nd</sup> and 4<sup>th</sup> in Sincerity and Approachability. In this case, Charlie cannot be ranked 5<sup>th</sup> in Approachability since Billy is ranked 5<sup>th</sup> in that parameter. Hence, this is not possible.

Angus can be ranked 1<sup>st</sup> in Sincerity and 3<sup>rd</sup> in Approachability. Charlie would be ranked 2<sup>nd</sup> in Sincerity and 4<sup>th</sup> in Approachability. From (iv), David must be ranked either 5<sup>th</sup> or 3<sup>rd</sup> in Approachability. But Billy is ranked 5<sup>th</sup> in Approachability and Angus is ranked 3<sup>rd</sup> in Approachability. Hence, this case is not possible.

Angus must be ranked 4<sup>th</sup> in Sincerity and 1<sup>st</sup> in Approachability. Charlie will be ranked 5<sup>th</sup> in Sincerity and 2<sup>nd</sup> in Approachability. David will be ranked 3<sup>rd</sup> in Approachability (and 1<sup>st</sup> in Sincerity). Eric will be ranked 2<sup>nd</sup> in Sincerity and 4<sup>th</sup> in Approachability.

The following table presents the ranks of the five employees:

Employee	Sincerity	Approachability	Overall Rank
Angus	4	1	5
Billy	3	5	8
Charlie	5	2	7
David	1	3	4
Eric	2	4	6

The second best Overall Rank is for Angus.

Choice (A)

undefined

**DIRECTIONS for questions 1 to 4:** Answer the questions on the basis of the information given below.

In a company, five employees – Angus, Billy, Charlie, David and Eric – were ranked from 1 to 5 based on two parameters – Sincerity and Approachability – such that in any parameter, a numerically lower rank is considered better than a numerically higher rank. For any employee, the sum of the ranks across the two parameters is referred to as the Overall Rank and it is known that the Overall Rank of each employee was distinct. Further, it is also known that

- i. no employee received the same rank across the two parameters.
- ii. Angus was ranked better than Charlie in each of the two parameters.
- iii. Billy, who was ranked third in Sincerity, had the numerically highest Overall Rank.

iv.

the difference in ranks of Charlie and David in Approachability is one.

**Q4. DIRECTIONS** for questions 1 to 4: Select the correct alternative from the given choices.

Who among the following was ranked better than Billy in each of the two parameters?

- a) **Angus**
- b) **Charlie**
- c) **Eric**
- d) **More than one of the above**

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>61</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>66</b>
% of students who attempted this question	<b>33.02</b>
% of students who got the question right of those who attempted	<b>33.07</b>

[Video Solution](#)

[Text Solution](#)

From (iii), Billy was ranked 3<sup>rd</sup> in Sincerity and had the highest Overall rank. Billy's rank in Approachability cannot be 1<sup>st</sup> or 2<sup>nd</sup> or 3<sup>rd</sup> (since the person who was ranked 5<sup>th</sup> will have a minimum Overall rank of 6). If Billy's rank in approachability is 4, his overall rank will be 7. In this case, the person who was ranked 5 in approachability must have rank 1 in sincerity (for Overall rank to be lower than 7). But the person ranked 5 in sincerity cannot have a rank of 1 (since the Overall rank will be the same as the person who was ranked 5 in approachability) and also cannot have any other rank (as he will end up with an overall rank greater than or equal to Billy's). Hence, Billy's rank in Approachability cannot be 4 and it has to be 5.

Therefore, the highest Overall rank has to be 8. The person with rank 5 in Sincerity must have a rank 1 or 2 in Approachability (to have a distinct Overall rank lower than 8). If this person has a rank of 1 in Approachability, then the person ranked 4 in Sincerity must have a rank of 3 in Approachability. The person ranked 4 in Approachability must be ranked 1 in Sincerity. The fifth person will have rank of 2 in both the parameters. This will violate condition (i). Hence, the person with rank 5 in Sincerity must have a rank of 2 in Approachability.

The person with rank 4 in Sincerity can have a rank of 1 or 3 in Approachability. But if he has a rank of 3, he will have the same Overall rank as the person above (ranked 5<sup>th</sup> in Sincerity and 2<sup>nd</sup> in Approachability). Hence, the person with rank 4 in Sincerity must have a rank of 1 in Approachability. The person with rank 2 in Sincerity must have a rank of 4 in Approachability. The other person must have a rank of 1 in Sincerity and 3 in Approachability.

The ranks of the five persons in Sincerity and Approachability are 3 and 5; 5 and 2; 4 and 1; 2 and 4; 1 and 3. We need to map these ranks to the five persons.

Billy got 3<sup>rd</sup> rank in Sincerity and 5<sup>th</sup> rank in Approachability. From (ii), Angus can be ranked 2<sup>nd</sup> and 4<sup>th</sup> in Sincerity and Approachability. In this case, Charlie cannot be ranked 5<sup>th</sup> in Approachability since Billy is ranked 5<sup>th</sup> in that parameter. Hence, this is not possible.

Angus can be ranked 1<sup>st</sup> in Sincerity and 3<sup>rd</sup> in Approachability. Charlie would be ranked 2<sup>nd</sup> in Sincerity and 4<sup>th</sup> in Approachability. From (iv), David must be ranked either 5<sup>th</sup> or 3<sup>rd</sup> in Approachability. But Billy is ranked 5<sup>th</sup> in Approachability and Angus is ranked 3<sup>rd</sup> in Approachability. Hence, this case is not possible.

Angus must be ranked 4<sup>th</sup> in Sincerity and 1<sup>st</sup> in Approachability. Charlie will be ranked 5<sup>th</sup> in Sincerity and 2<sup>nd</sup> in Approachability. David will be ranked 3<sup>rd</sup> in Approachability (and 1<sup>st</sup> in Sincerity). Eric will be ranked 2<sup>nd</sup> in Sincerity and 4<sup>th</sup> in Approachability.

The following table presents the ranks of the five employees:

Employee	Sincerity	Approachability	Overall Rank
Angus	4	1	5
Billy	3	5	8
Charlie	5	2	7
David	1	3	4
Eric	2	4	6

Eric is ranked better than Billy in each of the two parameters.

Choice (C)

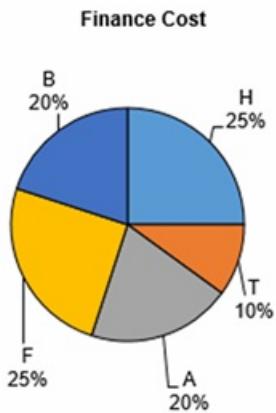
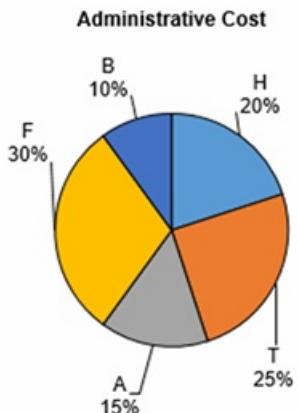
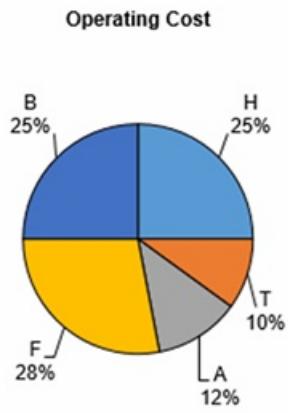
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**DIRECTIONS for questions 5 to 8:** Answer the questions on the basis of the information given below.

Trunami Inc is a conglomerate comprising five companies – Hurricane, Tiefone, Avalunch, Famints and Blizz. The Total Cost incurred by each of the five companies in any year can be divided into three components – Operating Cost, Administrative Cost and Finance Cost. The first pie chart given below provides, for the year 2017, the Operating Cost of each company as a percentage of the total Operating Cost of the five companies, while the second and the third pie charts provide similar percentage breakdowns for the Administrative Cost and Finance Cost respectively for 2017. In the pie charts below, each company is represented by the first letter of its name.

It is also known that the Total Cost was the same for exactly three of the five companies during 2017.

All the questions that follow are related to the costs of the five companies in the year 2017.



**Q5. DIRECTIONS** for questions 5 to 8: Select the correct alternative from the given choices.

For how many companies is its Finance Cost as a percentage of its Total Cost greater than 39%?

- a) 1
- b) 2
- c) 3
- d) None of the above

You did not answer this question

[Show Correct Answer](#)

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	17
Avg. time spent on this question by all students	379
Difficulty Level	M
Avg. time spent on this question by students who got this question right	537
% of students who attempted this question	20.72
% of students who got the question right of those who attempted	12.4

[Video Solution](#)

[Text Solution](#)

Given that the Total Cost was the same for three companies. By comparing Hurricane and Tiefone, the Operating Cost and Finance Cost of Hurricane is greater than that for Tiefone but the Administrative Cost is lesser. Hence, it is possible that the Total Cost of these two companies can be equal.

By comparing Hurricane and Avalunch, the Operating Cost, Administrative Cost and Finance Cost of Hurricane is greater than that of Avalunch. Hence, the Total Cost of Hurricane must be greater than that of Avalunch.

By comparing Hurricane and Famints, the Operating Cost and Administrative Cost of Hurricane is lesser than that of Famints, while the Finance Cost is the same. Hence, the Total Cost of Hurricane must be less than that of Famints.

By comparing Hurricane and Blizz, the Administrative Cost and Finance Cost is greater for Hurricane, while the Operating Cost is the same. Hence, the Total Cost of Hurricane must be greater than that of Blizz.

Since the Total Cost of Hurricane cannot be the same as two other companies, Hurricane is not one of the companies.

Similarly, we can see that for Famints (which has a higher Total Cost than even Hurricane), the Total Cost of Famints must be greater than that of Avalunch and Blizz. By observation, we can see that it must be greater than that of Tiefone as well. Hence, the Total Cost of Famints cannot be the same as any other company.

Therefore, the three companies whose Total Costs are equal must be Avalunch, Blizz and Tiefone.

Let  $a$ ,  $b$  and  $c$  represent the total Operating Cost, total Administrative Cost and the total Finance Cost of the three companies.

$$\text{The Total Cost of Avalunch} = 0.12a + 0.15b + 0.2c$$

$$\text{The Total Cost of Blizz} = 0.25a + 0.1b + 0.2c$$

$$\text{The Total Cost of Tiefone} = 0.1a + 0.25b + 0.1c$$

Since the Total Cost of Avalunch and Blizz are equal,

$$0.12a + 0.15b + 0.2c = 0.25a + 0.1b + 0.2c \Rightarrow \frac{a}{b} = \frac{5}{13}$$

Let  $a = 5k$  and  $b = 13k$ .

Substituting these values in the total cost of Avalunch and Blizz we get the Total Cost of Avalunch and Blizz to be  $2.55k + 0.2c$ .

$$\text{Total Cost of Tiefone} = 3.75k + 0.1c$$

Since these two costs must also be equal,

$$2.55k + 0.2c = 3.75k + 0.1c \Rightarrow c = 12k$$

Hence, the total Finance Cost =  $12k$ .

The following table provides the Operating Cost, Administrative Cost and Finance Cost of each company in terms of  $k$ :

Company	Operating Cost	Administrative Cost	Finance Cost	Total Cost
Hurricane	1.25k	2.6k	3k	6.85k
Tiefone	0.5k	3.25k	1.2k	4.95k
Avalunch	0.6k	1.95k	2.4k	4.95k
Famints	1.4k	3.9k	3k	8.3k
Blizz	1.25k	1.3k	2.4k	4.95k

The Finance cost is more than 39% of the total cost for 3 companies – Hurricane, Avalunch and Blizz.  
Choice (C)

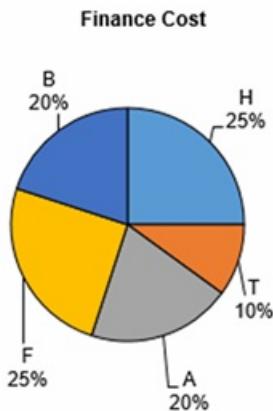
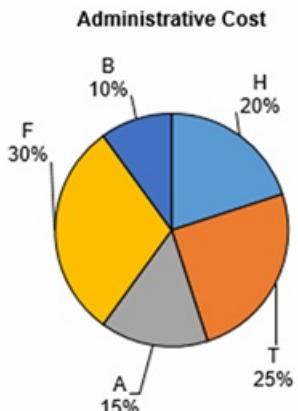
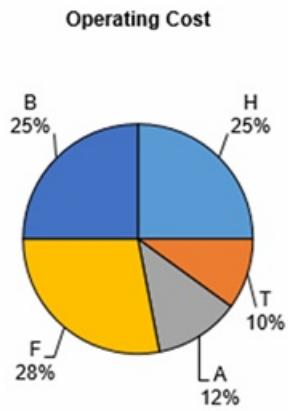
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**DIRECTIONS** for questions 5 to 8: Answer the questions on the basis of the information given below.

Trunami Inc is a conglomerate comprising five companies – Hurricane, Tiefone, Avalunch, Famints and Blizz. The Total Cost incurred by each of the five companies in any year can be divided into three components – Operating Cost, Administrative Cost and Finance Cost. The first pie chart given below provides, for the year 2017, the Operating Cost of each company as a percentage of the total Operating Cost of the five companies, while the second and the third pie charts provide similar percentage breakdowns for the Administrative Cost and Finance Cost respectively for 2017. In the pie charts below, each company is represented by the first letter of its name.

It is also known that the Total Cost was the same for exactly three of the five companies during 2017.

All the questions that follow are related to the costs of the five companies in the year 2017.



**Q6. DIRECTIONS** for questions 5 to 8: Select the correct alternative from the given choices.

How many of the five companies have a Finance Cost that is greater than the Operating Cost of Famints?

- a) 1
- b) 2
- c) 3
- d) 4

You did not answer this question

[Show Correct Answer](#)

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	0
Avg. time spent on this question by all students	138
Difficulty Level	M
Avg. time spent on this question by students who got this question right	138
% of students who attempted this question	11.69
% of students who got the question right of those who attempted	22.68

[Video Solution](#)

[Text Solution](#)

Given that the Total Cost was the same for three companies. By comparing Hurricane and Tiefone, the Operating Cost and Finance Cost of Hurricane is greater than that for Tiefone but the Administrative Cost is lesser. Hence, it is possible that the Total Cost of these two companies can be equal.

By comparing Hurricane and Avalunch, the Operating Cost, Administrative Cost and Finance Cost of Hurricane is greater than that of Avalunch. Hence, the Total Cost of Hurricane must be greater than that of Avalunch.

By comparing Hurricane and Famints, the Operating Cost and Administrative Cost of Hurricane is lesser than that of Famints, while the Finance Cost is the same. Hence, the Total Cost of Hurricane must be less than that of Famints.

By comparing Hurricane and Blizz, the Administrative Cost and Finance Cost is greater for Hurricane, while the Operating Cost is the same. Hence, the Total Cost of Hurricane must be greater than that of Blizz.

Since the Total Cost of Hurricane cannot be the same as two other companies, Hurricane is not one of the companies.

Similarly, we can see that for Famints (which has a higher Total Cost than even Hurricane), the Total Cost of Famints must be greater than that of Avalunch and Blizzard. By observation, we can see that it must be greater than that of Tiefone as well. Hence, the Total Cost of Famints cannot be the same as any other company.

Therefore, the three companies whose Total Costs are equal must be Avalunch, Blizz and Tiefone.

Let  $a$ ,  $b$  and  $c$  represent the total Operating Cost, total Administrative Cost and the total Finance Cost of the three companies.

$$\text{The Total Cost of Avalunch} = 0.12a + 0.15b + 0.2c$$

$$\text{The Total Cost of Blizz} = 0.25a + 0.1b + 0.2c$$

$$\text{The Total Cost of Tiefone} = 0.1a + 0.25b + 0.1c$$

Since the Total Cost of Avalunch and Blizz are equal,

$$0.12a + 0.15b + 0.2c = 0.25a + 0.1b + 0.2c \Rightarrow \frac{a}{b} = \frac{5}{13}$$

Let  $a = 5k$  and  $b = 13k$ .

Substituting these values in the total cost of Avalunch and Blizz we get the Total Cost of Avalunch and Blizz to be  $2.55k + 0.2c$ .

$$\text{Total Cost of Tiefone} = 3.75k + 0.1c$$

Since these two costs must also be equal,

$$2.55k + 0.2c = 3.75k + 0.1c \Rightarrow c = 12k$$

Hence, the total Finance Cost =  $12k$ .

The following table provides the Operating Cost, Administrative Cost and Finance Cost of each company in terms of  $k$ :

Company	Operating Cost	Administrative Cost	Finance Cost	Total Cost
Hurricane	1.25k	2.6k	3k	6.85k
Tiefone	0.5k	3.25k	1.2k	4.95k
Avalunch	0.6k	1.95k	2.4k	4.95k
Famints	1.4k	3.9k	3k	8.3k
Blizz	1.25k	1.3k	2.4k	4.95k

The Operating Cost of Famints is 1.4k. Four companies – Hurricane, Avalunch, Famints and Blizz – have a higher Finance cost than 1.4k. Choice (D)

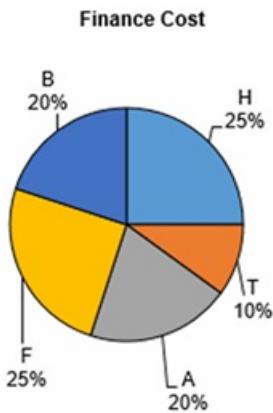
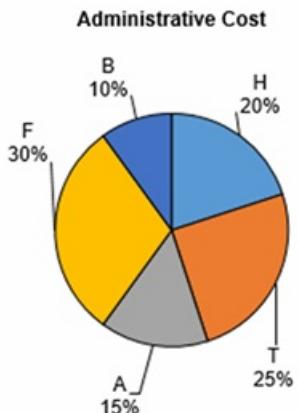
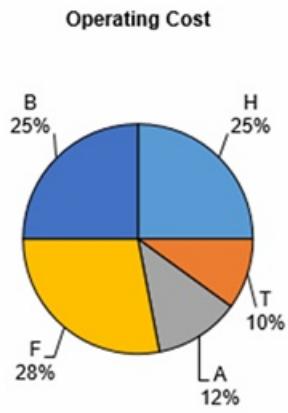
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**DIRECTIONS** for questions 5 to 8: Answer the questions on the basis of the information given below.

Trunami Inc is a conglomerate comprising five companies – Hurricane, Tiefone, Avalunch, Famints and Blizz. The Total Cost incurred by each of the five companies in any year can be divided into three components – Operating Cost, Administrative Cost and Finance Cost. The first pie chart given below provides, for the year 2017, the Operating Cost of each company as a percentage of the total Operating Cost of the five companies, while the second and the third pie charts provide similar percentage breakdowns for the Administrative Cost and Finance Cost respectively for 2017. In the pie charts below, each company is represented by the first letter of its name.

It is also known that the Total Cost was the same for exactly three of the five companies during 2017.

All the questions that follow are related to the costs of the five companies in the year 2017.



**Q7. DIRECTIONS** for questions 5 to 8: Select the correct alternative from the given choices.

What is the ratio of the Administrative Cost of Famints to the Operating Cost of Hurricane?

- a) 3
- b) 3.12
- c) 3.24
- d) 3.36

You did not answer this question

[Show Correct Answer](#)

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	0
Avg. time spent on this question by all students	106
Difficulty Level	M
Avg. time spent on this question by students who got this question right	96
% of students who attempted this question	6.38
% of students who got the question right of those who attempted	60.54

[Video Solution](#)

[Text Solution](#)

Given that the Total Cost was the same for three companies. By comparing Hurricane and Tiefone, the Operating Cost and Finance Cost of Hurricane is greater than that for Tiefone but the Administrative Cost is lesser. Hence, it is possible that the Total Cost of these two companies can be equal.

By comparing Hurricane and Avalunch, the Operating Cost, Administrative Cost and Finance Cost of Hurricane is greater than that of Avalunch. Hence, the Total Cost of Hurricane must be greater than that of Avalunch.

By comparing Hurricane and Famints, the Operating Cost and Administrative Cost of Hurricane is lesser than that of Famints, while the Finance Cost is the same. Hence, the Total Cost of Hurricane must be less than that of Famints.

By comparing Hurricane and Blizz, the Administrative Cost and Finance Cost is greater for Hurricane, while the Operating Cost is the same. Hence, the Total Cost of Hurricane must be greater than that of Blizz.

