

## (Key and Solutions for AIMCAT1703)

### Key

#### SECTION – I SUB-SECTION: RC

1. B	7. C	13. A	19. 124
2. C	8. B	14. D	20. A
3. D	9. 0	15. C	21. D
4. C	10. C	16. B	
5. B	11. B	17. D	
6. A	12. B	18. C	

#### SUB-SECTION: VA

1. 51324	4. 4	7. D	10. B
2. 41532	5. 2	8. C	11. D
3. 31524	6. B	9. B	

#### SECTION – II SUB-SECTION: DI

1. 3	4. D	7. D	10. C
2. 18	5. 5	8. A	11. A
3. 13	6. B	9. B	12. D

#### SUB-SECTION: LR

1. A	4. D	7. B	10. 7
2. 39	5. A	8. D	11. 2
3. B	6. C	9. B	12. 2

#### SECTION – III: QA

1. D	6. C	11. C	16. 3	21. 54
2. 165	7. A	12. C	17. 3	22. B
3. 76	8. D	13. 205	18. 11	23. C
4. 100	9. 13	14. A	19. 2	24. 4
5. A	10. 128	15. 26	20. C	

### Solutions

#### SECTION – I SUB-SECTION: RC

**Solutions for questions 1 to 3:**

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

Number of words: 465

1. A living internal reality takes over the brain. That kaleidoscope of activation feels intuitively right to anyone who's been utterly lost listening to a good yarn. The group broke down the stories into words (units of meaning): social elements, for example, like friends and parties, as well as locations and emotions. They found that these concepts fell into 12 categories that tended to cause activation in the same parts of people's brains at the same points throughout the stories ..... Would related words like mother and father, or times, dates and numbers trigger the same parts of people's brains? The answer was yes. This makes choice B the correct answer. Choice C is not according to the passage. The internal reality that the author refers to is the capacity of different part of the brain

to handle different thought components. Choice A is not the implication of the sentence in the question. Choice D seems to suggest that a person listening to podcasts loses control of the external as the subconscious mind is active. But that is not what the author is referring to as 'internal reality'. Choice D is not the answer. Choice (B)

2. Listening to music may make the daily commute tolerable, but streaming a story through the headphones can make it disappear. The pronoun "it" in the first sentence of para 1 refers to the (problems associated with) daily commute. Option A: Choice A is incorrect. The story narrative does not disappear. The pronoun "it" in the first sentence of the para does not refer to "story".  
Option B: The converse of choice B is true.  
Option C: Listening to music may make the daily commute tolerable, but streaming a story through the headphones can make it disappear. Choice C highlights the importance of streaming a story through the headphone over listening to music and is the answer.  
Option D: You were home; now you're at your desk: What happened? Storytelling happened. But choice D is absurd and is not the answer. Choice (C)

3. Option A: Choice A incorrectly refers to "complex ways that people experience words in **music**". The passage explores how the brain responds when listening to a story.  
 Option B: Choice B mentions "language processing" but does not mention that scientists have mapped the experience of listening to podcasts/ stories. So choice B is incorrect.  
 Option C: Choice C is not the main finding of the passage. It only mentions an example given in the penultimate paragraph.  
 Option D: Choice D summarizes the main finding of the passage. An important finding in the passage is: ..... These categories tended to cause activation in the **same parts of people's brains at the same points throughout the stories**. Would related words like mother and father, or times, dates and numbers trigger the same parts of people's brains? The answer was yes.      Choice (D)

#### Solutions for questions 4 to 9:

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

Number of words: 678

4. The second paragraph of the passage mentions that "environmental ethics is not the only discipline that deals with the human relationship to the nonhuman world" and presents philosophy of nature as another discipline which deals with the human relationship to the nonhuman world.  
 Option A: The author states that "environmental ethics may be the only field of philosophy that even considers the possibility of moving beyond the perspective of anthropocentrism". Further, when talking about philosophy of nature, the author questions whether in describing the nature of natural world, "should we be limited by a human centred understanding". Hence, this option is not the correct answer.  
 Option B: The author mentions that environmental ethics deals with human relationship with nonhuman world. Hence, this option is incorrect.  
 Option C: The author mentions that environmental ethics may be "the only field of philosophy that even considers the possibility of moving beyond the perspective of anthropocentrism". From this we can infer that philosophy of nature follows an anthropocentric approach in describing the nature of the natural world. Hence, this option is the correct answer.  
 Option D: The author mentions various anthropocentric disciplines in the first paragraph (aesthetics, ethics...). Hence, this option is also incorrect.  
 Therefore, the correct answer is option C.      Choice (C)
5. The author mentions that "Environmental policy, if it is to be morally defensible, must be connected in some way to a plausible theory of environmental ethics. But a plausible theory of environmental ethics must, in turn, be based on an adequate philosophy of nature".  
 Option A: The author mentions that environmental ethics must be based on an adequate philosophy of nature and not the other way around. Hence, this option is incorrect.  
 Option B: Environmental policy must be based on environmental ethics which in turn must be based on an adequate philosophy of nature. This philosophy of nature must be a "valid physical and metaphysical description of the way the world is". Hence, this is the correct answer.  
 Option C: In the third paragraph of the passage, the author states that environmental policy should be based on a philosophy of nature which must be a "valid physical and metaphysical description of the way the world is". However, he questions whether such a philosophy of nature is possible "from the limited horizon of anthropocentrism". He does not answer this question directly but considers the case of deep ecology. Going through the passage, we do not find enough evidence to answer this question one way or the other. Hence, this is not the correct answer.  
 Option D: As explained above, the author does not provide any argument to answer the question. Hence, this also cannot be the correct answer.  
 Therefore, the correct answer is option B.      Choice (B)
6. The author talks about Arne Naess in the fifth paragraph of the passage. Arne Naess is a "Norwegian philosopher who coined the distinction between shallow environmentalism and deep ecology".  
 Option A: The passage mentions that Naess is "deliberately ambiguous when it comes to delineating the fundamental ideas of deep ecology". This is because "the advocates of the position do not want to alienate potential supporters with a narrow or technical ideology". Hence, this is the correct answer.  
 Option B: The passage mentions that Naess used the "apron diagram" to "derive and justify the platform of the deep ecology movement". However, this cannot be inferred to be the reason why its scope was ambiguously defined.  
 Option C: Even though deep ecology is a social and political movement, Naess could have defined its scope exactly. But he did not do so because he did not want to "alienate potential supporters with a narrow or technical ideology". Therefore, the identity of deep ecology as social and political movement is not the reason.  
 Option D: While Naess did coin the distinction between shallow environmentalism and deep ecology, this is not related to the definition of the scope of deep ecology. Hence, this is not the correct answer.  
 Therefore, the correct answer is option A.      Choice (A)
7. The author talks about deep ecology in the last three paragraphs of the passage.  
 Option A: The passage mentions that "deep ecologists claim to transcend anthropocentrism and adopt a perspective of ecocentrism". However, claiming to transcend anthropocentrism and transcending anthropocentrism are not the same. Hence, this is not the correct answer.  
 Option B: The author states that "Whether or not deep ecology is anthropocentric will depend on how deep ecology is defined". He then talks about Naess, who ambiguously defined deep ecology and then about McLaughlin, who calls for "clarity within the Movement". However, the author is not sceptical about deep ecologists transcending anthropocentrism. He is donning the role of an investigator rather than a sceptic. Hence, this is not the correct answer.  
 Option C: The author tries to understand the movement of deep ecology and whether it does transcend anthropocentrism. Hence, this is the correct answer.  
 Option D: Andrew McLaughlin states that deep ecology is "not a theoretical or foundational philosophical system". However, the author does not express this opinion. Hence, this is not the correct answer.  
 Therefore, the correct answer is option C.      Choice (C)
8. The passage talks about Arne Naess and Andrew McLaughlin in the final two paragraphs of the passage.  
 (I): According to Naess, deep ecology is "a social and political movement". However, Andrew McLaughlin claims that deep ecology is "not a theoretical or foundational philosophical system". Hence, the second part of this option is incorrect.  
 (II): Naess was "deliberately ambiguous when it comes to delineating the fundamental ideas of deep ecology". Andrew McLaughlin "claims that the "point" of the platform "is to define the Deep Ecology movement, create clarity within the Movement, and make clear where real disagreement might exist." Hence, Andrew McLaughlin seeks clarity within the Movement of Deep Ecology. Therefore, this is the correct answer.  
 (III): While Naess does consider deep ecology to be a "big tent", Andrew McLaughlin wants clarity in the Movement. However, this does not imply that its definition be narrower in scope. It only implies that its definition be unambiguous. Hence, this is not the correct answer.  
 (IV): Naess defined (albeit ambiguously) the fundamental ideas of deep ecology. Hence, this option is incorrect.  
 Therefore, the correct answer is option B.      Choice (B)

9. The passage mentions various disciplines of philosophy and its anthropocentric nature.  
 I: According to the passage, "environmental ethics is not the only discipline that deals with the human relationship to the nonhuman world". The passage then discusses philosophy of nature. Hence, we can infer that philosophy of nature also deals with the human relationship with the nonhuman world.  
 II: Environmental ethics is one of the disciplines that "deals with the human relationship with the nonhuman world".  
 III: The author discusses environmental ethics and talks about philosophy of nature and its anthropocentric perspective. He considers the example of deep ecology to clarify these issues. From this, we can infer that deep ecology is also a part of environmental ethics and hence, will deal with human relationship to the nonhuman world. Therefore, this is not one of the fields.  
 IV: The passage mentions that "in epistemology, for example, the centrality of human knowing seems a straightforward focus of concern". From this, we can infer that epistemology is primarily anthropocentric but, especially because of the phrase "human knowing", we cannot definitely say that this field does not deal with relationship between the human world and the nonhuman world.  
 Hence, for none of the given fields can we say that it definitely does not deal with relationship between the human world and the nonhuman world. Ans: (0)

