T.I.M.E.
Triumphant Institute of Management Education Pvt. Ltd.

(Key and Solutions for AIMCAT1809)

Key

SECTION – I

1. 31524	8. 257	15. C	22. B	29. A
2. 1	9. 13524	16. B	23. D	30. C
3. 24531	10. 2	17. B	24. C	31. B
4. 168	11. B	18. C	25. B	32. D
5. 54132	12. B	19. D	26. A	33. C
6. 4	13. C	20. A	27. D	34. B
7. 43215	14. D	21. D	28. B	

SECTION – II

1. A	8. B	15. 64	22. D	29. B
2. C	9. 4	16. 36	23. D	30. C
3. B	10. 1	17. B	24. 10	31. C
4. D	11. A	18. C	25. C	32. D
5. 31458	12. C	19. C	26. B	
6. A	13. 64	20. D	27. A	
7. C	14. 275	21. B	28. D	

SECTION – III

1. 264	8. A	15. C	22. A	29. B
2. 11968	9. C	16. D	23. A	30. D
3. B	10. B	17. A	24. D	31. 7
4. 52	11. C	18. 33	25. D	32. B
5. C	12. C	19. 10	26. B	33. B
6. C	13. A	20. 4095	27. D	34. B
7. A	14. 32000	21. C	28. B	

Solutions

SECTION – I

Solutions for questions 1 to 10:

1. On a careful reading of the sentences, it can be observed that sentence b is a general sentence that begins the para. It introduces the famous painting of John Constable: The Haywain. Sentence b is followed by sentence d. "owes something to Rubens's *View of Het Steen in the Early Morning*" in sentence b links with "joyous and animated character" Rubens imparted to the sky filling it with departing showers" in sentence d. Also "This was a painting Constable greatly admired" in sentence d links with "The most famous painting John Constable ever painted" in sentence b. Sentence a then begins to tell us what Constable drew in his painting. So sentence a follows sentence d. Sentences a and e form a mandatory pair. "Constable recreated the area around Flatford Mill which was his father's first home" in sentence a links with "The house which figures so prominently in this work …. seventy years in Flatford" in sentence e. Sentence e is followed by sentence c. "in this work" in sentence e is parallel to "this work like all his best works" in sentence c. Sentence c ends the para with the conclusion: Clearly a metaphor for the tradition …... rooted in the emotional associations of his "careless boyhood". Hence, bdaec.
So, sentences a, b, c, d, and e occupy the 3rd, 1st, 5th, 2nd and 4th position in the coherent paragraph. The answer is: 31524. Ans: (31524)

2. 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 term 'pathological lies (liars)' to us. Sentence 4 is followed by sentence 3. "deemed pathological or malicious" in sentence 4 links with "categorized as cases of unique psychological or personal trauma" in sentence 3. Sentence 5 continues the discussion. "these individuals are seeking professional help for this" in sentence 5 follows "cases of **unique** psychological or personal trauma" in sentence 3. Sentence 2 concludes the para. "when it comes to these 'malicious' cases" also mirrors the introduction 'can be deemed pathological or malicious'. So, 4352. Sentence 1 is the odd sentence out. "for example" in sentence 1 needs a precedent and more substantiation. Ans: (1)

3. Sentence e is a general sentence that begins the para. It highlights the topic of discussion: dementia. Sentence e is followed by sentence a. "dementia …. ageing society" in sentence e links with "high prevalence of dementia in the elderly" in sentence a and also contrasts "however …. overshadow the importance of its occurrence in younger

patients" given in sentence a. Sentence a is followed by sentence d. "occurrence in younger patients" in sentence a links with "Young-onset dementia" in sentence d. The negative sentence d with respect to young-onset dementia (diagnostic challenge) is followed by the positive sentence b (provide important biological insights). So sentence b, with the contrast conjunction 'but', follows sentence d. Also "biological insights that might also be applicable to the more common presentation in older patients" in sentence b is parallel to "elderly can overshadow the importance of its occurrence in younger patients" given earlier in sentence a. Sentence c ends the paragraph with an example for the point given in sentence b. Hence, eadbc.
So, sentences a, b, c, d, and e occupy the 2nd, 4th, 5th, 3rd and 1st position in the coherent paragraph. The answer is: 24531. Ans: (24531)

4. The key word in the para that can help us fill the first blank is "not limited to" (as given in the second sentence of the paragraph) as natural scientists give up generality for accuracy and precision. The discovery of general laws was the main occupation of scientists in an earlier age. The first blank can be filled by 'hangover' which means vestige or 'holdover' (something that has survived from the past). Choice 1 is the answer. Hilarity (great merriment or laughter) and hauteur (pride and arrogance) are contextually inappropriate as they cannot be used to describe 'ideas'.

The second blank needs a verb similar to 'thinking'. 'Fathoming' is the correct word for the second blank. It means "to penetrate to the meaning or nature of; comprehend, to determine". So we have "fathoming the Creator's rulebook or general laws". Choice 6 is the answer. Intransigence (stubbornly refusing to compromise) and inveighing (to give vent to angry disapproval; protest vehemently) are too negative for the second blank.

The third blank needs a verb to indicate to engage or employ the attention or concentration of. The words are "rightly occupy". Generality is to be prized but scientists also need to dwell on non-general issues. Choice 8 is the answer here. 'Overween' and 'preponderate' are also verbs but they are contextually inappropriate. Overween means "to think too highly of". 'preponderate' means to be greater than something else, as in power, quantity, or importance; predominate. Ans: (168)

5. On a careful reading of the sentences, it can be observed that sentence c is a general sentence that begins the para. It introduces the topic of discussion: octopuses are known masters of camouflage but they are not known exactly for their social skills. Sentence c is followed by sentence e. "they aren't exactly famous for their social skills" in sentence c is linked with "strictly solitary" in sentence e. Also "camouflage and skillful escape artists" in sentence c links with "color-shifting ability for intimidating or hiding from predators" in sentence e. Sentence d continues the discussion as it talks about the findings of a new study. "frequently communicate with each other" in sentence d contrasts "strictly solitary" in sentence e. Also "challenging displays that include changing color" in sentence d contrasts "reserving its color-shifting ability for intimidating predators or hiding from them" in sentence e. Sentence d is followed by sentence b. "displayed dark colors …… displaying paler colors" in sentence b links with "challenging displays that include changing color" in sentence d. Sentence a concludes the para. Sentence a, with the contrast conjunction 'yet', talks about a different colour display (as responses to human action) from that given in sentence b. So, cedba.
Sentences a, b, c, d, and e occupy the 5th, 4th, 1st, 3rd and 2nd position in the coherent paragraph. The answer is: 54132. Ans: (54132)

6. On a careful reading of the sentences, it can be observed that sentence 5 is a general sentence that begins the paragraph. It has the full name of the British archaeologist and introduces the topic of discussion: spectacular discovery. Sentences 5 and 3 form a mandatory pair. "Layard made a spectacular discovery" in sentence 5 links with "Layard uncovered" … in sentence 3. Sentence 3 is followed by sentence 1 and sentence 2 in that order. "series of beautifully carved stone reliefs" in sentence 3 links with "The first few panels of the stone reliefs were missing" in sentence 1. "those adorning the left side of Sennacherib's throne room" in sentence 1 links with "The panels adorning the right side of Sennacherib's throne room" in sentence 2. Sentence 2 completes the para. So, 5312. Sentence 4 is the odd sentence out as "The siege of Lachish" needs a precedent and more substantiation.
Ans: (4)

7. On a careful reading of the sentences, it can be observed that sentence d is a general sentence that begins the para. It introduces the topic of discussion: Monsanto, the agricultural giant … Sentence d begins to mention some criticism of Monsanto and is followed by sentence c which talks about Monsanto in a similar vein. "foods that threaten the health of the planet …. intellectual-property laws to make people poorer" which are negative points in sentence d is followed by "Monsanto's sins dates back to when it produced the notorious herbicide Agent Orange" in sentence c. Sentence b with the contrast conjunction 'but' follows sentence c. Sentence b begins to talk positive about Monsanto: Monsanto's innovations in seeds. Sentence b is followed by sentence a. "tackling a looming global food crisis" in sentence b is followed by "the world has no chance of doubling agricultural output by 2050" in sentence a. Sentence e which is another positive point about Monsanto (Monsanto's innovations as essential to the agricultural revolution in Africa) concludes the para. Hence, dcbae.
Sentences a, b, c, d, and e occupy the 4^{th}, 3^{rd}, 2^{nd}, 1^{st} and 5^{th} position in the coherent paragraph. The answer is: 43215. Ans: (43215)

8. The discussion arising from the appearance of Walt Whitman's literary work is portrayed in a negative frame. Critics are revolting violently against his literary method. The first blank needs a synonym of 'violent' and 'revolting'. Choice 2 (acrimonious) fills the first blank. 'penitential' is a very mild word for the context. The discussion cannot be penitential. 'Cacophonous' means jarring in sound; discordant; harsh. Cacophonous does not provide the exact description for 'violent revolt'.

In the second blank, only 'poetic endowment' will fill the blank. 'opprobrium' is a negative word and cannot be used to describe merit. So choice 5 is correct for the second blank. The critics want to deny him all merit of poetic endowment. They want to attack his literary method.

