

(Key and Solutions for AIMCAT1803)

Key**SECTION – I**

1. 3	9. C	17. C	25. C	33. 5
2. 6	10. B	18. A	26. B	34. 3
3. 3	11. 5241	19. B	27. B	35. C
4. 4	12. 3215	20. A	28. 25	36. B
5. C	13. 4135	21. 26	29. D	37. A
6. D	14. 5432	22. 35	30. C	38. D
7. B	15. C	23. 36	31. 3	39. B
8. A	16. C	24. 14	32. 4	40. D

SECTION – II

1. 24	7. A	13. C	19. A	25. B
2. A	8. C	14. D	20. B	26. 20000
3. 17	9. D	15. C	21. C	27. 27500
4. D	10. C	16. B	22. D	28. B
5. A	11. 34	17. B	23. B	29. A
6. 272	12. B	18. C	24. B	30. 19

SECTION – III

1. A	7. C	13. D	19. D	25. 42
2. B	8. D	14. A	20. C	26. D
3. 18	9. C	15. C	21. A	27. 1260
4. 14	10. D	16. B	22. A	28. C
5. D	11. B	17. A	23. B	29. 3
6. C	12. C	18. B	24. 1004	30. D

Solutions**SECTION – I****Solutions for questions 1 to 4:**

1. On a reading of the paragraph, one can understand that the paragraphs in the passage use metaphors in a humorous way to explain how a car had to be started. The first para gives us a sequence of events leading to the author getting into the car.

The highlighted sentence is too specific to be upstream of the given passage. So (1) is not the answer.
 The highlighted sentence does not belong to blank (2). The highlighted sentence would interfere with the thought flow if placed in blank (2). The sentence preceding blank (2) talks about "No seats at all, really". So "Just a green canvas sling fraying its way off a tubular metal frame," connects well with the penultimate sentence as given: No seats at all, really. The highlighted sentence will best fit in blank 3. From the sentence, "She rattled the selector into reverse, and all the mechanical parts inside called the roll and counted quorum and set about deciding what to do." we come to know that the car was parked in such a way that the author had to reverse it. "She rattled the selector into **reverse**" as given in the sentence prior to blank 3 links with "it was whole seconds before the car **lurched backward**" as given in the highlighted sentence. This would then be followed correctly by the sentence given after blank 3: She turned

the wheel, which looked like hard work, and **then** she jammed the selector into a **forward gear**, and first of all the **reversing committee wound up its business** and approved its minutes and exited the room. Hence (3) is the location where the highlighted sentence could be inserted. Sentences 4 and 5 are not the locations where the highlighted sentence can be inserted. The highlighted sentence needs to come much earlier in the scheme of things.

The highlighted sentence cannot be placed in a para succeeding the given para. It would be redundant if placed in a para after the second para of the passage. So (6) is not the answer.
 Ans: (3)

2. On a cursory reading of the paragraph, one can understand that the paragraph talks about the memoirs of a person who captures the events and emotions of a particular period of time in her life.
 The highlighted sentence is a poor example of an upstream statement. The paragraph best begins with the general sentence: This is a small book with a big voice. This sentence introduces the topic of discussion. So (1) cannot be the blank where the highlighted sentence can be inserted.
 The highlighted sentence cannot be a part of blank 2. The pronoun "it" in the sentence following blank (2) refers to the "small book with a big voice" as given in the sentence preceding blank (2).

The highlighted sentence cannot be a part of blank 3. "This is her tender, anguished, remorseful letter of love to him." which is the sentence following blank 3 has to immediately follow "She returned; he never did." as given immediately prior to blank 3. Here 'he' refers to Marceline Loridan-Ivens' father, Solomon Rozenberg.

Similarly, the highlighted sentence cannot be a part of blank 4. "when they were both held in the extermination camp" in the sentence preceding blank 4 links with "At the time,..." in the sentence succeeding blank 4. The sentences in para 2 {"recall the words her father wrote to her in a letter" "both held in the extermination camp" "His words "probably spoke to me of hope and love," she muses: "but there was no humanity left in me"} need to run continuously. Similarly, the highlighted sentence cannot be a part of blank 5. "I served death" in the sentence prior to blank 5 points to "she was assigned to dig trenches into which gassed bodies would be dumped." given earlier in the para. "I'd been its hauler. Then its pickaxe." refers to how she served death (dig trenches into which gassed bodies would be dumped).

Hence, the highlighted sentence will disrupt the thoughtflow if placed in blanks (2), (3), (4) and (5).

The highlighted sentence would best be placed downstream of the passage. It provides an opinion or point of view about the book and this opinion could be made by another person. Since the highlighted sentence does not necessarily highlight an event or part(s) of the people's lives but focuses on a review of the book, it cannot be placed in any blank in either para 1 or para 2. It can come in a para much later in the thoughtflow. Hence (6) is the answer.

Ans: (6)

3. The first paragraph of the passage begins by discussing the history behind the idea of gravitational waves.

We need to place the highlighted sentence ahead of a sentence which speaks about approximations. The highlighted sentence can be placed only in blank (3). "It is a simple idea, but the equations that give it mathematical heft are damnably hard to solve." in the sentence prior to blank 3 links with "Only by making **certain approximations** can solutions be found." as given in the highlighted sentence. So, the highlighted sentence forms a bridge between the sentence preceding blank (3) (It is a simple idea, but the equations that give it mathematical heft are damnably hard to solve.) and the sentence succeeding blank (3) (And **one such approximation** led Einstein to an odd prediction: any accelerating mass should make ripples in spacetime. Hence (3) is the answer.