#### Solutions for questions 10 to 15:

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

Number of words: 731

10. Another theme is the impersonality of scientific prose. Scientific writing has always been relatively impersonal, but the literary forms of impersonality have changed over time.  
 Option A: In the **seventeenth** century, Robert Boyle used thickly layered circumstantial reporting to portray himself as a modest witness of his experiments, his judgement uncoloured by theoretical interest. He was nevertheless a witness at the centre of his own narratives, not averse to using the first-person singular – "I did X, I saw Y". So choice A is not the answer to the question.  
 Option B: By the **nineteenth** century – when the French physiologist Claude Bernard coined the aphorism "Art is I; Science is We" – the scientific author became increasingly submerged in the first-person plural ("We did X, we saw Y"). Choice B would be a scientific writing style of the 19<sup>th</sup> century and is not the answer to the question.  
 Option C: Now the passive voice is standard in scientific papers ("X was done, Y was seen"). Choice C presents the experiment details in passive voice. Hence choice C is the answer to the question.  
 Option D: Choice D would again be from a publication of the 19<sup>th</sup> century. The first sentence in the excerpt uses "the first-person plural" while the second sentence in the excerpt uses the passive voice. Hence choice D is not the answer.  
 Choice (C)

11. Option A: Choice A is out of scope. Hence it cannot be the answer.  
 Option B: The scientific literature reports, but it also aims to persuade readers that what it reports is reliable and significant. And the arts of persuasion are inevitably literary and, specifically, rhetorical. The very big differences between Jane Austen's *Persuasion* and a scientific paper lie in the different patterns of rhetoric used in the latter, not in their absence from it. Hence choice B is correct.  
 Option C: Conventions of scientific writing have changed enormously over the past few centuries and even over recent decades. Choice C does not serve to compare or contrast scientific and literary writing. So choice C is not the answer.  
 Option D: The aim of scientific writing was to report, whereas rhetoric worked to distort. The author goes on to

add: But it's not that simple. The scientific literature reports, but it **also aims** to persuade readers (through literary and, specifically, rhetorical means) that what it reports is reliable and significant. Choice B scores over choice D.

Choice (B)

12. Option A: Choice A is partly true but is not the main focus of the book. The rhetorical convention here implies that scientific authors do not matter to what they report in the same way that Jane Austen matters to *Persuasion*. So choice A is not the answer. This choice could be considered if it said "differences" instead of "commonalities".  
 Option B: Refer to para 4 where the reviewer calls the book 'a guided tour'. This follows his saying that the scientific excerpts are 'embedded in strands of editorial commentary'. The tone is genial: this "guided tour" doesn't threaten arduous intellectual adventure. Rhetorical terms are explained, and pertinent scientific contexts introduced.  
 Option C: 'The Scientific Literature' is not a book on science. Hence choice C is distorted.  
 Option D: Choice D is incorrect. The author discusses the art of persuasion in scientific writing in his review of the book 'The Scientific Literature'.  
 Choice (B)
13. Option A: Refer to the last para. It is becoming easier to envisage present-day science communication without words than without images. It is disappointing then that many of the **illustrations** in *The Scientific Literature* are so **murkily reproduced**. Maybe it is easier for humanists to say that visual communication is important than for them and **their publishers to act as if it is**. This makes choice A the correct answer.  
 Option B: The author is not at fault in utilizing visual representation. The publishers are at fault for not reproducing the representations accurately. Choice B is a misdirection.  
 Option C: Now, practically every issue of a scientific journal is a cornucopia of high-bandwidth visual communication sometimes even in online video form. Choice C cannot be inferred.  
 Option D: Choice D is out of scope. Choice (A)
14. The authors point out that, not surprisingly, specialization has been accompanied by increasingly exclusive scientific writing. There never was a golden age when every educated person could read everything in the scientific literature.  
 Option A: "increasing use of rhetoric in scientific writings" in choice A finds no mention in the passage. We only know that the very big differences between Jane Austen's *Persuasion* and a scientific paper lie in the different patterns of rhetoric used in the latter, not in their absence from it. So choice A would not be noticed by a reader of 'The Scientific Literature'.  
 Option B: Choice B is out of scope.  
 Option C: Refer to the opening sentence of para 7 – the accelerating incomprehensibility. Choice C is negated by para 7 of the passage. Hence choice C is not the answer.  
 Option D: The accelerating incomprehensibility of scientific writing to the average educated person is not merely the fault of the much-lamented 'public ignorance of science'. Specialists have been so successful in constructing and bounding their own audiences that they rarely feel any need to address the laity or even scientists in other disciplines. Hence choice D is the answer.  
 Choice (D)
15. Refer to the first para of the passage.  
 Option A: Few scientists would acknowledge any connection between how they write and the works of novelists or poets. Choice A is not related to the question.  
 Option B: The English originators of the scientific journal vigorously set themselves against all forms of fancy writing. The newly formed Royal Society of London separated "the knowledge of Nature...from the colours of Rhetorick". Choice B is not specific to the question.

Option C: Refer to the last two sentences of para 1. Today, few scientists consider themselves to be rhetoricians. How many even know the meaning of anaphora, antimetabole or litotes? Some scientists do not know even these names. We can surmise that anaphora, antimetabole and litotes are devices used in literary writing. Hence choice C is correct.

Option D: The aim of scientific writing was to report, whereas rhetoric worked to distort. But we cannot say that anaphora, antimetabole and litotes are destructive tools if employed in scientific writing. Hence choice D is not the answer.

Choice (C)

#### Solutions for questions 16 to 21:

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

Number of words: 691

16. Refer to para 6. New generations brought forth the dead cities from oblivion.

Option A: The phrase "like a resurrection, a miracle" does not allude to the amount of effort put in by the excavators. So choice A is not correct.

Option B: In the seventh paragraph, we are told "It is indeed hard to imagine a better way of preserving a whole city for the benefit of posterity .....of catching it fairly in the midst of its everyday activity, ..... The laws of time lost their validity." The details mentioned in para 8 point to choice B as the answer.

Option C: Choice C finds no mention in the passage. It is out of scope.

Option D: In August A.D. 79, there were signs that Vesuvius was again about to erupt. Almost seventeen hundred years passed after that disaster when the excavation of the two cities began. But choice D is not a reason for the question.

Choice (B)

17. The archaeologist, infatuated with his work to the exclusion of the usual pieties, is quite capable of praising this sort of catastrophe as a stroke of luck.

Option A: The archaeologists were infatuated with the rediscovery of Pompeii and Herculaneum. Though piety can refer to reverence towards God, the idea of religion does not come up in the context. Here 'pieties' is being used more in the sense of 'appropriately sympathetic sentiments'. So choice A is incorrect.

Option B: Choice B is true but does not completely describe the attitude of the archaeologist.

Option C: While the first part of choice C is true, the second part is negated from the phrase "infatuated with his work to the exclusion of the usual pieties". So choice C is incorrect.

Option D: 'Exclusion of the usual pieties' means that archaeologists do not show appropriate respect to the dead people and civilization they study. The archaeologists are happy that luck was on their side as they excavated the cities. This makes choice D the correct answer.

Choice (D)

18. Refer to paras 3 and 4. This violence descended on the two cities of Pompeii and Herculaneum during the busy, sunny hours of early morning and worked their total destruction in two different ways.

Option A: According to para 4, some citizens of Pompeii did choke to death due to sulphur fumes, but such an event is not mentioned in case of Herculaneum, which according to para 3, was buried in an avalanche of mud. The second part of choice A has not been mentioned in the passage. So choice A is not correct.

Option B: While ash, smoke and terrifying flashes of light have been mentioned in para 2, choice B does not explain the correct difference in the destruction patterns of the two cities. Hence choice B is not correct.

Option C: An avalanche of mud – a mixture of volcanic ash, rain, and lava – poured massively over Herculaneum, forcing its way into streets. In Pompeii, lapilli began to come down, then occasional bombs of pumice weighing many pounds. Clouds of sulphur fumes settled down on the city. So choice C is correct and is the answer.

Option D: The first part of choice D is itself a distortion. It's not the mud that the author likens to a sponge, it's the city itself. Further, the second part does not give the correct and complete picture of the destruction in Pompeii. The sun came out forty-eight hours later, but by this time Pompeii and Herculaneum had ceased to exist. For a distance of eleven miles around (*and not only in Pompeii*), the landscape had been destroyed.

Choice (C)

19. Refer to the last few paras of the passage, where the author discusses Pompeii's significance for archaeology. Before the first excavation nothing but the bare memory of the two cities' entombment remained. But once digging began, little by little the whole dramatic event took shape in men's minds, and information on the catastrophe left by the authors of antiquity came to life.

Statement 1: "..... preserving a whole city for the benefit of posterity, of catching it fairly in the midst of its everyday activity .....". Hence statement 1 is true.

Statement 2: It is indeed hard to imagine a better way of preserving a whole city for the benefit of posterity, of catching it fairly in the midst of its everyday activity, than by sealing it beneath a great blanket of ash. Para 8 talks about people being preserved as they went about their day to day activities. Para 9 talks about buildings being preserved: The rows of houses, the Temple of Isis, the amphitheater – all were there exactly as they had looked on the fateful August day. So statement 2 can be a reason for the question.

Statement 3: While the author does lament the fact that archaeologists can be callous enough to consider such death and destruction a positive thing, this in itself has no bearing on the importance of Pompeii for archeology. So statement 3 is incorrect.

Statement 4: Pompeii was quite different from the ruins of a city which had died a natural death by a process of withering away. The living community was touched with a magic wand, and the laws of time, of becoming and of fading, lost their validity. It was the cultured man of the eighteenth century who first saw this richly detailed museum of the past. Hence statement 4 is a reason.