Since the Total Cost of Hurricane cannot be the same as two other companies, Hurricane is not one of the companies.

Similarly, we can see that for Famints (which has a higher Total Cost than even Hurricane), the Total Cost of Famints must be greater than that of Avalunch and Blizz. By observation, we can see that it must be greater than that of Tiefone as well. Hence, the Total Cost of Famints cannot be the same as any other company.

Therefore, the three companies whose Total Costs are equal must be Avalunch, Blizz and Tiefone.

Let  $a$ ,  $b$  and  $c$  represent the total Operating Cost, total Administrative Cost and the total Finance Cost of the three companies.

$$\text{The Total Cost of Avalunch} = 0.12a + 0.15b + 0.2c$$

$$\text{The Total Cost of Blizz} = 0.25a + 0.1b + 0.2c$$

$$\text{The Total Cost of Tiefone} = 0.1a + 0.25b + 0.1c$$

Since the Total Cost of Avalunch and Blizz are equal,

$$0.12a + 0.15b + 0.2c = 0.25a + 0.1b + 0.2c \Rightarrow \frac{a}{b} = \frac{5}{13}$$

Let  $a = 5k$  and  $b = 13k$ .

Substituting these values in the total cost of Avalunch and Blizz we get the Total Cost of Avalunch and Blizz to be  $2.55k + 0.2c$ .

$$\text{Total Cost of Tiefone} = 3.75k + 0.1c$$

Since these two costs must also be equal,

$$2.55k + 0.2c = 3.75k + 0.1c \Rightarrow c = 12k$$

Hence, the total Finance Cost =  $12k$ .

The following table provides the Operating Cost, Administrative Cost and Finance Cost of each company in terms of  $k$ :

Company	Operating Cost	Administrative Cost	Finance Cost	Total Cost
Hurricane	1.25k	2.6k	3k	6.85k
Tiefone	0.5k	3.25k	1.2k	4.95k
Avalunch	0.6k	1.95k	2.4k	4.95k
Famints	1.4k	3.9k	3k	8.3k
Blizz	1.25k	1.3k	2.4k	4.95k

The ratio of the Administrative Cost of Famints to the Operating Cost of Hurricane =  $\frac{3.9}{1.25} = 3.12$  Choice (B)

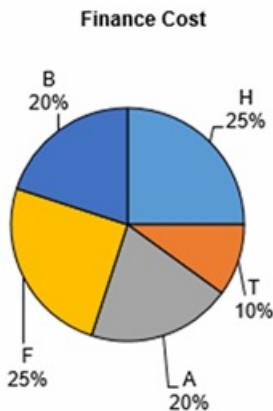
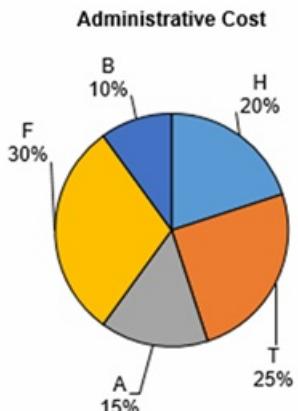
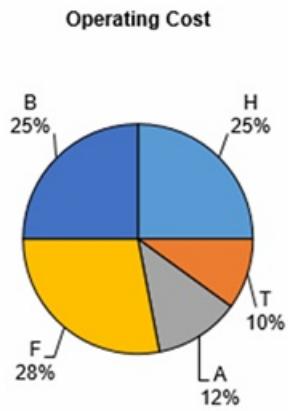
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**DIRECTIONS** for questions 5 to 8: Answer the questions on the basis of the information given below.

Trunami Inc is a conglomerate comprising five companies – Hurricane, Tiefone, Avalunch, Famints and Blizz. The Total Cost incurred by each of the five companies in any year can be divided into three components – Operating Cost, Administrative Cost and Finance Cost. The first pie chart given below provides, for the year 2017, the Operating Cost of each company as a percentage of the total Operating Cost of the five companies, while the second and the third pie charts provide similar percentage breakdowns for the Administrative Cost and Finance Cost respectively for 2017. In the pie charts below, each company is represented by the first letter of its name.

It is also known that the Total Cost was the same for exactly three of the five companies during 2017.

All the questions that follow are related to the costs of the five companies in the year 2017.



**Q8. DIRECTIONS** for questions 5 to 8: Select the correct alternative from the given choices.

If the Administrative Cost of Avalunch is Rs.29.25 lakh, what is the Operating Cost of Famints?

- a) **Rs.20 lakh**
- b) **Rs.21 lakh**
- c) **Rs.22 lakh**
- d) **Rs.23 lakh**

You did not answer this question

**Show Correct Answer**

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>113</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>99</b>
% of students who attempted this question	<b>5.41</b>
% of students who got the question right of those who attempted	<b>54.94</b>

[Video Solution](#)

[Text Solution](#)

Given that the Total Cost was the same for three companies. By comparing Hurricane and Tiefone, the Operating Cost and Finance Cost of Hurricane is greater than that for Tiefone but the Administrative Cost is lesser. Hence, it is possible that the Total Cost of these two companies can be equal.

By comparing Hurricane and Avalunch, the Operating Cost, Administrative Cost and Finance Cost of Hurricane is greater than that of Avalunch. Hence, the Total Cost of Hurricane must be greater than that of Avalunch.

By comparing Hurricane and Famints, the Operating Cost and Administrative Cost of Hurricane is lesser than that of Famints, while the Finance Cost is the same. Hence, the Total Cost of Hurricane must be less than that of Famints.

By comparing Hurricane and Blizz, the Administrative Cost and Finance Cost is greater for Hurricane, while the Operating Cost is the same. Hence, the Total Cost of Hurricane must be greater than that of Blizz.

Since the Total Cost of Hurricane cannot be the same as two other companies, Hurricane is not one of the companies.

Similarly, we can see that for Famints (which has a higher Total Cost than even Hurricane), the Total Cost of Famints must be greater than that of Avalunch and Blizz. By observation, we can see that it must be greater than that of Tiefone as well. Hence, the Total Cost of Famints cannot be the same as any other company.

Therefore, the three companies whose Total Costs are equal must be Avalunch, Blizz and Tiefone.

Let  $a$ ,  $b$  and  $c$  represent the total Operating Cost, total Administrative Cost and the total Finance Cost of the three companies.

$$\text{The Total Cost of Avalunch} = 0.12a + 0.15b + 0.2c$$

$$\text{The Total Cost of Blizz} = 0.25a + 0.1b + 0.2c$$

$$\text{The Total Cost of Tiefone} = 0.1a + 0.25b + 0.1c$$

Since the Total Cost of Avalunch and Blizz are equal,

$$0.12a + 0.15b + 0.2c = 0.25a + 0.1b + 0.2c \Rightarrow \frac{a}{b} = \frac{5}{13}$$

Let  $a = 5k$  and  $b = 13k$ .

Substituting these values in the total cost of Avalunch and Blizz we get the Total Cost of Avalunch and Blizz to be  $2.55k + 0.2c$ .

$$\text{Total Cost of Tiefone} = 3.75k + 0.1c$$

Since these two costs must also be equal,

$$2.55k + 0.2c = 3.75k + 0.1c \Rightarrow c = 12k$$

Hence, the total Finance Cost =  $12k$ .

The following table provides the Operating Cost, Administrative Cost and Finance Cost of each company in terms of  $k$ :

Company	Operating Cost	Administrative Cost	Finance Cost	Total Cost
Hurricane	1.25k	2.6k	3k	6.85k
Tiefone	0.5k	3.25k	1.2k	4.95k
Avalunch	0.6k	1.95k	2.4k	4.95k
Famints	1.4k	3.9k	3k	8.3k
Blizz	1.25k	1.3k	2.4k	4.95k

Given  $1.95k = 29.25 \Rightarrow k = ₹15$  lakh.

Operating Cost of Famints =  $1.4 \times 15 = ₹21$  lakh

Choice (B)

undefined

**DIRECTIONS** for questions 9 to 12: Answer the questions on the basis of the information given below.

Rohit, the coach of a badminton team, has to select a team from an available squad of eight players, A through H. However, the only constraint that he has for selecting the team is that, for each of the eight players, if he selects that player, there are exactly two players from among the remaining players who cannot be selected.

It is known that

- i. for each of A and B, if either of them is to be in the team, H cannot be in the team.

ii.  
if D is in the team, neither G nor E can be in the team.

iii.  
if F is in the team, neither B nor G can be in the team.

**Q9. DIRECTIONS** for questions 9 to 12: Select the correct alternative from the given choices.

If Rohit selected a team with the maximum possible size and he selected A, who among the following will he definitely select?

- a) **B**
- b) **F**
- c) **G**
- d) **More than one of the above** Your answer is correct

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>375</b>
Avg. time spent on this question by all students	<b>272</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>274</b>
% of students who attempted this question	<b>51.12</b>
% of students who got the question right of those who attempted	<b>60.85</b>

[Video Solution](#)

[Text Solution](#)

Given that if he picks any player, Rohit will not be able to pick two other players. From (i), if either A or B is in the team, H cannot be in the team. Hence, if H is picked, neither A nor B can be picked. For H, A and B are the two players that cannot be picked.

From (ii), for D, G and E are the two players that cannot be picked.

From (iii), for F, B and G are the two players that cannot be picked.

If G is there D cannot be in the team. Also F cannot be in the team. Hence, for G, D and F are the two players that cannot be picked.

From (iii), If B is in the team, F cannot be picked. Hence, for B, F and H are the two players that cannot be picked.

For E, D is one of the players who cannot be picked. Also, for A, H is one of the players who cannot be picked.

We do not know about either of the players who cannot be in the team if C is picked.

For E, the other player can only be A or C. However, it cannot be A because in that case, there cannot be two players who cannot be picked if C is picked.

Hence, for E, the other player must be C. For A the other player must be C. For C, the two players who cannot be picked must be E and A.

The following table provides the persons who cannot be picked for each player:

Player	Players who cannot be picked
A	C, H
B	F, H
C	A, E
D	E, G
E	C, D
F	B, G
G	D, F
H	A, B

From the above table, we can see that selection of each player will exclude two other players from selection.

If A is selected, neither C nor H can be selected. Now, if the next player to be selected also has C or H in his list of players who cannot be picked, then that will exclude only one more player from being selected.

For example, if B is picked along with A, then only three players cannot be selected (instead of 4) – C, F and H.

If E is picked, only four players cannot be selected – C, F, H and D.

Along with A, B and E, G can also be picked.

Hence, A, B, E and G can be picked as a team.

Similarly, C, F, H and D can be picked as a team. It is not possible to pick more than four players in the team.

Further, four players can be picked in only two ways – **ABEG and CDFH**.

If A is selected, among B, F and G, both B and G must be selected.

Choice (D)

undefined

**DIRECTIONS** for questions 9 to 12: Answer the questions on the basis of the information given below.

Rohit, the coach of a badminton team, has to select a team from an available squad of eight players, A through H. However, the only constraint that he has for selecting the team is that, for each of the eight players, if he selects that player, there are exactly two players from among the remaining players who cannot be selected.

It is known that

i.

for each of A and B, if either of them is to be in the team, H cannot be in the team.

ii.  
if D is in the team, neither G nor E can be in the team.

iii.  
if F is in the team, neither B nor G can be in the team.

**Q10. DIRECTIONS** for questions 9 to 12: Select the correct alternative from the given choices.

If Rohit selects both A and D, what is the maximum possible size of the team that he can select?

- a) 2
- b) 3
- c) 4   Your answer is incorrect
- d) 5

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	144
Avg. time spent on this question by all students	89
Difficulty Level	M
Avg. time spent on this question by students who got this question right	96
% of students who attempted this question	52.09
% of students who got the question right of those who attempted	14.63

[Video Solution](#)

[Text Solution](#)

Given that if he picks any player, Rohit will not be able to pick two other players.  
 From (i), if either A or B is in the team, H cannot be in the team. Hence, if H is picked, neither A nor B can be picked. For H, A and B are the two players that cannot be picked.  
 From (ii), for D, G and E are the two players that cannot be picked.  
 From (iii), for F, B and G are the two players that cannot be picked.  
 If G is there D cannot be in the team. Also F cannot be in the team. Hence, for G, D and F are the two players that cannot be picked.  
 From (iii), If B is in the team, F cannot be picked. Hence, for B, F and H are the two players that cannot be picked.  
 For E, D is one of the players who cannot be picked. Also, for A, H is one of the players who cannot be picked.  
 We do not know about either of the players who cannot be in the team if C is picked.  
 For E, the other player can only be A or C. However, it cannot be A because in that case, there cannot be two players who cannot be picked if C is picked.  
 Hence, for E, the other player must be C. For A the other player must be C. For C, the two players who cannot be picked must be E and A.  
 The following table provides the persons who cannot be picked for each player:

Player	Players who cannot be picked
A	C, H
B	F, H
C	A, E
D	E, G
E	C, D
F	B, G
G	D, F
H	A, B

If A and D are both selected, Rohit cannot select any of C, H, E and G.  
 Among the remaining players, i.e., B and F, only one person can be selected. Hence, only 3 persons can be selected to the team.

Choice (B)

**DIRECTIONS** for questions 9 to 12: Answer the questions on the basis of the information given below.

Rohit, the coach of a badminton team, has to select a team from an available squad of eight players, A through H. However, the only constraint that he has for selecting the team is that, for each of the eight players, if he selects that player, there are exactly two players from among the remaining players who cannot be selected.

It is known that

- i. for each of A and B, if either of them is to be in the team, H cannot be in the team.
- ii. if D is in the team, neither G nor E can be in the team.
- iii. if F is in the team, neither B nor G can be in the team.

**Q11. DIRECTIONS** for questions 9 to 12: Select the correct alternative from the given choices.

Instead of selecting one team, Rohit selected two teams, not necessarily of the same size, from the available eight players.

What is the minimum possible number of players that Rohit did not select?

- a) 0 Your answer is correct
- b) 1
- c) 2
- d) None of the above

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	173
Avg. time spent on this question by all students	102
Difficulty Level	M
Avg. time spent on this question by students who got this question right	99
% of students who attempted this question	40.05
% of students who got the question right of those who attempted	50.02

[Video Solution](#)

[Text Solution](#)

Given that if he picks any player, Rohit will not be able to pick two other players.  
From (i), if either A or B is in the team, H cannot be in the team. Hence, if H is picked, neither A nor B can be picked. For H, A and B are the two players that cannot be picked.

From (ii), for D, G and E are the two players that cannot be picked.

From (iii), for F, B and G are the two players that cannot be picked.

If G is there D cannot be in the team. Also F cannot be in the team. Hence, for G, D and F are the two players that cannot be picked.

From (iii), If B is in the team, F cannot be picked. Hence, for B, F and H are the two players that cannot be picked.

For E, D is one of the players who cannot be picked. Also, for A, H is one of the players who cannot be picked.

We do not know about either of the players who cannot be in the team if C is picked.

For E, the other player can only be A or C. However, it cannot be A because in that case, there cannot be two players who cannot be picked if C is picked.

Hence, for E, the other player must be C. For A the other player must be C. For C, the two players who cannot be picked must be E and A.

The following table provides the persons who cannot be picked for each player:

Player	Players who cannot be picked
A	C, H
B	F, H
C	A, E
D	E, G
E	C, D
F	B, G
G	D, F
H	A, B

Rohit can select two teams of four players each. Hence, the minimum number of players that Rohit did not select is 0.

Choice (A)

undefined

**DIRECTIONS for questions 9 to 12:** Answer the questions on the basis of the information given below.

Rohit, the coach of a badminton team, has to select a team from an available squad of eight players, A through H. However, the only constraint that he has for selecting the team is that, for each of the eight players, if he selects that player, there are exactly two players from among the remaining players who cannot be selected.

It is known that

i.

for each of A and B, if either of them is to be in the team, H cannot be in the team.

ii.  
if D is in the team, neither G nor E can be in the team.

iii.  
if F is in the team, neither B nor G can be in the team.

**Q12. DIRECTIONS** for questions 9 to 12: Select the correct alternative from the given choices.

Instead of selecting one team, Rohit selected two teams, not necessarily of the same size, from the available eight players.

If Rohit selected A, B and D to be a part of one of the two teams and the second team should have at least three players, in how many ways can he select the second team?

- a) 2
- b) 3
- c) 4
- d) 8   Your answer is incorrect

**Show Correct Answer**

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>514</b>
Avg. time spent on this question by all students	<b>158</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>161</b>
% of students who attempted this question	<b>35.8</b>
% of students who got the question right of those who attempted	<b>25.24</b>

[Video Solution](#)

[Text Solution](#)

Given that if he picks any player, Rohit will not be able to pick two other players. From (i), if either A or B is in the team, H cannot be in the team. Hence, if H is picked, neither A nor B can be picked. For H, A and B are the two players that cannot be picked.

From (ii), for D, G and E are the two players that cannot be picked.

From (iii), for F, B and G are the two players that cannot be picked.

If G is there D cannot be in the team. Also F cannot be in the team. Hence, for G, D and F are the two players that cannot be picked.

From (iii), If B is in the team, F cannot be picked. Hence, for B, F and H are the two players that cannot be picked.

For E, D is one of the players who cannot be picked. Also, for A, H is one of the players who cannot be picked.

We do not know about either of the players who cannot be in the team if C is picked.

For E, the other player can only be A or C. However, it cannot be A because in that case, there cannot be two players who cannot be picked if C is picked.

Hence, for E, the other player must be C. For A the other player must be C. For C, the two players who cannot be picked must be E and A.

The following table provides the persons who cannot be picked for each player:

Player	Players who cannot be picked
A	C, H
B	F, H
C	A, E
D	E, G
E	C, D
F	B, G
G	D, F
H	A, B

If A, B and D are picked, then the other team cannot have four players (because only two teams with four players can be formed and neither of them is possible here).

In the above solution, we have seen all the ways in which a three-player team can be selected.

Among the available three-player teams, only the following are possible: **EGH, CHG, FHE and CFH**.

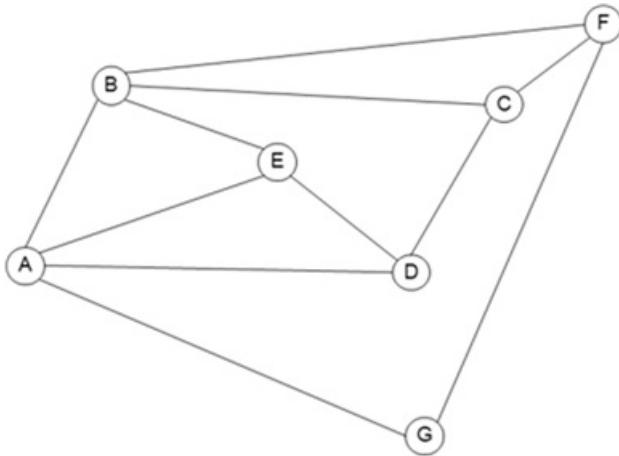
Hence, it is possible to select the second team in 4 ways.

Choice (C)

undefined

**DIRECTIONS** for questions 13 to 16: Answer the questions on the basis of the information given below.

Seven cities, A through G, are connected by roads as shown in the figure below.



Four persons, Dopinder, Trilok, Chari and Pancho, frequently travel between these seven cities. However, while travelling between any two cities, Dopinder passes through exactly two other cities, Trilok passes through three other cities, Chari passes through four other cities and Pancho passes through five other cities. Further, none of them pass through the same city twice. Each route is defined as the order of the cities that a person has to pass through to reach the destination from the origin.

**Q13. DIRECTIONS** for questions 13 to 16: Select the correct alternative from the given choices.

How many distinct routes can Trilok take to go from E to F?