The third blank needs a synonym for 'central' and that word is 'integral'. 'Indecorous' and 'inured' are incorrect words for the third blank. Indecorous means lacking propriety or decorum. Inured means to habituate to something undesirable, especially by prolonged subjection; to accustom. Choice 7 is correct. Ans: (257)

9. On a careful reading of the sentences, it can be observed that sentence a is a general sentence that begins the para. It has introductory words "With the advent and expansion of Christian monotheism" and it introduces the topic of discussion: organization of knowledge ….. idea of a world governed by the laws dictated by God. Sentence d follows sentence a. "From this tradition" in sentence a links with "With the advent and expansion of Christian monotheism, the organization of knowledge" in sentence d. Sentence d introduces some important characters involved in encyclopedic efforts ….. Sentence b follows sentence d. "Llull introduced iconic tree-diagrams and forest-encyclopedias" in sentence b links with "encyclopedic efforts …. the works of the Catalan Ramon Llull" in sentence d. Sentence e follows sentence b. "He also introduced more abstract diagrams" in sentence e follows from "Llull introduced iconic tree-diagrams" in sentence b. Sentences e and c form a mandatory pair. "combinatorially encode the knowledge of God's creation in a universal

language of basic symbols" in sentence e links with "Their combination would be expected to generate knowledge of the secrets of creation and help articulate knowledge of universal order" in sentence c. Sentence c concludes the para. So, adbec.

Sentences a, b, c, d, and e occupy the 1st, 3rd, 5th, 2nd, and 4th position in the coherent paragraph. The answer is: 13524. Ans: (13524)

10. 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: US diplomats visiting Cuba began suffering unexplained losses of hearing. Sentence 3 is followed by sentence 5. "US diplomats visiting Cuba" in sentence 3 links with "Several of the diplomats were recent arrivals at the US embassy in Cuba" in sentence 5. Sentence 1 adds to the discussion: some of the US diplomats' symptoms were so severe that they were forced to cancel their tours early. Sentence 1 is followed by the conclusion in sentence 4. "the diplomats had been attacked with an advanced sonic weapon" in sentence 4 mentions the cause for the problem given earlier in sentence 3: began suffering unexplained losses of hearing. So, 3514. Sentence 2 goes against the grain of the paragraph and is the odd sentence out. Ans: (2)

Solutions for questions 11 to 13:

Number of words and Explanatory notes for RC:

Number of words: 403

11. The author mentions the Scottish referendum in the second paragraph of the passage. The author states that the referendum failed in 2014 but it was followed by quadrupling of membership of the Scottish National Party. Further, the author provides the Scottish referendum as an example of how "Plebiscites meant to settle thorny issues instead often aggravate them". We can infer from this that the Scottish National Party advocates Scottish independence.
Option A: Since the membership of the Scottish National Party quadrupled, it did not settle the issue of Scottish independence. It only aggravated the issue. Hence, this option is incorrect and cannot be a reason for the increase in the membership of the Scottish National Party.
Option B: In the next paragraph, the author states that referendums "can bring the alienated back into politics". The increase in the membership of the Scottish National Party can be explained by this reason. If the referendum sparked an interest in the people who were out-of-touch with the issue of Scotland's independence, this will explain the increase in the membership. Choice B is the correct answer.
Option C: The author talks about propositions that voters do not understand in the fourth paragraph and does not refer to the Scottish referendum as an example. Further, we cannot infer from the passage that the people did not understand about the Scottish referendum from the passage.
Option D: Since the Scottish referendum failed, we can probably infer that the majority of them voted against it. However, this does not explain the increase in the membership of the Scottish National Party. Hence, this is not the correct answer.
Therefore, the correct answer is option B.
Choice (B)

12. In the last paragraph, the author suggests that "Requiring minimum turnouts can guard against the tyranny of the few".
Option A: This is one of the risks/shortcomings of referendum mentioned in the penultimate paragraph of the passage. However, we cannot be sure whether this will be mitigated when large number of voters vote on the referendum. If the author mentions that the majority of the voters are aware of the trade-offs, then this risk can be mitigated. Since the author does not imply that, this cannot be the correct answer.
Option B: The author mentions that "fringe groups or vested interests use referendums to exercise outsized influence, particularly if few signatures are needed to call one and voter turnout is low". Hence, when the voter turnout is high, this risk will be mitigated. Therefore, this is the correct answer.
Option C: The author mentions the example of Greece, in which the government had to act against the results of the referendum. However, having a large voter base will not necessarily mitigate this risk. Hence, this is not the correct answer.
Option D: The author does not talk about people voting for an outcome which is beneficial to the government. Hence, this is not the correct answer.
Therefore, the correct answer is option B.
Choice (B)

13. The author mentions various examples of referendums to highlight the risks involved in referendums.
Statement I: The author mentions that in the case of Greece's referendum, "Mr Tsipras had to take the deal anyway". We can infer from this that the issue was out of government's control.
Statement II: In the Dutch referendum, the Dutch may be stuck with EU-Ukraine agreement "unless the EU's other 27 members agree to changes". Even though this is mentioned as a referendum that asked "a country's voters what they think of a policy set by other countries", this is also an example of an issue where the government cannot implement the outcome of the referendum. Hence, we can infer that this is also an issue which is beyond the government's control.
Statement III: The Scottish referendum does not involve any issue which is outside the government's control. Since the referendum itself was a vote against Scottish independence, and in favour of status quo, we cannot infer whether this issue was outside the government's control.
Statement IV: Similar to the Dutch's referendum, the Swiss referendum also involved an issue on which the Swiss government could take no action because it "requires changes to its trade deal with the EU". Hence, this is also an example of an issue outside the government's control.
Therefore, the examples mentioned in I, II and IV are the examples of referendums mentioned in the passage are on subjects beyond government's control.
Choice (C)

Solutions for questions 14 to 16:

Number of words and Explanatory notes for RC:

Number of words: 356

14. The author talks about Davidson's research throughout the passage. According to Davidson, "there's a vicious cycle of bad diets and brain changes". From Davidson's experiment on rats, he hypothesizes that, in humans, hippocampal damage may lead to people eating more. He also refers to "a 2015 study in the Journal of Pediatrics that found obese children performed more poorly on memory tasks". Hence, being obese led to impairment of memory function. This is the vicious cycle that Davidson refers to.

To summarize, (a) there's a clear indication that the hippocampus carries out memory functions (b) there's a clear indication that a diet rich in fats and sugars (the so-called Western diet) does have a negative impact on the hippocampus, and therefore on memory functions. And, it's likely that affected people, forgetting that they've eaten, may be drawn to and may perpetuate such a diet.

Option A: The author mentions that "A diet high in saturated fats and sugars, the so-called Western diet, actually affects the parts of the brain that are important to memory". Choice A is inappropriate because of the "may affect". Further, choice A only captures one aspect of the relation between Western diet and memory function, though incorrectly. Choice A is not the comprehensive answer to the question.
Option B: Davidson's experiment shows that rats with hippocampal damage pick up food more often. He says that

"something similar may happen in human brains". Hence, this statement is also correct. However, as with the previous option, this option also captures only one aspect of the relation.
Option C: This statement is an extension of the statement mentioned in option A. While this statement is true, it does not mention the fact that people tend to forget that they are full because they eat foods high in saturated fats and sugars. Choice C is not the answer.
Option D: This statement combines both the aspects of the relation between Western diet and memory function mentioned in option A and option B. Hence, this is the correct answer as it is most comprehensive.

Choice (D)

15. The author talks about Davidson's experiment on rats in the passage. He studied "rats that had very specific types of hippocampal damage and seeing what happened to them". He noticed that "The rats with the hippocampal damage would go to pick up food more often than the other rats, but they would eat a little bit, then drop it."
Option A: In Davidson's experiment, he did not study how hippocampus of rats is affected when they are given a diet high in fats and sugars. He started with rats which had damaged hippocampus and found that they ate more often. Hence, this cannot be supported by Davidson's experiment.
Option B: The rats in Davidson's experiment ate food more often. But we cannot say just from his experiment that an impaired hippocampus contributes to craving **unhealthy food.** Hence, only part of this option can be supported by Davidson's experiment.
Option C: The rats with hippocampal damage picked up food more often and ate a little bit each time, indicating that they didn't realise they were full. Hence, this can result in overeating. Therefore, Davidson's experiment best supports the statement that an impaired hippocampus contributes to overeating.
Therefore, the correct answer is option C.

Choice (C)

16. The passage mentions white matter in people's brains in the last paragraph of the passage.
Option A: The last sentence of the penultimate paragraph (as quoted by Davidson) mentions that "I think **the evidence is fairly substantial** that you have an effect of **these diets** and obesity on brain function and cognitive function". The next paragraph starts with "The evidence is growing." Hence, we can infer that this evidence which is growing is the evidence of the effect on "**these diets** and obesity on brain function and cognitive function". However, from the part "I think **the evidence is fairly substantial** that you have an effect of **these diets**", we cannot infer choice A. "**fairly substantial**" does not definitely imply "results in…" as given in choice A.
Option B: The passage mentions that "obese people have less white matter in their brains". Hence we can say that gaining excessive weight which is equivalent to becoming obese may lead to a decrease in the white matter in the brain. Choice B is the answer.
Option C: The passage mentions "obese people have less white matter in their brains." Hence, we can say that being obese is a sign of having less white matter in their brains. However, the converse, i.e., having less white matter is a sign of obesity need not be true. Hence, this is not the correct answer.
Option D: The passage mentions that the brains of obese people are as if they were 10 years older. However, it does not link this with the behaviour of obese people. Hence, this is not the correct answer.
Therefore, the correct answer is option B.