Statement 5: The archaeologist, infatuated with his work to the exclusion of the usual pieties, is quite capable of praising this sort of catastrophe as a stroke of luck. But "for the very first time" as given in statement 5 cannot be inferred from the passage.

Ans: (124)

20. The Renaissance had prepared him for the aesthetic appreciation of antique splendors. But he also sensed the incipient power of science and was eager to dedicate himself to facts rather than rest content with mere contemplation of the beautiful and strange. To do justice to both these viewpoints someone was needed who combined a love for the art of antiquity with a talent for systematic investigation and criticism.

Option A: Choice A is correct. One realizes that beauty needs to be looked at but one should also consider the science or facts behind the beautiful and the strange things.

Option B: Choice B states the contrary point and is not the answer.

Option C: Choice C seems to put both the requirements or characteristics on par but it is not the answer. While the first part of choice C is correct, a mere knowledge of science is not sufficient. One needs to have a thirst for systematic investigation and criticism.

Choice (A)

21. Para 1 mentions the author's conclusion that the writer then proceeds to explain. (Since the para is a single sentence we wouldn't assess its style on its own, since style requires an arrangement of sentences.)

Paras 2, 3 and 4 don't just relate the happenings, they describe them in pretty vivid detail. All 3 paras would be descriptive.

Paras 5 and 6 relate events without a focus on description. These two paras would be narrative.

Para 7 (The archaeologist, infatuated with his work to the exclusion of the usual pieties, is quite capable of praising this sort of catastrophe as a stroke of luck.) is an evaluation

of the situation as pertaining to archaeologists. So its style is analytical. The tone of the author is evaluatory.

Para 8 relates events without a focus on description. This para would be narrative.

Para 9 is descriptive.

Para 10 (It was the cultured man of the eighteenth century who first saw this richly detailed museum of the past.....) is analytical in style and evaluatory in tone.

Choice D has all the parts correctly matched.

Choice (D)

Difficulty level wise summary - Section I	
Sub Section: RC	
Level of Difficulty	Questions
Very Easy	-
Easy	2, 10, 15
Medium	6, 11, 13, 16, 20
Difficult	1, 3, 7, 8, 9, 12, 14, 17, 18, 19, 21
Very Difficult	4, 5

## SUB-SECTION: VA

### Solutions for questions 1 to 3:

1. On a careful reading of the sentences, it can be observed that sentence 5 is a standalone sentence and is very general in nature. The other sentences (i.e. sentences 1, 3 and 4) in one way or another, exemplify the point about "demotions" mentioned in sentence 5 while sentence 2 contrasts the same. Hence sentence 5 can be placed at the beginning of the paragraph. One can then pay attention to the timelines or dates mentioned in the paragraph. Hence sentence 1 (In the 1500s....) follows sentence 5. "Nicolaus Copernicus kicked Earth from its perch ...." in sentence 1 is an example of a painful demotion in science. Sentence 3 then follows sentence 1. "Later Charles Darwin .... humans are just another species of animal" in sentence 3 is another example of a painful demotion in science. Sentence 2 then mentions an observation of geologists in the 20<sup>th</sup> century. "All human history amounts to less than an eye-blink in the life span of Earth (4.6 billion years old)" is yet another example of a demotion in science. So, 5132. Sentence 4 with the contrast conjunction "though" concludes the paragraph. "unexpected promotion" in sentence 4 contrasts "science is a series of painful demotions" mentioned in the introductory sentence 5. Hence, 51324.

Ans: (51324)

2. 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 background: old admirers nor recent converts cannot seem to get enough .... Also J. M. W. Turner is the full name that we have of Mr. Turner in this sentence. Sentence 4 is then followed by sentence 1, which is another general sentence (the latest of many in recent decades). We can infer on reading the remaining sentences that "the man who was arguably Britain's greatest painter" in sentence 1 refers to Mr. Turner. Ms. Franny Moyle was the biographer of Mr. Turner. Sentences 1 and 5 form a mandatory pair. "the man who was arguably Britain's greatest painter" in sentence 1 links with "declaring Turner to be the world's most famous landscape painter" in sentence 5. So, 415. Sentence 5 is followed by sentence 3. "Turner himself would have disagreed" in sentence 3 links with "The book-jacket declares Turner to be the world's most famous landscape painter" in sentence 5. Sentences 3 and 2 are linked through the detail of Claude Lorrain. Sentence 2 concludes the para. So, 41532.

Ans: (41532)

3. On a careful reading of the sentences, it can be observed that sentence 3 is a general sentence that begins the paragraph. Sentence 3 is followed by sentence 1 which has the contrast conjunction 'but'. Researchers are trying to find out how the brain works. Sentences 1 and 5 form a mandatory pair. The pronoun 'their' in sentence 5 refers to 'researchers' in sentence 1. Sentence 5 introduces fMRI to us. Sentence 5 is followed by sentence 2. Sentence 2 talks

about the other use of MRI scanners. Sentence 4 concludes the paragraph. "study volunteers for the purposes of research" in sentence 2 links with "watching people's brains as they carry out certain tasks" in sentence 4. "neuroscientists hope to get some idea" in sentence 4 concludes the idea introduced in sentences 3 and 1: Researchers are trying to find out how the brain works. So, 31524.

Ans: (31524)

### Solutions for questions 4 and 5:

4. The word 'see' fits in the blanks in sentences (i), (ii) and (iii). The word 'know' fits the blanks in sentences (ii), (iii) and (v). The word 'discuss' fits the blanks in sentences (ii), (iii), (iv) and (v). The word 'fret' does not fit in any of the blanks. Since the word 'discuss' fits the blank in a maximum of four sentences, the correct answer is 4. Ans: (4)
5. The word 'humour' fits the blank in sentences (i) and (iv). The word 'partial' fits the blanks in sentences (iii) and (v). The word 'inconceivable' fits the blank in sentence (ii). The word 'cliché' does not fit in any of the blanks. Since each of the words 'humour' and 'partial' fits the blank in a maximum of two sentences, the correct answer is 2. Ans: (2)

### Solutions for questions 6 and 7:

6. On a careful reading of the sentences, it can be observed that the first paragraph paints artificial coral reefs in a negative light. The second paragraph talks about some positive points (support a biomass of fish that is 20 times greater than similarly sized natural reefs, further gains .....). In this scenario, the best sentence out of the choices that would bridge the gap between the two paragraphs is choice B. "can pay dividends" in choice B echoes with "expects further gains" in the later half of the second paragraph. Choice A is nowhere connected with the first paragraph and the contrast conjunction 'but' employed in choice A does not serve any purpose (in providing a contrast between the last sentence of para 1 and para 2). Choice C can be a part of another paragraph as it describes some technical points about how reefs can be made. Choice D is a positive sentence that can be a part of another paragraph, much later in the flow. "appear to be a promising way" needs further elaboration.
7. The paragraph talks about conditional aid. The first para puts cashewnuts in a negative light. Cashew nuts still haunt the backers of conditional-aid schemes. The cashewnut processing industry in Mozambique suffered losses when it cut its high export tariff on raw nuts in exchange for loans from the World Bank. Choice D best reflect this idea and can complete the blank. "Such slips" refers to the missstep mentioned in para 1. "one idea is working well" in the sentence following the blank contrasts the idea mentioned in choice D.
- Choice C can serve as an introduction sentence in a paragraph immediately following the second paragraph in the question. "poor countries would prefer to receive cash with no strings attached" in choice C would continue after "25 countries have received more than \$9 billion between them" in the question paragraph. Choices A and B can come in paragraphs much later in the text as they resemble "course of action" sentences. They would need further elaboration and substantiation.

Choice (B)

Choice (D)

### Solutions for questions 8 to 11:

8. The given sentence has errors related to parallelism and punctuation. 'The college' is incorrect. We are not referring to a particular college but we are referring to 'college' in general. So 'a college' should be used at the start of the sentence. '{prison house}' would refer to ignorance or the limitations of our prejudice. The battle refers to one of the battles. The sentence implies that one will go through many battles. Existence of college life is one such battle.} We

need to say, "The battle is not yet lost" since the other parts have the word 'yet' in them. The present perfect "battle has not yet been lost" is incorrect (in choices A and D) as it is not parallel to "hope has not yet died" and "the prison house has not yet closed". Also in the final part, the word 'here' has to be placed before "we assert, endow and defend as final reality.....". 'where' in choice A is incorrect inspite of the semicolon before it. Without the semicolon, it would have been wrong altogether. 'in final reality' in choice D is incorrect. With respect to punctuation, we would also need to introduce a semicolon after the word 'lost'. (We want to bring in another statement to be seen with an earlier one but it is an independent thought. We have ended a thought and are starting a new thought with a different emphasis). So the correction is, "A college is a corner of our hearts where hope has not yet died, the prison house has not yet closed, the battle is not yet lost; here we assert, endow and defend as final reality, the best of our dreams." In choice B, the presence of a comma after 'hearts' and the absence of a semicolon after 'lost' renders it incorrect. Only Choice C is free from errors and provides the correct sentence construction.

Choice (C)

9. The sentence means to tell us that the survey is questionable. 'They estimated' is wrong in choice C. 'that which' is awkward. The subject 'survey' is already present and so another subject is not required. Moreover, survey cannot be referred to as 'they'. Also, because the focus is on 'action having been done', the tense should be present perfect: has estimated. 'Whatever its merits' is the same as 'whatever its merits may be'. So keeping verbosity in mind, we can eliminate choices A and D. Now in comparison to 61, 29 is smaller. Hence logically, 'only' should emphasize the smaller figure. 'Only' thus should go with 29. This eliminates choices A and C. The one that is error-free is choice B. It tells us that government analysts point out that '..... the survey ..... has estimated ..... and is questionable.'