- a) 3
- b) 5
- c) 6 Your answer is correct
- d) 9

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	497
Avg. time spent on this question by all students	283
Difficulty Level	M
Avg. time spent on this question by students who got this question right	302
% of students who attempted this question	52.19
% of students who got the question right of those who attempted	26.28

[Video Solution](#)

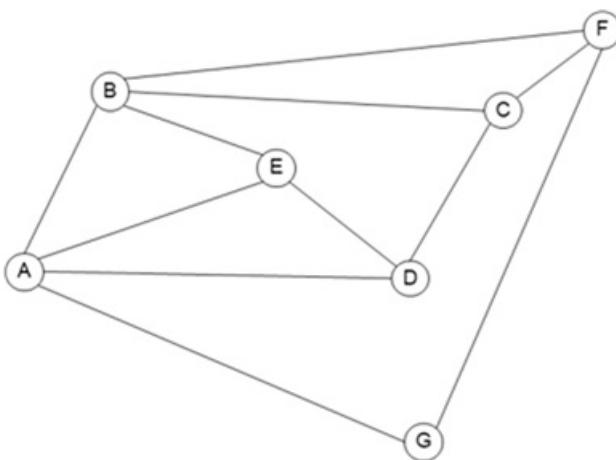
[Text Solution](#)

The route that Trilok takes must be of the form E \_\_\_ F.  
 From E, Trilok can go directly to A or B or D. Hence, the first two cities that he goes through must be EA or EB or ED.  
 To reach F, Trilok must pass through B or C or G. Hence, the last two cities that he goes through must be BF or CF or GF.  
 For each combination of the above, we can check if there is a common city connecting the first two cities and the last two cities.  
 Consider EA \_ BF. If there is any city which connects both A and B (which is not E or F), then there will be a possible route. However, no such city exists (apart from E, which is the origin).  
 Consider EA \_ CF. There are two cities connecting A and C which are B and D. hence, there are two possible routes – EABCF and EADCF.  
 Consider EA \_ GF. There are no possible route.  
 EB\_BF is not possible (as B cannot be the second and the fourth city).  
 For EB\_CF, there are no possibilities.  
 For EB\_GF, there is one possibility – EBAGF.  
 For ED\_BF, there are two possibilities – EDABF and EDCBF.  
 For ED\_CF, there are no possibilities.  
 For ED\_GF, there is one possibility – EDAGF.  
 Hence, there are six possibilities – EABCF, EADCF, EBAGF, EDABF, EDCBF and  
 Choice (C)

undefined

**DIRECTIONS** for questions 13 to 16: Answer the questions on the basis of the information given below.

Seven cities, A through G, are connected by roads as shown in the figure below.



Four persons, Dopinder, Trilok, Chari and Pancho, frequently travel between these seven cities. However, while travelling between any two cities, Dopinder passes through exactly two other cities, Trilok passes through three other cities, Chari passes through four other cities and Pancho passes through five other cities. Further, none of them pass through the same city twice. Each route is defined as the order of the cities that a person has to pass through to reach the destination from the origin.

**Q14. DIRECTIONS** for questions 13 to 16: Select the correct alternative from the given choices.

How many distinct routes can Chari take to go from D to C?

- a) 1
- b) 2
- c) 3
- d) More than 3 Your answer is correct

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>264</b>
Avg. time spent on this question by all students	<b>148</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>142</b>
% of students who attempted this question	<b>51.38</b>
% of students who got the question right of those who attempted	<b>34.06</b>

[Video Solution](#)

[Text Solution](#)

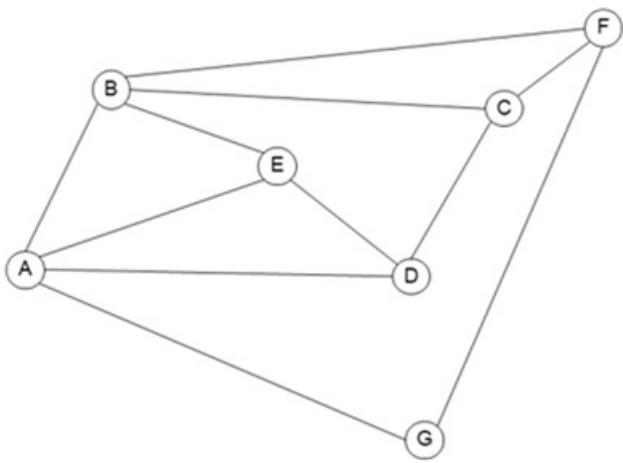
From D, Chari can go to E or A or C. C is not possible as it is the destination. Hence, the first two cities of his route can be DE or DA.  
 To reach C, the last two cities of his route must be BC or FC.  
 Let the first two cities be DE and the last two cities be BC.  
 From E to B, Chari has to pass through two cities.  
 From E, Chari can go only to A. To reach B, Chari has to go through FB. However, the route EAEB is not possible. Hence, this is not possible.  
 Let the first two cities be DE and the last two cities be FC.  
 From E to F, Chari has to pass through two cities.  
 From E, Chari can go to A or B. Hence, EA and EB are possible. To reach F, BF and GF are possible. Looking at possible combinations, we can see that EABF and EAGF are both possible.  
 Hence, there are two possibilities – DEABFC and DEAGFC.  
 Let the first two cities be DA and the last two cities be FC.  
 From A, Chari can go to B or E or G. Hence, AB, AE and AG are possible. To reach F, BF and GF are possible. Looking at the combinations, only one possibility exists – AEBF.  
 Hence there is one more possibility – DAEBFC.  
 Let the first two cities be DA and the last two cities be BC.  
 From A, Chari can go to AE or AG. To reach B, FB and EB are possible.  
 There is one possibility here as well – AGFB.  
 Hence, there is one more possibility – DAGFBC.  
 Therefore, there are four possibilities in total – DEABFC, DEAGFC, DAEBFC, DAGFBC.

Choice (D)

undefined

**DIRECTIONS** for questions 13 to 16: Answer the questions on the basis of the information given below.

Seven cities, A through G, are connected by roads as shown in the figure below.



Four persons, Dopinder, Trilok, Chari and Pancho, frequently travel between these seven cities. However, while travelling between any two cities, Dopinder passes through exactly two other cities, Trilok passes through three other cities, Chari passes through four other cities and Pancho passes through five other cities. Further, none of them pass through the same city twice. Each route is defined as the order of the cities that a person has to pass through to reach the destination from the origin.

**Q15. DIRECTIONS** for questions 13 to 16: Select the correct alternative from the given choices.

Pancho was at C and he wanted to go to one of the other cities. He realized that to go to his destination he had only one possible route. Which of the following can be his destination?

- a) A
- b) B
- c) D   Your answer is incorrect
- d) E

Show Correct Answer

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>311</b>
Avg. time spent on this question by all students	<b>174</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>202</b>
% of students who attempted this question	<b>42.55</b>
% of students who got the question right of those who attempted	<b>33.1</b>

[Video Solution](#)

[Text Solution](#)

For Pancho to go from one city to another, he has to travel through all the seven cities. Let A be the destination. Since A is the destination, to travel through G (as he has to pass through all the cities), Pancho must pass through FGA, in that order.

Backtracking from F, only B is possible (since C is origin). From B, going back, only E is possible (since A is destination) and from E, only D is possible. Hence, to go to A, only one route is possible – CDEBFGA.

For B, there are at least two routes – CFGADEB and CDEAGFB.

For D, there are at least two routes – CFGABED and CBFGAED.

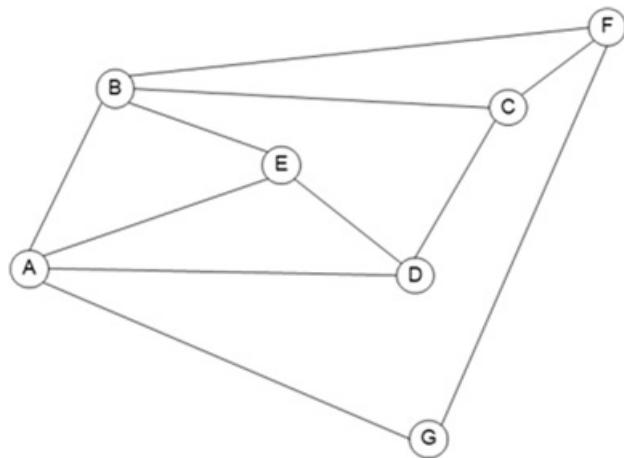
For E, there are at least two routes – CDAGFBE and CBFGADE.

Hence, only for A, there is one route.

Choice (A)

**DIRECTIONS** for questions 13 to 16: Answer the questions on the basis of the information given below.

Seven cities, A through G, are connected by roads as shown in the figure below.



Four persons, Dopinder, Trilok, Chari and Pancho, frequently travel between these seven cities. However, while travelling between any two cities, Dopinder passes through exactly two other cities, Trilok passes through three other cities, Chari passes through four other cities and Pancho passes through five other cities. Further, none of them pass through the same city twice. Each route is defined as the order of the cities that a person has to pass through to reach the destination from the origin.

**Q16. DIRECTIONS** for questions 13 to 16: Select the correct alternative from the given choices.

Trilok and Dopinder both start from E and intend to reach the same city. However, both of them decided that they would not pass through the same city (except for the origin and destination). Among the following cities, which city can be the one that they reach in this manner?

- a) A
- b) B Your answer is correct
- c) C
- d) None of the above

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>326</b>
Avg. time spent on this question by all students	<b>143</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>141</b>
% of students who attempted this question	<b>36.55</b>
% of students who got the question right of those who attempted	<b>44.09</b>

[Video Solution](#)

[Text Solution](#)

Dopinder and Trilok did not pass through the same cities. Since Dopinder passes through two cities and Trilok passes through three cities, they must have covered all five cities (excluding the origin and the destination) between the two of them.

Let A be the destination. Dopinder cannot go from E to A passing through two other cities. Hence, this is not possible.

Let B be the destination. Dopinder can go from E to B in two ways – EDAB and EDCB. If Dopinder goes through EDAB, Trilok must pass through C, F and G (in any order) to go from E to B. However, this is not possible.

If Dopinder goes through EDCB, Trilok has to pass through A, E and G to go from E to B. This is possible if he goes through EAGEB. Hence, B can be their destination.

Let C be the destination. Dopinder can use the route EADC or EABC or EBFC. In each case, it is not possible for Trilok to reach C.

Hence, among the given options, only B can be the destination.

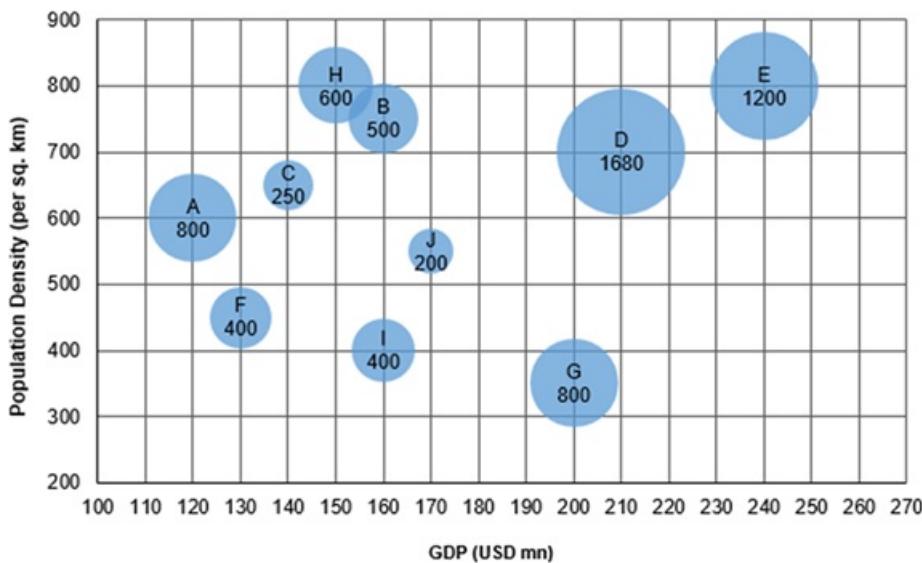
Choice (B)

undefined

**DIRECTIONS** for questions 17 to 20: Answer the questions on the basis of the information given below.

Omar, a student of Economics, was tracking three parameters, GDP per capita, GDP and Population Density, for ten different districts – A through J – of a state. The GDP per capita of a district is defined as the ratio of GDP of that district to the population of that district. The Population Density of a district is defined as the ratio of the population of that district to the total area of the district.

He made the following bubble chart in which each bubble represents one of the ten districts and the size of the bubble provides the GDP per capita (in USD) (the value of which is mentioned inside each bubble), the horizontal axis represents the GDP (in USD mn) and the vertical axis represents the Population Density (in persons per sq. km):



**Q17. DIRECTIONS** for questions 17 to 20: Select the correct alternative from the given choices.

The ten districts are ranked on the basis of their population such that the rank of any district is one more than the number of districts which have a higher population than that district. The ten districts are also ranked on the basis of their total area in the same manner.

For how many districts is its rank based on population the same as its rank based on the total area?

a) 3

b) 4

c) 5

d) 6

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>11</b>
Avg. time spent on this question by all students	<b>667</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>671</b>
% of students who attempted this question	<b>6.86</b>
% of students who got the question right of those who attempted	<b>38.99</b>

[Video Solution](#)

[Text Solution](#)

From the graph, we can get the GDP per capita, the GDP and the Population Density. By observing the questions, we can see that the questions ask of the populations and the total areas of the ten districts.

By dividing the GDP with the GDP per capita, we can find the population of the district. By dividing the Population with the Population Density, we can find the total area of the district.

$$\text{The Population of district A} = \frac{(120 \times 10^6)}{800} = 150,000$$

$$\text{Total Area of district A} = \frac{150000}{600} = 250 \text{ sq. km}$$

Similarly, we can find the Population and the Total Area for each of the other districts. This is presented in the table below:

District	Population	Total Area (in sq. km)
A	150,000	250.00
B	320,000	426.67
C	560,000	861.54
D	125,000	178.57
E	200,000	250.00
F	325,000	722.22
G	250,000	714.29
H	250,000	312.50
I	400,000	1000.00
J	850,000	1545.45

If the ten districts are ranked in the manner described in the question, the ranks of the ten districts based on their population and their total area will be as given in the following table:

District	Rank of Population	Rank of Total Area
A	9	8
B	5	6
C	2	3
D	10	10
E	8	8
F	4	4
G	6	5
H	6	7
I	3	2
J	1	1

The two ranks are same for 4 districts – D, E, F and J.

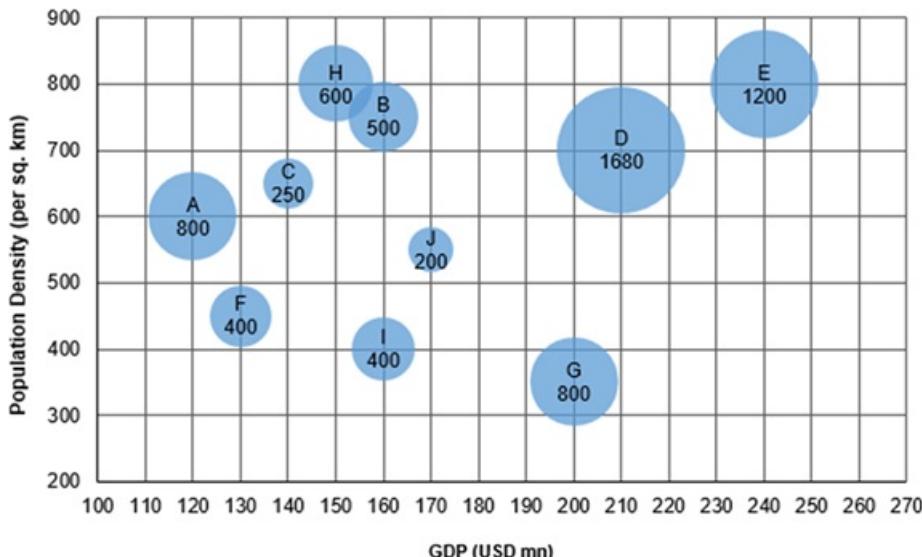
Choice (B)

undefined

**DIRECTIONS** for questions 17 to 20: Answer the questions on the basis of the information given below.

Omar, a student of Economics, was tracking three parameters, GDP per capita, GDP and Population Density, for ten different districts – A through J – of a state. The GDP per capita of a district is defined as the ratio of GDP of that district to the population of that district. The Population Density of a district is defined as the ratio of the population of that district to the total area of the district.

He made the following bubble chart in which each bubble represents one of the ten districts and the size of the bubble provides the GDP per capita (in USD) (the value of which is mentioned inside each bubble), the horizontal axis represents the GDP (in USD mn) and the vertical axis represents the Population Density (in persons per sq. km):



**Q18. DIRECTIONS** for questions 17 to 20: Select the correct alternative from the given choices.

The ten districts are ranked on the basis of their population such that the rank of any district is one more than the number of districts which have a higher population than that district. The ten districts are also ranked on the basis of their total area in the same manner.

For how many districts is the difference between its rank based on population and its rank based on total area greater than two?

- a) 0
- b) 1
- c) 2
- d) 3

You did not answer this question Show Correct Answer

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	0
Avg. time spent on this question by all students	80
Difficulty Level	M
Avg. time spent on this question by students who got this question right	85
% of students who attempted this question	6.14
% of students who got the question right of those who attempted	50.94

[Video Solution](#)

[Text Solution](#)

From the graph, we can get the GDP per capita, the GDP and the Population Density. By observing the questions, we can see that the questions ask of the populations and the total areas of the ten districts.

By dividing the GDP with the GDP per capita, we can find the population of the district.

By dividing the Population with the Population Density, we can find the total area of the district.

$$\text{The Population of district A} = \frac{(120 \times 10^6)}{800} = 150,000$$

$$\text{Total Area of district A} = \frac{150000}{600} = 250 \text{ sq. km}$$

Similarly, we can find the Population and the Total Area for each of the other districts. This is presented in the table below:

District	Population	Total Area (in sq. km)
A	150,000	250.00
B	320,000	426.67
C	560,000	861.54
D	125,000	178.57
E	200,000	250.00
F	325,000	722.22
G	250,000	714.29
H	250,000	312.50
I	400,000	1000.00
J	850,000	1545.45

For none of the districts is the given condition satisfied (from the table in the above solution).

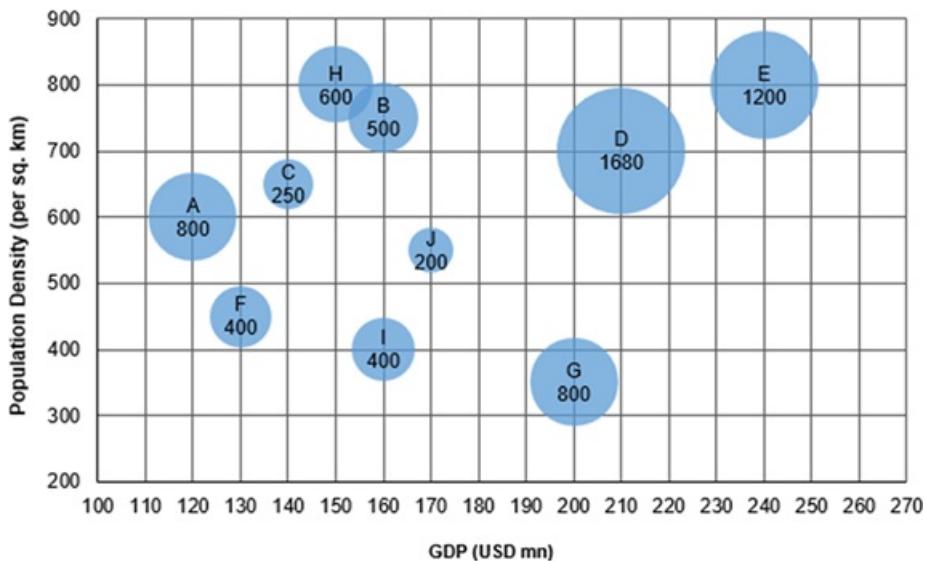
Choice (A)

undefined

**DIRECTIONS** for questions 17 to 20: Answer the questions on the basis of the information given below.

Omar, a student of Economics, was tracking three parameters, GDP per capita, GDP and Population Density, for ten different districts – A through J – of a state. The GDP per capita of a district is defined as the ratio of GDP of that district to the population of that district. The Population Density of a district is defined as the ratio of the population of that district to the total area of the district.

He made the following bubble chart in which each bubble represents one of the ten districts and the size of the bubble provides the GDP per capita (in USD) (the value of which is mentioned inside each bubble), the horizontal axis represents the GDP (in USD mn) and the vertical axis represents the Population Density (in persons per sq. km):



**Q19. DIRECTIONS** for questions 17 to 20: Select the correct alternative from the given choices.

What is the population of the district with the fourth highest total area?