Choice (B)

Solutions for question 17 to 22:

Number of words and Explanatory notes for RC:

Number of words: 763

17. Refer to the first para. These days such structures have fallen out of fashion. They are too complicated for the methods employed by most modern builders, and the skilled labour required to produce them is scarce and pricey. Hence choice B is the answer. The remaining choices do not apply. Choice C is wrong because it has been mentioned in the passage that the speed of FreeFab can meet the design demands of more complicated buildings. Choice (B)

18. FreeFAB gets around that problem by printing moulds rather than trying to print structural material directly. Invented by James Gardiner, an Australian architect, it has big advantages over traditional mould-making techniques. It creates far less waste. FreeFAB's wax can be melted down and poured back into the tank, ready to be re-extruded into a new form. The system also makes it cheaper to make even complicated moulds. FreeFAB can print a mould in three hours. That speed makes it possible to meet the design and cost demands of more complicated buildings. And because the concrete itself is not being printed, the panels are just as strong as the ones made in the traditional way. FreeFAB's parts do not peel, and have withstood twice the required force in bomb-proofing tests. These details are given correctly in choice C.
Choice A is incorrect. Ordinary moulds (and not the moulds made by FreeFab) are made from wood and polystyrene. Choices A and B are incorrect because they say that the FreeFab technology is recyclable. The mould created by FreeFab can be recycled. Choice D is incorrect. Making a mould for a concrete panel that curves along two different axes, like the ones used in Crossrail, takes about eight days. FreeFAB can print one in three hours.

Choice (C)

19. Dr. James Gardiner, an Australian Architect, was the inventor of FreeFab. It took Dr Gardiner three years to find a wax which could be printed, milled and recycled.

Choice (D)

20. Option A: Dr Block's group will make the floors for a new part of the building called HiLo. The main bottleneck is that it is expensive and slow to mill all the parts from blocks of stone, or to build traditional moulds for each individual component. So Drs Block and Gardiner are planning to work together on HiLo, using FreeFAB to print moulds that will produce segments of the floors. So choice A is the answer.
Option B: Choice B is incorrect from the explanation given above.
Option C: Choice C has not been mentioned in the passage. The passage only says that if the FreeFab technology matures enough, Laing O'Rourke plans to spin it out as a start-up focused on this new way of creating buildings.
Option D: Choice D is a project for the future and it does not specifically answer the question. Choice (A)

21. Option A: Dr Block makes floors that have the flowing, veined look of biological membranes and are just a few centimetres thick. Choice A is true and is not the answer.
Option B: Dr Block calculates that his new, thinner floors would need only about a third as much material as a typical floor slab. Their thinness allows him to claw back enough vertical space to fit three floors into the space that would be taken by two floors built in the standard way. Each bit of the floor holds up the rest in a shallow vault. Each is bespoke, designed by a computer to efficiently deal with the specific loads it must bear. This allows him to build much thinner structures out of materials much weaker than reinforced concrete. Choice B is true and is not the answer.
Option C: Each bit of the floor holds up the rest in a shallow vault. Dr. Block constructed a 15-metre vaulted "tent" out of 399 blocks of cunningly shaped limestone, each precisely milled to match the pattern of forces necessary to hold the vault up. Choice C is correct and is not the answer.
Option D: Instead of building floors that rely on steel reinforcement to hold them up, Dr Block builds them under compression. Hence choice D is not correct and is the answer. Choice (D)

22. Option A: Choice A is a problem that has been circumvented by FreeFab technology. Printed concrete is currently produced in layers, which are fused together to make a thicker panel. But the boundaries between the layers introduce weaknesses that make the panels unsuitable for real buildings. "These things can peel apart," he says. FreeFAB gets around that problem by printing moulds rather than trying to print structural material directly. FreeFAB's parts do not peel, and have withstood twice the required force in bomb-proofing tests. Choice A is not the answer.
Option B: It is early days. The factory in Doncaster has had teething problems – it has proved tricky to print moulds without flaws big enough to be visible in panels cast from them. If the technology matures enough ..... Choice B is the answer.
Option C: Choice C is nowhere mentioned in the passage.
Option D: Choice D has not been specified in the passage.
Choice (B)

Solutions for questions 23 to 28:

Number of words and Explanatory notes for RC:

Number of words: 636

23. Option A: Stalin had nearly a million of his own citizens executed, beginning in the 1930s. Millions more fell victim ..... by Stalin's henchmen. A vast network of state organizations had to be mobilized to seize and kill that many people. Hence choice A is true and is not the answer.
Option B: Both Hitler and Stalin chewed up the lives of human beings in the name of a transformative vision of Utopia. "And yet somehow Stalin gets a pass" Ian Frazier wrote in a recent New York article about the gulags. He was not declared horrible officially and TIME Magazine put him on his cover 11 times. Russian public opinion polls still rank him near the top of the greatest leaders of Russian history. So choice B is correct and is not the answer.
Option C: There's a reason for Russian obliviousness. Every family had not only victims but accomplices and perpetrators . "A vast network of state organizations had to be mobilized to seize and kill that many people. This implies that choice C is correct and is not the answer.
Option D: One hand that wasn't in the room guided the pen. The Soviet delegation vetoed any definition of genocide that might include the actions of its leader, Joseph Stalin. Choice D is not true and is the answer. Choice (D)

24. Consider para 3: The book's title is plural for a reason: Naimark argues that the Soviet elimination of a social class, the kulaks (who were higher-income farmers), and the subsequent famine which killed 3-5 million Ukrainian peasants – as well as the notorious 1937 order No. 00447 that called for the mass execution and exile of "socially harmful elements" as "enemies of the people" – were, in fact, genocide.
Option A: There isn't enough in the text (by way of hard-hitting awareness) to justify the 'powerful punch' phrase. Hence choice A is not the answer.
Option B: Choice B has been mentioned at various points in the passage, yet it is not the answer to the question. Naimark argues that we need a much broader definition of genocide, one that includes nations **killing social classes and political groups**. Choice B only includes the killing of political groups but not the killing of social classes. Also, choice B only indicates that there were events of genocide, whereas Naimarks' intention is clear from the use of the words "these matters shouldn't be seen as **discrete** episodes but seen together" - there is the need to see them as systematically congruent and, therefore, the need to expand the definition of genocide'. Choice B, while true, is incomplete and is not the answer to the question.
Option C: The book's title is plural for a reason. He argues that the Soviet elimination of the Kulaks and the subsequent killer famine ..... and the notorious 1937 order no. 00447 that called for mass execution ..... He makes the argument that these matters shouldn't be seen as **discrete** episodes but seen together. Accounts gloss over the **genocidal** character of the Soviet regime in the 1930s that killed **systematically** rather than episodically. As, such the book looks at the plural events of genocide and then moves on to indicate that when they are looked at as systematically congruent, they demonstrate the need to expand the definition of genocide'.
Option D: Choice D is a fact mentioned in the passage but it is not specific to the question. The destruction of the kulak class triggered the Ukranian famine, during which 3 million to 5 million peasants died of starvation.
Choice (C)

25. Option A: The passage clearly mentions that both Hitler and Stalin were genocidaires. So 'obliviousness' over here does not mean 'one cannot be sure'…. Choice A is not correct.
Option B: The term 'obliviousness' suggests a refusal to come to terms with the realities of the past, for various reasons. Every family had not only victims but perpetrators. …. Through denial and obfuscation, the Turks have gone about it the wrong way." So choice B is correct.
Option C: Choice C is not limited to the Russians. …. This always occurs with international law – they outlaw what happened in the immediate past, not what's going to happen in the future. Choice C is not the answer.
Option D: Choice D is a suggestion. Without a full examination of the past, it's too easy for it to happen again. But it is not the answer to the question.
Choice (B)

26. Option A: Choice A is correct. The official definition of the word "genocide" mentions only national, ethnic, racial and religious groups. We need a much broader definition of genocide, one that includes nations killing social classes and political groups.
Option B: 'exonerate' means to absolve (someone) from blame for a fault or wrongdoing. Choice B is negated by the passage. Stalin had nearly a million of his own citizens executed, beginning in the 1930s. Millions more fell victim to forced labor, deportation, famine, massacres, and detention and interrogation by Stalin's henchmen.
Option C: The convention's work was shaped by the Holocaust – "that was considered *the* genocide," said Naimark. We will never know how many millions Stalin killed. "And yet somehow Stalin gets a pass." Choice C is incorrect.
Option D: Choice D is not substantiated by the passage. Only Naimark's new book *Stalin's Genocides* has been termed 'controversial'. Choice (A)

27. The definition of 'genocide' is found wanting with respect to choices A, B and C.
Option A: "A catastrophe had just happened, and everyone was still thinking about the war that had just ended. This always occurs with international law – they outlaw what happened in the immediate past, not what's going to happen in the future." So choice A is incorrect.
Option B: Both Hitler and Stalin chewed up the lives of human beings in the name of a transformative vision of Utopia. Both destroyed their countries and societies, as well as vast numbers of people inside and outside their own states. Both, in the end, were genocidaires. The Allies, exhausted by war, were loyal to their Soviet allies – to the detriment of subsequent generations. Choice B is true but is not the answer.
Option C: "I make the argument that these matters shouldn't be seen as discrete episodes, but seen together," said Naimark. Accounts "gloss over the genocidal character of the Soviet regime in the 1930s, which killed systematically rather than episodically," said Naimark. So choice C is reversed and is not the answer.
Option D: The term "genocide" was defined by the 1948 United Nations Convention on the Prevention and Punishment of the Crime of Genocide. The convention's work was shaped by the Holocaust – "that was

considered *the* genocide," said Naimark. "A catastrophe had just happened, and everyone was still thinking about the war that had just ended." Choice D is the answer.
Choice (D)

28. Option A: Look at the annual international tussle over whether the 1915 Turkish massacre and deportation of the Armenians "counts" as genocide. …."Through denial and obfuscation, the Turks have gone about it the wrong way." Choice A is not the answer.
Option B: "How much can you move on? Can you put it in your past? How is a national identity formed when a central part of it is a crime?" Naimark asked. "The Germans have gone about it the right way," he said, pointing out that Germany has pioneered research about the Holocaust and the crimes of the Nazi regime. Choice B is the answer.
Option C: Naimark is quite critical of the Soviet Regime who massacred and exiled the "enemies of the people" (the notorious 1937 order No. 00447 that called for the mass execution and exile of "socially harmful elements" as "enemies of the people"). Choice C is not the answer.
Option D: Choice D is a detail mentioned in the passage but it is not relevant to the question.
Choice (B)