Choice (B)

10. The rise and commitment of Morgan Motor Company are two subjects and so require a plural verb (have). When 'sport' refers to sport in general such as the statement – I am not interested in sport – it is used without the final 's'. However, when it is used in the expression 'sport cars' it is used with the final 's'. 'nearly' should be used immediately before 'every major automaker'. 'on the production pipeline' is unidiomatic. It should be 'in the production pipeline'. Choice A: 'commitment' should be followed by 'to' and not 'for (creating)'. 'nearly' has been placed before 'in the world' conveying an absurd idea.

Choice B: This option uses the plural verb 'have', the correct idiom and the adverb 'nearly' in the right position. (Correct)

Choice C: 'So positive a momentum ..... that" is not as appropriate as "Such positive ..... that". "nearly" is placed in the wrong part of the sentence.

Choice D: 'sport car' is incorrect here. The plural 'sports cars' needs to be used. The construction 'who has' is wordy.

Choice (B)

11. The author is expressing a general opinion about the historians. The first part has a parallelism error. 'speak' and 'take' in the first part of the sentence should be parallel to each other. This is not so in choice B. Now the ununderlined part of the sentence is in the past tense. This means that all verbs should be in the past tense (were, prefaced, were going). This makes choices A and C wrong. Only choice D is correct.

Choice (D)

Difficulty level wise summary - Section I	
Sub Section: VA	
Level of Difficulty	Questions
Very Easy	–
Easy	–
Medium	5, 6
Difficult	1, 2, 3, 4, 7
Very Difficult	8, 9, 10, 11

## SECTION – II

### SUB-SECTION: DI

#### Solutions for questions 1 to 4:

We can find the number of babies born between 2000 and 2005, 2005 and 2008, 2008 and 2009 by finding the total number of people in the colony during each year. Since no new persons moved into the colony and no person dies, the difference in the totals across the years will be the number of babies born during that period. Hence, 10 babies were born between 2000 and 2005, 6 babies were born between 2005 and 2008. 2 babies were born between 2008 and 2009.

Since 10 babies were born between 2000 and 2005, the number of people in the age group 0-10 has to be  $32 + 10 = 42$ , if there were no one in this group with age  $\geq 6$ . However, only 28 people are in the age group 0-10. Hence, 14 people in 2000 would have been in the age group 6-10 and  $32-14 = 18$  people would be in the age group 1-5 (since no one's age was less than one year).

Similarly, if 14 people moved to the next age group by 2005, the number of people in the age group 11-20 must be  $15 + 14 = 29$ . However, there are only 25 people in this age group. Hence, in 2005, 4 people must have been in the age group 16-20 and 11 people would have been in the age group 11-15.

The number of people in the age group 21-50 in 2005 was 48 (instead of 52, since 4 people moved into this age group). Hence, 4 people in 2000 would have been in the age group 46-50 and 44 people would have been in the age group 21-45. Similarly, in 2000, the number of people in the age group 56-60 will be 11 and the number of people in the age group 51-55 will be 21.

All the people in the 1-5 age group in 2000 would have moved to the 6-10 age group after five years (i.e., in 2005). We can make a similar conclusion for the other age groups.

Hence, in 2005, the number of people in the age groups 6-10, 11-15, 16-20, 21-25, 26-50, 51-55, 56-60, 61-65 and  $>65$  will be 18, 14, 11, 4, 44, 4, 21, 11 and 12 respectively. The number of people in the age group 0-5 will be 10 (the babies born during 2000-2005).

The number of babies born between 2005 and 2008 was 6. This should result in the number of people in the age group 0-10 as  $28 + 6 = 34$ . However, there are only 31 people. The remaining 3 people must have been in the age group 8-10 in 2005 (since, in three years, they must have shifted to the next age group). Hence, in 2005, the number of people in the age group 6-7 will be 15. Similarly, we can find the number of people in the age groups 11-15, 16-17, 18-20, 26-47, 48-50, 51-55, 56-57, 58-60, 61-65 and  $>65$  to be 14, 4, 7, 4, 36, 8, 4, 19, 2, 11 and 12 respectively.

In 2008, the age of each person in this age group would have increased by three years. Hence, 0-5 age group will become 3-8, 6-7 age group will become 9-10 and so on.

The following table gives the number of people by different age groups in 2008:

Age Group	Number of people
0-2	6
3-8	10
9-10	15
11-13	3
14-18	14
19-20	4
21-23	7
24-28	4
29-50	36
51-53	8
54-58	4
59-60	19
61-63	2
$>63$	23

Between 2008 and 2009, 2 babies were born. But the number of people in the age group 0-10 did not increase by 2. Hence, there must have been 2 people whose age was 10 years in 2008. Therefore, 13 people would have been 9 years old in 2008. Similarly, there must have been 3 people whose age was 20 years in 2008 and one person whose age was 19 in 2008. 5 people would have been 50, 18 people would have been 59 and 1 person would have been 60.

Using this information, we can find the ages of the people in 2000 (given in the following table).

Age Group	Number of people
1	13
2	2
3-5	3
6-10	14
11	1
12	3
13-15	7
16-20	4
21-41	31
42	5
43-45	8
46-50	4
51	18
52	1
53-55	2
56-60	11
>60	12

1. 3 people were of 12 years at the beginning of 2000.  
Ans: (3)
2. 18 people were 51 years at the beginning of 2000. All these people would be 58 years at the beginning of 2007.  
Ans: (18)
3. All the people (13) who were 1 year old at the beginning of 2000, would have been born in 1998. Hence, 13 people would have been born in 1998.  
Ans: (13)
4. The statement given in option D will definitely be false since there are only 2 people in the age group 53-55. If this statement is to be true, there has to be at least 3 people.  
Choice (D)

#### Solutions for questions 5 to 8:

All the persons whose Landline number starts with '08123' can be from Newrock. The persons who can be from Newrock are Tracey, Katherine, Lisbet and Francine.

The sum of the durations of their calls =  $100 + 36 + 30 + 54 = 220$   
 Actual duration of calls made to persons from Newrock = 184  
 Difference = 36

Hence, Katherine is not from Newrock and all the rest are from Newrock.

Tracey, Lisbet and Francine use the networks Revula, Zephyr and Telbon respectively.

Similarly, all the persons whose landline number starts with '08124' can be from Snowsilver. Hence, Mary, Eric, Elias and Astrid can be from Snowsilver.  
 Sum of their durations = 223  
 Difference =  $223 - 195 = 28$

Hence, except Mary, the rest are from Snowsilver. Eric, Elias and Astrid use the networks Telbon, Telbon and Zephyr respectively.  
 The persons who can be from Westerhall are Cecil, Mulu, Agnes and Aurele.  
 The sum of their durations = 252  
 Difference =  $252 - 155 = 97$

Hence, Agnes is not from Westerhall. Cecil, Mulu and Aurele use Eureka, Revula and Revula respectively.

Further, Brian can only be from Appleview and must be using the network Revula.

Since Brian is from Appleview, the sum of durations of the other people from Appleview must be  $105 - 41 = 64$   
 Hence, Kifle and Agnes cannot be from Appleview (since their call durations are more than 64 seconds). They must be from Glassgold and will be using Eureka and Zephyr respectively.

The sum of the durations of other people from Glassgold must be  $196 - 65 - 97 = 34$

The only possibilities for Glassgold are Cecil and Javier. Of these, Cecil is from Westerhall. Hence, Javier must be from Glassgold. He must be using the network Eureka.

Katherine and Mary must be from Appleview and both will be using the network Eureka.

The following table provides the cities, networks of each person:

Name	Landline Number	Duration (sec)	City	Network
Mary	0812421847	28	Appleview	Eureka
Javier	0812241568	34	Glassgold	Eureka
Eric	0812445178	54	Snowsilver	Telbon
Tracey	0812336487	100	Newrock	Revula
Cecil	0812525594	34	Westerhall	Eureka
Katherine	0812322748	36	Appleview	Eureka
Brian	0813634781	41	Appleview	Revula
Mulu	0812533547	56	Westerhall	Revula
Elias	0812444578	74	Snowsilver	Telbon
Kifle	0812234788	65	Glassgold	Eureka
Lisbet	0812357789	30	Newrock	Zephyr
Agnes	0812525486	97	Glassgold	Zephyr
Francine	0812345578	54	Newrock	Telbon
Aurele	0812532547	65	Westerhall	Revula
Astrid	0812454268	67	Snowsilver	Zephyr

5. 5 persons' phones belong to Eureka.

Ans: (5)

6. The given condition is satisfied for Newrock.

Choice (B)

7. Javier, Agnes belong to the same city.

Choice (D)

8. The first number is from Appleview and belongs to Eureka.

Choice (A)

#### Solutions for questions 9 to 12:

9. Let the weight of each salad be  $w$ .

Total weight of apples used

$$= (0.2 + 0.1 + 0.05 + 0.2 + 0.15) * w = 0.7w$$

Total weight of oranges used =  $1.1w$

Total weight of Bananas used =  $1.5w$

Total weight of Pomegranates used =  $0.6w$

Total weight of Papayas used =  $1.1w$

All the apples could not have been used because the oranges available would have to be higher in such a case.

$$\text{If all the oranges were consumed, } w = \frac{2.3}{1.1} = 2.091$$

In this case, the weight of bananas required =  $1.5 * 2.091 = 3.14$  kg. Since this is not available, oranges also could not have been consumed completely. We can see that, the fruit, for which the value of  $w$  is lowest, will be used completely.

$$\text{If all the bananas were consumed, } w = \frac{2.3}{1.5} = 1.5333$$

$$\text{If all the pomegranates were consumed, } w = \frac{1}{0.6} = 1.67$$

$$\text{If all the papayas were consumed, } w = \frac{6}{0.9} = 6.67$$

Since the value of  $w$  is smallest for bananas, all the bananas could be consumed.