- a) 325,000
- b) 250,000
- c) 500,000
- d) 350,000

You did not answer this question

[Show Correct Answer](#)

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	0
Avg. time spent on this question by all students	68
Difficulty Level	M
Avg. time spent on this question by students who got this question right	63
% of students who attempted this question	6.46
% of students who got the question right of those who attempted	53.2

[Video Solution](#)

[Text Solution](#)

From the graph, we can get the GDP per capita, the GDP and the Population Density. By observing the questions, we can see that the questions ask of the populations and the total areas of the ten districts.

By dividing the GDP with the GDP per capita, we can find the population of the district.

By dividing the Population with the Population Density, we can find the total area of the district.

$$\text{The Population of district A} = \frac{(120 \times 10^6)}{800} = 150,000$$

$$\text{Total Area of district A} = \frac{150000}{600} = 250 \text{ sq. km}$$

Similarly, we can find the Population and the Total Area for each of the other districts. This is presented in the table below:

District	Population	Total Area (in sq. km)
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E	200,000	250.00
F	325,000	722.22
G	250,000	714.29
H	250,000	312.50
I	400,000	1000.00
J	850,000	1545.45

- The district with the fourth highest total area is F. The population of F is 325,000.  
Choice (A)

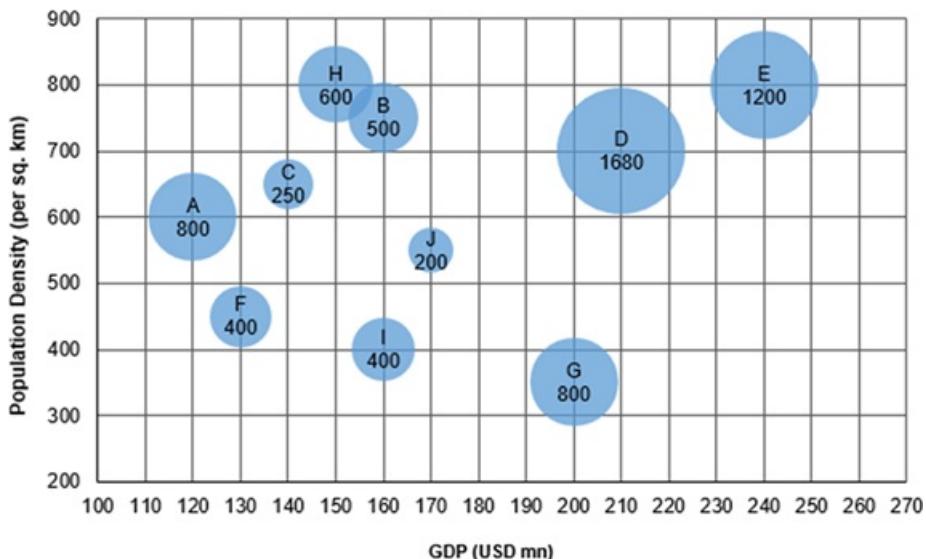
undefined

**DIRECTIONS** for questions 17 to 20: Answer the questions on the basis of the information given below.

Omar, a student of Economics, was tracking three parameters, GDP per capita, GDP and Population Density, for ten different districts – A through J – of a state. The GDP per capita of a district is defined as the ratio of GDP of that district to the population of that district. The Population Density of a district is defined as the ratio of the population of that district to the total area of the district.

He made the following bubble chart in which each bubble represents one of the ten districts and the size of the bubble provides the GDP per capita (in USD) (the value of which is mentioned inside each bubble), the horizontal axis represents

the GDP (in USD mn) and the vertical axis represents the Population Density (in persons per sq. km):



**Q20. DIRECTIONS** for questions 17 to 20: Select the correct alternative from the given choices.

For how many districts is the total area of the district less than that of the district with the fifth highest population?

- a) 2
- b) 3
- c) 4
- d) 5

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	0
Avg. time spent on this question by all students	62
Difficulty Level	M
Avg. time spent on this question by students who got this question right	59
% of students who attempted this question	5.57
% of students who got the question right of those who attempted	51.43

[Video Solution](#)

[Text Solution](#)

From the graph, we can get the GDP per capita, the GDP and the Population Density. By observing the questions, we can see that the questions ask of the populations and the total areas of the ten districts.

By dividing the GDP with the GDP per capita, we can find the population of the district. By dividing the Population with the Population Density, we can find the total area of the district.

$$\text{The Population of district A} = \frac{(120 \times 10^6)}{800} = 150,000$$

$$\text{Total Area of district A} = \frac{150000}{600} = 250 \text{ sq. km}$$

Similarly, we can find the Population and the Total Area for each of the other districts. This is presented in the table below:

District	Population	Total Area (in sq. km)
A	150,000	250.00
B	320,000	426.67
C	560,000	861.54
D	125,000	178.57
E	200,000	250.00
F	325,000	722.22
G	250,000	714.29
H	250,000	312.50
I	400,000	1000.00
J	850,000	1545.45

The district with the fifth highest population is B. The total area of I is 426.67 sq. km. Four districts, H, A, E and D, have a total area less than that of B.      Choice (C)

undefined

**DIRECTIONS** for questions 21 to 24: Answer the questions on the basis of the information given below.

Two football teams, A and B, from the same college play against each other frequently. During a particular year, the two teams played exactly 100 matches against each other. It is also known that the number of goals scored in any match was at most 4; the number of goals scored by A in any match was at least 1; the number of goals scored by B in any match was at least 1.

The following information is known about the number of goals scored by the two teams in each match:

- i. The number of matches that A won was 27 more than the number of matches in which B scored at least 2 goals.
- ii. The number of matches that ended as a draw was the same as the number of matches in which A scored exactly 1 goal.
- iii. The number of matches in which the difference in the number of goals scored by the two teams was at least 2 was twice the number of matches in which 3 goals were scored in total.
- iv. The sum of the number of matches that A did not win and those it won by at most 1 goal was 15 more than the number of matches that it won.
- v. The number of matches in which one team scored exactly one goal more than the other team was 20 less than the number of matches in which one team scored exactly two goals more than the other team.

**Q21. DIRECTIONS** for questions 21 to 24: Type in your answer in the input box provided below the question.

How many matches ended as a draw?

**You did not answer this question** [Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	8
Avg. time spent on this question by all students	219
Difficulty Level	D
Avg. time spent on this question by students who got this question right	574
% of students who attempted this question	5.15
% of students who got the question right of those who attempted	8.34

[Video Solution](#)

[Text Solution](#)

It is given that both A and B scored at least one goal in each match and not more than 4 goals were scored in any match. Hence, the goals scored by A and B in any match can be 1 – 1 or 1 – 2 or 1 – 3 or 2 – 1 or 2 – 2 or 3 – 1. Let a, b, c, d, e and f represent the respective number of matches in which the score was as mentioned above.

The number of matches that A won will be d + f.

$$\text{From (i), } d + f = 27 + b + c + e \quad \dots \dots \dots (1)$$

$$\text{From (ii), } a + e = a + b + c \Rightarrow e = b + c \quad \dots \dots \dots (2)$$

$$\text{From (iii), } c + f = 2(b + d) \Rightarrow c + f = 2b + 2d \quad \dots \dots \dots (3)$$

$$\text{From (iv), } a + b + c + d + e = 15 + d + f \Rightarrow a + b + c + e = 15 + f \quad \dots \dots \dots (4)$$

$$\text{From (v), } b + d = c + f - 20 \quad \dots \dots \dots (5)$$

$$\text{From (3) and (4), } b + d = 2b + 2d - 20 \Rightarrow b + d = 20$$

$$\text{From (3), } c + f = 40$$

$$\text{Since } a + b + c + d + e + f = 100, a + e = 40.$$

$$\text{Also, } (b + d) + (c + f) = 60 \Rightarrow (b + c) + (d + f) = 60$$

$$\text{From (1) and (2), } e + 27 + 2e = 60 \Rightarrow e = 11$$

$$\text{Since } a + e = 40, a = 29.$$

$$\text{From (4), } a + (b + c) + e = 15 + f.$$

$$\text{Since } b + c = e, a + 2e = 15 + f \Rightarrow f = 29 + 22 - 15 = 36$$

$$\text{Since } c + f = 40, c = 4.$$

$$\text{Since } b + c = e = 11, b = 7.$$

$$b + d = 20 \Rightarrow d = 13.$$

The following table provides the number of matches played for the different possible results:

A	B	Number of Matches
1	1	29
1	2	7
1	3	4
2	1	13
2	2	11
3	1	36

Number of matches that ended as a draw = 29 + 11 = 40.

Ans: (40)

undefined

**DIRECTIONS** for questions 21 to 24: Answer the questions on the basis of the information given below.

Two football teams, A and B, from the same college play against each other frequently. During a particular year, the two teams played exactly 100 matches against each other. It is also known that the number of goals scored in any match was at most 4; the number of goals scored by A in any match was at least 1; the number of goals scored by B in any match was at

least 1.

The following information is known about the number of goals scored by the two teams in each match:

- i. The number of matches that A won was 27 more than the number of matches in which B scored at least 2 goals.
- ii. The number of matches that ended as a draw was the same as the number of matches in which A scored exactly 1 goal.
- iii. The number of matches in which the difference in the number of goals scored by the two teams was at least 2 was twice the number of matches in which 3 goals were scored in total.
- iv. The sum of the number of matches that A did not win and those it won by at most 1 goal was 15 more than the number of matches that it won.
- v. The number of matches in which one team scored exactly one goal more than the other team was 20 less than the number of matches in which one team scored exactly two goals more than the other team.

**Q22. DIRECTIONS** for questions 21 to 24: Type in your answer in the input box provided below the question.

How many goals did A score in all the matches that it played against B during the year?

**You did not answer this question**

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>52</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>203</b>
% of students who attempted this question	<b>4.45</b>
% of students who got the question right of those who attempted	<b>2.35</b>

[Video Solution](#)

[Text Solution](#)

It is given that both A and B scored at least one goal in each match and not more than 4 goals were scored in any match. Hence, the goals scored by A and B in any match can be 1 – 1 or 1 – 2 or 1 – 3 or 2 – 1 or 2 – 2 or 3 – 1. Let a, b, c, d, e and f represent the respective number of matches in which the score was as mentioned above.

The number of matches that A won will be  $d + f$ .

$$\text{From (i), } d + f = 27 + b + c + e \quad \dots \dots \dots (1)$$

$$\text{From (ii), } a + e = a + b + c \Rightarrow e = b + c \quad \dots \dots \dots (2)$$

$$\text{From (iii), } c + f = 2(b + d) \Rightarrow c + f = 2b + 2d \quad \dots \dots \dots (3)$$

$$\text{From (iv), } a + b + c + d + e = 15 + d + f \Rightarrow a + b + c + e = 15 + f \quad \dots \dots \dots (4)$$

$$\text{From (v), } b + d = c + f - 20 \quad \dots \dots \dots (5)$$

$$\text{From (3) and (4), } b + d = 2b + 2d - 20 \Rightarrow b + d = 20$$

$$\text{From (3), } c + f = 40$$

$$\text{Since } a + b + c + d + e + f = 100, a + e = 40.$$

$$\text{Also, } (b + d) + (c + f) = 60 \Rightarrow (b + c) + (d + f) = 60$$

$$\text{From (1) and (2), } e + 27 + 2e = 60 \Rightarrow e = 11$$

$$\text{Since } a + e = 40, a = 29.$$

$$\text{From (4), } a + (b + c) + e = 15 + f.$$

$$\text{Since } b + c = e, a + 2e = 15 + f \Rightarrow f = 29 + 22 - 15 = 36$$

$$\text{Since } c + f = 40, c = 4.$$

$$\text{Since } b + c = e = 11, b = 7.$$

$$b + d = 20 \Rightarrow d = 13.$$

The following table provides the number of matches played for the different possible results:

A	B	Number of Matches
1	1	29
1	2	7
1	3	4
2	1	13
2	2	11
3	1	36

$$\text{Total number of goals scored by A} = 29 + 7 + 4 + 13 \times 2 + 11 \times 2 + 36 \times 3 = 196$$

$$\text{Ans: (196)}$$

undefined

**DIRECTIONS** for questions 21 to 24: Answer the questions on the basis of the information given below.

Two football teams, A and B, from the same college play against each other frequently. During a particular year, the two teams played exactly 100 matches against each other. It is also known that the number of goals scored in any match was at most 4; the number of goals scored by A in any match was at least 1; the number of goals scored by B in any match was at least 1.

The following information is known about the number of goals scored by the two teams in each match:

- i. The number of matches that A won was 27 more than the number of matches in which B scored at least 2 goals.
- ii. The number of matches that ended as a draw was the same as the number of matches in which A scored exactly 1 goal.
- iii. The number of matches in which the difference in the number of goals scored by the two teams was at least 2 was twice the number of matches in which 3 goals were scored in total.
- iv. The sum of the number of matches that A did not win and those it won by at most 1 goal was 15 more than the number of matches that it won.
- v. The number of matches in which one team scored exactly one goal more than the other team was 20 less than the number of matches in which one team scored exactly two goals more than the other team.

**Q23. DIRECTIONS** for questions 21 to 24: Type in your answer in the input box provided below the question.

In how many matches did A score 2 goals more than B?

**You did not answer this question** [Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>25</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>14</b>
% of students who attempted this question	<b>4.35</b>
% of students who got the question right of those who attempted	<b>4.31</b>

[Video Solution](#)

[Text Solution](#)

It is given that both A and B scored at least one goal in each match and not more than 4 goals were scored in any match. Hence, the goals scored by A and B in any match can be 1 – 1 or 1 – 2 or 1 – 3 or 2 – 1 or 2 – 2 or 3 – 1. Let a, b, c, d, e and f represent the respective number of matches in which the score was as mentioned above.

The number of matches that A won will be  $d + f$ .

$$\text{From (i), } d + f = 27 + b + c + e \quad \dots \dots \dots (1)$$

$$\text{From (ii), } a + e = a + b + c \Rightarrow e = b + c \quad \dots \dots \dots (2)$$

$$\text{From (iii), } c + f = 2(b + d) \Rightarrow c + f = 2b + 2d \quad \dots \dots \dots (3)$$

$$\text{From (iv), } a + b + c + d + e = 15 + d + f \Rightarrow a + b + c + e = 15 + f \quad \dots \dots \dots (4)$$

$$\text{From (v), } b + d = c + f - 20 \quad \dots \dots \dots \quad (5)$$

From (3) and (4),  $b + d = 2b + 2d - 20 \Rightarrow b + d = 20$

From (3),  $c + f = 40$

Since  $a + b + c + d + e + f = 100$ ,  $a + e = 40$ .

$$\text{Also, } (b + d) + (c + f) = 60 \Rightarrow (b + c) + (d + f) = 60$$

From (1) and (2),  $e + 27 + 2e = 60 \Rightarrow e = 11$

Since  $a + e = 40$ ,  $a = 29$ .

$$\text{From (4), } a + (b + c) + e = 15 + f.$$

$$\text{Since } b + c = e, a + 2e = 15 + f \Rightarrow f = 29 + 22 - 15 = 36$$

Since  $c + f = 40$ ,  $c = 4$ .

Since  $b + c = e = 11$ ,  $b = 7$ .

$$b + d = 20 \Rightarrow d = 13.$$

The following table p

results:

A	B	Number of Matches
1	1	29
1	2	7
1	3	4
2	1	13
2	2	11
3	1	36

- . In 36 matches, A scored 2 goals more than B.

Ans: (36)

undefined

**DIRECTIONS** for questions 21 to 24: Answer the questions on the basis of the information given below.

Two football teams, A and B, from the same college play against each other frequently. During a particular year, the two teams played exactly 100 matches against each other. It is also known that the number of goals scored in any match was at

most 4; the number of goals scored by A in any match was at least 1; the number of goals scored by B in any match was at least 1.

The following information is known about the number of goals scored by the two teams in each match:

- i. The number of matches that A won was 27 more than the number of matches in which B scored at least 2 goals.
- ii. The number of matches that ended as a draw was the same as the number of matches in which A scored exactly 1 goal.
- iii. The number of matches in which the difference in the number of goals scored by the two teams was at least 2 was twice the number of matches in which 3 goals were scored in total.
- iv. The sum of the number of matches that A did not win and those it won by at most 1 goal was 15 more than the number of matches that it won.
- v. The number of matches in which one team scored exactly one goal more than the other team was 20 less than the number of matches in which one team scored exactly two goals more than the other team.

**Q24. DIRECTIONS** for questions 21 to 24: Type in your answer in the input box provided below the question.

If the Goal Difference of a team for any set of matches is defined as the number of goals scored by the team minus the number of goals scored against the team in all those matches, what is the Goal Difference of B for all the matches that it played against A?

**You did not answer this question**

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>0</b>
Avg. time spent on this question by all students	<b>35</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>88</b>
% of students who attempted this question	<b>3.35</b>
% of students who got the question right of those who attempted	<b>1.81</b>

[Video Solution](#)

[Text Solution](#)

It is given that both A and B scored at least one goal in each match and not more than 4 goals were scored in any match. Hence, the goals scored by A and B in any match can be 1 – 1 or 1 – 2 or 1 – 3 or 2 – 1 or 2 – 2 or 3 – 1. Let a, b, c, d, e and f represent the respective number of matches in which the score was as mentioned above.

The number of matches that A won will be  $d + f$ .

$$\text{From (i), } d + f = 27 + b + c + e \quad \dots \dots \dots (1)$$

$$\text{From (ii), } a + e = a + b + c \Rightarrow e = b + c \quad \dots \dots \dots (2)$$

$$\text{From (iii), } c + f = 2(b + d) \Rightarrow c + f = 2b + 2d \quad \dots \dots \dots (3)$$

$$\text{From (iv), } a + b + c + d + e = 15 + d + f \Rightarrow a + b + c + e = 15 + f \quad \dots \dots \dots (4)$$

$$\text{From (v), } b + d = c + f - 20 \quad \dots \dots \dots (5)$$

$$\text{From (3) and (4), } b + d = 2b + 2d - 20 \Rightarrow b + d = 20$$

$$\text{From (3), } c + f = 40$$

$$\text{Since } a + b + c + d + e + f = 100, a + e = 40.$$

$$\text{Also, } (b + d) + (c + f) = 60 \Rightarrow (b + c) + (d + f) = 60$$

$$\text{From (1) and (2), } e + 27 + 2e = 60 \Rightarrow e = 11$$

$$\text{Since } a + e = 40, a = 29.$$

$$\text{From (4), } a + (b + c) + e = 15 + f.$$

$$\text{Since } b + c = e, a + 2e = 15 + f \Rightarrow f = 29 + 22 - 15 = 36$$

$$\text{Since } c + f = 40, c = 4.$$

$$\text{Since } b + c = e = 11, b = 7.$$

$$b + d = 20 \Rightarrow d = 13.$$

The following table provides the number of matches played for the different possible results:

A	B	Number of Matches
1	1	29
1	2	7
1	3	4
2	1	13
2	2	11
3	1	36

$$\text{Goal difference for B} = 7 + 4 \times 2 - 13 - 36 \times 2 = -70$$

Ans: (-70)

undefined

**DIRECTIONS** for questions 25 to 28: Answer the questions on the basis of the information given below.

Six persons, Kiran, Lalit, Amit, Pranav, Jiva and Ravi, were sitting in six equally spaced chairs around a circular table. Each person was sitting in a chair of a different colour among Red, Black, Orange, Cyan, Green and Yellow.

It is also known that

i.

the number of persons sitting between the person sitting in the Red chair and Kiran in the clockwise direction counting from the former to the latter was the same as the number of persons sitting between the person sitting in the Cyan chair and Pranav in the anticlockwise direction counting from the former to the latter.

- ii. neither Kiran nor Pranav are sitting in either the Red chair or the Cyan chair.
- iii. Amit was sitting two places to the right of the person sitting in the Green chair and adjacent to the person sitting in the Yellow chair.
- iv. the person sitting in the Red chair and Jiva are sitting opposite each other, while the person sitting in the Cyan chair was sitting to the left of Ravi.
- v. neither Kiran nor Ravi was sitting adjacent to Pranav, while Amit was sitting opposite the person sitting in the Black chair.

**Q25. DIRECTIONS** for questions 25 to 28: Select the correct alternative from the given choices.

Who was sitting opposite the person sitting in the Orange chair?