Solutions for questions 29 to 34:

Number of words and Explanatory notes for RC:

Number of words: 686

29. Option A: In an age in which humans and human activity are held in low esteem there is a tendency to deify nature. In almost every aspect of life, the 'natural' is regarded as morally superior to the artificial or the human. Many decry science that seems to defile the purity of nature and to laud science that seems to make us more natural. Hence choice A is the answer.
Option B: Choice B gives a reverse cause-effect sequence. Refer to the last para. Biological technology that threatens to transform our relationship with nature is often seen as unnatural and blasphemous. This is a reaction to the deification of nature. Choice B is not the answer.
Option C: 'Have we the right', the molecular biologist Ervin Chargaff asks, 'to counteract, irreversibly, the evolutionary wisdom of millions of years? . We cannot impose on future generations our conceptions of improvement, because to do so represents an assault on human dignity. Choice C again gives an inverted cause-effect relationship. What has been mentioned in choice C seems to be a consequence of the deification of nature and not its main objective.
Option D: Choice D appears true but it is merely a restatement. Refer to para 5: …. debased view of what it means to be human and an exalted view of nature. In a secular civilization' …… Choice D is not the answer. The 'exalted view' is the 'deification'. Choice (A)

30. Richard Dawkins, Steven Pinker, E. O. Wilson, Matt Ridley, Jared Diamond – evolutionary biologists are among the literary superstars of our age, as much entertainers as scientists, writing bestsellers, ... Choice C is the odd man out. Choice (C)

31. Refer to paras 1, 2 and 4.
Option A: Choice A is true but it is incomplete as an answer to the question. No period has been more penetrated by science, nor more dependent upon it, than the past half century.
Option B: Refer to para 1. There are few things that have more changed our world than has science. Scientists and their discoveries have helped transform material conditions and opened up new social and moral vistas. Yet it is the very notion of human-directed change that many people today find so troubling. No period has been more penetrated by science, nor more dependent upon it, than the past half century. Yet no period has been more uneasy about it, nor felt more that the relationship with scientific knowledge is a Faustian pact. ...Refer to para 4. What many people fear is a science that disturbs their moral compass. Hence choice B is the answer. {Faust is a scholar who is highly successful yet dissatisfied with his life, which leads him to make a pact with the Devil, exchanging his soul for unlimited knowledge and worldly pleasures. "Faust" and the adjective "Faustian" imply a situation in which an ambitious person surrenders moral integrity in order to achieve power and success for a delimited term.}
Option C: There are few things that have more changed our world than has science. Scientists and their discoveries have helped transform material conditions and opened up new social and moral vistas. Yet it is the very notion of human-directed change that many people today find so troubling. ...No science has seemed more to call all in doubt than the science of biology. Choice C is true but it is not the reason for the question.
Option D: Choice D is true but is not the specific answer to the question. Choice (B)

32. Option A: Choice A is true but it is limited to the last para. Each generation must be allowed to struggle with human nature as it is given to them, and not with the irreversible biological results of their forbears' actions. We cannot impose on future generations our conceptions of improvement, because to do so represents an assault on human dignity. Choice A is a close choice but it is not the primary concern of the author.
Option B: Choice B is out of scope. The author does not justify the need to examine scientific discoveries under the microscope of reality.
Option C: Opinion formers in society worry that man is now playing God, remaking nature in his own image. Choice C is true but is not the primary concern of the author.
Option D: Choice D is true as the first four paras show. People are enamoured by the progress in science and the power it gives, on the one hand, and the fear, the consequences and moral dilemma, it poses on the other.
Choice (D)

33. What many people fear is a science that disturbs their moral compass, upsetting traditional ideas of Man and nature, a science that promises new forms of control over nature, new types of mastery over human destiny. So choices A, B and D are true and are not the answers.
What many people are drawn to is a science that provides science and comfort, that turns an explanation about the human condition into a parable about fate. Choice C is the answer. Choice (C)

34. Option A: Mary Douglas and Aaron Wildavsky observe, 'nature plays the role of general arbiter of human designs more plausibly than God'. In the 19th century, positivists recast science as a new faith, and nature as a new God, at a time when the old religion appeared inadequate for Man's needs. Today, too, nature is rapidly turning into a new deity to whom we turn for moral answer and personal comfort. So choice A is not definitely false.
Option B: Choice B is definitely false. 'Have we the right', the molecular biologist Ervin Chargaff asks, 'to counteract, irreversibly, the evolutionary wisdom of millions of years? Each generation must be allowed to struggle with human nature as it is given to them, and not with the irreversible biological results of their forbears' actions. Choice B is the answer to the question.
Option C: As Norman Levitt put it 'The "natural" is the virtuous opposite of the degraded manifestations of humanity's fallen state.' Choice C is definitely true. It is not the answer.
Option D: Bryan Appleyard is terrified by the way that science has invaded the human realm. "The new biology entails the thwarting of nature at a very fundamental level. Genetics must be contained, humbled." Choice D is correct and is not the answer. Choice (B)

Difficulty level wise summary - Section I	
Level of Difficulty	Questions
Very Easy	28, 30
Easy	6, 10, 18, 19, 20, 26, 27
Medium	2, 11, 14, 15, 16, 17, 21, 22, 24, 25, 31, 32
Difficult	4, 5, 7, 8, 9, 12, 13, 23, 29, 33, 34
Very Difficult	1, 3

SECTION – II

Solutions for questions 1 to 4:

Let Bill be the truth teller. From Bill's first statement, Bob is not the alternator. Hence, Bob must be the liar. From Bill's second statement, Bill must be from Backer Island because he is the truth teller.

Since Bob is a liar, from his first statement, Alternators are not from Becker Island. Hence, Alternators must be from Bicker Island. Liars must be from Becker Island. In this case, Buck must be an Alternator. Buck's second statement is false and first statement is true. Hence, this is one possible case.

Let Bob be the truth teller. From Bob's first statement, Alternators are from Becker Island. Since Bob is the truth teller, Bill's first statement is true. Hence, Bill must be the alternator. His second statement must be false. Hence, Truth tellers are not from Backer Island. Since Alternators are from Becker Island, Truth tellers are from Bicker Island and Liars must be from Backer Island. Since Bob is the truth teller and Bill is the alternator, Buck must be the liar. However, Buck's first statement is true as Bill is not from Bicker Island (since Bill is the Alternator, he must be from Becker Island). Hence, Buck cannot be the liar. Therefore, this case is not possible.

Let Buck be the truth teller. Bob is the alternator and Bill is the liar. Bob's second statement is false and hence, his first statement must be true. Therefore, Alternators are from Becker Island. Since Bill is the liar, truth tellers cannot be from Backer Island. Hence, Truth tellers must be from Bicker Island and Liars must be from Backer Island. This is one possible case.

The two possible cases are presented below:

Person	Case 1		Case 2	
	TT/L/A	Island	TT/L/A	Island
Bill	TT	Backer	L	Backer
Bob	L	Becker	A	Becker
Buck	A	Bicker	TT	Bicker

1. Buck is from Bicker Island. Choice (A)

2. In both the cases, Buck spoke at least one true statement. Choice (C)

3. If Bill is not the Liar, then Bill is the Truth Teller. Choice (B)

4. In both the cases, Buck spoke more number of true statements than Bob. Hence, the statement given in option D is definitely correct. Choice (D)

Solutions for questions 5 to 8:

By observing the graph, we can see that points A, D, C and F must represent the first quarter of the four companies. This is because, there are no points which have lower expenses and lower revenues than these four points.

Point B will represent the second quarter of the company represented by point F.

The points N, E, L, H and I will represent the subsequent quarters of the companies represented by Point F and Point C.

Now, point G can be the second quarter of the company represented by point D. G and A cannot represent the same company since the revenues will not be positive in this case. Similarly, J will represent the second quarter of the same company represented by A.

K is the third quarter of the company represented by point D. The fourth quarter of this company can be represented by O, P or M.

For the company represented by point A (and point J), the third quarter can be represented by O or P. M has to represent the fourth quarter of a company and this company cannot be the one represented by point C or point F. If M is the fourth quarter of the company represented by point D, the company represented by point A will not have any point to represent its fourth quarter. Therefore, M must be the fourth quarter of company represented by point A. Hence, for the company represented by point D, the fourth quarter can be represented by O or P.

Point H and Point I will be the fourth quarters of the two companies in any order.

Point E and Point L will represent the third quarters of the two companies in any order. Hence, Point N has to represent the second quarter of company C. For this company, the only possibility for third and fourth quarters will be point E and point H respectively.

Hence, for the company represented by point F, the third and fourth quarter will be represented by point L and point I respectively.