Choice (B)

10. In fruit salad 1, 3, 4, and 5, weight of apples used

$$= (20\% + 5\% + 20\% + 15\%) * 0.250 = 0.15 \text{ kg}$$

Total weight of oranges used =  $0.75 * 0.250 = 0.1875 \text{ kg}$

Total weight of bananas used =  $0.325 \text{ kg}$

Total weight of pomegranates used =  $0.1125 \text{ kg}$

Total weight of papayas used =  $0.225 \text{ kg}$

Weight of apples, oranges, bananas, pomegranates, and papayas remaining are 4.85 kg, 2.1125 kg, 1.975 kg, 0.8875 kg, and 5.775 kg respectively. These fruits are to be used in percentages of 10%, 35%, 20%, 15%, and 20%. Starting with pomegranates, if 15% of the salad weighs 0.8875 kg of pomegranates, weight of bananas required

$$= \frac{0.8875}{0.15} * 0.2 = 1.183 \text{ kg}$$

Weight of oranges required

$$= \frac{0.8875}{0.15} * 0.35 = 2.071 \text{ kg}$$

Weight of apples required

$$= \frac{0.8875}{0.15} * 0.10 = 0.592 \text{ kg}$$

Weight of papayas required

$$= \frac{0.8875}{0.15} * 0.2 = 1.183 \text{ kg}$$

This is the maximum quantity of fruits required because of the limited quantity of pomegranates left.

Hence, the maximum number of papayas required

$$= \frac{1.183}{0.5} = 2.367$$

Choice (C)

11. If 1 unit of apple was used in making fruit salad 3, then 0.250 kg (weight of 1 unit of apple) corresponds to 5% of the weight of the fruit salad.

Hence, weight of oranges required =  $1.25 \text{ kg} \rightarrow \text{Number of units}$

$$\text{units} = \frac{1.25}{0.153} = 8.17$$

Weight of bananas required =  $1 \text{ kg} \rightarrow \text{Number of units}$

$$= \frac{1}{0.051} = 19.57$$

Weight of pomegranates required = 1 kg  $\rightarrow$  Number of units = 5

Weight of papayas required = 1.5 kg  $\rightarrow$  Number of units

$$= \frac{1.5}{0.5} = 3$$

Total cost of making the fruit salad

$$= 1 \times 40 + 8.17 \times 10 + 19.57 \times 5 + 5 \times 20 + 3 \times 15$$

$$= ₹364.55 \quad \text{Choice (A)}$$

12. If the vendor prepares only Fruit Salad 1,

If all apples are to be used, total weight of fruit salad

$$= \frac{5}{20} \% = 25 \text{ kg}$$

For oranges, total weight of fruit salad =  $\frac{2.3}{25} \% = 9.2 \text{ kg}$

For bananas, total weight of fruit salad =  $\frac{2.3}{30} \% = 7.67 \text{ kg}$

For pomegranates, total weight of fruit salad =  $\frac{1}{10} \% = 10 \text{ kg}$

For papayas, total weight of fruit salad =  $\frac{6}{15} \% = 40 \text{ kg}$

Since the weight of the fruit salad 1 is lowest, if all bananas are consumed, this is the maximum weight of fruit salad that can be prepared. Since the total weight of fruits available is 16.6 kg, the remaining fruits =  $16.6 - 7.67 = 8.93 \text{ kg}$

Calculating similarly for other fruit salads, we get fruits left over in fruit salad 2, 3, 4, and 5 as 10.03 kg, 11.6 kg, 10.85 kg, and 10.85 kg. Hence, the minimum weight of fruits left over is when preparing fruit salad 1 using all the available bananas.

Choice (D)

<b>Difficulty level wise summary - Section II</b>	
<b>Sub Section: DI</b>	
<b>Level of Difficulty</b>	<b>Questions</b>
Very Easy	-
Easy	-
Medium	9, 10, 11
Difficult	5, 6, 7, 8, 12
Very Difficult	1, 2, 3, 4

## SUB-SECTION: LR

### Solutions for questions 1 to 4:

Given that Kaka's watch shows 7:06 pm at 7:00 pm. This would have occurred only if Kaka's watch was set at 4:00 pm and it gains 2 minutes an hour or if Kaka's watch was set at 1:00 pm and it gains 1 minute an hour.

If Kaka's watch was set at 4:00 pm and it gains 2 minutes an hour, it would have displayed a time of 7:06 pm at 7:00 pm. One of the other watches has to gain 1 minute an hour. However, Kaka's watch will catch up with the watch which gains 1 minute an hour irrespective of when it is set, as shown below:

If the watch which is adjusted at 1:00 pm gains 1 minute an hour, the watch set at 4:00 pm will catch up at 7:00 pm (both will show a time of 7:06 pm).

If the watch which is adjusted at 10:00 am gains 1 minute an hour, the watch set at 4:00 pm will catch up at 10:00 pm (both will show a time of 10:12 pm).

If the watch adjusted at 7:00 am gains 1 minute an hour, the watch set at 4:00 pm will catch up at 1:00 am (both will show a time of 1:18 am).

Hence, the watch set at 4:00 pm cannot gain 2 minutes an hour. Hence, Kaka wears a watch which was adjusted at 1:00 pm and it gains 1 minute per hour. The watch which is set at 4:00 pm cannot gain 2 minutes an hour (since they will show the same time at 7:00 pm). The watch which is set at 4:00 pm has to lose either 1 minute0 per hour or 2 minutes per hour.

If it loses 2 minutes per hour and the watch set at 7:00 am loses one minute an hour, they will display the same time at 1:00 am. If the watch which is set at 4:00 pm loses 2 minutes an hour and the watch which is set at 10:00 am loses 1 minute an hour, the two watches will display the same time at 10:00 pm.

Hence, the watch which is set at 4:00 pm has to lose 1 minute an hour. The watches which are set at 7:00 am and 10:00 am can either lose or gain 2 minutes an hour. Hence, there are two possible cases.

To identify which watch was set at which time, we can calculate the time displayed by each watch at 2:00 am (from (iii)).

If the watch set at 7:00 am loses 2 minutes an hour, the time displayed by this watch at 2:00 am will be 1:22 am. The watch set at 10:00 am gains 2 minutes an hour and will display a time of 2:32 am. The watch set at 4:00 pm loses 1 minute an hour and will display a time of 1:50 am. There will also be another watch which displays the correct time. In this case, Satish cannot wear a watch which shows the correct time (since no other watch shows a time in the range of 1:20 to 1:40), he cannot wear a watch which shows 2:32, and he cannot wear a watch which shows a time of 1:22. Hence, Satish has to wear a watch which shows 1:50 am, i.e., the watch which is set at 4:00 pm and Babu would be wearing the watch set at 7:00 am (as this shows a time of 1:22 am). The difference between time displayed by the watch set at 7:00 am and that by the watch set at 4:00 pm will be 28. Hence, this is a possible case.

If the watch set at 10:00 am loses 2 minutes an hour, the time displayed by this watch at 2:00 am will be 1:28 am. The watch set at 7:00 am gains 2 minutes an hour and the time displayed by this watch will be 2:38 am. The watch set at 4:00 pm will display a time of 1:50 am. Even in this case, Satish can only wear the watch set at 4:00 pm and Babu would be wearing a watch which shows 1:28 pm. Hence, this is another possible case.

In both the cases, Satish will wear the watch set at 4:00 pm and it will lose 1 minute every hour. Babu will be wearing the watch which loses 2 minutes an hour. It could have been set at 7:00 am or 10:00 am.

From (i), since Ankur's watch is ahead of Rohan's watch, Ankur must be wearing the watch which gains 2 minutes an hour and Rohan must be wearing the watch which shows the correct time.

If Ankur's watch was set at 7:00 am, at 10:00 pm, Ankur's watch would show a time of 10:30 pm and Rohan's watch would show the correct time, i.e., 10:00 pm. Hence, this is possible.

If Ankur's watch was set at 10:00 am, at 10:00 pm, Ankur's watch would show a time of 10:24 pm, which will violate condition (i) (since Ankur's watch will be ahead only by 24 minutes).

Hence, Ankur's watch would have been set at 7:00 am and Babu's watch would have been set at 10:00 am.

The following table presents this information:

Person	Watch Adjusted at	Gains or Loses by
Ankur	7:00 am	Gains by 2 minutes
Babu	10:00 am	Loses by 2 minutes
Kaka	1:00 pm	Gains by 1 minutes
Rohan	Correct time	Correct time
Satish	4:00 pm	Loses by 1 minute

1. Rohan wears the watch which shows the correct time.  
Choice (A)

Required difference =  $7 + 32 = 39$  minutes.

Ans: (39)

2. At 11:00 pm, time shown by Satish's watch will be

10:53 pm.

The time shown by Ankur's watch will be 11:32 pm.

3. Babu adjusts his watch every day at 10:00 am.

Choice (B)

4. The following table provides the time shown by the four watches at different times provided in the options:

Watch	At 5:00 pm	At 6:00 pm	At 7:00 pm	At 8:00 pm
+2 minutes	+20	+22	+24	<b>+26</b>
-2 minutes	-14	-16	-18	-20
+1 minute	+4	+5	+6	+7
-1 minute	-1	-2	-3	<b>-4</b>

By observation, we can see that the difference between any two watches is 30 minutes at 8:00 pm.

Choice (D)

#### Solutions for questions 5 to 8:

Given that Rahul was wearing the letter 'O'. During the first half, from (i), Amar and Omar cannot be at the first position. From (ii), Ramesh and Wasim cannot be at the first position. During the first half, Imran cannot be at the first position because he will then be standing to the left of the person wearing the letter 'A' (this will violate condition (iii)). Hence, Rakesh must be at the first position during the first half and he must have been wearing the letter 'W'.

In the second half, no two persons wearing consonants are next to each other. However, from (ii), Ramesh and Wasim were standing next to each other in the first and the second halves. Hence, both of them cannot be wearing consonants.

Further, from (vi), the two persons standing adjacent to Ramesh were wearing the same letter. This is possible only if both of Ramesh's neighbours were wearing the letter 'R'. From (iv), Ramesh must be wearing a vowel.