- a) **Jiva**
- b) **Pranav**
- c) **Lalit**
- d) **Kiran** Your answer is incorrect

**Show Correct Answer**

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>481</b>
Avg. time spent on this question by all students	<b>910</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>936</b>
% of students who attempted this question	<b>20</b>
% of students who got the question right of those who attempted	<b>47.97</b>

[Video Solution](#)

[Text Solution](#)

Let 1 to 6 represent the chairs around the circular table as shown in the adjacent figure.

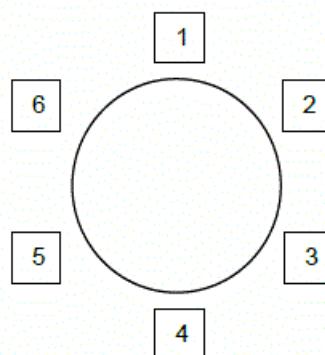
By observing the conditions, we can see that three of the conditions provide information on the Cyan chair. Hence, we can start with fixing the position of the Cyan chair.

Let the Cyan chair be at 1. From (iv), Ravi must be at 6. From (v), Pranav cannot be at 1 or 5.

Also from (iv), Jiva and the Red chair are opposite each other. Hence, in condition (i), the number of persons between Red chair and Kiran cannot be 2. Therefore, the number of persons between the Cyan chair and Pranav in the anticlockwise direction also cannot be 2.

Hence, Pranav cannot be at 4. Hence, Pranav can only be at 2 or 3.

If Pranav is at 3, then Kiran cannot be at 2 or 4 (from (v)). Kiran cannot be at 1 (from (ii)). Kiran must be at 5. If Kiran is at 5, then the Red chair must also be at 1 (from (i)). Since this is not possible, Pranav cannot be at 3.



Hence, Pranav must be at 2. Kiran cannot be at 1 or 3. Kiran can only be at 4 or 5. If Kiran is at 4, the Red chair must be at 5. From (iv), Jiva must be sitting opposite the Red chair. However, Pranav is sitting opposite the Red chair. Hence, Kiran cannot be at 4.

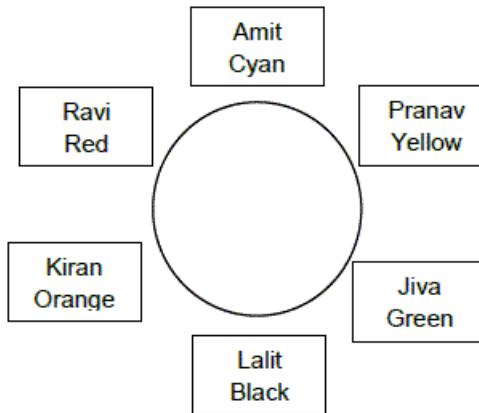
Kiran must be at 5. The Red chair must be at 6, i.e., Ravi must be in the Red chair.

From (iv), Jiva must be at 3. Amit and Lalit must be at 1 and 4 in any order.

From (vi), Amit was sitting opposite the person in the Black chair. Hence, Amit must be at 1 and Lalit must be at 4.

Lalit must be sitting in the Black chair. From (iii), Jiva must be in the Green chair and Pranav must be in the Yellow chair. Kiran must be in the Orange chair.

The following diagram provides the person and the colour of the chair around the table:



Pranav was sitting opposite the person in the Orange chair.

Choice (B)

undefined

**DIRECTIONS** for questions 25 to 28: Answer the questions on the basis of the information given below.

Six persons, Kiran, Lalit, Amit, Pranav, Jiva and Ravi, were sitting in six equally spaced chairs around a circular table. Each person was sitting in a chair of a different colour among Red, Black, Orange, Cyan, Green and Yellow.

It is also known that

- i. the number of persons sitting between the person sitting in the Red chair and Kiran in the clockwise direction counting from the former to the latter was the same as the number of persons sitting between the person sitting in the Cyan chair and Pranav in the anticlockwise direction counting from the former to the latter.
- ii. neither Kiran nor Pranav are sitting in either the Red chair or the Cyan chair.
- iii. Amit was sitting two places to the right of the person sitting in the Green chair and adjacent to the person sitting in the Yellow chair.
- iv. the person sitting in the Red chair and Jiva are sitting opposite each other, while the person sitting in the Cyan chair was sitting to the left of Ravi.
- v. neither Kiran nor Ravi was sitting adjacent to Pranav, while Amit was sitting opposite the person sitting in the Black chair.

**Q26. DIRECTIONS** for questions 25 to 28: Select the correct alternative from the given choices.

Who is sitting to the left of the person sitting in the Green chair?

- a) **Pranav**
- b) **Kiran**
- c) **Jiva** Your answer is incorrect
- d) **Lalit**

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>46</b>
Avg. time spent on this question by all students	<b>53</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>47</b>
% of students who attempted this question	<b>19.22</b>
% of students who got the question right of those who attempted	<b>48.11</b>

[Video Solution](#)

[Text Solution](#)

Let 1 to 6 represent the chairs around the circular table as shown in the adjacent figure.

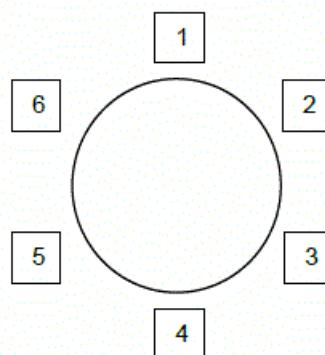
By observing the conditions, we can see that three of the conditions provide information on the Cyan chair. Hence, we can start with fixing the position of the Cyan chair.

Let the Cyan chair be at 1. From (iv), Ravi must be at 6. From (v), Pranav cannot be at 1 or 5.

Also from (iv), Jiva and the Red chair are opposite each other. Hence, in condition (i), the number of persons between Red chair and Kiran cannot be 2. Therefore, the number of persons between the Cyan chair and Pranav in the anticlockwise direction also cannot be 2.

Hence, Pranav cannot be at 4. Hence, Pranav can only be at 2 or 3.

If Pranav is at 3, then Kiran cannot be at 2 or 4 (from (v)). Kiran cannot be at 1 (from (ii)). Kiran must be at 5. If Kiran is at 5, then the Red chair must also be at 1 (from (i)). Since this is not possible, Pranav cannot be at 3.



Hence, Pranav must be at 2. Kiran cannot be at 1 or 3. Kiran can only be at 4 or 5. If Kiran is at 4, the Red chair must be at 5. From (iv), Jiva must be sitting opposite the Red chair. However, Pranav is sitting opposite the Red chair. Hence, Kiran cannot be at 4.

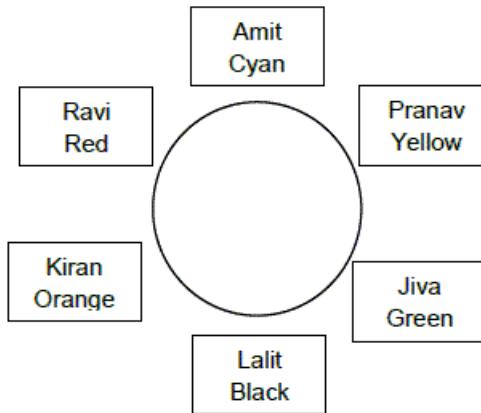
Kiran must be at 5. The Red chair must be at 6, i.e., Ravi must be in the Red chair.

From (iv), Jiva must be at 3. Amit and Lalit must be at 1 and 4 in any order.

From (vi), Amit was sitting opposite the person in the Black chair. Hence, Amit must be at 1 and Lalit must be at 4.

Lalit must be sitting in the Black chair. From (iii), Jiva must be in the Green chair and Pranav must be in the Yellow chair. Kiran must be in the Orange chair.

The following diagram provides the person and the colour of the chair around the table:



Lalit was sitting to the left of the person sitting in the Green chair.

Choice (D)

undefined

**DIRECTIONS** for questions 25 to 28: Answer the questions on the basis of the information given below.

Six persons, Kiran, Lalit, Amit, Pranav, Jiva and Ravi, were sitting in six equally spaced chairs around a circular table. Each person was sitting in a chair of a different colour among Red, Black, Orange, Cyan, Green and Yellow.

It is also known that

- i. the number of persons sitting between the person sitting in the Red chair and Kiran in the clockwise direction counting from the former to the latter was the same as the number of persons sitting between the person sitting in the Cyan chair and Pranav in the anticlockwise direction counting from the former to the latter.
- ii. neither Kiran nor Pranav are sitting in either the Red chair or the Cyan chair.
- iii. Amit was sitting two places to the right of the person sitting in the Green chair and adjacent to the person sitting in the Yellow chair.
- iv. the person sitting in the Red chair and Jiva are sitting opposite each other, while the person sitting in the Cyan chair was sitting to the left of Ravi.
- v. neither Kiran nor Ravi was sitting adjacent to Pranav, while Amit was sitting opposite the person sitting in the Black chair.

**Q27. DIRECTIONS** for questions 25 to 28: Select the correct alternative from the given choices.

What is the colour of the chair opposite Lalit?

- a) **Red**
- b) **Green** Your answer is incorrect
- c) **Cyan**
- d) **Yellow**

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>12</b>
Avg. time spent on this question by all students	<b>32</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>26</b>
% of students who attempted this question	<b>17.88</b>
% of students who got the question right of those who attempted	<b>63.5</b>

[Video Solution](#)

[Text Solution](#)

Let 1 to 6 represent the chairs around the circular table as shown in the adjacent figure.

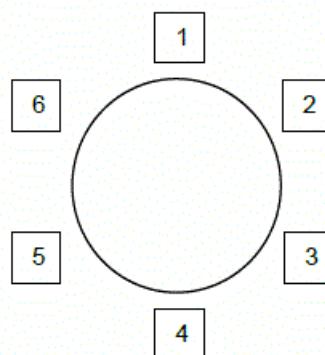
By observing the conditions, we can see that three of the conditions provide information on the Cyan chair. Hence, we can start with fixing the position of the Cyan chair.

Let the Cyan chair be at 1. From (iv), Ravi must be at 6. From (v), Pranav cannot be at 1 or 5.

Also from (iv), Jiva and the Red chair are opposite each other. Hence, in condition (i), the number of persons between Red chair and Kiran cannot be 2. Therefore, the number of persons between the Cyan chair and Pranav in the anticlockwise direction also cannot be 2.

Hence, Pranav cannot be at 4. Hence, Pranav can only be at 2 or 3.

If Pranav is at 3, then Kiran cannot be at 2 or 4 (from (v)). Kiran cannot be at 1 (from (ii)). Kiran must be at 5. If Kiran is at 5, then the Red chair must also be at 1 (from (i)). Since this is not possible, Pranav cannot be at 3.



Hence, Pranav must be at 2. Kiran cannot be at 1 or 3. Kiran can only be at 4 or 5. If Kiran is at 4, the Red chair must be at 5. From (iv), Jiva must be sitting opposite the Red chair. However, Pranav is sitting opposite the Red chair. Hence, Kiran cannot be at 4.

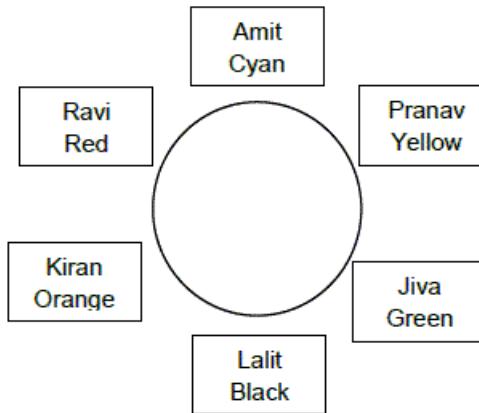
Kiran must be at 5. The Red chair must be at 6, i.e., Ravi must be in the Red chair.

From (iv), Jiva must be at 3. Amit and Lalit must be at 1 and 4 in any order.

From (vi), Amit was sitting opposite the person in the Black chair. Hence, Amit must be at 1 and Lalit must be at 4.

Lalit must be sitting in the Black chair. From (iii), Jiva must be in the Green chair and Pranav must be in the Yellow chair. Kiran must be in the Orange chair.

The following diagram provides the person and the colour of the chair around the table:



The colour of the chair opposite Lalit is Cyan.

Choice (C)

undefined

**DIRECTIONS** for questions 25 to 28: Answer the questions on the basis of the information given below.

Six persons, Kiran, Lalit, Amit, Pranav, Jiva and Ravi, were sitting in six equally spaced chairs around a circular table. Each person was sitting in a chair of a different colour among Red, Black, Orange, Cyan, Green and Yellow.

It is also known that

- i. the number of persons sitting between the person sitting in the Red chair and Kiran in the clockwise direction counting from the former to the latter was the same as the number of persons sitting between the person sitting in the Cyan chair and Pranav in the anticlockwise direction counting from the former to the latter.
- ii. neither Kiran nor Pranav are sitting in either the Red chair or the Cyan chair.
- iii. Amit was sitting two places to the right of the person sitting in the Green chair and adjacent to the person sitting in the Yellow chair.
- iv. the person sitting in the Red chair and Jiva are sitting opposite each other, while the person sitting in the Cyan chair was sitting to the left of Ravi.
- v. neither Kiran nor Ravi was sitting adjacent to Pranav, while Amit was sitting opposite the person sitting in the Black chair.

**Q28. DIRECTIONS** for questions 25 to 28: Select the correct alternative from the given choices.

Who among the following is sitting two places away from the person sitting in the Yellow chair?

- a) **Kiran**
- b) **Amit**
- c) **Jiva** Your answer is incorrect
- d) **Ravi**

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>31</b>
Avg. time spent on this question by all students	<b>53</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>51</b>
% of students who attempted this question	<b>16.85</b>
% of students who got the question right of those who attempted	<b>55.33</b>

[Video Solution](#)

[Text Solution](#)

Let 1 to 6 represent the chairs around the circular table as shown in the adjacent figure.

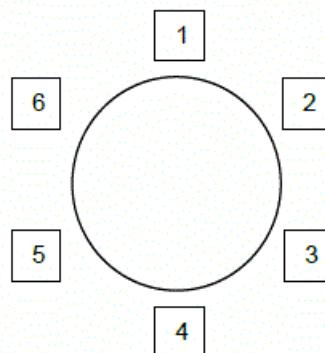
By observing the conditions, we can see that three of the conditions provide information on the Cyan chair. Hence, we can start with fixing the position of the Cyan chair.

Let the Cyan chair be at 1. From (iv), Ravi must be at 6. From (v), Pranav cannot be at 1 or 5.

Also from (iv), Jiva and the Red chair are opposite each other. Hence, in condition (i), the number of persons between Red chair and Kiran cannot be 2. Therefore, the number of persons between the Cyan chair and Pranav in the anticlockwise direction also cannot be 2.

Hence, Pranav cannot be at 4. Hence, Pranav can only be at 2 or 3.

If Pranav is at 3, then Kiran cannot be at 2 or 4 (from (v)). Kiran cannot be at 1 (from (ii)). Kiran must be at 5. If Kiran is at 5, then the Red chair must also be at 1 (from (i)). Since this is not possible, Pranav cannot be at 3.



Hence, Pranav must be at 2. Kiran cannot be at 1 or 3. Kiran can only be at 4 or 5. If Kiran is at 4, the Red chair must be at 5. From (iv), Jiva must be sitting opposite the Red chair. However, Pranav is sitting opposite the Red chair. Hence, Kiran cannot be at 4.

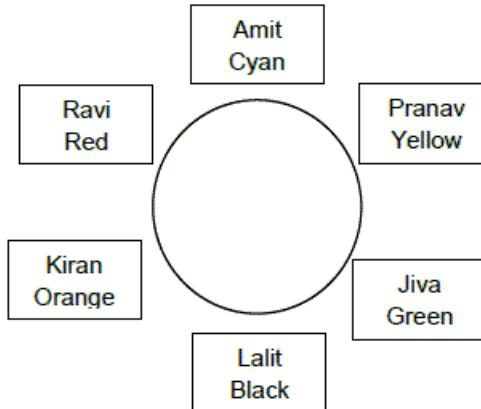
Kiran must be at 5. The Red chair must be at 6, i.e., Ravi must be in the Red chair.

From (iv), Jiva must be at 3. Amit and Lalit must be at 1 and 4 in any order.

From (vi), Amit was sitting opposite the person in the Black chair. Hence, Amit must be at 1 and Lalit must be at 4.

Lalit must be sitting in the Black chair. From (iii), Jiva must be in the Green chair and Pranav must be in the Yellow chair. Kiran must be in the Orange chair.

The following diagram provides the person and the colour of the chair around the table:



Among the given options, Ravi was sitting two places away from Pranav.

Choice (D)

undefined

**DIRECTIONS for questions 29 to 32:** Answer the questions on the basis of the information given below.

Rakesh, the Sales Head of a company, was reviewing the travel bills of a certain month of all the sales persons reporting to him. During the month, each sales person used at least one means of transport among Bus, Train and Cab.

It is known that

- i. the number of persons who used only Train was twice the number of persons who used only Bus and Cab, while exactly 13 persons used only Train and Bus.
- ii. half the persons who used Bus also used Cab, while half the persons who used Cab also used Train.
- iii. the number of persons who used both Bus and Cab was seven more than the number of persons who used only Cab and Train, while the number of persons who used only Bus was the same as the number of persons who used only Cab.

**Q29. DIRECTIONS** for question 29: Select the correct alternative from the given choices.

What is the difference between the number of persons who used only Train and the number of persons who used only Cab?

- a) 7
- b) 6
- c) 19 **Your answer is correct**
- d) Cannot be determined

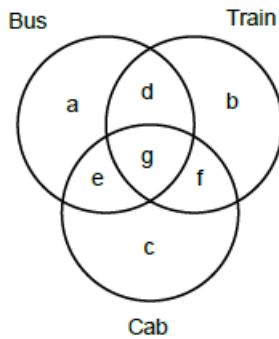
#### Time spent / Accuracy Analysis

Time taken by you to answer this question	292
Avg. time spent on this question by all students	406
Difficulty Level	E
Avg. time spent on this question by students who got this question right	479
% of students who attempted this question	12.07
% of students who got the question right of those who attempted	30.06

[Video Solution](#)

[Text Solution](#)

Let the following Venn diagram represent the number of persons who used different means of transport:



From (i),  $b = 2e$  ----- (1)

Also, from (i),  $d = 13$ .

From (ii), the number of persons who used Bus =  $a + d + g + e$

Half of them also used cab. The number of persons who used both Bus and Cab =  $e + g$ .

Hence,  $\frac{1}{2}(a + d + g + e) = e + g \Rightarrow a + 13 = e + g$  ----- (2)

Also, from (ii),  $\frac{1}{2}(e + g + f + c) = g + f \Rightarrow e + c = g + f$  ----- (3)

From (iii),  $e + g = 7 + f$  ----- (4)

From (4) and (2),  $7 + f = a + 13 \Rightarrow f = a + 6$

From (iii),  $a = c$

From (3),  $e - g = f - c = a + 6 - a = 6$  ----- (5)

From (5) and (2),  $e = \frac{a+19}{2}$  and  $g = \frac{a+7}{2}$

From (1),  $b = a + 19$

The number of persons who used only Train =  $a + 19$

The number of persons who used only Cab =  $a$

Required difference = 19

Choice (C)

undefined

**DIRECTIONS** for questions 29 to 32: Answer the questions on the basis of the information given below.

Rakesh, the Sales Head of a company, was reviewing the travel bills of a certain month of all the sales persons reporting to him. During the month, each sales person used at least one means of transport among Bus, Train and Cab.

It is known that

- i. the number of persons who used only Train was twice the number of persons who used only Bus and Cab, while exactly 13 persons used only Train and Bus.
- ii. half the persons who used Bus also used Cab, while half the persons who used Cab also used Train.
- iii. the number of persons who used both Bus and Cab was seven more than the number of persons who used only Cab and Train, while the number of persons who used only Bus was the same as the number of persons who used only Cab.

**Q30. DIRECTIONS** for questions 30 to 32: Type in your answer in the input box provided below the question.

What is the minimum number of sales persons reporting to Rakesh?

**You did not answer this question** Show Correct Answer

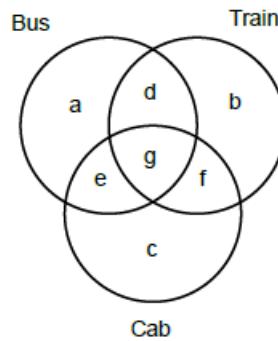
**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>8</b>
Avg. time spent on this question by all students	<b>97</b>
Difficulty Level	<b>E</b>
Avg. time spent on this question by students who got this question right	<b>138</b>
% of students who attempted this question	<b>9.37</b>
% of students who got the question right of those who attempted	<b>10.59</b>

[Video Solution](#)

[Text Solution](#)

Let the following Venn diagram represent the number of persons who used different means of transport:



From (i),  $b = 2e$  ----- (1)

Also, from (i),  $d = 13$ .