The following table presents the points corresponding to the four quarters of the four companies:

Quarter 1	A	D	C	F
Quarter 2	J	G	N	B
Quarter 3	O/P	K	E	L
Quarter 4	M	P/O	H	I

5. C, N, E and H represent the four quarters of the company to which N corresponds. The numerical equivalent of C, N, E and H would be 31458. Ans: (31458)

6. There are two possible cases for the company represented by point A. If point O represents the third quarter of the company, then the revenues for this company in the third quarter would be (Cumulative Revenues until the third quarter – Cumulative Revenues until the third quarter) = USD 2.5 mn and, similarly, expenses would be USD 3 mn. It would not have made a profit in this case.
If point P represents the third quarter of the company, then the revenues for this quarter would be USD 3 mn and the expenses would also be USD 3 mn. It would not have made a profit in this case as well.
For the company represented by point D, the revenues in the third quarter will be USD 1 mn and the expenses would also be USD 1 mn. Hence, this company would also not have made a profit.
For the company represented by point C, revenues would be USD 0.5 mn and expenses would be USD 1mn. Hence, this company would also not have made a profit.
For the company represented by point F, revenues would be USD 2 mn and expenses would be USD 2 mn.
Therefore, no company made a profit in the third quarter.
Choice (A)

7. If the company represented by point M did not incur a loss in the third quarter, then the third quarter of this company must be represented by point P. The fourth quarter of the company represented by point G will be point O. The profit of this company in the fourth quarter will be 2.5 – 1 = USD 1.5 mn. Choice (C)

8. The profit (in USDMn) of company represented by point A in second quarter = 1 – 2 = -1
The profit (in USDMn) of company represented by point D in second quarter = 1 – 2 = -1
The profit (in USDMn) of company represented by point C in second quarter = 3 – 2 = 1
The profit (in USDMn) of company represented by point F in second quarter = 1 – 1 = 0
Hence, two companies incurred a loss in the second quarter. Choice (B)

Solutions for questions 9 to 12:

The following table provides the error codes in the strings for each day in the order that they appear in the string:

Day	Errors
Day 1	527 2378 527 419 681 913 527
Day 2	419 2378 681 419 681 913
Day 3	681 419 2378
Day 4	419 419 2378 681 681
Day 5	527 681 419 913
Day 6	419 681 913 913 681
Day 7	527 419 913 2378

9. By observing the strings, we can see that on Day 2, Day 3, Day 4 and Day 6, there were no Syntax errors. Hence, the answer is 4 days. Ans: (4)

10. Referencing error was detected immediately before a Runtime error only once, i.e., on Day 6.
Ans: (1)

11. Total number of errors = 34
Total number of Semantic errors (419) = 9
Required percentage = 9/34 = 26.47%
Choice (A)

12. Option A is true because at least one Semantic error was detected every day.
Option B is true because only three errors was detected on Day 4.
Option C is false because the number of Logical errors that were detected is 5, which is the same as the number of Syntax error.
Option D is true because 6 Referencing errors occurred and 5 Syntax errors occurred.
Choice (C)

Solutions for questions 13 to 16:

Let the larger cube that Hari makes be of dimensions n × n × n.
In any large cube that Hari makes, there will be red cubes at the eight corners. Hence, there will be 8 red cubes.
For cube of size n, there will be 12(n – 2) cubes that are at the edges but not at the corners. Hence, there will be 12(n – 2) green cubes.
For a cubes of size n, there will be a total of n^3 cubes. Hence, there will be $n^3 - 12(n-2) - 8 = n^3 - 12n + 16$ blue cubes.

13. Given that 12(n-2) = 24 ⇒ n = 4.
Number of unit cubes in the larger cube $=4^3 = 64$
Ans: (64)

14. Number of Blue unit cubes
$= 7^3 - 12 \times 7 + 16 = 275$. Ans: (275)

15. Given that $12(n-2) \geq \frac{1}{2} \times (n^3 - 12n + 16)$

$\Rightarrow n^3 - 36n + 64 \leq 0 \Rightarrow n \leq 4$
The maximum possible number of unit cubes in the large cube = 64 Ans: (64)

16. Number of red cubes in any cube = 8
Number of blue cubes must be more than 32.
If n = 2, there will be no Blue Cubes.
If n = 3, there will be 7 Blue Cubes.
If n = 4, there will be 32 Blue Cubes.
If n = 5, there will be 81 Blue cubes.
Hence, the minimum possible cube will be of dimensions 5 × 5 × 5.
Number of green unit cubes in such a cube = 12 × 3 = 36
Ans: (36)

Solutions for questions 17 to 20:

From (i), Passion and Pluck were not sent to Pluto. Mettle was not sent to Mercury.
From (ii), Mettle was not sent to Jupiter. Also, Mettle does not have Microscopic Imager. From (iii), the rover sent to Pluto had a Microscopic Imager. Hence, Mettle was not sent to Pluto. Mettle could have been sent to Saturn or Neptune. From (iv), the rover sent to Neptune was not named Mettle. Hence, Mettle must have been sent to Saturn. From (v), Mettle has Photometer.
From (iii), Valour had Methane Sensor. As the rover sent to Pluto had Microscopic Imager, Valour could not have been sent to Pluto. From (iv), the rover sent to Neptune had a Mass Analyser. Hence, Valour could not have been sent to Neptune. Valour could have been sent to Jupiter or Mercury. Since the rover sent to Jupiter did not have a Methane Sensor, Valour was not sent to Jupiter. Valour must have been sent to Mercury.
Since Passion, Pluck, Mettle or Valour could not be sent to Pluto, Courage must have been sent to Pluto. From (iii), Courage has a Microscopic Imager.
Passion and Pluck must have Spectrometer and Mass Analyser in any order. From (v), Passion does not have Spectrometer. Hence, Passion has Mass Analyser and Pluck has Spectrometer.
Since the rover sent to Neptune had Mass Analyser, Passion was sent to Neptune. Pluck must have been sent to Jupiter.
The following table provides the planets that each rover was sent to along with the instrument in each rover:

Rover	Planet	Instrument
Mettle	Saturn	Photometer
Courage	Pluto	Microscopic Imager
Valour	Mercury	Methane Sensor
Pluck	Jupiter	Spectrometer
Passion	Neptune	Mass Analyser

17. Passion was sent to Neptune. Choice (B)

18. Pluck was sent to Jupiter. Choice (C)

19. The rover sent to Mercury had Methane Sensor. Choice (C)

20. The rover named Courage was sent to Pluto. Choice (D)

Solutions for questions 21 to 24:

Given that in each match, the winner scored exactly one goal more than the loser.
The value GF – GA will indicate the number of matches won by each team. If a team won all the matches that it played, then this team would have scored one goal more than each of its opponents. Hence, the value GF – GA will be 5 for such a team.
Similarly, if a team won 4 matches, in the four matches that it won, the value GF – GA will be 4. But in the match that it lost, the value of GF – GA will be -1. Hence, for the five matches, the value of GF – GA will be 3.
If a team won 3 matches, 2 matches, 1 match and 0 matches, the value of GF – GA will be 1, -1, -3 and -5 respectively.
From the given table, D won five matches, F won four matches, C won three matches, A won two matches, E won one match and B won no match. Hence, D won against all the five teams, F won against A, B, C and E; C won against A, B and E; A won against B and E; E won against B.

21. C won a match against E. Choice (B)

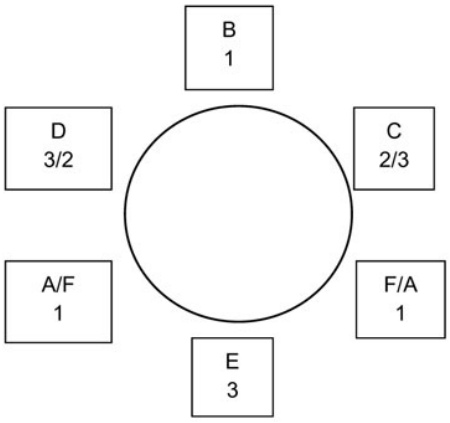
22. D scored 15 goals. Since D won all the matches, it must have scored at least one goal in each match. As the number of goals are distinct, D could have scored a minimum of 1, 2, 3, 4 and 5 goals in the five matches, which adds up to 15. Since D scored only 15 goals, the number of goals that D scored must be 1, 2, 3, 4 and 5. In each match, the opponent must have scored 0, 1, 2, 3 and 4 goals respectively. Hence, the maximum number of goals that any team would have scored against D would be 4. Choice (D)

23. F lost a match only against D, which is not given in the choices. Choice (D)

24. A lost against C. To maximize the number of goals scored by A against C, A must have scored minimum number of goals in all the other matches. Since GF and GA always differ by 1, we need to keep both minimum in all the matches.
Hence, in the two matches that A won (against B and E), A could have scored 2 goals and the opponents 0 goals each. In the matches that A lost against D and F, A could have scored 0 goals and opponents 1 goal each. Hence, A could have scored 12 goals and C, 13 goals.
However, C lost two matches and could have scored a minimum of 0 goals in these two matches. In the two matches that it won against B and E, C could have scored one goals each. Hence, C can score a maximum of 11 goals in the match against A and A could have scored a maximum of 10 goals in the match against C.
Hence, the maximum goals that A could have scored against C is 10. Ans: (10)

Solutions for questions 25 to 28:

Let 1 to 6 represent the positions of the chairs around the table in the clockwise direction.
Given that B was sitting to the left of D. Let B be at 1. D must be at 6.
From (iv), E received Form 3. From (ii), E cannot be the person who is sitting opposite D. Also, from (iv), E cannot be at 5 or 2. Hence, E must be at 4 and received Form 3.
From (iii), A and F are not opposite each other. Also, since they received the same test form, they are not adjacent to each other. Hence, they can only be at 3 and 5 in any order. Since they did not receive Form 2 and from (ii), they cannot receive Form 3, they must have received Form 1.
C must be at 2.
A and F received Form 1. E received Form 3. Since C is adjacent to F/A, C can receive Form 2 or 3.
B can receive Form 1 or 3.
D can receive Form 2 or 3 (since D is adjacent to A/F).
More than two students received the same test form. Since only D and C can receive Form 2, it is not possible for three students to receive Form 2.
If three students received Form 3, D and C must have received Form 3 (along with E). In this case, B would have received Form 1. But no one would have received Form 2. Hence, this is not possible.
If three students received Form 1, B must have received Form 1. One of D and C must have received Form 2 and the other, Form 3.
The following diagram provides the positions of the six students and the test forms they received:



25. C or D can be sitting opposite A. From the given options, C is sitting opposite A. Choice (C)

26. B received Form 1. Choice (B)

27. The person sitting opposite C receive Form 1. Choice (A)

28. Option A: If A is adjacent to a student who received Form 2, either C or D can be that student. Hence, this is also not sufficient.
Option B: If C is sitting two places away from a student who received Form 2, D must be the student who received Form 2. However, D can receive Form 2 or Form 3. Hence, this statement is also not sufficient.
Option C: E is sitting two places away from both C and D, one of whom (or both) received Form 2. However, we cannot determine who received Form 2 among C and D. Hence, this statement is not sufficient.
Therefore, none of the given statements is sufficient. Choice (D)

Solutions for questions 29 to 32:

Given that Phil runs for 3 km irrespective of what he eats during the day.