Ramesh and Wasim can be in the fourth and fifth positions or in the second and third positions.

If they are in the fourth and fifth positions, Ramesh would be wearing the letter 'I' and Wasim would be wearing the letter 'R'. From (vii), in the second half, Ramesh must be standing adjacent to the person wearing the letter 'W'. This will violate condition (vi). Hence, Ramesh and Wasim cannot be in the fourth and fifth positions.

Ramesh and Wasim must therefore be in the second and third positions respectively. Ramesh will be wearing the letter 'A' and Wasim will be wearing the letter 'R'.

From (i), Amar must be at fourth position (he cannot be at the last position because he cannot be standing next to Omar in this case). Omar will be at fifth position wearing the letter 'I'.

The following table provides their positions during the first half of the match:

Position	1	2	3	4	5	6	7
Letter	W	A	R	R	I	O	R
Person	Rakesh	Ramesh	Wasim	Amar	Omar	Rahul	Imran

In the second half, since no two persons wearing consonants can be together, the person standing at the first position will wear a consonant and the letters held by the persons in the sequence will alternate between vowel and consonant.

From (v), Rahul had one new neighbour and one old neighbour. Since Rahul's neighbours in the second half must both wear consonants, Omar cannot be Rahul's neighbour in the second half. Since Rahul has one old neighbour, Imran will be Rahul's neighbour. From (iii), Imran was standing to the left of Ramesh. Hence, Rahul will be to the left of Imran. Since Wasim and Ramesh were next to each other throughout the game, Wasim will be to the right of Ramesh.

From (vii), Omar and Rakesh are next to each other. Also, there must be at least one person standing to the left of Rahul (since the first person cannot be holding a vowel). Either Amar or Rakesh can be standing next to Rahul. If Rakesh is next to Rahul, Omar will be to the left of Rakesh. Amar has to be to the left of Omar (since the first person has to hold a consonant). In this case, Wasim will be at the extreme left, which will violate (ii).

If Amar is next to Rahul, Omar can be to the left of Wasim and Rakesh can be to the left of Omar. This is the only possible case. The following table presents their arrangement in the second half of the game:

Position	1	2	3	4	5	6	7
Letter	R	O	R	A	R	I	W
Person	Amar	Rahul	Imran	Ramesh	Wasim	Omar	Rakesh

5. Omar was wearing the letter 'I'.

Choice (A)

7. Amar was standing adjacent to Wasim during the first half.  
Choice (B)

6. Rahul, who was adjacent to Amar during the second half, was wearing the letter 'O'.

Choice (C)

8. Omar and Wasim were standing adjacent to each other only during the second half.  
Choice (D)

### Solutions for questions 9 to 12:

From (i), Karan received a better rank than Lalit and Raj received a better rank than Shiva. From (iv), Nitin received a better rank than Kamal and a worse rank than Shiva. From (v), rank of Varun was one more than rank of Shiva. Hence, the ranks of Raj, Shiva, Varun, Nitin, Kamal, Lalit will be in ascending order (but need not be consecutive). From (iii), Manoj will be ranked last (since Varun cannot be ranked last).

Piyush would be the fifth person to be interviewed (from (vi)) and Nitin was the fourth person to be interviewed. Varun could not be the last person to be interviewed (from (iii)). Hence, Varun would be the seventh person to be interviewed.

The rank of Shiva can be 2 or 3 and the rank of Varun can be 3 or 4.

If Shiva is ranked 2<sup>nd</sup> and Varun, 3<sup>rd</sup>, Raj will be ranked 1<sup>st</sup>. Shiva cannot be the sixth or the eighth person to be interviewed (since Varun was the seventh and ranks of Shiva and Varun are consecutive). Shiva cannot be the second to be interviewed as well (since Shiva's rank cannot be the same as the relative order). Hence, Shiva could have been the 1<sup>st</sup> to be interviewed of the 3<sup>rd</sup> to be interviewed.

If Shiva was the 1<sup>st</sup> to be interviewed, there will be three persons interviewed between Piyush and Shiva. Hence, the rank of Piyush will be 5 (from (ii)). In this case, Nitin must be ranked 4<sup>th</sup>. But he cannot be ranked 4<sup>th</sup> since he was the 4<sup>th</sup> person to be interviewed (from (iv)).

If Shiva was the 3<sup>rd</sup> to be interviewed, there will be one person between Piyush and Shiva. Hence, the rank of Piyush can 1<sup>st</sup> or 3<sup>rd</sup>. But Raj and Varun are 1<sup>st</sup> and 3<sup>rd</sup>. Hence, this is also not possible. Therefore, Shiva cannot be ranked 2 and Varun cannot be ranked 3.

If Shiva's rank is 3 and Varun's rank is 4, Shiva cannot be sixth or eighth to be interviewed (since he cannot be interviewed immediately before or after Varun). Since there must be two persons ranked better than Shiva, they have to be Raj and Piyush in any order.

The ranks of Nitin, Kamal, Lalit and Manoj will be 5, 6, 7 and 8 respectively. Shiva can be 1<sup>st</sup> or 2<sup>nd</sup> to be interviewed. If Shiva is 1<sup>st</sup> to be interviewed, Piyush's rank must be 6<sup>th</sup> (since there will be three people interviewed between them). Since this is not possible, Shiva cannot be the first to be interviewed.

Hence, Shiva must be the second person to be interviewed. Since there are exactly two persons between Shiva and Piyush, Piyush can be 1<sup>st</sup> or 5<sup>th</sup>. Since Nitin is 5<sup>th</sup>, Piyush must be ranked 1<sup>st</sup>. Raj must be ranked 2<sup>nd</sup>.

Raj cannot be the first or third to be interviewed (since Shiva, ranked 3, was interviewed immediately after or before). Raj cannot be sixth to be interviewed (since Piyush, ranked 1, was interviewed immediately before). Hence, Raj must be the last person to be interviewed.

Kamal, who is ranked 6<sup>th</sup>, cannot be the sixth person to be interviewed. He also cannot be the third person to be interviewed (since Nitin ranked 5, was interviewed fifth). Hence, Kamal must be the first person to be interviewed.

From (i), Lalit will be interviewed third and Manoj sixth.

The following table presents the slot and the ranks received by the eight persons:

Slot	1	2	3	4	5	6	7	8
Person	Kamal	Shiva	Lalit	Nitin	Piyush	Manoj	Varun	Raj
Rank	6	3	7	5	1	8	4	2

9. Kamal was the first person to be interviewed.  
Choice (B)
10. The rank of Lalit was 7.  
Ans: (7)
11. Shiva and Piyush were ranked better than Nitin.  
Ans: (2)
12. The last person to be interviewed was ranked 2.  
Ans: (2)
- =  $[2\sqrt{35} + 9][2\sqrt{35} - 9]$   
 $= (2\sqrt{35})^2 - (9)^2$   
 $= 140 - 81 = 59$   
Choice (D)
2. Let ABCD be the four-digit number with non-zero digits.  
 $A + B + C + D = 12$   
 $\Rightarrow 1 \leq (A, B, C, D) \leq 9$   
 This is same as writing 12 as a sum of four non-zero digits.  
 $\therefore$  The number of possibilities is  ${}^{12-1}C_{4-1} = {}^{11}C_3$  i.e., 165.  
Ans: (165)

Difficulty level wise summary - Section II	
Sub Section: LR	
Level of Difficulty	Questions
Very Easy	-
Easy	-
Medium	9, 10, 11, 12
Difficult	5, 6, 7, 8
Very Difficult	1, 2, 3, 4

### SECTION – III: QA

#### Solutions for questions 1 to 24:

$$\begin{aligned}
 1. & (\sqrt{3} + \sqrt{5} + \sqrt{7})(-\sqrt{3} + \sqrt{5} + \sqrt{7})(\sqrt{3} - \sqrt{5} + \sqrt{7}) \\
 & (\sqrt{3} + \sqrt{5} - \sqrt{7}) \\
 & = [(\sqrt{5} + \sqrt{7})^2 - (\sqrt{3})^2][(\sqrt{3})^2 - (\sqrt{5} - \sqrt{7})^2] \\
 & = [12 - 3 + 2\sqrt{35}][3 - 12 + 2\sqrt{35}]
 \end{aligned}$$

$$\begin{aligned}
 & x^4 + \frac{1}{x^4} + 2 = 49 \\
 & \Rightarrow x^4 + \frac{1}{x^4} = 47 \\
 & \text{Again } \left(x + \frac{1}{x}\right)^3 = x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right)
 \end{aligned}$$

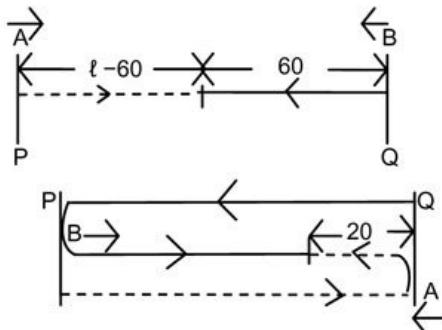
$$\therefore x^3 + \frac{1}{x^3} = \left(x + \frac{1}{x}\right)^3 - 3\left(x + \frac{1}{x}\right) = 27 - 3(3) = 18$$

$$\therefore x^4 + x^{-4} + x^3 + x^{-3} + x^2 + x^{-2} + x^1 + x^{-1} + x^0$$

$$47 + 18 + 7 + 3 + 1 = 76$$

Ans: (76)

4. Let the length of the swimming pool be  $\ell$  m.



They met for the first time after time 't' (say), when they together covered  $\ell$ . They met for the second time after they together covered  $3\ell$ . So the second meeting took place after time  $3t$ .