The highlighted sentence will disrupt the thought flow if it is placed in blank 2. The sentence "Mass, Einstein realized, deforms the space and time around itself." before blank (2) need to be immediately followed by the sentence: "Gravity is the effect of this, the behaviour of objects dutifully moving along the curves of mass-warped space-time". Hence (2) is not the answer.

The highlighted sentence will be redundant in blanks (4) and (5). The second para mainly talks about the thoughts and actions of Einstein and all the given sentences in the second para need to run continuously.

The highlighted sentence would need other specific information along with it to be placed upstream or downstream of the paragraph. Hence (1) and (6) are not the answers.

Ans: (3)

4. On a cursory reading of the passage, one can understand that the first paragraph talks about the trusting nature of humanity.

The highlighted sentence is a poor example of an introductory statement of the first paragraph of the passage or even as an upstream statement. The first paragraph best begins with the general sentence: Humans are a trusting sort. This is largely a good thing. So (1) and (2) cannot be

the blanks where the highlighted sentence can be inserted. The sentences preceding blank 3 talk about the positive benefits of trust. Trusting citizens are healthier, happier and more likely to start their own businesses. So the highlighted sentence "It is also a boon for crooks." if inserted in blank 3 would need explanation. But the sentences after blank 3 do not provide any context that helps explain "boon for crooks". Even the sentence "People can be bad at spotting deception because, ultimately, very few are downright deceptive." has a positive tone to it. Hence the highlighted sentence will disrupt the thoughtflow if inserted in blank 3.

The sentences after blank 3 and those just preceding blank (4) talk positively about the trusting nature of humanity. It is great news that people can be bad at spotting deception because very few are downright deceptive. "It is also a boon for crooks" as mentioned in the highlighted sentence parallels "This is great good news for humanity." The highlighted sentence best fits in blank 4 as it serves as a precursor to what follows in the second para of the passage: "aristocrats of crime"....., hustle (which means a fraud or swindle). The substantiation of how "it is a good boon for crooks" happens in the second para of the passage. Hence (4) is the correct answer.

The highlighted sentence cannot be a part of blank (5) as the highlighted sentence needs to come earlier in the flow. It would be redundant if placed in blank (5).

The highlighted sentence would need other specific information along with it to be placed downstream of the paragraph. Hence (6) is not the answer.

Ans: (4)

Solutions for questions 5 to 10:

Number of words and Explanatory notes for RC:

Number of words: 694

5. Option A: The first sentence of the passage is not a controversial one. Also the author's main point of view is not brought out by the first sentence of the passage. Hence choice A is not the answer.

Option B: A fallacy is a mistaken belief, especially one based on unsound arguments; a misconstruction or a misinterpretation. There is no attempt made to confuse the readers in the opening sentence of the passage and the subsequent lines. So choice B is not the answer.

Option C: Between choice C and choice D, choice C is better as the author does not merely present the notion that the museum of the past was content to care for the "oldfashioned satisfaction," "aesthetic refreshment," and "pleasure and delight" of its permanent collection, he suggests that these are outdated views, and that museums should be seen as instruments of social change. Further, it is evident that these are terms often used (therefore 'clichés') and not universal truth. Hence choice C is the answer.

Option D: A universal truth as given in choice D wrongly implies that the idea is in fact true. Truth is considered to be universal if it is valid in all times and places. A universal truth is seen as eternal or as absolute. Choice D is not the correct answer.

Choice (C)

Note: When one considers the rest of the piece, one understands that the author is only presenting the new wave in museums, not actively promoting it. As for his agreement with the idea that museums should be instruments of social change, he is not presenting a view about the approach that museum should adopt in doing so.

6. Refer to the second and third paras of the passage.

Option A: Back then, a museum's fundamental role was about taking care of and protecting the art. The museum of the future will virtually be a museum without objects, as new non-collection spaces dwarf exhibition halls with the promise that no direct contact with the past will disturb your meal. So choice A is true and is not the answer.

Option B: The museum of the present forsakes the visited, and its own **cultural** importance, to focus on the visitor.This it does not learn from history but to show the

superiority of our present time over past relics. The result is a museum that succeeds in its own destruction. So we can say that the museum of tomorrow is no longer an ark of culture, but one where the artifact at greatest risk is the museum itself. Hence choice B is true and is not the answer.

Option C: The museum of the past was content to care for the "oldfashioned satisfaction," "aesthetic refreshment," and "pleasure and delight" of its permanent collection. From offering an unmediated window onto the real and astonishing objects of history, the contemporary museum looks to reify our own socially mediated self-reflections. This it does not learn from history but to show the superiority of the current time over past relics. Therefore choice C can be inferred to be true and is not the answer.