From (ii), the number of persons who used Bus =  $a + d + g + e$

Half of them also used cab. The number of persons who used both Bus and Cab =  $e + g$ .

Hence,  $\frac{1}{2}(a + d + g + e) = e + g \Rightarrow a + 13 = e + g$  ----- (2)

Also, from (ii),  $\frac{1}{2}(e + g + f + c) = g + f \Rightarrow e + c = g + f$  ----- (3)

From (iii),  $e + g = 7 + f$  ----- (4)

From (4) and (2),  $7 + f = a + 13 \Rightarrow f = a + 6$

From (iii),  $a = c$

From (3),  $e - g = f - c = a + 6 - a = 6$  ----- (5)

From (5) and (2),  $e = \frac{a+19}{2}$  and  $g = \frac{a+7}{2}$

From (1),  $b = a + 19$

Since  $e = \frac{a+19}{2}$ , the value of  $a$  must be at least 1.

If  $a = 1$ , then  $b = 20$ ,  $c = 1$ ,  $d = 13$ ,  $e = 10$ ,  $f = 7$  and  $g = 4$ .

Total number of sales persons = 56.

Ans: (56)

undefined

**DIRECTIONS** for questions 29 to 32: Answer the questions on the basis of the information given below.

Rakesh, the Sales Head of a company, was reviewing the travel bills of a certain month of all the sales persons reporting to him. During the month, each sales person used at least one means of transport among Bus, Train and Cab.

It is known that

- i. the number of persons who used only Train was twice the number of persons who used only Bus and Cab, while exactly 13 persons used only Train and Bus.
- ii. half the persons who used Bus also used Cab, while half the persons who used Cab also used Train.
- iii. the number of persons who used both Bus and Cab was seven more than the number of persons who used only Cab and Train, while the number of persons who used only Bus was the same as the number of persons who used only Cab.

**Q31. DIRECTIONS** for questions 30 to 32: Type in your answer in the input box provided below the question.

If the number of persons who used exactly two means of transport was 45, how many persons used exactly one means of transport?

**You did not answer this question** [Show Correct Answer](#)

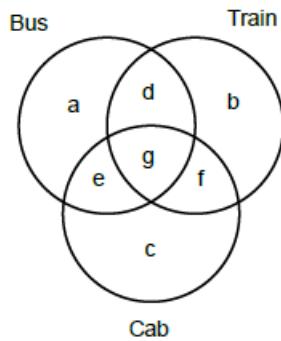
**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>5</b>
Avg. time spent on this question by all students	<b>96</b>
Difficulty Level	<b>E</b>
Avg. time spent on this question by students who got this question right	<b>129</b>
% of students who attempted this question	<b>8.47</b>
% of students who got the question right of those who attempted	<b>28.65</b>

[Video Solution](#)

[Text Solution](#)

Let the following Venn diagram represent the number of persons who used different means of transport:



From (i),  $b = 2e$  ----- (1)

Also, from (i),  $d = 13$ .

From (ii), the number of persons who used Bus =  $a + d + g + e$

Half of them also used cab. The number of persons who used both Bus and Cab =  $e + g$ .

Hence,  $\frac{1}{2}(a + d + g + e) = e + g \Rightarrow a + 13 = e + g$  ----- (2)

Also, from (ii),  $\frac{1}{2}(e + g + f + c) = g + f \Rightarrow e + c = g + f$  ----- (3)

From (iii),  $e + g = 7 + f$  ----- (4)

From (4) and (2),  $7 + f = a + 13 \Rightarrow f = a + 6$

From (iii),  $a = c$

From (3),  $e - g = f - c = a + 6 - a = 6$  ----- (5)

From (5) and (2),  $e = \frac{a+19}{2}$  and  $g = \frac{a+7}{2}$

From (1),  $b = a + 19$

From the given information,

$$d + e + f = 45 \Rightarrow 13 + \frac{a+19}{2} + a + 6 = 45 \Rightarrow a = 11$$

Number of persons who used exactly one means of transport =  $a + b + c = 11 + 11 + 19 + 11 = 52$

Ans: (52)

undefined

**DIRECTIONS** for questions 29 to 32: Answer the questions on the basis of the information given below.

Rakesh, the Sales Head of a company, was reviewing the travel bills of a certain month of all the sales persons reporting to him. During the month, each sales person used at least one means of transport among Bus, Train and Cab.

It is known that

- i. the number of persons who used only Train was twice the number of persons who used only Bus and Cab, while exactly 13 persons used only Train and Bus.
- ii. half the persons who used Bus also used Cab, while half the persons who used Cab also used Train.
- iii. the number of persons who used both Bus and Cab was seven more than the number of persons who used only Cab and Train, while the number of persons who used only Bus was the same as the number of persons who used only Cab.

**Q32. DIRECTIONS** for questions 30 to 32: Type in your answer in the input box provided below the question.

If the total number of sales persons reporting to Rakesh is 96, how many persons used only Cab and Bus?

**You did not answer this question** Show Correct Answer

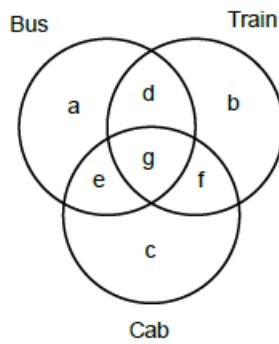
**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>63</b>
Avg. time spent on this question by all students	<b>220</b>
Difficulty Level	<b>E</b>
Avg. time spent on this question by students who got this question right	<b>143</b>
% of students who attempted this question	<b>7.21</b>
% of students who got the question right of those who attempted	<b>24.08</b>

[Video Solution](#)

[Text Solution](#)

Let the following Venn diagram represent the number of persons who used different means of transport:



From (i),  $b = 2e$  ----- (1)

Also, from (i),  $d = 13$ .

From (ii), the number of persons who used Bus =  $a + d + g + e$

Half of them also used cab. The number of persons who used both Bus and Cab =  $e + g$ .

Hence,  $\frac{1}{2}(a + d + g + e) = e + g \Rightarrow a + 13 = e + g$  ----- (2)

Also, from (ii),  $\frac{1}{2}(e + g + f + c) = g + f \Rightarrow e + c = g + f$  ----- (3)

From (iii),  $e + g = 7 + f$  ----- (4)

From (4) and (2),  $7 + f = a + 13 \Rightarrow f = a + 6$

From (iii),  $a = c$

From (3),  $e - g = f - c = a + 6 - a = 6$  ----- (5)

From (5) and (2),  $e = \frac{a+19}{2}$  and  $g = \frac{a+7}{2}$

From (1),  $b = a + 19$

Total number of sales persons =  $a + a + 19 + a + 13 + \frac{a+19}{2} + \frac{a+7}{2} + a + 6 = 5a + 51$

Given that  $5a + 51 = 96 \Rightarrow a = 9$ .

Number of persons who used only Cab and Bus =  $e = 14$

Ans: (14)

undefined

**Q1. DIRECTIONS** for questions 1 to 3: Select the correct alternative from the given choices.

Find the number of roots common to the equations  $x^3 + 4x^2 + 5x + 18 = 0$  and  $x^3 + 3x^2 + 10x + 12 = 0$ .

- a) 0
- b) 1
- c) 2
- d) 3

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	190
Avg. time spent on this question by all students	153
Difficulty Level	M
Avg. time spent on this question by students who got this question right	162
% of students who attempted this question	21.64
% of students who got the question right of those who attempted	43.53

[Video Solution](#)

[Text Solution](#)

The roots common to the given equations will satisfy  $x^3 + 4x^2 + 5x + 18 = x^3 + 3x^2 + 10x + 12$ .  
 $\Rightarrow x^2 - 5x + 6 = 0$   
 $\Rightarrow x = 2 \text{ or } 3$ .  
But as x is positive, the L.H.S. of each of the given equations is positive.  
 $\therefore$  Neither value of x satisfies the given equations.

Choice (A)

undefined

**Q2. DIRECTIONS** for questions 1 to 3: Select the correct alternative from the given choices.

A man is 20 minutes late to his office, if he drives at an average speed of 40 kmph and is four minutes early, if he drives at an average speed of 50 kmph. By how much time will he be early / late, if he drives at an average speed of 48 kmph?

- a) 1 minute early
- b) 1 minute late
- c) 2 minutes late
- d) None of the above Your answer is correct

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	236
Avg. time spent on this question by all students	262

### Time spent / Accuracy Analysis

Difficulty Level	E
Avg. time spent on this question by students who got this question right	261
% of students who attempted this question	44.62
% of students who got the question right of those who attempted	77.99

[Video Solution](#)

[Text Solution](#)

Let the distance travelled by the man be  $d$  km.

$$\text{Time taken to travel the distance } d \text{ at } 40 \text{ kmph} = \frac{d}{40}.$$

$$\text{Time take to travel the distance } d \text{ at } 50 \text{ kmph} = \frac{d}{50}.$$

Difference in timings is

$$\frac{d}{40} - \frac{d}{50} = \frac{4}{60} + \frac{20}{60}$$

$$\frac{10d}{2000} = \frac{24}{60}$$

$$\Rightarrow d = 80 \text{ km.}$$

$\therefore$  Actual time available.

$$= \frac{80}{40} - \frac{20}{60}$$

$$= 100 \text{ minutes}$$

$$\text{If the man is travelling at } 48 \text{ kmph, the time taken to cover } 80 \text{ km} = \frac{80}{48} \times 60 = 100 \text{ min}$$

$\therefore$  He will be on time.

Choice (D)

undefined

**Q3. DIRECTIONS** for questions 1 to 3: Select the correct alternative from the given choices.

A regular hexagon ABCDEF is inscribed in a circle of radius 18 cm. Another circle is then inscribed in the hexagon ABCDEF. Now, another regular hexagon is inscribed in the second circle and this process continues indefinitely. What is the sum of the areas (in sq.cm) of all the circles and the hexagons that are formed?

- a)  $(324\pi + 486\sqrt{3})$
- b)  $(648\pi + 972\sqrt{3})$
- c)  $(864\pi + 129\sqrt{3})$
- d)  $(1296\pi + 1944\sqrt{3})$

You did not answer this question

Show Correct Answer

### Time spent / Accuracy Analysis

Time taken by you to answer this question	11
Avg. time spent on this question by all students	227
Difficulty Level	E
Avg. time spent on this question by students who got this question right	259
% of students who attempted this question	8.22
% of students who got the question right of those who attempted	44.27

[Video Solution](#)[Text Solution](#)

Radius of first circle = 18 cm  
 Radius of first circle = side of hexagon 1 = 18 cm  
 Radius of second circle =  $\sqrt{3}/2 \times$  side of hexagon 1 =  $9\sqrt{3}$   
 Side of second hexagon = radius of circle 2 =  $9\sqrt{3}$  and this pattern continues.  
 ∴ The sum of the areas of all the circles and hexagons  
 $= \pi(18^2) + 3\sqrt{3}/2(18)^2 + \pi(\sqrt{3}/2)^2(18)^2 + 3\sqrt{3}/2 \times (\sqrt{3}/2)^2(18)^2 + \dots$   
 $= (324\pi + 486\sqrt{3})(1 + 3/4 + (3/4)^2 + \dots)$   
 $= (324\pi + 486\sqrt{3})(1/1 - 3/4)$   
 $= 4 \times (324\pi + 486\sqrt{3})$   
 $= (1296\pi + 1944\sqrt{3}) \text{ sq. cm}$

Choice (D)

undefined

**Q4. DIRECTIONS** for question 4: Type in your answer in the input box provided below the question.

If  $f(x) = 3x + 5$  and  $g(x) = 2x + 4$ , and  $f(g(f(g(x)))) = 335$ , find the value of  $x$ .

**Your Answer:6 Your answer is correct**

Time spent / Accuracy Analysis

Time taken by you to answer this question	137
Avg. time spent on this question by all students	154
Difficulty Level	E
Avg. time spent on this question by students who got this question right	145
% of students who attempted this question	41.67
% of students who got the question right of those who attempted	79.51

[Video Solution](#)[Text Solution](#)

$$\begin{aligned} f(x) &= 3x + 5, g(x) = 2x + 4 \\ f(g(f(g(x)))) &= f[g(f(2x + 4))] \\ &= f[g(3(2x + 4) + 5)] \\ &= f(g(6x + 17)) \\ &= f(2(6x + 17) + 4) \\ &= f(12x + 38) \\ &= 3(12x + 38) + 5 = 36x + 119 \\ 36x + 119 &= 335 \\ \Rightarrow 36x &= 216 \Rightarrow x = 6 \end{aligned}$$

**Alternative Solution:**

Given  $f(g(f(g(x)))) = 335$   
 By observation, we get  
 $g(f(g(x))) = 110$  (i.e.,  $(335 - 5)/3$ )  
 $\Rightarrow f(g(x)) = 53$  (i.e.,  $(110 - 4)/2$ )  
 $\Rightarrow g(x) = 16$   
 $\Rightarrow x = 6$ . Ans: (6)

undefined

**Q5. DIRECTIONS** for questions 5 to 7: Select the correct alternative from the given choices.

Which of the following cannot be the number of digits in the product of nine eleven-digit numbers?

- a) **99**
- b) **96**
- c) **95**
- d) **90**

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>171</b>
Avg. time spent on this question by all students	<b>113</b>
Difficulty Level	<b>E</b>
Avg. time spent on this question by students who got this question right	<b>117</b>
% of students who attempted this question	<b>22.26</b>
% of students who got the question right of those who attempted	<b>54.87</b>

[Video Solution](#)

[Text Solution](#)

The least 11 eleven-digit number is  $10^{10}$  and the largest is  $(10^{11} - 1)$ . So, the product of the least 9 eleven-digit numbers will lie between  $(10^{10})^9$  and  $(10^{11} - 1)^9$ .  
∴ It may have any number of digits between 91 and 99, but not 90.

Choice (D)

undefined

**Q6. DIRECTIONS** for questions 5 to 7: Select the correct alternative from the given choices.

What is the maximum value of  $\tan^4 \theta + \sec^4 \theta - 2 \tan^2 \theta \sec^2 \theta$ ?

- a) **0**
- b) **1**
- c) **2**
- d) **Not defined**

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>7</b>
Avg. time spent on this question by all students	<b>85</b>
Difficulty Level	<b>E</b>

#### Time spent / Accuracy Analysis

Avg. time spent on this question by students who got this question right **82**

% of students who attempted this question **37.06**

% of students who got the question right of those who attempted **79.79**

[Video Solution](#)

[Text Solution](#)

$$\begin{aligned}\tan^4\theta + \sec^4\theta - 2\tan^2\theta \sec^2\theta \\= (\tan^2\theta - \sec^2\theta)^2 \\We \text{ know that, } \sec^2\theta - \tan^2\theta = 1 \\ \Rightarrow (\tan^2\theta - \sec^2\theta)^2 = (1)^2 = 1 \text{ (irrespective of } \theta) \\ \therefore \text{The maximum value of } \tan^4\theta + \sec^4\theta - 2\tan^2\theta \sec^2\theta = 1.\end{aligned}$$

Choice (B)

undefined

**Q7. DIRECTIONS** for questions 5 to 7: Select the correct alternative from the given choices.

Anwar leaves home by car everyday at 4 pm to pick up his son from school and returns home at 6 pm. One day, the school was over at 4 pm and the son, instead of waiting for his father as usual, started walking home from school. Anwar, unaware of this, starts from home as usual and meets his son on the way and returns home with him 15 minutes earlier than usual. If the speed of Anwar's car is 35 kmph, find the speed (in kmph) of his son.

a) 8

b) 7

c) 6

d) 5 Your answer is correct

#### Time spent / Accuracy Analysis

Time taken by you to answer this question **581**

Avg. time spent on this question by all students **280**

Difficulty Level **M**

Avg. time spent on this question by students who got this question right **278**

% of students who attempted this question **24.13**

% of students who got the question right of those who attempted **64.36**

[Video Solution](#)

[Text Solution](#)

Anwar would take 1 hour to travel to his son's school. On that day, since he returned home 15 minutes early, he must have traveled for a time of 7.5 minutes less, both ways.

$\therefore$  He must have driven for 52.5 minutes before meeting his son.

As he started from home at the same time as his son started from school, his son must have walked for 52.5 minutes and hence, would have covered the same distance that Anwar would in 7.5 minutes.

Hence speed of son =  $35 \times \frac{7.5}{52.5} = 5$  kmph. Choice (D)

undefined

**Q8. DIRECTIONS** for question 8: Type in your answer in the input box provided below the question.

Anand is the owner of a transport company. He has a total of 30 trucks available for rent every week, from Monday morning to Saturday evening. During a certain week, 50% of the trucks he had rented out during that week were returned on or before Saturday evening. Find the maximum number of trucks that could have been rented out during that week, if he had at least 18 trucks with him on the Saturday evening of that week. Assume that no truck was rented out more than once in that week.

You did not answer this question

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	40
Avg. time spent on this question by all students	158
Difficulty Level	E
Avg. time spent on this question by students who got this question right	165
% of students who attempted this question	21.8
% of students who got the question right of those who attempted	57.07

[Video Solution](#)

[Text Solution](#)

Let us say the number of trucks Anand had given for rent is  $x$ .

Number of trucks that have not been rented =  $30 - x$ .

$$\text{Number of trucks with Anand after trucks were returned} = 30 - x + \frac{50}{100}x$$

$$\text{Given, } 30 - x + \frac{50}{100}x \geq 18$$

$$x \leq 24$$

$x$  has a maximum value of 24.

Ans: (24)

undefined

**Q9. DIRECTIONS** for questions 9 to 13: Select the correct alternative from the given choices.

AB is a chord of a circle with centre O. C is a point on the circle such that  $\angle ACB = 30^\circ$ . If AB = 4 cm, the area of triangle BOC can be at most

a)  $4\sqrt{3}$  cm<sup>2</sup>.

b)  $\frac{4}{\sqrt{3}}$  cm<sup>2</sup>.

c) 4 cm<sup>2</sup>.

d) None of these

You did not answer this question

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	188
Avg. time spent on this question by all students	171

#### Time spent / Accuracy Analysis

Difficulty Level	M
Avg. time spent on this question by students who got this question right	209
% of students who attempted this question	18.42
% of students who got the question right of those who attempted	15.26

[Video Solution](#)

[Text Solution](#)

$$\angle AOB = 2\angle ACB = 2 \times 30^\circ = 60^\circ$$

$\therefore AO = OB = AB = 4 \text{ cm}$  ( $\triangle AOB$  is equilateral)

Now area of  $\triangle BOC$  is maximum when  $\angle BOC = 90^\circ$  (since  $OB = OC = \text{radius} = 4 \text{ cm}$ ) is field

$$\Rightarrow \max . \text{area} = \frac{1}{2} \times 4 \times 4 = 8 \text{ cm}^2$$

Choice (D)

undefined

**Q10. DIRECTIONS** for questions 9 to 13: Select the correct alternative from the given choices.

If  $N$  is a natural number and  $N!$  ends with  $m$  zeros, then the number of zeros that  $(5N)!$  ends with is always

- a)  $5m + 1$ .
- b)  $\frac{N}{5} + m$ .
- c)  $N + m$ .
- d) Cannot be determined Your answer is incorrect

[Show Correct Answer](#)

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	82
Avg. time spent on this question by all students	128
Difficulty Level	M
Avg. time spent on this question by students who got this question right	143
% of students who attempted this question	29.62
% of students who got the question right of those who attempted	41.19

[Video Solution](#)

[Text Solution](#)

$N!$  ends with  $\left\lfloor \frac{N}{5} \right\rfloor + \left\lfloor \frac{N}{25} \right\rfloor + \dots$  zeroes, i.e., a total of  $m$  zeroes.