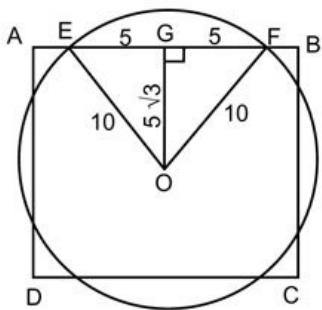
Meeting	time	distance covered	
		A	B
1	$t$	$\ell - 60$	60
2	$3t$	$\ell + 20$	$2\ell - 20$

$$\therefore 2\ell - 20 = 3(60)$$

$$\Rightarrow \ell = 100 \text{ m}$$

Ans: (100)

- 5.



Let us denote the centre of the circle by O  
Now OF = Radius of the circle = 10

$$OG = \frac{1}{2} (\text{side of the square}) = 5\sqrt{3}$$

$$\therefore GF = \sqrt{OF^2 - OG^2} = \sqrt{10^2 - (5\sqrt{3})^2} = 5$$

$$\sin(\angle FOG) = \frac{GF}{OF} = \frac{1}{2}$$

$$\therefore \angle FOG = 30^\circ$$

$$\therefore \angle EOF = 60^\circ [\because \angle GOE = \angle GOF]$$

Therefore, EOF is an equilateral triangle.

$$\text{Thus, the area of the sector EOF} = \frac{60}{360} \pi(10)^2 = \frac{100\pi}{6}$$

Area of the portion of the sector EOF which lies outside the square

$$\text{square} = \frac{100\pi}{6} - \frac{\sqrt{3}}{4}(10)^2$$

Now, the area of the circle which lies outside the square

$$= 4 \left[ \frac{100\pi}{6} - \frac{\sqrt{3}}{4}(10)^2 \right]$$

Therefore, the portion of the circle contained within the

$$\text{square} = \pi(10)^2 - 4 \left[ \frac{100\pi}{6} - \frac{\sqrt{3}}{4}(100) \right]$$

$$= \frac{100\pi}{3} + 100\sqrt{3}$$

Thus, the fraction of the circle's area contained within the

$$\text{square} = \frac{\frac{100\pi}{3} + 100\sqrt{3}}{\pi(100)} = \frac{1}{3} + \frac{\sqrt{3}}{\pi}$$

Choice (A)

6. We can take  $p = 11$ ,  $q = 12$ ,  $r = 13$  and  $s = 14$

$$\text{Therefore } I = \frac{p+q}{r+s} = \frac{23}{27} < 1$$

$$II = \frac{q+r}{p+s} = \frac{25}{25} = 1$$

$$III = \frac{q+s}{p+r} = \frac{26}{24} > 1$$

$$IV = \frac{p+s}{q+r} = \frac{25}{25} = 1$$

Thus II and IV can be equal in magnitude. We can easily check that I is the least and III is the highest among the given fractions.

#### Alternative Solution:

Given,  $10 < p < q < r < s$ .

#### Option (A):

When II is compared to I, the numerator has increased (since  $r > p$ ) and the denominator has decreased (since  $p < r$ ). Hence, II > I.

#### Option (B):

When IV is compared to III, the numerator has decreased (since  $p < q$ ) and the denominator has increased (since  $q > p$ ). Hence, IV < III

#### Option (C):

When IV is compared to II, each of the numerator and denominator could either increase or decrease and no definite inequality (II > IV OR II < IV) can be established.

#### Option (D):

When III is compared I, the numerator has increased (since  $s > p$ ) and the denominator has decreased (since  $r < s$ ). Hence III > I.

Clearly, among the options given, II and IV is the only pair of fractions that can be equal for some values of  $p$ ,  $q$ ,  $r$ ,  $s$ . (For example, refer the solution given above).

Choice (C)

7. Let us consider the initial quantity of mixture as 100 litres  
Therefore the quantity of alcohol = 80 litres and the quantity of water = 20 litres

When 20% of the mixture is replaced by water the quantity of alcohol remaining =  $\frac{80}{100} (80) = 64$  litres

Next, 20 litres alcohol is added.

Therefore, after the process is conducted once, the quantities of alcohol and water are 84 and 36 litres respectively

Next, we replace 20% of the mixture by water so quantity of alcohol remaining  $\frac{80}{100} (84) = 67.2$  litres

$$\therefore \begin{array}{lll} \text{Alcohol} & & \text{Water} \\ 67.2 & & 52.8 \end{array}$$

Next, volume of the mixture is increased by 20% by adding alcohol. So, the final quantity of alcohol =  $67.2 + 24 = 91.2$  litres

Final composition of the mixture is

$$\begin{array}{lll} \text{Alcohol} & \text{Water} & \text{Total} \\ 91.2 & 52.8 & 144 \end{array}$$

Therefore, the final concentration of alcohol in the mixture

$$= \frac{91.2}{144} \times 100 = 63.33\%$$

Choice (A)

8. We can attempt to find a pattern in the sum to  $n$  terms, for  $n = 1, 2, 3, \dots$

$$\begin{aligned} \sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2}} &= \sqrt{1 + 1 + \frac{1}{4}} = \frac{3}{2} = \left(2 - \frac{1}{2}\right) \\ \sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2} + \sqrt{1 + \frac{1}{2^2} + \frac{1}{3^2}}} &= \frac{3}{2} + \frac{7}{6} = \frac{16}{6} = \frac{8}{3} = \left(3 - \frac{1}{3}\right) \\ \sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2} + \sqrt{1 + \frac{1}{2^2} + \frac{1}{3^2}} + \sqrt{1 + \frac{1}{3^2} + \frac{1}{4^2}}} &= \\ = \frac{3}{2} + \frac{7}{6} &= \frac{13}{6} = \frac{15}{4} = \left(4 - \frac{1}{4}\right) \\ \therefore \sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2}} + \sqrt{1 + \frac{1}{2^2} + \frac{1}{3^2}} + \sqrt{1 + \frac{1}{3^2} + \frac{1}{4^2}} &= \\ + \dots + \sqrt{1 + \frac{1}{2016^2} + \frac{1}{2017^2}} &= 2017 - \frac{1}{2017} \end{aligned}$$

**Alternative Solution:**

Since each term in the given series is greater than 1, it is clear that the required sum must be greater than 2016 (as there are 2016 terms). Therefore, choices (A) and (B) are clearly eliminated. Further evaluating the first term, we get

$\frac{3}{2}$ , i.e., 1.5. Therefore, the sum needs to be greater than 2016.5. Now, only choice (D) satisfies. Choice (D)

9. Let the number of notes in the denominations of ₹50, ₹20 and ₹5 be  $a, b$  and  $c$  respectively  
 $50a + 20b + 5c = 120$

Therefore, the total number of solutions is 13.

Ans: (13)

10.  $\sec^2 \frac{\pi}{32} = \frac{1}{\cos^2 \frac{\pi}{32}} = \frac{1}{\sin^2 \frac{\pi}{32}}$

$$\left[ \because \cos \frac{15\pi}{32} = \cos \left( \frac{\pi}{2} - \frac{\pi}{32} \right) = \sin \frac{\pi}{32} \right]$$

$$\therefore \sec^2 \frac{\pi}{32} + \sec^2 \frac{15\pi}{32} = \frac{1}{\cos^2 \frac{\pi}{32}} + \frac{1}{\sin^2 \frac{\pi}{32}}$$

$$= \frac{\sin^2 \frac{\pi}{32} + \cos^2 \frac{\pi}{32}}{\sin^2 \frac{\pi}{32} \cos^2 \frac{\pi}{32}} = \frac{4}{4 \sin^2 \frac{\pi}{32} \cos^2 \frac{\pi}{32}} = \frac{4}{\sin^2 \frac{\pi}{16}}$$

Similarly,

$$\sec^2 \frac{3\pi}{32} + \sec^2 \frac{13\pi}{32} = \frac{1}{\cos^2 \frac{3\pi}{32}} + \frac{1}{\sin^2 \frac{3\pi}{16}} = \frac{4}{\sin^2 \frac{3\pi}{16}}$$

Similarly,

$$\sec^2 \frac{5\pi}{32} + \sec^2 \frac{11\pi}{32} = \frac{4}{\sin^2 \frac{5\pi}{16}}$$

$$\sec^2 \frac{7\pi}{32} + \sec^2 \frac{9\pi}{32} = \frac{4}{\sin^2 \frac{7\pi}{16}}$$

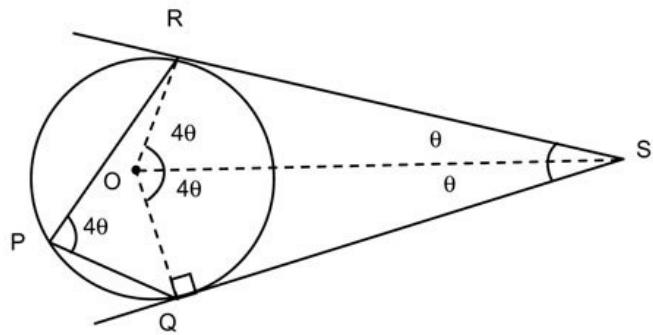
$$\text{Now, } \frac{4}{\sin^2 \frac{\pi}{16}} + \frac{4}{\sin^2 \frac{3\pi}{16}} + \frac{4}{\sin^2 \frac{5\pi}{16}} + \frac{4}{\sin^2 \frac{7\pi}{16}}$$

$$\text{Again } \frac{4}{\sin^2 \frac{\pi}{16}} + \frac{4}{\sin^2 \frac{7\pi}{16}} + \frac{4}{\sin^2 \frac{3\pi}{16}} + \frac{4}{\sin^2 \frac{5\pi}{16}}$$

$$\begin{aligned} &4 \left[ \frac{1}{\sin^2 \frac{\pi}{16}} + \frac{1}{\cos^2 \frac{\pi}{16}} \right] + 4 \left[ \frac{1}{\sin^2 \frac{3\pi}{16}} + \frac{1}{\cos^2 \frac{3\pi}{16}} \right] \\ &4 \left[ \frac{\sin^2 \frac{\pi}{16} + \cos^2 \frac{\pi}{16}}{\sin^2 \frac{\pi}{16} + \cos^2 \frac{\pi}{16}} \right] + 4 \left[ \frac{\sin^2 \frac{3\pi}{16} + \cos^2 \frac{3\pi}{16}}{\sin^2 \frac{3\pi}{16} + \cos^2 \frac{3\pi}{16}} \right] \\ &\frac{4 \times 4}{\left( 2 \sin \frac{\pi}{16} \cos \frac{\pi}{16} \right)^2} + \frac{4 \times 4}{\left( 2 \sin \frac{3\pi}{16} \cos \frac{3\pi}{16} \right)^2} \\ &= \frac{16}{\sin^2 \frac{\pi}{8}} + \frac{16}{\sin^2 \frac{3\pi}{8}} = \frac{64}{\sin^2 \frac{\pi}{4}} = \frac{64}{\left( \frac{1}{\sqrt{2}} \right)^2} = 128 \end{aligned}$$