Option D: The museum of the past was derided as the "salvage and warehouse business." It was the steward of a collection of objects. The museum of the past did not focus on "visitor experience". So the first part of choice D is not correct. Hence choice D is the answer. Choice (D)

7. But I think (and others agree) that the museum of tomorrow must see itself not as the steward of a collection of objects but as "an instrument for social change." A museum's fundamental role in the past was about taking care of and protecting the art, but this century it is more about the **visitor experience**. The museum of the present **forsakes the visited**, and its own **cultural** importance, to focus on the **visitor**.

Option A: It can be inferred on a careful reading of the first two paras of the passage that Choice A has keywords that relate to the functioning of the "museums of the past". Choice A is not the answer.

Option B: Choice B has all the keywords that pertain to the "visitor experience" mantra of the "museums of tomorrow". Choice B is the answer.

Option C: While "socially orientated" is a keyword that is true about the museums of tomorrow; "salvage", "traditional art", "artist" do not necessarily pertain to visitor experience. "artist" also refers to 'visited' and not to the visitors. Hence choice C is not the answer.

Option D: While "museum without walls" and "great sharing" are keywords that are true about the museums of tomorrow, the remaining keywords in choice D do not apply to the museums of tomorrow. Therefore choice D is not the answer.

Choice (B)

8. Refer to para 4 of the passage.

Option A: Almost all American museums were founded and supported by the free will of private individuals. The treasures these benefactors bequeathed became not only public objects of secular devotion but also tokens of the idealism behind the institutions that maintained them. It was also about how hard work can become an expression of virtue by gifting objects to the public trust. Hence choice A is the correct answer.

Option B: Choice B is not necessarily true of American museums. It is true of any contemporary museum: From offering an unmediated window onto the real and astonishing objects of history, the contemporary museum looks to reify our own socially mediated self-reflections. This it does not learn from history but to show the superiority of the current time over past relics. Hence choice B is not specific to the question.

Option C: Choice C is wrong. Choice C is true of European museums and not American museums.

Option D: Choice D is incomplete. Became not only public objects of secular devotion but also tokens of the idealism behind the institutions that maintained them. The aesthetic education offered through their permanent collections was not just about history and connoisseurship. It was also about how hard work can become an expression of virtue by gifting objects to the public trust.

Choice (A)

9. Refer to para 5. Consider the Brooklyn Museum

Option A: Choice A is incorrect. 'palimpsest' means something reused or altered but still bearing visible traces

of its earlier form. The entire statement A seems to suggest that few changes were made to the Brooklyn museum but it remains in the state it was completed. Choice A is incorrect and is not the reason for the question.

Option B: While there are words in the fifth para that indicate iconoclasm, choice B is not the primary reason for the question. {The progressive director Philip Newell Yount launched an assault on his museum from which it has never recovered He demolished the Brooklyn Museum's exterior Grand Staircase}

Option C: It wasn't long into the twentieth century before some American museums began to change. ... He undertook the transformation of the Brooklyn Museum from a temple of contemplation into a school of instruction where the arts were put in the service of progressive ends transform his collection into a parade of teachable moments. Here, we can see a progressive strain agitating for a more "socially orientated museum". Choice C is the correct answer.

Option D: Choice D is a very general choice and is out of scope.

Choice (C)

10. The museum of the present forsakes the visited, and its own cultural importance, to focus on the visitor. Another example where a museum has catered to the 'visitor experience'. Back in New York, the Whitney museum relocated in 2015 from the Upper East Side to a flood zone along the Hudson River.

Option A: Choice A (make it more appealing to prominent museum critics) is out of scope and is not the answer. Also "old bottle" as given in choice A is not correct. The museum has undergone a revamp.

Option B: Designed, by Renzo Piano, here is the museum as sky-box, an institution built as much **to be looked out of as looked into** The rest goes to multi-million-dollar views and a circulation system that forces the museumgoer outside onto a fire escape turned against the skyline, which treats the museum as an **institutional theater**. Choice B is the correct answer.

Option C: The new museum metaphorically explodes, reprocesses, and repackages its own history through a giddy, irrational space for spectacle and an incinerator for its dusty, unwanted past. Choice C is not true.

Option D: Choice D (turned the American museum into a neoliberal juggernaut) is out of scope and is not the answer.

Choice (B)

Solutions for questions 11 to 14:

11. On a careful reading of the sentences it can be observed that sentence 5 is a general sentence that begins the paragraph. It mentions the topic of discussion: the money spent on a map. Sentences 5 and 2 form a mandatory pair. "Three billion dollars sounds a lot to spend on a map" in sentence 5 contrasts "cost per square kilometer, about \$8.30, is not, perhaps, too bad" in sentence 2. Both sentences 5 and 2 are linked through the contrast conjunction 'but' given in sentence 2. Sentence 2 is followed by sentence 4. "making such a map" in sentence 4 points to "if it is a map of two-thirds of Earth's surface" in sentence 2. Also "such a cost" in sentence 4 points to "cost per square kilometer, about \$8.30" in sentence 2. And "proposing to do" in sentence 4 points to "map two-thirds of Earth's surface" in sentence 2. So, 524. Sentence 4 is followed by sentence 1. The pronoun "its" in sentence 1 points to "General Bathymetric Chart of the Oceans (GEBCO)" mentioned in sentence 4. "chart the seabed completely by 2030" in sentence 1 links with " a map of two-thirds of Earth's surface" given earlier in sentence 2. So, 5241. Sentence 3 which mentions "economic activity" would be a new discussion taking off from this one. It can be a part of another para.