$(5N)!$  ends with  $\left\lfloor \frac{5N}{5} \right\rfloor + \left\lfloor \frac{5N}{25} \right\rfloor + \left\lfloor \frac{5N}{125} \right\rfloor + \dots$

$$= N + \left\lfloor \frac{N}{5} \right\rfloor + \left\lfloor \frac{N}{25} \right\rfloor + \dots = (N + m) \text{ zeros.}$$

**Alternative Solution:**

Checking for  $N = 1$ ,  $1!$  has no zeroes, while  $5!$  ends in one zero, i.e., choice (C) satisfies. Checking for  $N = 2$ ,  $2!$  has no zeroes, while  $10!$  ends in two zeroes. Hence, Choice (C)

undefined

**Q11. DIRECTIONS** for questions 9 to 13: Select the correct alternative from the given choices.

There are two kids both of whom weigh less than 10 kg and have integral weights (in kilos). Weight of the lighter kid is equal to the cube root of the product of the weights of the two kids. If the digit representing the weight of the lighter kid is placed to the left of the digit representing the weight of the heavier kid, we get half the weight of their mother. Similarly, if we place the digit representing the weight of the heavier kid to the left of the weight of the lighter kid, we get the weight of their father. If the father weighs 15 kgs more than the mother, then what is the weight of the lighter kid?

- a) 2 kg
- b) 3 kg
- c) 4 kg
- d) 1 kg

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	10
Avg. time spent on this question by all students	252
Difficulty Level	M
Avg. time spent on this question by students who got this question right	249
% of students who attempted this question	23.72
% of students who got the question right of those who attempted	82.85

[Video Solution](#)

[Text Solution](#)

Let the weight of the lighter kid be  $W_1$  and the weight of the heavier kid be  $W_2$ .  
 Given,  $W_1, W_2 < 10$   
 And  $W_1 = (W_1 W_2)^{1/3}$   
 $\Rightarrow W_1^3 = W_1 W_2$ .  
 $\Rightarrow W_1^2 = W_2$   
 (As  $W_1, W_2$  are integers)  
 $W_1 = 2, 3$   
 $W_2 = 4, 9$   
 Weight of the father  $W_f = (10W_2 + W_1)$   
 Weight of the mother  
 $W_m = 2 (10W_1 + W_2)$   
 Given  $W_f - W_m = 15$   
 Hence,  $(10W_2 + W_1) - (20W_1 + 2W_2) = 15$   
 $\Rightarrow 8W_2 - 19W_1 = 15$ . ---- (I)  
 If  $W_1 = 2$  and  $W_2 = 4$  (I) is not satisfied.  
 If  $W_1 = 3$  and  $W_2 = 9$ .  
 Then  $72 - 57 = 15$   
 Hence,  $W_1 = 3 \text{ kg}$

Choice (B)

undefined

**Q12. DIRECTIONS** for questions 9 to 13: Select the correct alternative from the given choices.

Let  $g(x) = \min(11 - x, x + 4)$ . The largest possible value of  $g(x)$  is

- a)  $\frac{7}{12}$
- b)  $\frac{11}{2}$
- c)  $\frac{15}{2}$
- d) **None of the above**

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>47</b>
Avg. time spent on this question by all students	<b>102</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>101</b>
% of students who attempted this question	<b>23.57</b>
% of students who got the question right of those who attempted	<b>67.38</b>

[Video Solution](#)

**Text Solution**

$\min(11 - x, x + 4)$  is maximum when  $(11 - x)$  and  $(x + 4)$  are equal.

$$\therefore 11 - x = x + 4 \Rightarrow 2x = 7 \Rightarrow x = \frac{7}{2}$$

$\therefore$  The largest possible value of  $g(x) = 11 - x$

$$= 11 - \frac{7}{2} = \frac{15}{2}$$

Choice (C)

undefined

**Q13. DIRECTIONS** for questions 9 to 13: Select the correct alternative from the given choices.

If  $p$  and  $q$  are the roots of the quadratic equation  $px^2 + px + q = 0$ , then

- a)  $q < 0$ .
- b)  $q > 0$ .
- c)  $q \leq 0$ .
- d)  $q = 0$ .

You did not answer this question

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>136</b>
Avg. time spent on this question by all students	<b>109</b>
Difficulty Level	<b>E</b>
Avg. time spent on this question by students who got this question right	<b>107</b>
% of students who attempted this question	<b>39.96</b>
% of students who got the question right of those who attempted	<b>45.17</b>

[Video Solution](#)

[Text Solution](#)

The roots of  $px^2 + px + q = 0$  are  $p$  and  $q$ .  
 $\therefore p + q = -p/p = -1$   
and  $pq = q/p$   
 $\Rightarrow p^2 = 1$   
 $\therefore p = \pm 1$   
when  $p = 1$ ,  $q = -2$   
when  $p = -1$ ,  $q = 0$   
 $\therefore q \leq 0$

Choice (C)

undefined

**Q14. DIRECTIONS** for questions 14 and 15: Type in your answer in the input box provided below the question.

How many positive integers upto 3528 are co-prime to 42?

You did not answer this question

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>30</b>
Avg. time spent on this question by all students	<b>136</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>131</b>
% of students who attempted this question	<b>15.45</b>
% of students who got the question right of those who attempted	<b>25.95</b>

[Video Solution](#)

[Text Solution](#)

$$3528 = 2^3 \times 3^2 \times 7^2 = 2^2 \times 3 \times 7 (2 \times 3 \times 7) = 84 \times 42$$

The no. of numbers which are co-prime to 42( $2 \times 3 \times 7$ ) will be 84 times the no. of numbers upto 42 which are coprime to 42.

The no. of numbers which are coprime to 42 which are less than 42 =

$$42 \left(1 - \frac{1}{2}\right) \left(1 - \frac{1}{3}\right) \left(1 - \frac{1}{7}\right) = 12$$

$\therefore$  The required number =  $(84)(12) = 1008$ .

**Alternative Solution:**

$$42 = 3 \times 7 \times 2$$

From the 3528 numbers, we have to subtract all multiples of 2, 3 and 7, to get the required answer

No. of multiples of 2 = 1764

No. of multiples of 3 = 1176

No. of multiples of 7 = 504

No. of multiple of 2 & 3 = 588

$$2 \& 7 = 252$$

$$3 \& 7 = 168$$

No. of multiples of 2, 3 and 7 i.e., 42 = 84.

Required answer =  $3528 - (1764 + 1176 + 504 - 588 - 252 - 168 + 84)$

= 1008.

Ans: (1008)

undefined

**Q15. DIRECTIONS** for questions 14 and 15: Type in your answer in the input box provided below the question.

Eight straight lines, no two of which are parallel and no three of which pass through any common point, are drawn on a plane. The total number of regions (including finite and infinite regions) into which the plane would be divided by the lines is

Your Answer:24 □ Your answer is incorrect

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question **236**

Avg. time spent on this question by all students **102**

Difficulty Level **M**

Avg. time spent on this question by students who got this question right **95**

% of students who attempted this question **20.32**

% of students who got the question right of those who attempted **28.44**

[Video Solution](#)

[Text Solution](#)

When a line is drawn in the plane the line divides the plane in two regions.  
 When the second line is drawn, then the number of regions will be doubled i.e., the number of regions will be 4.  
 As the third line should not pass through the point of contact of the first and second line, the third line cuts the two lines, making the three more regions. Now total number of regions is 7 =  
 As the fourth line should not pass through any of the three points of contacts, it cuts the three lines, making 4 more regions. Now total number of regions is 11.  
 In this manner

No. of straight lines	1	2	3	4	5	6	7	8
No. of Regions	2	4	7	11	16	22	29	37

∴ If 8 straight lines, number of regions = 37. Ans: (37)

undefined

**Q16. DIRECTIONS** for questions 16 to 20: Select the correct alternative from the given choices.

Find the value of  $\log_{\sqrt{2}} 16\sqrt{2} + \log_{\sqrt{2}} 32\sqrt{32}$ .

- a) 40.5 Your answer is correct
- b) 20.5
- c) 3.625
- d) 55.5

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>30</b>
Avg. time spent on this question by all students	<b>169</b>
Difficulty Level	<b>E</b>
Avg. time spent on this question by students who got this question right	<b>162</b>
% of students who attempted this question	<b>19.92</b>
% of students who got the question right of those who attempted	<b>66.24</b>

[Video Solution](#)

[Text Solution](#)

$$\begin{aligned}
 & \log_{\sqrt[4]{2}} 16\sqrt{2} + \log_{\sqrt[3]{2}} 32\sqrt{32} \\
 &= \log_{2^{1/4}} (2^4 \cdot 2^{1/2}) + \log_{2^{1/3}} (2^5 \cdot 2^{5/2}) \\
 &= 4 \cdot \frac{9}{2} \log_2 2 + 3 \cdot \frac{15}{2} \log_2 2 = 18 + \frac{45}{2} = 40.5
 \end{aligned}
 \quad \text{Choice (A)}$$

undefined

**Q17. DIRECTIONS** for questions 16 to 20: Select the correct alternative from the given choices.

If  $a$ ,  $b$  and  $c$  are three distinct non-zero real numbers satisfying the equations  $a - \frac{bc}{a} = b - \frac{ac}{b} = c - \frac{ab}{c}$ ,  $b$  would be equal to

a)

b)

c)

d)

You did not answer this question

[Show Correct Answer](#)

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>93</b>
Avg. time spent on this question by all students	<b>163</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>184</b>
% of students who attempted this question	<b>16.09</b>
% of students who got the question right of those who attempted	<b>51.7</b>

[Video Solution](#)

[Text Solution](#)

$$\begin{aligned}
 & \text{Consider } a - \frac{bc}{a} = c - \frac{ab}{c} \\
 & \Rightarrow (a - c) + \left( \frac{ab}{c} - \frac{bc}{a} \right) = 0 \\
 & \Rightarrow (a - c) + b \left( \frac{a^2 - c^2}{ac} \right) = 0 \\
 & \Rightarrow (a - c) \left( 1 + \frac{b(a + c)}{ac} \right) = 0 \\
 & \text{Since } a \neq c, a - c \neq 0 \\
 & \Rightarrow \left( 1 + \frac{b(a+c)}{ac} \right) = 0 \\
 & \Rightarrow ac = -b(a + c) \Rightarrow b = \frac{-ac}{a + c}
 \end{aligned}$$

Choice (B)

undefined

**Q18. DIRECTIONS** for questions 16 to 20: Select the correct alternative from the given choices.

On their birthday, Ram and Shyam, a pair of twins, were gifted a large packet of chocolates, containing chocolates of four different flavours. They started eating the chocolates alternately, one chocolate at a time. What should be the minimum total number of chocolates that both of them together should eat, before it can be said that at least one of them has certainly eaten at least four chocolates of a single flavour?

- a) 21
- b) 26
- c) 20
- d) 25

You did not answer this question Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>95</b>
Avg. time spent on this question by all students	<b>132</b>
Difficulty Level	<b>E</b>
Avg. time spent on this question by students who got this question right	<b>139</b>
% of students who attempted this question	<b>15.34</b>
% of students who got the question right of those who attempted	<b>47.99</b>

[Video Solution](#)

[Text Solution](#)

For either of them to have eaten at least four chocolates of a single flavour, he will have to eat at least 13 chocolates. This is since, even in the worst possible case the first 12 chocolates yield all four flavours uniformly, i.e., three of each flavour, the 13<sup>th</sup> chocolate will definitely ensure that at least four chocolates of a single flavour are obtained. But since the twins are eating the chocolates one at a time and alternately, for at least one of them to have eaten 13 chocolates, together they should have eaten at least  $13 + 12 = 25$  chocolates.

Choice (D)

undefined

**Q19. DIRECTIONS** for questions 16 to 20: Select the correct alternative from the given choices.

In how many ways can seven friends be seated in a row having 35 seats, such that no two friends occupy adjacent seats?

- a)  ${}^{29}P_7$
- b)  ${}^{29}C_7$
- c)  ${}^{28}P_7$
- d)  ${}^{28}C_7$

You did not answer this question

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>106</b>
Avg. time spent on this question by all students	<b>99</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>105</b>
% of students who attempted this question	<b>33.31</b>
% of students who got the question right of those who attempted	<b>34.54</b>

[Video Solution](#)

[Text Solution](#)

Let the friends be denoted by  $F_1, F_2, F_3, F_4, F_5, F_6$  and  $F_7$  and the number of vacant seats to the left of  $F_1$  be denoted by  $x_0$ , the number of vacant seats between  $F_1$  and  $F_2$  be denoted by  $x_1$ , the number of vacant seats between  $F_2$  and  $F_3$  be denoted by  $x_2$ , ..... the number of vacant seats to the right of  $F_7$  be denoted by  $x_7$ . The positions and the number of vacant seats are shown in the diagram below.

$F_1 \quad F_2 \quad F_3 \quad F_4 \quad F_5 \quad F_6 \quad F_7$   
 $x_0 \quad x_1 \quad x_2 \quad x_3 \quad x_4 \quad x_5 \quad x_6 \quad x_7$

The number of ways in which the seats can be selected is the number of non-negative integral solutions of the equation

$$x_0 + x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7 = 35 - 7$$

where  $x_0, x_7 \geq 0$  and  $x_1, x_2, x_3, x_4, x_5, x_6 \geq 1$

Let  $X_0 = x_0 + 1$  and  $X_7 = x_7 + 1$

The given equation in terms of  $X_0, x_1, x_2, \dots, x_6, X_7$  is  $X_0 + x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + X_7 = 30$ , where each unknown is positive. The number of solutions is  ${}^{29}C_7$ .

The number of ways of seating the 7 friends is  ${}^{29}P_7$ .

(The number of positive integral solutions of  
 $x_1 + x_2 + \dots + x_n = S$  is  $S-1C_{n-1}$ )

**Alternative solution:**

First let us consider the 28 unoccupied seats. They create 29 slots – one on the left of each seat and one on the right of the last one. We can place the 7 friends in any of these 29 slots i.e., in  ${}^{29}P_7$  ways.

Choice (A)

undefined

**Q20. DIRECTIONS** for questions 16 to 20: Select the correct alternative from the given choices.

A shopkeeper purchased six identical toys at the same price. He sold exactly one of the six toys on each day for the next six days. If the profit he earned on a day was double the profit he earned on the previous day, and the profit earned on the first day was 8%, then by approximately what percentage is the total cost of the six toys less than their total selling price?

- a) 45% Your answer is correct
- b) 60%
- c) 75%
- d) 90%

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	237
Avg. time spent on this question by all students	237
Difficulty Level	E
Avg. time spent on this question by students who got this question right	236
% of students who attempted this question	32.12
% of students who got the question right of those who attempted	62.56

[Video Solution](#)

[Text Solution](#)

Let the cost price of each toy be ₹100.

Selling prices will be ₹108, 116, 132, 164, 228 and 356 for six days.

Total cost price = 600

Total selling price = 1104

Percentage by which cost price is less than selling price is

$$= \frac{1104 - 600}{1104} = \frac{504}{1104} \approx 45\%$$

Choice (A)

undefined

**Q21. DIRECTIONS** for question 21: Type in your answer in the input box provided below the question.

The cost of the feed for 30 cows and 40 buffaloes for 20 days is Rs.3400. If the cost of the feed for 20 cows for 40 days is Rs.2400, find the cost (in Rs.) of the feed for 40 cows and 20 buffaloes for 10 days.

**Your Answer:1600 Your answer is correct**

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	127
Avg. time spent on this question by all students	161
Difficulty Level	E
Avg. time spent on this question by students who got this question right	152
% of students who attempted this question	45.28
% of students who got the question right of those who attempted	76.35

[Video Solution](#)

[Text Solution](#)

Let the feed per day of a cow and a buffalo be  $c$  and  $b$  respectively.  
 $\Rightarrow 20(30c + 40b) = 3400 \rightarrow (1)$   
and  $40(20c) = 2400 \rightarrow (2)$   
from (1) and (2), we get  $c = 3$  and  $b = 2$   
 $\Rightarrow 10(40c + 20b) = 1600$

Ans: (1600)

undefined

**Q22. DIRECTIONS** for questions 22 and 23: Select the correct alternative from the given choices.

A milkman mixed a certain quantity of milk with water and sold one-third of the mixture. He then added pure milk and water to the remaining mixture. The quantities of the milk and water added were half and one-third, respectively, of the initial quantity of the mixture. The ratio of milk and water now is the reverse of what it was initially. Find the original ratio of milk and water.

- a) 2 : 5
- b) 1 : 2
- c) 6 : 7
- d) 7 : 9

You did not answer this question

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	34
Avg. time spent on this question by all students	206
Difficulty Level	E
Avg. time spent on this question by students who got this question right	222
% of students who attempted this question	9.33
% of students who got the question right of those who attempted	58.89

[Video Solution](#)

[Text Solution](#)

The data is tabulated below.

	Milk	Water
Initial Quantity	$6m$	$6w$
After selling	$4m$	$4w$
After mixing	$7m + 3w$	$2m + 6w$

$$\begin{aligned} \therefore \frac{7m+3w}{2m+6w} &= \frac{w}{m} \\ \Rightarrow 7m^2 + 3wm &= 2mw + 6w^2 \\ \Rightarrow 7k^2 + k - 6 &= 0 \text{ where } k = \frac{m}{w} \\ \Rightarrow (7k - 6)(k + 1) &= 0 \\ \therefore k &= \frac{6}{7} \end{aligned}$$

Choice (C)

undefined

**Q23. DIRECTIONS** for questions 22 and 23: Select the correct alternative from the given choices.

Ajay has a collection of  $n$  books. If the number of ways in which he can select at least one of the books is 2047, what is the number of ways in which he can select exactly two books?

- a) 11
- b) 45
- c) 10
- d) 55

Your answer is correct

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	87
Avg. time spent on this question by all students	94
Difficulty Level	E
Avg. time spent on this question by students who got this question right	93
% of students who attempted this question	19.69
% of students who got the question right of those who attempted	76

[Video Solution](#)

[Text Solution](#)

Number of ways of selecting at least one book from a collection of  $n$  books =  $2^n - 1 = 2047$   
or  $2^n = 2048 \Rightarrow n = 11$

There are 11 books and the number of ways of selecting two books =  ${}^{11}C_2 = \frac{(11)(10)}{2}$   
= 55  
Choice (D)

undefined

**Q24. DIRECTIONS** for question 24: Type in your answer in the input box provided below the question.

If  $1 + a + a^2 + a^3 + \dots + a^p = (1 + a)(1 + a^2)(1 + a^4)(1 + a^8)$ , find the value of  $p$ .

**You did not answer this question**

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	134
Avg. time spent on this question by all students	87
Difficulty Level	M
Avg. time spent on this question by students who got this question right	86
% of students who attempted this question	22.62
% of students who got the question right of those who attempted	58.96

[Video Solution](#)

### Text Solution

Given,  
 $1 + a + a^2 + \dots + a^P = (1 + a)(1 + a^2)(1 + a^4)(1 + a^8)$   
 $\Rightarrow \frac{1(1-a^{P+1})}{1-a} = (1 + a)(1 + a^2)(1 + a^4)(1 + a^8)$   
 $\Rightarrow 1 - a^{P+1} = (1 - a)(1 + a)(1 + a^2)(1 + a^4)(1 + a^8)$   
 $= (1 - a^2)(1 + a^2)(1 + a^4)(1 + a^8)$   
 $= (1 - a^4)(1 + a^4)(1 + a^8)$   
 $= (1 - a^8)(1 + a^8)$   
 $= (1 - a^{16})$   
 $\therefore P + 1 = 16 \Rightarrow P = 15.$

#### **Alternative solution:**

The highest power of 'a' that will occur in the expansion of  $(1 + a)(1 + a^2)(1 + a^4)(1 + a^8)$  will be the sum of the powers of 'a' that occur in each term i.e.,  $1 + 2 + 4 + 8 = 15$ .  
**Ans: (15)**

undefined

**Q25. DIRECTIONS** for questions 25 and 26: Select the correct alternative from the given choices.

If  $a, b, c$  and  $d$  are distinct positive real numbers, then  $\frac{(a+c)(b+d)(ac+bd)}{abcd}$  is always

- a) greater than 4.
- b) greater than 8.
- c) greater than 12.   Your answer is incorrect
- d) None of the above

**Show Correct Answer**

#### **Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>346</b>
Avg. time spent on this question by all students	<b>117</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>119</b>
% of students who attempted this question	<b>29.78</b>
% of students who got the question right of those who attempted	<b>59.85</b>

### Video Solution

### Text Solution

$$\begin{aligned}
 & \text{Let } \frac{(a+c)(b+d)(ac+bd)}{abcd} = x \\
 & \Rightarrow x = \frac{(ab+ad+bc+cd)(ac+bd)}{abcd} \\
 & = \frac{a^2bc + ab^2d + a^2cd + abd^2 + abc^2 + b^2cd + ac^2d + bcd^2}{abcd} \\
 & = \frac{a}{d} + \frac{b}{c} + \frac{a}{b} + \frac{d}{c} + \frac{c}{d} + \frac{b}{a} + \frac{c}{b} + \frac{d}{a}
 \end{aligned}$$

As  $x$  is sum of eight distinct real numbers, whose product is unity,  $x$  must be greater than 8.