Ans: (128)

11. Let the centre of the circle be 'O'.



Value of $a$	Equation	Solutions ( $b$ )	No. of Solutions
0	$20b + 5c = 120$	0, 1, 2, 3...	7
1	$20b + 5c = 70$	0, 1, 2, 3	4
2	$20b + 5c = 20$	0, 1	2

Let  $\angle QSR = 2\theta \Rightarrow \angle QPR = 4\theta \Rightarrow \angle QOR = 8\theta$

Now, consider  $\triangle ORS$ , where  $\angle ORS = 90^\circ$

From symmetry  $\angle ROS = \frac{8\theta}{2} = 4\theta$  and  $\angle RSO = \frac{2\theta}{2} = \theta$ .

Also,  $\angle ROS + \angle RSO = 90^\circ$

$\Rightarrow 4\theta + \theta = 90^\circ$

$\Rightarrow \theta = 18^\circ$  and  $\angle QSR = 2\theta = 36^\circ$ .

Choice (C)

12. Slope of the original line AB =  $\frac{2-1}{4-3} = 1$

Hence angle of inclination of line AB =  $45^\circ$

On turning the line by  $15^\circ$ , in the anti clock wise direction, the inclination of the line in its new position =  $(45 + 15)^\circ = 60^\circ$ , slope =  $\sqrt{3}$

Hence the equation of the new line, passing through A with a slope of  $\sqrt{3}$  is,

$$(y-1) = \sqrt{3} (x-3)$$

$$\Rightarrow \sqrt{3}x - y - 3\sqrt{3} + 1 = 0.$$

Choice (C)

13. Total cost of producing 8 toys =  $64a + 8b + 200$

Total cost of producing 10 toys =  $100a + 10b + 200$

It is given that,  $100a + 10b + 200 = \frac{4}{3}(64a + 8b + 200)$

$$44a - 2b = 200$$

Total cost of producing 12 toys =  $144a + 12b + 200$

It is given that,

$$144a + 12b + 200 = \frac{13}{10} (100a + 10b + 200)$$

$$140a - 10b = 600 \rightarrow (2)$$

Solving Eq.(1) and (2), we get  $a = 5$  and  $b = 10$ .

Therefore the cost of producing  $n$  toys

$$= 5n^2 + 10n + 200$$

The profit earned by selling these  $n$  toys

= selling price of the  $n$  toys – cost of producing these toys

$$= 100n - (5n^2 + 10n + 200)$$

$$= 90n - 5n^2 - 200$$

$$\text{Now, } -5n^2 + 90n - 200 = -5[n^2 - 18n + 40]$$

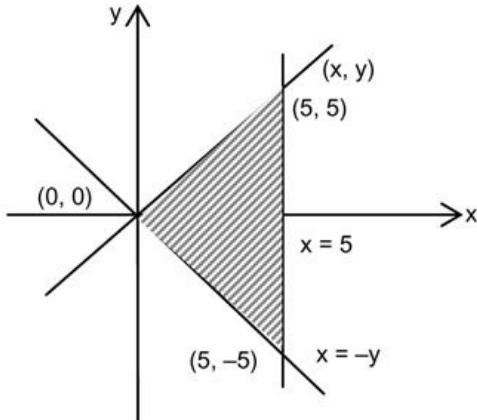
$$= -5[(n - 9)^2 - 41]$$

$$= -5(n - 9)^2 + 205$$

The maximum value of the above expression occurs when the square term is 0, i.e., at  $n = 9$  and the maximum value is ₹205.

Ans: (205)

14. The figure below describes the given line.



$$\text{Therefore the area of the triangle so formed} = \frac{1}{2} (10) (5)$$

$$= 25 \text{ square units.}$$

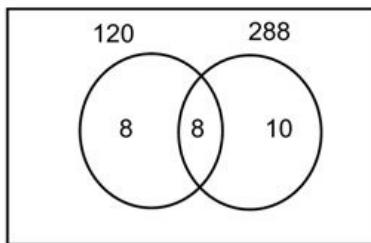
Choice (A)

120 = $2^3 \times 3^1 \times 5^1$	$(3+1)(1+1)(1+1) = 16$	No. of factors
288 = $2^5 \times 3^2$	$(5+1)(2+1) = 18$	

No. of factors

$$\text{HCF}(120, 288) = 2^3 \times 3^1 (3+1)(1+1) = 8$$

No. of natural numbers which divide both 120 and 288 are the factors of 24, i.e., 8



There are 8 and 10 natural numbers which divide only 120 and only 288 and 8 natural numbers which divide both.

Therefore, there are  $8 + 10 + 8$ , i.e., 26 natural numbers which divide at least one of the two numbers.

Ans: (26)

16. It is given that

$$(A + B + C) = (C + D + E) = (E + F + G) = (G + H + A) = S$$

$$\therefore (A + B + C + D + E + F + G + H) + A + C + E + G = 4S$$

$$\Rightarrow (1 + 2 + 3 + 4 + 5 + 6 + 7 + 8) + A + C + E + G = 4S$$

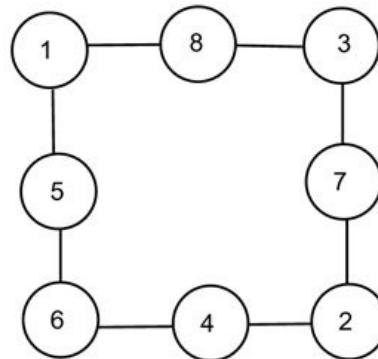
$$\Rightarrow 36 + A + C + E + G = 4S$$

Now,  $A + C + E + G$  should be sum of four distinct digits from 1 to 8 such that  $S$  is an integer.

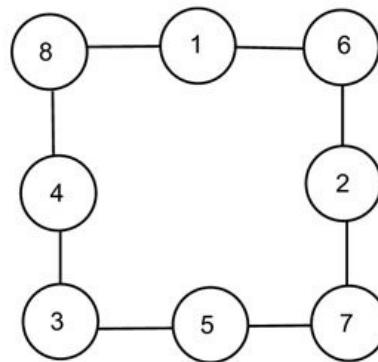
The minimum possible value of  $A + C + E + G$  is  $1 + 2 + 3 + 6$ , i.e., 12, which gives  $36 + 12 = 4S$ , i.e.,  $S = 12$ .

The maximum possible value of  $A + C + E + G$  is  $8 + 7 + 6 + 3$ , i.e., 24, which gives  $36 + 24 = 4S$ , i.e.,  $S = 15$ . Therefore the difference between the maximum and the minimum possible value of  $S$  is  $15 - 12 = 3$ .

One of the configuration for  $S = 12$  is shown below:



One of the configuration for  $S = 15$  is shown below:



Ans: (3)

17. It is given that  $x = |2x - |120 - 3x||$

If  $120 - 3x \geq 0$ , then  $|120 - 3x| = 120 - 3x$

i.e.  $x \leq 40$

$$x = |2x - 120 + 3x|$$

$$\Rightarrow x = |5x - 120|$$

if  $5x - 120 \geq 0$

$$\Rightarrow x \geq 24$$

for  $24 \leq x \leq 40$ , we get

$$x = 5x - 120$$

$$\Rightarrow x = 30$$

if  $5x - 120 < 0$

i.e.  $x < 24$

$$x = 120 - 5x \Rightarrow x = 20$$

again, if  $120 - 3x < 0$  i.e.  $x > 40$

$$x = |2x + 120 - 3x|$$

$$x = |120 - x|$$

Now, if  $120 - x > 0$  i.e.  $x < 120$

$$46 < x < 120$$

$$x = 120 - x \Rightarrow x = 60$$

If  $120 - x < 0$  i.e.  $x > 120$ , we get

$$x = x - 120 \text{ (Which is inadmissible)}$$

Therefore, if  $x < 24$ , we get  $x = 20$

For  $24 \leq x \leq 40$ , we get  $x = 30$  and

for  $40 < x < 120$ , we get  $x = 60$

Thus, three integer values of  $x$  satisfy the given equation.

Ans: (3)

18. We can observe that  $7^3 = 343$ , when divided by 19, leaves

a remainder of 1. Hence, we need to express  $7^{32^{23}}$  as some power of  $7^3$ . Now  $32^{23}$  leaves a remainder of  $(-1)^{23} = -1$ , when divided by 3. Hence,

$$7^{32^{23}} = 7^{3k-1} = 7^2 \cdot 7^{3(k-1)} = 49 \cdot 7^{3p}. \text{ Now, the}$$

remainder of  $7^{3p}$ , when divisible by 19 =  $\text{Rem} \left[ \frac{(7^3)^p}{19} \right]$

$$\therefore \text{Required remainder} = 49 \times 1 = \text{Rem} \left[ \frac{49}{19} \right] = 11.$$

Ans: (11)