Ans: (5241)

12. On a careful reading of the sentences it can be observed that sentence 3 is a general sentence that begins the paragraph. It mentions the background and the topic of discussion: some music experts wonder if jazz can survive. Sentence 2 with the contrast conjunction 'yet' follows

sentence 3. "its staying power" in sentence 2 contrasts "if jazz can survive" in sentence 3. Sentence 1 (A case in point became a bestseller and critics' favourite in 2015) provides an example for the point given in sentence 2. "Kamasi Washington, a Los Angeles-based jazz saxophonist" in sentence 1 points to "jazz artist" in sentence 2. "audience exposure for jazz artists" in sentence 2 links with "jazz saxophonist was unknown globally until his three-CD debut recording, "The Epic", became a bestseller" in sentence 1. Hence sentence 1 follows sentence 2. Sentence 1 is followed by sentence 5. "This year, Mr Washington performed before thousands of people at the Coachella Valley Music and Arts Festival" in sentence 5 contrasts "Kamasi Washington was unknown globally until his three-CD debut recording, "The Epic", became a bestseller and critics' favourite in 2015" in sentence 1. Also "Mr Washington performed before thousands of people" in sentence 5 points to "audience exposure for jazz artists" in sentence 2. "usually reserved for rock, hip-hop and pop stars" in sentence 5 is parallel to "compared with the 26.8% for rock and 22.6% for hip-hop and rhythm and blues combined" in sentence 3. So, 3215. Sentence 5 can come in another para much later in the flow. This sentence talks about mavericks incorporating incorporate elements of hip-hop, rock or classical music into their works of jazz. The remaining sentences talk about how jazz can survive; they elaborate on the staying power of jazz. Sentence 5 needs a precedent and more substantiation. It is the odd sentence out.

Ans: (3215)

13. On a careful reading of the sentences it can be observed that sentence 4 is a general sentence that begins the paragraph. It establishes the background: ... think back on education experiences, the highlight was synergistic. Sentence 1 follows sentence 4. "early moment" in sentence 1 begins to describe the "experience" given in sentence 4. Sentence 1 talks about the initial phase of an encounter: required genuine love and considerable courage, to become extremely authentic and confront some inside truth about others. Sentence 3 follows sentence 1 in sequence. Sentence 3 (then others became more authentic and open) is a consequence of the point mentioned in sentence 1 (becoming extremely authentic, in confronting some inside truth about others, ... and saying it with genuine love and courage). Also "synergistic communication" in sentence 3 is parallel to "highlights were almost always synergistic" given in sentence 4. Sentence 5 follows sentence 3. "more and more creative" in sentence 5 follows from "more authentic, open, and honest" in sentence 3. "ended up in insights and plans that no one had anticipated initially" in sentence 5 is how the author wants to end the description of his consulting and executive education experience. Sentence 5 is the final/ conclusion sentence of the para. So, 4135. Sentence 2 is the odd sentence out as it needs a precedent and more substantiation. "one particularly meaningful synergistic experience" in sentence 2 can begin a new para. Also "corporate mission statement" runs tangent to the remaining sentences and it is out of scope.
- Ans: (4135)

14. On a careful reading of the sentences, it can be observed that sentence 5 is a general sentence that begins the para. It mentions the topic of discussion: the Narcissistic **Ignorance** view. All other sentences need a precedent. Sentences 5 and 4 form a mandatory pair. "narcissists lack insight into their personality" in sentence 5 is followed by "they fail to understand that they have narcissistic characteristics" in sentence 4. So, sentence 5 is followed by sentence 4. Sentence 3, which talks about another view and introduces the Narcissistic **Awareness** view, best follows sentence 4. Sentences 3 and 2 form another mandatory pair. "they understand that they have narcissistic characteristics" in sentence 2 links with "narcissists have insight into their personality and reputation" in sentence 3. So sentence 2 follows sentence 3. Also "their meta-perceptions are closer to others' perceptions (i.e., less positively biased) than are their self-perceptions" in sentence 2 contrasts "their meta-perceptions are just as

overly positive as their self-perceptions" given earlier in sentence 4. So, 5432 form a paragraph which is focussed on explaining the arguments of two views, viz, the Narcissistic **Ignorance** view and the Narcissistic **Awareness** view. Sentence 1 is the odd sentence out. It runs tangent to the discussion and can be a part of another para.

Ans: (5432)

Solutions for questions 15 to 20:

Number of words and Explanatory notes for RC:

Number of words: 603

15. At the beginning of the second paragraph of the passage, it is mentioned that "The editors, though were equally correct to assert in 1992... the ancients' use of marble." Option A: The author does not state that the archaeologists did not delve much into the subject. In fact, throughout the passage, he highlights how the study on the subject progressed. Hence, this is not the answer. Option B: The editors said that there isn't a general and fully accessible book on the ancients' use of marble. The author doesn't say that they didn't have the expertise to produce a general book on the subject, as given in choice B. Choice B is not the answer. Option C: Consider the following bit from para 3 - "Despite this, research in this field remains irregularly spread and often highly targeted. **There is a lot of material that needs to be drawn together.**" While archaeometric studies are increasingly revealing where materials came from and how and when they were used, much less work has been done on interpreting what this tells us about how the stone trade was organized and what it reveals about the economy." And this is a reason for the current situation of there being no book so far. Hence choice C is the answer. Option D: Nowhere has the author mentioned that the archaeologists and historians chose to not write a book on the subject. Hence, this is not an answer. Therefore, the correct answer is option C.