On Day 1, he must have run for an additional 3 km. This can happen only if he ate French Fries OR Ice cream and Pastries.
On Day 2, he could have eaten Burgers and Ice creams OR Pizzas and Pastries OR French Fries, Ice Creams and Pastries.
Similarly, we can find the possibilities for each day. This is presented in the table below:

Day	Food		
Day 1	FF	IC & Pas	
Day 2	B & IC	Piz & Pas	FF & IC & Pas
Day 3	Piz & IC	B & FF	B & IC & Pas
Day 4	Piz & IC	B & FF	B & IC & Pas
Day 5	Piz	B & Pas	IC & FF
Day 6	Piz & IC	B & FF	B & IC & Pas
Day 7	Piz	B & Pas	IC & FF
Day 8	Piz & FF	Piz & IC & Pas	B & FF & Pas
Day 9	B & IC	Piz & Pas	FF & IC & Pas

On Day 9, if he had Pizzas and Pastries, he cannot have any of the three options in Day 8. On Day 9, if he had French Fries, Ice Cream and Pastries, he cannot have any of the three options on Day 8. Hence, he must have had Burgers and Ice Creams on Day 9.

Since he had Burgers and Ice Creams on Day 9, he must have had Pizzas and French Fries on Day 8.
Since he had Pizzas and French Fries on Day 8, he must have had Burgers and Pastries on Day 7.
Since he had Burgers and Pastries on Day 7, he must have had Pizzas and Ice Creams on Day 6.
Since he had Pizzas and Ice Creams on Day 6, he must have had Burgers and Pastries on Day 5.
Since he had Burgers and Pastries on Day 5, he must have had Pizzas and Ice Creams on Day 4.
Since he had Pizzas and Ice Creams on Day 4, he must have had Burgers and French Fries on Day 3.
Since he had Burgers and French Fries on Day 3, he must have had Pizzas and Pastries on Day 2.
Since he had Pizzas and Pastries on Day 2, he must have had French Fries on Day 1.

The following table provides the food items that he had on each day:

Day	Food
Day 1	FF
Day 2	Piz & Pas
Day 3	B & FF
Day 4	Piz & IC
Day 5	B & Pas
Day 6	Piz & IC
Day 7	B & Pas
Day 8	Piz & FF
Day 9	B & IC

29. Only one instance satisfies the given condition – Day 2 and Day 3. Choice (B)

30. Phil ate Pastries on Day 2. Choice (C)

31. Phil ate Pizzas on four days. Phil did not eat any of the other items given in the options on more than 3 days. Choice (C)

32. Phil ate Burgers but not French Fries on three days (Day 5, Day 7 and Day 9). Choice (D)

Difficulty level wise summary - Section II	
Level of Difficulty	Questions
Very Easy	–
Easy	1, 2, 3, 4, 9, 10, 17, 18, 19, 20, 25, 26, 27, 28
Medium	11, 12, 13, 14, 21, 22, 23
Difficult	5, 6, 7, 8, 15, 16, 24, 29, 30, 31, 32
Very Difficult	–

SECTION – III

Solutions for questions 1 and 2:

1. Let the terms of the AP be a, $a + 24$, $a + 48$

$\therefore$ The terms of the GP are a, $a + 24$, $(a + 24)\left(\frac{a+24}{a}\right)$

But given that the third term of the GP is

$(a + 24)\left(1+\frac{24}{a}\right) = (a + 48) + 2.4$

$\therefore \frac{24^2}{a} = 2.4 \; ; \Rightarrow a = 240$

$\therefore$ The second term of the GP (or AP) is $240 + 24 = 264$ Ans: (264)

2. $t_n = n(n + 1) = n^2 + n$

$S_n = \Sigma n^2 + \Sigma n$

$= \frac{n(n+1)(2n+1)}{6} + \frac{n(n+1)}{2}$

$S_{32} = \frac{32\times33\times65}{6} + \frac{32\times33}{2} = 11968$ Ans: (11968)

Solutions for question 3:

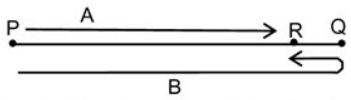
3. Given that $x_1 + x_2 + x_3 + x_4 + x_5 + x_6 = 9753$. So, 1, 3 or 5 of the six terms must be odd. We require to minimize the value of $E = \sum_{i=1}^{6}(-1)^{x_i}$. Since $(-1)^{\text{odd number}} = -1$, we shall try and make as many possible x_i as odd. So we will make 5 of them odd and the sixth x_i will be even.

$\therefore E_{min} = 5(-1)^{odd} + (-1)^{even} = -5 + 1 = -4$

Choice (B)

Solutions for question 4:

4.



Clearly both A and B put together have covered 2(PQ). Also the ratio of their speeds is 6 : 7.

$\therefore$2(PQ) is covered by A and B in the ratio 6 : 7.

Since PR is the distance travelled by A.

$\frac{6}{13}$ [2(PQ)] = 48 $\Rightarrow$ PQ = 52 km Ans: (52)

Solutions for questions 5 to 13:

5. Initial ratio of milk to total volume, $\frac{M}{T} = \frac{3}{5}$

The ratio of milk to total volume when the volume of liquid in the beaker is increased by 60% = $\frac{3}{5(1.6)} = \frac{3}{8}$

Next 38.4litres of solution was replaced with water resulting in ratio of milk to water as 3 : 7.

$\therefore$ Ratio of milk to total volume in the breaker = $\frac{3}{10}$

When 38.4 litres of solution was removed, volume of milk removed = $\frac{3}{8}\times38.4 = 14.4$ litres.

$\therefore$ If the volume of milk before replacement was 3x and total volume was 8x, then $\frac{3x-14.4}{8x} = \frac{3}{10} \Rightarrow x = 24$

$\therefore$ Before addition of 60% of water, total volume = 5x

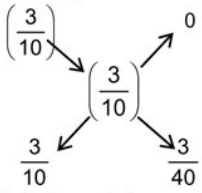
$= 5 \times 24 = 120$ litres

Alternative Solution:

After adding 60% volume of water, the fraction of milk is $\frac{3}{8}$.

After replacing with water, fraction of milk is $\frac{3}{10}$.

Using alligation method,



$\therefore$ Ratio in which the solution and water are mixed is $\frac{3}{10} : \frac{3}{40}$ or 4 : 1.

Since 38.4 litres are replaced by water, volume of solution before replacement = $(4 + 1) \times 38.4 = 192$ litres.

$\therefore$ Initial volume = $\frac{5}{8}\times192 = 120$ litres.

Choice (C)

6. In the series, consecutive numbers starting from 1 are given and each number is written as many times as the value of the number, i.e., 1 is written one time, 2 is written two times and so on.

If the series has n distinct numbers written, then there is a minimum of $\left(\frac{n(n-1)}{2}+1\right)$ terms present and a maximum of $\left(\frac{n(n+1)}{2}\right)$ terms present.

$\frac{n(n-1)}{2}+1 \le 342 \le \frac{n(n+1)}{2}$

$n(n - 1) \le 684 \le n(n + 1)$

(Now, the closest square to 684 is 26^2, hence $n = 26$)

Going back from the choices, we can observe that $n = 26$ satisfies the above inequality. Choice (C)

7. Any quadratic function can be written as $f(x) = \alpha(x - k)^2 - \beta$ (This format is convenient as opposed to $f(x) = ax^2 + bx + c$, since minimum value of $f(x)$ is given).

Given that minimum value of $f(x)$ is –15 at $x = 3$

$f(x)$ is minimum when $x = k \Rightarrow k = 3$.

$\Rightarrow -15 = -\beta \Rightarrow \beta = 15$.

Also, given that f(0) = 5

$\Rightarrow 5 = \alpha(0 - 3)^2 - 15 \Rightarrow \alpha = \frac{20}{9}$

$\therefore$ f(9) = $\frac{20}{9}(9-3)^2 - 15 = 65$. Choice (A)

8. $a : b = 3 : 2 = 6 : 4$
$b : c = 4 : 5$
$c : d = 5 : 6$
$d : e = 6 : 5$
From the above,
$a : b : c : d : e$ is $6 : 4 : 5 : 6 : 5$

$$\therefore \frac{ad + ce}{bc + ae} = \frac{(6)(6) + (5)(5)}{(4)(5) + (6)(5)} = \frac{61}{50} = 1.22$$

Choice (A)

9. Let the initial lengths of the candles be 30 cm and 20 cm respectively. Let their hourly rates of burning be $2k$ cm and k cm respectively. So, in three hours (from 6:00 p.m. to 9:00 p.m.) they burn $6k$ cm and $3k$ cm.