**Alternative Solution:**

When  $a, b, c, d$  are almost equal, the value of the expression approaches 8. Hence, the expression is either greater than or less than 8.

Checking with  $a, b, c, d = 1, 2, 3, 4$  we get a value of 11.

Hence, choice (B).

Choice (B)

undefined

undefined

**Q26. DIRECTIONS** for questions 25 and 26: Select the correct alternative from the given choices.

Find the area of the largest possible isosceles triangle, such that its perimeter is 20 cm and the lengths of all its sides (in cm) are integers.

- a)  $\sqrt{320}$  sq. cm
- b)  $\sqrt{240}$  sq. cm
- c)  $\sqrt{360}$  sq. cm
- d)  $\sqrt{392}$  sq. cm

You did not answer this question

Show Correct Answer

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	53
Avg. time spent on this question by all students	163
Difficulty Level	M
Avg. time spent on this question by students who got this question right	152
% of students who attempted this question	17.14
% of students who got the question right of those who attempted	54.42

[Video Solution](#)

### Text Solution

The sides need to be as close to each other as possible for maximum area.  
 $\therefore$  we consider 7, 7, 6 and 6, 6, 8

The required triangle is  $7\triangle 7$  or  $6\triangle 6$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

$\therefore$  area =  $\sqrt{360}$  sq.cm or  $\sqrt{320}$  sq.cm. So maximum area is  $\sqrt{360}$  sq.cm

Choice (C)

**Q26. DIRECTIONS** for questions 25 and 26: Select the correct alternative from the given choices.

Find the area of the largest possible isosceles triangle, such that its perimeter is 20 cm and the lengths of all its sides (in cm) are integers.

- C a)  $\sqrt{320}$  sq. cm
- C b)  $\sqrt{240}$  sq. cm
- C c)  $\sqrt{360}$  sq. cm
- C d)  $\sqrt{392}$  sq. cm

You did not answer this question

Show Correct Answer

#### Time spent / Accuracy Analysis

Time taken by you to answer this question	53
Avg. time spent on this question by all students	163
Difficulty Level	M
Avg. time spent on this question by students who got this question right	152
% of students who attempted this question	17.14
% of students who got the question right of those who attempted	54.42

[Video Solution](#)

### Text Solution

The sides need to be as close to each other as possible for maximum area.  
 $\therefore$  we consider 7, 7, 6 and 6, 6, 8

The required triangle is  $7\triangle 7$  or  $6\triangle 6$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

$\therefore$  area =  $\sqrt{360}$  sq.cm or  $\sqrt{320}$  sq.cm. So maximum area is  $\sqrt{360}$  sq.cm

Choice (C)

undefined

**Q27. DIRECTIONS** for questions 27 to 29: Type in your answer in the input box provided below the question.

What is the remainder when

$(1^1 + 2^2 + 3^3 + 4^4 + 5^5 + 6^6 + 7^7 + 8^8 + 9^9) + (10^9 - 11^8 + 12^7 - 13^6 + 14^5 - 15^4 + 16^3 - 17^2 + 18^1)$  is divided by 19?

You did not answer this question

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	4
Avg. time spent on this question by all students	115
Difficulty Level	M
Avg. time spent on this question by students who got this question right	97
% of students who attempted this question	11.91
% of students who got the question right of those who attempted	54.07

[Video Solution](#)

**Text Solution**

If  $a - b = km$  where  $a$ ,  $b$ , and  $m$  are integers and  $m$  is a natural number we can write  $a \equiv b \pmod{m}$  or  $a \equiv b(m)$  read as  $a$  is congruent to  $b$  modulo  $m$ . If  $a \equiv b \pmod{m}$ ,  $a^i \equiv b^i \pmod{m}$ .

The given expression is

$$\begin{aligned} E &= 1^1 + 2^2 + 3^3 + 4^4 + 5^5 + 6^6 + 7^7 + 8^8 + 9^9 + 18^1 - 17^2 + 16^3 - 15^4 + 14^5 - 13^6 + \\ &\quad 12^7 - 11^8 + 10^9 \\ 18 &\equiv -1 \pmod{19} \quad \therefore 18^1 \equiv -1 \pmod{19} \\ 17 &\equiv -2 \pmod{19} \quad \therefore 17^2 \equiv 2^2 \pmod{19} \\ 16 &\equiv -3 \pmod{19} \quad \therefore 16^3 \equiv -3^3 \pmod{19} \\ 15 &\equiv -4 \pmod{19} \quad \therefore 15^4 \equiv 4^4 \pmod{19} \\ 14 &\equiv -5 \pmod{19} \quad \therefore 14^5 \equiv -5^5 \pmod{19} \\ 13 &\equiv -6 \pmod{19} \quad \therefore 13^6 \equiv 6^6 \pmod{19} \\ 12 &\equiv -7 \pmod{19} \quad \therefore 12^7 \equiv -7^7 \pmod{19} \\ 11 &\equiv -8 \pmod{19} \quad \therefore 11^8 \equiv 8^8 \pmod{19} \\ 10 &\equiv -9 \pmod{19} \quad \therefore 10^9 \equiv -9^9 \pmod{19} \\ \therefore E &\equiv 1 + 2^2 + 3^3 + 4^4 + 5^5 + 6^6 + 7^7 + 8^8 + 9^9 - 1 - 2^2 - 3^3 - 4^4 - 5^5 - 6^6 - 7^7 - 8^8 - \\ &\quad 9^9 \pmod{19} \\ &\equiv 0 \pmod{19} \end{aligned}$$

**Alternate Solution**

Consider the identities of divisibility.

- i.  $a^n + b^n$  is always divisible by  $(a + b)$  if  $n$  is odd.
- ii.  $a^n - b^n$  is always divisible by  $(a - b)$  if  $n$  is even.

So pairing the terms for both parentheses as  $(1^1 + 18^1) + (2^2 - 17^2) + (3^3 + 16^3) \dots (9^9 + 10^9)$

We see that each pair is divisible by 19. Hence the final remainder = 0

Ans: (0)

undefined

**Q27. DIRECTIONS** for questions 27 to 29: Type in your answer in the input box provided below the question.

What is the remainder when

$(1^1 + 2^2 + 3^3 + 4^4 + 5^5 + 6^6 + 7^7 + 8^8 + 9^9) + (10^9 - 11^8 + 12^7 - 13^6 + 14^5 - 15^4 + 16^3 - 17^2 + 18^1)$  is divided by 19?

You did not answer this question

Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	4
Avg. time spent on this question by all students	115

### Time spent / Accuracy Analysis

Difficulty Level	M
Avg. time spent on this question by students who got this question right	97
% of students who attempted this question	11.91
% of students who got the question right of those who attempted	54.07

[Video Solution](#)

### Text Solution

If  $a - b = km$  where  $a, b$ , and  $m$  are integers and  $m$  is a natural number we can write  $a \equiv b \pmod{m}$  or  $a \equiv b(m)$  read as  $a$  is congruent to  $b$  modulo  $m$ . If  $a \equiv b \pmod{m}$ ,  $a^i \equiv b^i \pmod{m}$ .

The given expression is

$$\begin{aligned} E &= 1^1 + 2^2 + 3^3 + 4^4 + 5^5 + 6^6 + 7^7 + 8^8 + 9^9 + 18^1 - 17^2 + 16^3 - 15^4 + 14^5 - 13^6 + \\ &\quad 12^7 - 11^8 + 10^9 \\ 18 &\equiv -1 \pmod{19} \quad \therefore 18^1 \equiv -1 \pmod{19} \\ 17 &\equiv -2 \pmod{19} \quad \therefore 17^2 \equiv 2^2 \pmod{19} \\ 16 &\equiv -3 \pmod{19} \quad \therefore 16^3 \equiv -3^3 \pmod{19} \\ 15 &\equiv -4 \pmod{19} \quad \therefore 15^4 \equiv 4^4 \pmod{19} \\ 14 &\equiv -5 \pmod{19} \quad \therefore 14^5 \equiv -5^5 \pmod{19} \\ 13 &\equiv -6 \pmod{19} \quad \therefore 13^6 \equiv 6^6 \pmod{19} \\ 12 &\equiv -7 \pmod{19} \quad \therefore 12^7 \equiv -7^7 \pmod{19} \\ 11 &\equiv -8 \pmod{19} \quad \therefore 11^8 \equiv 8^8 \pmod{19} \\ 10 &\equiv -9 \pmod{19} \quad \therefore 10^9 \equiv -9^9 \pmod{19} \\ \therefore E &\equiv 1 + 2^2 + 3^3 + 4^4 + 5^5 + 6^6 + 7^7 + 8^8 + 9^9 - 1 - 2^2 - 3^3 - 4^4 - 5^5 - 6^6 - 7^7 - 8^8 - \\ &\quad 9^9 \pmod{19} \\ &\equiv 0 \pmod{19} \end{aligned}$$

### Alternate Solution

Consider the identities of divisibility.

- i.  $a^n + b^n$  is always divisible by  $(a+b)$  if  $n$  is odd.
- ii.  $a^n - b^n$  is always divisible by  $(a-b)$  if  $n$  is even.

So pairing the terms for both parentheses as  $(1^1 + 18^1) + (2^2 - 17^2) + (3^3 + 16^3) \dots (9^9 + 10^9)$

We see that each pair is divisible by 19. Hence the final remainder = 0

Ans: (0)

undefined

**Q28. DIRECTIONS** for questions 27 to 29: Type in your answer in the input box provided below the question.

There are 40 students in a class. Each student had three electives to choose from – Physics, Chemistry and Mathematics. Ten students chose Physics, 15 chose Chemistry, 20 chose Mathematics, two chose all the three, five chose Physics and Chemistry, four chose Physics and Mathematics but not Chemistry, one chose Chemistry and Mathematics but not Physics. How many students did not choose any of the three subjects?

You did not answer this question

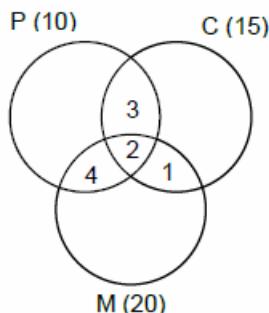
Show Correct Answer

### Time spent / Accuracy Analysis

Time taken by you to answer this question	8
Avg. time spent on this question by all students	165
Difficulty Level	E
Avg. time spent on this question by students who got this question right	157
% of students who attempted this question	34.2
% of students who got the question right of those who attempted	62.29

[Video Solution](#)

### Text Solution



Number of students who choose at least one subject  
 $= 10 + 15 + 20 - (2)(2) - (3 + 4 + 1) = 33.$   
 $\therefore 40 - 33 = 7$  students did not choose any of these three subjects.      Ans: (7)

undefined

**Q29. DIRECTIONS** for questions 27 to 29: Type in your answer in the input box provided below the question.

How many positive integral solutions of  $x, y$  and  $z$  exist for the equation  $x + y + z = 10$ , so that no two of the three quantities are equal?

**Your Answer:24 Your answer is correct**

Time spent / Accuracy Analysis

Time taken by you to answer this question	<b>26</b>
Avg. time spent on this question by all students	<b>129</b>
Difficulty Level	<b>D</b>
Avg. time spent on this question by students who got this question right	<b>153</b>
% of students who attempted this question	<b>28.69</b>
% of students who got the question right of those who attempted	<b>17.33</b>

[Video Solution](#)

### Text Solution

We know that the number of positive integral solutions of the equation,  $x_1 + x_2 + \dots + x_k = n$  is  $(n-1)C_{k-1}$ .  
 $\therefore$  The number of positive integral solutions of the equation,  
 $x + y + z = 10$  is  $(10-1)C_{(3-1)}$   
i.e.,  ${}^9C_2 = 36$   
Clearly  $x = y = z$  is not possible, since  $x + y + z = 10$   
Now, if any two (say  $x$  and  $y$ ) of  $x, y, z$  are equal,  $z$  must be even.  
Hence, we can easily enumerate such solutions for  $z = 2, 4, 6$  and  $8$  as  $(4, 4, 2), (3, 3, 4), (2, 2, 4)$  and  $(1, 1, 8)$   
There are three possible solutions (i.e.,  $x = y, y = z$  and  $x = z$ ) in each of the combinations:  $(1, 1, 8), (2, 2, 6), (3, 3, 4), (4, 4, 2)$ .  
Hence, the required number of solutions is  $36 - (3 \times 4) = 24$ .

**Alternative solution:**

If  $x = 1$ ,  $(y, z)$  can be  $(2, 7), (3, 6)$  and  $(4, 5)$

If  $x = 2$ ,  $(y, z)$  is  $(3, 5)$

In each of the above four cases,  $x, y$  and  $z$  can be interchanged in  $3! = 6$  ways. Hence,  
total number of ways =  $6 \times 4 = 24$  ways.      Ans: (24)

undefined

**Q30. DIRECTIONS** for questions 30 to 32: Select the correct alternative from the given choices.

The product of 114 and 21 in a certain number system is 2444. Find the decimal equivalent of the number represented as 4231 in that number system.

- a) **566**
- b) **1398**
- c) **944**
- d) **676**

You did not answer this question

[Show Correct Answer](#)

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>6</b>
Avg. time spent on this question by all students	<b>157</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>173</b>
% of students who attempted this question	<b>6.06</b>
% of students who got the question right of those who attempted	<b>70.18</b>

[Video Solution](#)

[Text Solution](#)

Let the base of the number system be  $a$ . We have  $(a^2 + a + 4)(2a + 1) = 2a^3 + 4a^2 + 4a + 4$   
 $\Rightarrow 2a^3 + 3a^2 + 9a + 4 = 2a^3 + 4a^2 + 4a + 4$   
 $a^2 = 5a \Rightarrow a = 0$  or  $5$ . As  $a$  can't be  $0$ ,  $a$  is  $5$ . This is consistent with the given data, i.e.,  
the digits in 114 and 21 are all less than 5.  
 $\therefore (4231)_5 = 4(125) + 2(25) + 3(5) + 1 = 566$  Choice (A)

undefined

**Q31. DIRECTIONS** for questions 30 to 32: Select the correct alternative from the given choices.

If five dice are thrown simultaneously, what is the probability of getting the sum as seven?

- a)  $\frac{15}{6^5}$  Your answer is correct
- b)  $\frac{11}{6^5}$
- c)  $\frac{10}{6^5}$
- d)  $\frac{5}{6^5}$

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>30</b>
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**Time spent / Accuracy Analysis**

Avg. time spent on this question by all students	<b>120</b>
Difficulty Level	<b>M</b>
Avg. time spent on this question by students who got this question right	<b>122</b>
% of students who attempted this question	<b>22</b>
% of students who got the question right of those who attempted	<b>61.31</b>

[Video Solution](#)[\*\*Text Solution\*\*](#)

The following are two cases when the sum will be 7

$$7 = 1 + 1 + 1 + 1 + 3 \rightarrow {}^5C_1 \text{ ways} = 5$$

$$7 = 1 + 1 + 1 + 2 + 2 \rightarrow {}^5C_2 \text{ ways} = 10$$

Total number of possible ways of throwing five dice =  $6^5$ .

$$\text{The required probability} = \frac{15}{6^5}$$

**Alternative solution:**

The number of way required can be conceived of as the number ways in which 7 identical balls are to be distributed in 5 boxes, with each box having at least 1 ball. This is also equivalent to the case where 2 balls have to be distributed in 5 boxes, i.e.,  $(5+2-1)C_2 = 15$ . Choice (A)

undefined

**Q32. DIRECTIONS** for questions 30 to 32: Select the correct alternative from the given choices.

The sum of ten consecutive integers is half the sum of the next five consecutive integers. What is the sum of all the 15 integers?

- a) **120**
- b) **180**
- c) **60**
- d) **75** Your answer is correct

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>45</b>
Avg. time spent on this question by all students	<b>209</b>
Difficulty Level	<b>VE</b>
Avg. time spent on this question by students who got this question right	<b>231</b>
% of students who attempted this question	<b>21.51</b>
% of students who got the question right of those who attempted	<b>58.69</b>

[Video Solution](#)[\*\*Text Solution\*\*](#)

Let the first integer be 'a' and  $d = 1$

$$\begin{aligned}\text{Sum of 10 consecutive integers} &= \frac{10}{2}[2a + (10 - 1)(1)] \\ &= 5[2a + 9] = 10a + 45\end{aligned}$$

$$\begin{aligned}\text{Sum of the 15 consecutive integers} &= \frac{15}{2}[2a + (15 - 1)(1)] \\ &= 15a + 105\end{aligned}$$

As the sum of 10 consecutive integers is half the sum of the next five consecutive integers, it will be  $1/3^{\text{rd}}$  of the sum of the 15 consecutive integers.

$$\text{Thus } 3(10a + 45) = 15a + 105 \Rightarrow a = -2.$$

$$\begin{aligned}\text{Thus the required sum} &= 15a + 105 = (15 \times -2) + 105 \\ &= 75\end{aligned}$$

Choice (D)

undefined

**Q33. DIRECTIONS** for questions 33 and 34: Type in your answer in the input box provided below the question.

The monthly expenditure incurred by a hostel comprises a fixed component and a variable component, which varies with the number of persons living in the hostel. If there are 100 persons, the average monthly expenditure per person is Rs.2400. If there are 200 persons, the average monthly expenditure per person is Rs.2200. What is the fixed component of the monthly expenditure (in Rs.) of the hostel?

**Your Answer:40000 Your answer is correct**

**Time spent / Accuracy Analysis**

Time taken by you to answer this question	<b>22</b>
Avg. time spent on this question by all students	<b>151</b>
Difficulty Level	<b>E</b>
Avg. time spent on this question by students who got this question right	<b>150</b>
% of students who attempted this question	<b>23.5</b>
% of students who got the question right of those who attempted	<b>43.37</b>

[Video Solution](#)

[Text Solution](#)

Let the fixed quantity be  $x$  and the varying quantity per head be  $y$ .

$$\therefore x + 100y = 2400 \quad (100)$$

$$\Rightarrow x + 100y = 240000 \quad \text{---- (1)}$$

$$x + 200y = 2200 \quad (200)$$

$$\Rightarrow x + 200y = 440000 \quad \text{---- (2)}$$

$$(2) - (1) \Rightarrow 100y = 200000$$

$$\Rightarrow y = 2000.$$

$$\therefore x = 240000 - 100(2000) = ₹40000.$$

Ans: (40000)

undefined

**Q34. DIRECTIONS** for questions 33 and 34: Type in your answer in the input box provided below the question.

A function  $f(x)$  is defined on the interval  $0 \leq x \leq 2$  as below:

$f(x) = \text{integer closest to } x, \text{ if } x \neq 0.5 \text{ or } 1.5.$

$$f(0.5) = 1$$

$$f(1.5) = 2$$

Find the area (in sq.units) under the graph of this function and above the x-axis, bound by the lines  $x = 0$  and  $x = 2$ .

You did not answer this question

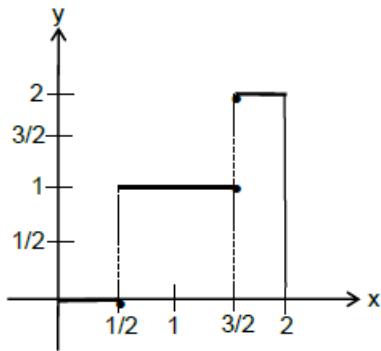
Show Correct Answer

Time spent / Accuracy Analysis

Time taken by you to answer this question	15
Avg. time spent on this question by all students	134
Difficulty Level	M
Avg. time spent on this question by students who got this question right	132
% of students who attempted this question	10.95
% of students who got the question right of those who attempted	57.2

[Video Solution](#)

[Text Solution](#)



The area is  $(3/2 - 1/2) \times 1 + (2 - 3/2) \times 2 = 1 + 1 = 2$  sq.units.

Ans: (2)