Choice (C)

16. Option A: The author mentions that "Since Ward Perkins was writing, the available datasets have increased markedly on almost all fronts". He also mentions that "Considerable numbers of new quarrying sites have been discovered". This probably is because of Perkins' writings but we cannot infer from the passage that Perkins mentions these new quarrying sites in his writings. Hence, this statement is false. Option B: This is just a question that the author raises and it hasn't been proved or concluded yet. Hence, this is not the answer. Option C: The model explains how demand for the stone affected the stone production in the past. The passage also mentions that "This was a less responsive but more efficient system that can be used to explain the apparently repetitive aspect of so much Roman art and architecture." Hence, this statement is true. Option D: The author raises the question whether the distribution of stone would reveal something about the things mentioned here and does not state that the studies have revealed substantial information. Hence, this is not the answer. Therefore, the correct answer is option C.

Choice (C)

17. The passage mentions various areas in which extensive research has been done and some areas where we need more information. Option A: The passage states that "A wider interest in where materials came from and how they were carved can also be seen in more specifically art historical or architectural studies" From this we can infer that this aspect has already been studied and therefore, is not the answer. Option B: Rockwell's discussions of practicalities of stone carving helped in reinvigorating the study of artistic

production and foreground it in even the most mainstream studies of Roman and Greek art. Hence, this is not the answer.

Option C: The penultimate paragraph mentions that "much less work has been done on interpreting what this tells us about how the stone trade was organized and what it reveals about the economy." Hence, we can say that this aspect is not yet researched extensively. Hence, this is the correct answer.
Choice (C)

18. Option A: From the statement "This is not to say that important synthesis tackling these issues do not exist", we can infer that there has been some work done towards bringing together the available data. Hence, this statement is false.

Option B: From the statement "Fant worked extensively on the evidence for imperial stone use", we can infer that this is true. Hence, this is not the answer. Option C: From the statement "Braemer brought together a lot of data for the more localized patterns of stone use that have tended to be ignored", we can infer that this is true. Hence, this is not the answer.

Option D: From the statement "Pensabene, most notably of all, has produced a huge number of detailed examinations of the production and supply of stone", we can infer that this is true. Hence, this is not the answer.

Therefore, the correct answer is option A.

Choice (A)

19. In the last paragraph of the passage, the author raises various questions which are not yet answered ("there remain questions to be asked").

Option A: From "How did imperial and non-imperial stone use compare with respect to the procurement, distribution and scale?", it can be implied that this is one of the issues that need to be answered. Hence, this is not the answer.

Option B: The author mentions Ward Perkins model which explains how the demand for the stone affected the stone production in the past. The author attempts to answer this question by explaining the Ward Perkins model. Hence, this is the answer.

Option C: From the statement "Did the imperial stone trade really lie outside of the normal orbit of trade in marbles and decorative stones, as has been proposed", it can be implied that this is one of the questions that need to be answered. Hence, this is not the answer.

Option D: From the statement "What do stone objects add to our understanding of Roman manufacturing?", it can be implied that this is one of the questions that need to be answered. Hence, this is not the answer.

Therefore, the correct answer is option B.

Choice (B)

20. The statement mentions the difference between the procurement of imperial stones and non-imperial stones.

Option A: The statement provides a difference between the procurement of imperial and non-imperial stones. The statement partially answers the question mentioned in this option. Hence, the statement helps answer this question.

Option B: The statement does not talk about the imperial stone trade. It only mentions procurement. Hence, this is not the correct answer.

Option C: The statement does not mention the distribution of materials and demand for specific materials. It only talks about one of the differences between imperial stone use and non-imperial stone use.

Option D: The statement does not mention Roman manufacturing.

Therefore, the correct answer is option A.

Choice (A)

Solutions for questions 21 to 24:

21. The first sentence in the paragraph indicates a contrast with the contrast conjunction 'but'. Even though his novels lacked intellectual 'depth', Dickens was described by the London Times as the greatest instructor of the nineteenth

century. The correct synonym for 'depth' would be prowess or challenge. Doughtiness cannot fill the first blank as doughtiness means brave or marked by stouthearted courage. Erudition refers to deep, extensive learning or scholarship or knowledge. Erudition does not collocate with 'intellectual'. Hence choice 2 (challenge) fills the first blank. The second blank is best filled by 'spokesman for'. A spokesman is someone who is asked to speak as the representative of an organization or group of people. So Charles Dickens was portrayed as a spokesman for the downtrodden. Choice 6 fits the second blank. 'Disapprobation' means strong disapproval, typically on moral grounds. This word is contextually inappropriate. 'enthusiast' means a person who is very interested in a particular activity or subject. 'unrestrained enthusiast' does not qualify the description in the second sentence. Hence choices 4 and 5 are incorrect for the second blank.