Given that $\frac{30 - 6k}{20 - 3k} = \frac{2}{3} \Rightarrow 90 - 18k = 40 - 6k$

$$\Rightarrow k = \frac{25}{6}$$

Now, let them be of equal length, say, t hours after 6:00 p.m.

$$\Rightarrow 30 - \frac{25t}{3} = 20 - \frac{25t}{6}$$

$$\Rightarrow 10 = \frac{25t}{6} \Rightarrow t = 2.4$$

$\therefore$ The candles are of equal length at 6:00 p.m. + 2.4 hours, i.e., at 8:24 p.m. Choice (C)

10. The given equation can be rewritten as

$$\log_2\left(\frac{a-b}{2}\right)\log_2 2 = \log_2\left(\sqrt{a} - \sqrt{b}\right)^2 + \log_2 2$$

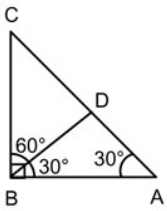
$$\Rightarrow \frac{a-b}{2} = 2\left(\sqrt{a} - \sqrt{b}\right)^2$$

$$\Rightarrow \sqrt{a} + \sqrt{b} = 4\left(\sqrt{a} - \sqrt{b}\right) \left(\because \sqrt{a} - \sqrt{b} \neq 0\right)$$

$$\Rightarrow 3\sqrt{a} = 5\sqrt{b}$$

$$\Rightarrow \frac{b}{a} = \frac{9}{25} = \frac{36}{100}$$ i.e., b is 36% of a. Choice (B)

11.



There is a point D on AC, which is such that DC = DB = BC i.e., ΔDBC is equilateral.
$\therefore \Delta ABC$ is a 30°, 90°, 60° triangle.
$\angle ABD = \angle B - \angle CBD = 90° - 60° = 30°$
Hence ΔABD is isosceles and BD : AD = 1 : 1
Choice (C)

12. We can observe that both $f(x, y)$ and $g(x, y)$ are always positive for non-zero real numbers x and y. While we cannot conclude anything about their difference, we can definitely say that their sum will be positive. Hence, choice (C) is the right option.

Alternative Solution:

For $x = -2$ and $y = 1$,
$f(x, y) = 1$ and $g(x, y) = 1$
$\therefore$ the choices (A), (B) and (D) all yield the value 0.
Hence, choice (C) is the right option. Choice (C)

13. The increased value of $H(a, b, c, d)$
$= 2a(1.8) + 3b(1.5)\, c(1.2) + 4c^2(1.2)^2\, d(1.25)$
$= 1.8(2a + 3bc + 4c^2d) = 1.8$ times the original value of $H(a, b, c, d)$
$\Rightarrow$ Percentage increase in $H(a, b, c, d) = 80\%$.
Choice (A)

Solutions for question 14:

14. Let the increase in the price of the ticket be as ₹x. So, let the price of the ticket when the theatre owner maximises his revenue be ₹$(40 + x)$. Audience in this case would be $600 - 5x$.
$\therefore$ Maximum revenue of the theatre owner is the maximum of $= (40 + x)(600 - 5x) = 24000 + 400x - 5x^2$

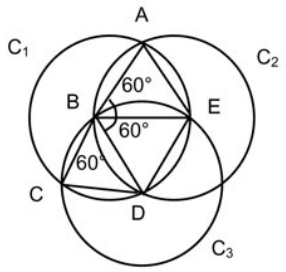
The maximum of this occurs at $x = \frac{-b}{2a} = \frac{-400}{-10} = 40.$

Maximum revenue $= (600 - 5 \times 40)(40 + 40)$
$=$ ₹32,000. Ans: (32000)

Solutions for questions 15 to 17:

15. As the graph is symmetric about y-axis, it is an even function.
$\therefore$ Choices (A) and (B) are ruled out.
As $x \to \infty$, $y \to 0$
Only choice (C) satisfies the given condition.
Choice (C)

16.



The three circles C_1, C_2 and C_3 are of equal radius.
$\therefore$ In the above figure
AB = AE = BE = BC = CD = BD = DE
AB is the radius of circle C_1, AE is the radius of circle C_2 and BE is radius of both C_1 and C_2.
$\therefore$ The triangles, ABE, BCD and BDE are equilateral.
We see that $\frac{1}{2}$ the circumference of each of the 3 circles is included in the perimeter P.

$$\therefore P = 3\left(\frac{1}{2}\right)c = (3/2)2\pi r = 18\pi$$ Choice (D)

17. For $t = 0$, $v = -0.5$.
We consider choices A and B
When t increases to 2, v decreases by 3.
Slope $= -1.5$ Choice (A)

Solutions for question 18:

18. If $n^2 = 24k + 1$, then n^2 when divided by 24 leaves a remainder of 1. Any perfect square (i.e., n^2) which leaves a remainder of 1 when divided by 24 must be the square of a natural number (i.e., n) which is of the form $n = 6p \pm 1$ where p is a whole number. In the problem given, least number in the form $6p \pm 1$ is $1 = 6(0) + 1$ and the greatest number in this form is $97 = 6(16) + 1$.
$\therefore$ A total of $1 + 2(16) = 33$ natural numbers satisfy the given conditions.

Note : It can be shown that $(6p \pm 1)^2 = 36p^2 \pm 12p + 1 = 12p(3p \pm 1) + 1$, where $12p(3p \pm 1)$ is always a multiple of 24 (since $p(3p \pm 1)$ is always even). Hence $(6p \pm 1)^2 = 24k + 1$

Alternative Solution:
Since $24k + 1$ is always odd $\Rightarrow$ n cannot be even, i.e., n must be an odd integer.
If $n^2 = 24k + 1$

$n^2 - 1 = 24k$
$(n-1)(n+1) = 24$
When n is an odd integer $(n-1)(n+1)$ is always divisible by 8. Further if and only if n is not a multiple of 3 then $(n-1)(n+1)$ is also divisible by 3. That is, $n^2 - 1$ is divisible by 24.
$\therefore$ Any odd integer which is not a multiple by 3 will satisfy the condition $n^2 = 24k + 1$.
$\therefore$ The number of values which n can take are
= number of odds less than 100 – number odd 3 multiples less than 100

$$= 50 - \left(\frac{99-3}{6} + 1\right) = 33$$ Ans: (33)

Solutions for questions 19 and 20:

Let there be n flavours of chocolates manufactured by the company. In each packet a particular flavour may be taken or may not be taken. So, there are 2^n ways of selecting 1 or more of the n flavours. This includes the possibility of no flavour being selected. Therefore one or more of the n flavours can be selected in $(2^n - 1)$ ways.

19. If n is the minimum number of flavours required to get 671 different combinations.
$(2^n - 1) < 671 \le 2^n - 1$
$2^{n-1} < 672 \le 2^n \Rightarrow n = 10$
$\therefore$ a minimum of 10 flavours of chocolates are required.
Ans: (10)

20. The maximum combinations of one or more flavours that can be considered with n flavours is $2^n - 1$.
$\therefore$ For $n = 12$, the maximum number of distinct packets is $2^{12} - 1$ i.e., 4095. Ans: (4095)

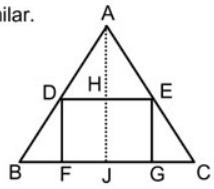
Solutions for questions 21 and 22:

21. Let the side of the square be x. Since the square is inscribed in the equilateral triangle, the square will be as shown in the figure. ABC is the triangle and DEGF is the square.
AJ = Altitude of equilateral triangle of side 1

$$= \frac{\sqrt{3}}{2}.1 = \frac{\sqrt{3}}{2}$$

Since DF = x, HJ is also x, AH = AJ – HJ = $\frac{\sqrt{3}}{2} - x$

Triangles ADE and ABC are similar.



Hence $\frac{DE}{BC} = \frac{AH}{AJ}$

$$\Rightarrow \frac{x}{1} = \frac{\sqrt{3}/2 - x}{\sqrt{3}/2}$$

From this, we get,

$$x = \frac{\sqrt{3}}{2+\sqrt{3}} = \sqrt{3}(2-\sqrt{3})$$ (by rationalising the denominator). Since we want the square area,

$$\text{Area} = \left(\sqrt{3}\left(2-\sqrt{3}\right)\right)^2 = 21 - 12\sqrt{3} \text{ sq.cm.}$$

Alternative Solution:

Area of the equilateral triangle is $\frac{\sqrt{3}}{4} \approx 0.43$.

Area of the required square must be less than 0.43, which eliminates options A and D. Using intuitive reasoning and an approximate diagram, an educated guess can be made.
Choice (C)

22. There are 5 vowels {A, E, I, O, U} and 4 consonants {D, C, T, N}
The 4 consonants can be placed in 4! Ways. Only two vowels should be together. These 2 can be selected in $^5C_2$ ways.
There are 5 positions for the 4 vowel groups – C – C – C – C – (considering 2 vowels as one group): They can be placed in $^5P_4$ ways and the 2 vowels which are together can be arranged in 2! ways.
$\therefore$ The total number of ways = $4! \, {}^5C_2 \, {}^5P_4 \, 2! = 57600$.
Choice (A)

Solution for question 23:

23. From statement (I) alone: 1st of this month is a Sunday and 1st of next month is Wednesday i.e., the gap between 1st of this month and 1st of next month is 3 odd days. So, this month has 31 days, i.e., this month can be January, March, May and so on.
From statement (II) alone: 1st of previous month is a Saturday and 1st of this month is a Sunday i.e., number of odd days is one. So, the previous month has 29 days i.e., it is February and this month is March and hence we can find the day on which 1st of January false.
Hence, II alone is sufficient. Choice (A)

Solutions for questions 24 to 30:

24. Choice (A):
If $a = b = 0.5$
$a^+ = b^+ = 1$ and $(a+b)^+ = 1$
$\therefore$ R = 3.
$(2a)^+ = (2b)^+ = 1$. $\therefore$ S = 2
$\therefore$ R > S i.e Choice (1) is possible.
Choices (B) and (C):
If a and b are any two integers, R = S and P = Q.
$\therefore$ Choices (B) and (C) are possible.
Choice (D):
Let $a = m + x$ and $b = n + y$, where m and n are integers and $0 < x < 1$ and $0 < y < 1$
$\therefore P = (m+x)^- + (n+y)^- + (m+n+x+y)^-$
$= m + n + m + n + \text{int}(x+y) = 2(m+n) + \text{int}(x+y)$
$Q = (2m + 2x)^- + (2n + 2y)^-$
$= 2m + \text{int}(2x) + 2n + \text{int}(2y)$
$= 2(m+n) + \text{int}(2x + 2y)$
If $x + y \ge 1$, then at least one of $2x$ and $2y$ must be greater than 1.
$\therefore$ P can never be greater than Q. Choice (D)

25. Let the number of sides be $2n$. Let the length of the side be S and the length of the perpendicular from the centre to each side be P. Since the number of sides is even, the opposite sides will be parallel and the distance between any two opposite sides is equal to 2P.