Ans: (26)

22. The trigger words for the first blank include the phrase 'at the same time'. The first blank needs a synonym of 'unnerving'. China's growing global clout and recent financial tumult have been unnerving to the parties concerned. The correct synonym of 'unnerving' is 'unsettling'. Copacetic and vindictive are contextually inappropriate. Copacetic means 'in excellent order'. There is not enough information in the first sentence to suggest that China's growing clout can be vindictive for the incumbents. Vindictive means 'having or showing a strong or unreasoning desire for revenge'. Choice 3 fills the first blank.

The second blank finds a reference in the second sentence of the para. 'Vastness' would refer to 'China's growing global clout'. We need a word to describe 'China's recent financial tumult'. That word is 'vulnerability'. Choice 5 is the correct answer. Flagitiousness refers to turpitude (degrading, immoral acts or habits). Encumbrance means burden or impediment. Vulnerability is a better fit for the second blank than 'encumbrance'.

Ans: (35)

23. The keyword in the first sentence of the para is 'unlike any other'. We need to understand the role of the phrases 'For one thing' and 'But at the same time' in the para. The second sentence in the paragraph tells us how the fertility business is unique. The fertility business requires clinics to report success rates to the federal government. Hence we can say that the business is essentially regulated. If clinics have to report success rates to the federal government, it does not mean that the fertility business becomes hackneyed (which refers to having been overused; unoriginal and trite) or self-serving (preoccupied with one's own interests, often disregarding the truth or the interests, well-being of others). Hence choice 3 fills the first blank. Choices 1 and 2 are negative for the second blank.

While the second sentence tells us how the fertility business is unlike any other medical business, the third sentence needs to highlight a similarity between the fertility business and any other medical business. Note the use of the contrasting starter in the third sentence: But at the same time Hence choice 6 (as competitive) best completes the second blank. "not so exceptional and commercial as" (choice 5) would not provide a similarity between the fertility business and laser eye/ plastic surgery. Intrepid means fearless or undaunted and does not fit the second blank.

Ans: (36)

24. There are clues in the para which tell us that the first blank needs to be filled up with a synonym of 'murdered'. The clues include "Murder She Wrote", "murder-mystery", "witness to the murder". So the first blank can be filled with the word 'dispatched'. The primary meaning of 'dispatched' is to send off to a destination or for a purpose. But here it is used in another sense: deal with (a task or opponent) quickly and efficiently i.e. murder. Choice 1 is the correct answer for the first blank. Choices 2 and 3 are inappropriate. 'cozened' means to trick or deceive. 'Rescinded' means cancel, or repeal (a law, order, or agreement).

In the second blank, we can only say "compromise the government". Compromise means to weaken or to bring into disrepute or danger by indiscreet, foolish, or reckless behaviour. Fulminate means to express vehement protest, to denounce, inveigh, vituperate. Traduce means to speak badly of or tell lies about (someone) so as to damage their reputation.

Ans: (14)

Solutions for questions 25 to 30:

Number of words and Explanatory notes for RC:

Number of words: 698

- 25.** Option A: Intelligence cannot be isolated from other facets of human personality; it is not a definite unitary entity depending on particular genes. People are not composed of bits that can be separated out and analysed independently. ... Intelligence is of many kinds, a name for a group of overlapping skills. Hence choice A is correct and is not the answer.

Option B: Intelligence is of many kinds, a name for a group of overlapping skills, and that it has to be measured not on one scale but many. In the last para, it has been mentioned that intelligence has more than one dimension and does not involve speed alone. Hence choice B is true and is not the answer.

Option C: To show how 'relative' a quality intelligence is, if a society decided to bring up its children under absolutely identical conditions, the environmental factor would decline and the dependence of intelligence on heredity in a century might approach 100 percent. The author's implication is that children are not brought up in identical conditions, therefore the difference in conditions will have an impact on different children in the aspect of intelligence. So, the idea expressed in choice C is inappropriate.

Option D: A person's success in all walks of life depends on at least three types of mental quality: 'he must possess the requisite abilities; he must respond with eagerness and zeal; and he must sustain the necessary effort'. Hence choice D is correct and is not the answer.

Choice (C)

- 26.** Option A: Refer to the last few sentences of para 3. Estimates of the heritability of intelligence by tests vary according to whether a test is dependent on an acquired knowledge and facility in the handling of words. The author suggests that knowledge of using words and language might help people from diverse backgrounds. Also refer to para 1: We simply cannot measure the heritability of intelligence once and for all. Hence choice A is not correct.

Option B: We can only estimate the inborn nature of intelligence as measured from scores in a particular test by a particular group of people living at a particular time in a particular area. Hence choice B is the correct answer.

Option C: Choice C is a distorted view of the point mentioned in para 3: However, the administration of a well-established intelligence test is still the most reliable way of assessing an individual's capacity for intelligent behaviour. So choice C is incorrect.

Option D: The last sentence in the third para suggests that there are limitations in the IQ test, but does not say they serve little purpose. So choice D is wrong.

Choice (B)

- 27.** Since the question asks for a statement that may not contribute to greater objectivity in measuring the heritability of intelligence, the other options should contribute to greater objectivity in the measurement.

Option A: Choice A helps by eliminating the influence of acquired factors. It contributes to greater objectivity in measuring the heritability of intelligence. Hence choice A is not the answer.

Option B: Choice B is not a modification to the test. It is the modification to the environment. If uniform environmental conditions were provided to nurture intelligence, it would lead to better results. Since the question asks for a step which is not a modification to a test that could lead to

greater objectivity..., choice B is the answer.

Option C: Choice C would also lead to greater objectivity (Para 3 has the word 'creativity' in quotes and the lines that follow imply its meaning as 'the ability to spot relationships and apply them in a new situation' – which is also acquired. Choice C does not answer the question.

Option D: Choice D – measuring the speed – is one aspect of intelligence that can be measured objectively. After the brain has received a message through the eyes about, say a flash of light, it produces electrical waves, whose frequency can be measured, and **there may be some link between the frequency of these waves and some forms of intelligence....** So choice D will lead to greater objectivity (it would make the situation better than before). Choice D is not the correct answer.

Choice (B)

- 28.** Statement 1: Intelligent activity is the ability to grasp the essentials of a situation and respond appropriately to them: the 'activity' can be affected by mood, attitude, temperament, character, or aspiration. Hence Statement 1 is true and is not the answer.

Statement 2: Statement 2 is completely out of scope. "Intuition and instinct" have not been discussed in the passage. Statement 2 is false and is the answer.

Statement 3: "Intelligence" is an abstraction. Intelligence, like height or blood pressure or fertility, is only a relative quality dependent very much on the place, time, and culture. To show how 'relative' a quality intelligence is Hence Statement 3 can be inferred and is not the answer.

Statement 4: Estimates of the heritability of intelligence by tests vary according to whether a test is dependent on an acquired knowledge and facility in the handling of words. Clearly a test stripped of such requirements is a better test of heritability. Refer to the fourth para. Even non-verbal tests ... do not avoid the influence of culture. Culture free tests are impossible to devise, anyway. From these lines, statement 4 is true. Statement 4 is not the answer.

Statement 5: Statement 5 is again out of scope. "neonativist distinction between intelligence traits" has not been discussed in the passage. Statement 5 is false and is the answer.

Ans: (25)

- 29.** As Galton described: a person's success in all walks of life depends on at least three types of mental quality: he must possess the requisite abilities (cognitive); he must respond with eagerness and zeal (emotive); and he must sustain the necessary effort. Hence (a) and (b) apply.

Perseverance is a mental ability which means proceeding to put effort into something and continuing to do it. Hence (c) also applies.

Choice (D)

- 30.** Option A: The given sentence in the question cannot be inserted at the end of the passage. The last sentence of the last paragraph, as given, (But at present, our studies on the inheritance of IQ are crude and so are our notions of intelligence.) is the conclusion sentence of the passage. This sentence also gives the central idea of the passage. Choice A is not the correct location for the sentence in the question as it would need disrupt the thoughtflow.

Option B: Cultural impact on intelligence has not been discussed in the second para. Choice B is not the correct answer.

Option C: The sentence in the question can be best placed as the introduction sentence in para 4 as it would then connect well with the sentence that follows: The tests of IQ mentioned above would be of little use with Arabs or Red Indians Para 4 deals with 'racial intelligence'. (the white Westener in doing such tests is playing on home ground; the Arab, Red Indian, Negro, or Japanese is playing away Even non-verbal tests do not avoid the influences of culture. Low scores are just as liable to be due to inexperience in arranging bricks or in interpreting conventional drawings as to having low inborn mental powers. 'Culture-free' tests are probably impossible to devise, anyway.) The given sentence can precede the discussion in para 4. Hence choice C is the answer.

Option D: The second sentence of para 1 is: We simply

cannot measure the heritability of intelligence once and for all. The third sentence of para 1 is: We can only estimate the inborn nature of intelligence as measured from scores in a particular test by a particular group of people living at a particular time in a particular area. These two sentences have no reference to 'racial intelligence' at all. The sentence in the question would disrupt the thoughtflow if placed between the second and third sentences of para 1. Choice D is not the answer.

Choice (C)

Solutions for questions 31 and 32:

31. Option 1: Choice 1 is not the correct summary as it merely repeats the first and last sentences of the paragraph without focussing on the sentences that provide the central idea of the para. So choice 1 is not the answer.
 Option 2: Choice 2 distorts and extends the argument mentioned. The verbs "bothered" and "concerned" run tangent to the given text. Choice 2 is also incomplete as a summary.
 Option 3: Choice 3 paraphrases the following lines from the passage really well: {The value in use of the arts is that they help a society make sense of itself. They generate the symbols and rituals that create a common identity – that is why art and religion are so closely linked.} Choice 3 best summarizes the first para by stressing on the importance of the arts. Society uses art to understand itself. Art helps to create a common identity in a society. The second sentence of choice 3 also summarizes the first half of the passage. Hence choice 3 is the answer.
 Option 4: Choice 4 is incomplete. Choice 4 is limited to the first two sentences of the para. It does not mention common identity or history.
 Option 5: Choice 5 brings religious identity into the limelight, which is not the main focus of the para. The word 'only' in choice 5 renders it narrow in scope. Ans: (3)
32. Option 1: The paragraph does not say that individualistic societies are more self-centered or stress more on the individual or have greater dialogue with their children than collectivist societies. So choice 1 is incorrect.
 Option 2: Though choice 2 might seem implied, it is not the main difference between the two societies. The author clearly mentions that individualistic societies encourage children to make personal choices early on in their lives whereas collectivist societies stress upon duty rather than personal choice.
 Option 3: Indian children have not been spoken about in the passage. So choice 3 is incorrect.
 Option 4: Choice 4 is a complete, concise and correct summary. Choice 4 is the answer.
 Option 5: In choice 5, the point about "individualistic societies" is correct. The remaining part of the choice merely repeats some examples (which need not be mentioned in the summary). Also "should be determined by society and should not be left to the whims of the individual" in choice 5 is out of scope. Choice 5 does not highlight the fact that collectivist societies emphasize duty. Hence choice 5 is not the answer. Ans: (4)