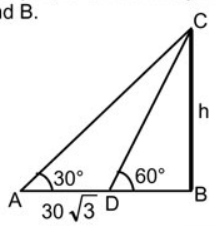
Also, area of the polygon (A) $= 2n\left(\frac{SP}{2}\right)$ ----- (1)

Given that S(2P) = A/4 or SP = A/8
$\therefore$(1) $\Rightarrow$ A = n(A/8)
$\Rightarrow n = 8$ or $2n = 16$ Choice (D)

26. The possible combinations of placing the balls are:
(1, 5, 6), (2, 4, 6), (2, 5, 5), (3, 3, 6), (3, 4, 5) and (4, 4, 4).
i.e., 6 possible combinations. Choice (B)

27. Let B be the foot of the pole CB, and let A be the initial point where Amit starts. If Amit walks $30\sqrt{3}$ m in a straight line from A then, there are three possible cases with respect to the position where he finally stops, relative to A and B.

Case (i)
His final position, say D, is on the line joining A and B, and is in between A and B.



Let h be the height of the pole.

$\tan 30^0 = \frac{h}{AB} \Rightarrow \frac{1}{\sqrt{3}} = \frac{h}{AB} \Rightarrow AB = h\sqrt{3}$.

When Amit is at a point D

$\tan 60° = \frac{h}{BD} \Rightarrow \sqrt{3} = \frac{h}{BD}$

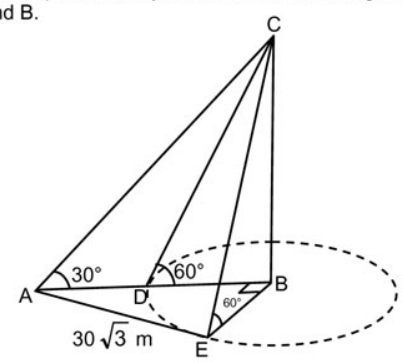
$\Rightarrow BD = \frac{h}{\sqrt{3}}$

$AB - BD = 30\sqrt{3}$

$h\sqrt{3} - \frac{h}{\sqrt{3}} = 30\sqrt{3} \Rightarrow h = 45$ m

Case (ii)

His final position, say E, is not on the straight line joining A and B.



Let us draw a circle with centre B and radius $h/\sqrt{3}$. From any point on the circumference of this circle, the angle of elevation will be 60°.

Let Amit move to same point E on this circle and assume $\angle ABE = 90°$

$AE = 30\sqrt{3}$

$AB = h\sqrt{3}$

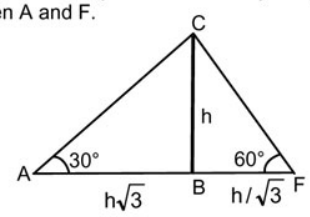
Thus $\sqrt{\left(h\sqrt{3}\right)^2 + \left(\frac{h}{\sqrt{3}}\right)^2} = (30\sqrt{3})^2$

$\Rightarrow h = 9\sqrt{10}$ m.

As $\sqrt{10} > 3$, $9\sqrt{10} > 27$.

Case (iii)

His final position, say F is on the line joining A and B but B is between A and F.



$AB = h\sqrt{3}$. Now, after walking for $30\sqrt{3}$ meters he reached a point F and $BF = h/\sqrt{3}$, where A and F are on opposite sides of the foot of the pole.

Thus $h\sqrt{3} + \frac{h}{\sqrt{3}} = 30\sqrt{3} \Rightarrow h = 22.5$ meters.

Thus, in case (i), h attains its highest value, in case (ii), the value of h lies in between its maximum and minimum value and in case (iii), the value of h will be the minimum i.e., 22.5 meters Choice (D)

28. Let *a* and *b* be the one day's work of A and B respectively.
When A started the work, he works for 9 days and B works for 8 days.
Similarly when B started the work, he works for 9 days and A works for $8\frac{2}{3}$ days.

$\therefore 9a + 8b = 9b + 8\frac{2}{3}a \Rightarrow \frac{1}{3}a = b$

Total work $= 9a + 8b = 9a + 8\left(\frac{1}{3}\right)a = 11\frac{2}{3}a$

$\Rightarrow$ A takes $11\frac{2}{3}$ days to complete the work alone.

And B takes $11\frac{2}{3} \times 3 = 35$ days to complete the work alone.

$\therefore$ A, B and C can complete

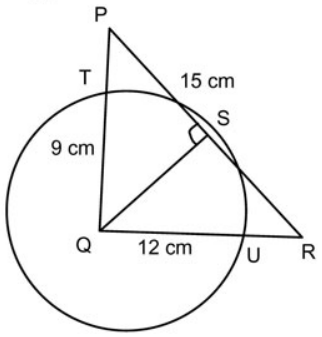
$\frac{3}{35} + \frac{1}{35} + \frac{1}{35} = \frac{5}{35} = \frac{1}{7}$ of work in a day.

$\Rightarrow$ They can complete the entire work in 7 days.
Choice (B)

29. ΔPQR is a right angled triangle. $\because 15^2 = 9^2 + 12^2$

The area of the $\Delta PQR = \frac{1}{2}(PQ)(QR) = \frac{1}{2}(PR)(QS)$

$\Rightarrow QS = \frac{9(12)}{15} = 7.2$ cm.



QT = QU = QS = 7·2cm
PT : RU = (9 – 7·2) : (12 – 7·2) = 1·8 : 4·8 = 3 : 8
Choice (B)

30. The first row can be coloured using any two of the six colours i.e., in $6 \times 5 = 30$ ways.
The second row onwards only four colours are available (i.e., excluding the two colours chosen for the earlier row).
Hence $4 \times 3 = 12$ ways.
$\Rightarrow$ Total number of ways $= 30 \times 12^5$ ways. Choice (D)

Solution for question 31:

31. $A \le 9$ and $B \le 9$. Hence $A + B \le 18$
As A + B and $(A + B)^N$ always have the same units digit, A + B must end with 0 or 1 or 5 or 6.
As $(A \times B)$ and $(A \times B)^N$ always have the same units digit, $A \times B$ must end with 0 or 1 or 5 or 6.
As $A + B \le 18$, A + B can be 5 or 6 or 10 or 11 or 15 or 16 to satisfy the given conditions. We have the following results for each of these values of A + B.
(1) A + B = 5
Possible values of (A, B) are (4, 1) and (3, 2). However, only when (A, B), is (3, 2) the condition for $A \times B$ is satisfied.
(2) A + B = 6
Possible values of (A, B) are (5, 1) (4, 2) and (3, 3).
Only when (A, B) is (5, 1) the condition for $A \times B$ is

satisfied.

(3) A + B = 10

Possible values of (A, B) are (9, 1), (8, 2), (7, 3), (6, 4) and (5, 5). Only when (A, B) is (8, 2), (7, 3) or (5, 5), the condition for A × B is satisfied.

(4) A + B = 11

Possible values of (A, B) are (9, 2), (8, 3), (7, 4) and (6, 5). Only when (A, B) is (6, 5) the condition for A × B is satisfied.

(5) A + B = 15

Possible values of (A, B) are (9, 6) and (8, 7). Only when (A, B) is (8, 7) the condition for A × B is satisfied.

(6) A + B = 16

Possible values of (A, B) are (9, 7) and (8, 8). For neither of these possibilities is the condition for A × B satisfied.

∴ A total of 7 possibilities exist for (A, B)

Ans: (7)

Solution for questions 32 to 34:

32. Since, in a triangle, the sum of any two sides is greater than the third side, the maximum length of a side is 7.

∴ the possible lengths of the triangles are :

2	7	7
3	6	7
4	5	7
4	6	6
5	5	6

i.e., There are a total of 5 triangles. Choice (B)

33. If the sum of two numbers is constant (say $2a$, and the numbers are $a - x$ and $a + x$) the sum of the squares of the two numbers i.e., $2(a^2 + x^2)$ has its minimum value where the numbers are equal, i.e., $x = 0$.

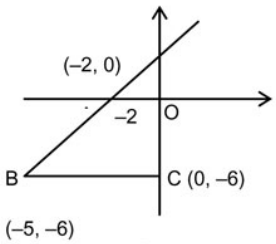
If the sum of the squares of two numbers is constant the sum of the numbers would have its maximum value when the numbers are equal.

These two statements can be generalised to 3 or more positive numbers and from squares to cubes, fourth powers etc.

∴ If $a^2 + b^2 + c^2 = 12$, the maximum value of $a + b + c$ is $2 + 2 + 2 = 6$.

∴ S is at most 6. Choice (B)

34.



At the point of intersection of the two lines, $-6 = 2x + 4$

$x = -5$

The area of the quadrilateral = area of the trapezium OABC

$= \frac{1}{2}$ (OA + BC) OC

$= \frac{1}{2}$ (2 + 5) (6) = 21 sq.units

Choice (B)

Difficulty level wise summary - Section III	
Level of Difficulty	Questions
Very Easy	–
Easy	4, 5, 8, 17, 23, 29, 33
Medium	1, 2, 3, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 24, 25, 28, 30, 32, 34
Difficult	26, 27, 31
Very Difficult	–