Solutions for questions 33 and 34:

33. The para talks about 'nostalgia for the past'. The tone of the passage reflects the futility of brooding over the past, though a completely negative attitude towards it should also be avoided. It brands this nostalgia as 'intellectually sterile' which indicates that it is of no practical use.
 Option 1: Choice 1 is completely negative in tone as it talks about "erasing these memories" which contradicts the tone of the para. Choice 1 is not the answer.
 Option 2: Choice 2 paraphrases the term 'intellectually sterile' and thus seems to continue the discussion. But does it close the discussion? We keep it in hand but consider the other choices to see if any are more suitable.
 Option 3: Choice 3 is completely negative in tone as it talks about 'completely erasing.....' which contradicts the tone of the para. Choice 3 is not the answer.

Option 4: Choice 4 contradicts the para by saying that 'one has to be nostalgic'. Choice 4 is not the answer.
 Option 5: Choice 5 offers the additional outlook that would render the consideration of the past meaningful. The discussion in the para, of the two aspects of the past, is thus drawn to a close. Choice 5 is the answer.

Ans: (5)

34. The para discusses our changed attitude to science. From being considered a panacea, we are now conscious of the limitations and the negative results of science.
 Option 1: Choice 1 focuses on the scientist whereas the focus of the para is on science. It talks of 'both fronts' not mentioned in the para. Choice 1 is not the answer.
 Option 2: Choice 2 gives an example but it does not exemplify what is stated in the penultimate sentence. Choice 2 is not the answer.
 Option 3: Choice 3 focuses on the willingness of some scientists to recognise the situation and to discuss the issue with community involvement. Choice 3 takes the thoughtflow forward to an effective close.
 Option 4: Choice 4 begins with 'such happenings' but there is no happening in the para. Choice 4 needs a precedent. Choice 4 is not the answer.
 Option 5: Choice 5 places the responsibility of future steps on scientists, unilaterally. However, considering that the para refers to diminishing confidence on 'our' part (meaning all of community and society), choice 3 is more appropriate since it takes community into account as well.

Ans: (3)

Solutions for questions 35 to 40

Number of words and Explanatory notes for RC:

Number of words: 697

35. Particularly when econometricians and statisticians deal with them, goods even cease to be anything identifiable, and become GNP, imports, exports, savings, investment, infrastructure, or what not.
 Option A: If we talk of promoting development, what have we in mind -- goods or people? But economic concepts like GNP, imports-exports, savings, investment, infrastructure are quantitative terms and not qualitative terms. In the penultimate para, the author says, "All important insights are missed if we continue to think of development mainly in quantitative terms." Hence choice A is ruled out.
 Option B: The author does refer to economic concepts like GNP, imports-exports, savings, investment, infrastructure as abstractions. (Impressive models can be built out of these abstractions.) But Choice B is incorrect because they don't hasten development, according to the author.
 Option C: Choice C is correct. The author rues the fact that they are not focussed on people but on goods. Refer to the second para: Particularly when econometricians deal with them, goods cease to be anything identifiable, and become GNP, imports, exports, savings, investment, infrastructure. Impressive models can be built out of these abstractions, but they do not leave room for actual people.
 Option D: Choice D is incorrect because economic concepts like GNP, imports-exports, savings, investment, infrastructure don't help in dealing with people.
 The correct answer is choice C. Choice (C)

36. Option A: Choice A (do not serve any purpose) is out of scope. Hence choice A is not the answer. In any case, it is not the primary concern of the author in the passage.
 Option B: Refer to the first para of the passage which explains briefly what the author is setting out to show. It supports choice B, the details in which are from the rest of the passage. The results of the second development decade will be no better than those of the first unless there is a shift of emphasis from goods to people. Indeed, without such a shift, the results of aid will become destructive. Hence choice B is the answer.
 Option C: This means that three tremendous gulfs separate the former from the latter: the gulf between rich and poor; the gulf between educated and uneducated; and the gulf

between city-men and country-folk. The first problem of development aid is how to bridge these three gulfs. The word 'prove' in choice C renders it incorrect. The rest of choice C is also wrong. Choice C is not the answer.

Option D: Choice D is incorrect. In para 5, the author does say "The failure of the first development decade is attributed simply to an insufficiency of aid appropriations or to certain **alleged** defects inherent in the societies and populations of the developing countries." But he counters this in the next para where he says "Now, these items are not irrelevant, but they do not seem to go to the heart of the matter....." Hence choice D is not correct. Choice D is also not the primary concern of the passage.

Choice (B)

37. The words occur in the first line of para 5 and refer to what has been said in para 4.

Option A: The life, work, and happiness of all societies depend on certain **precious** and vulnerable 'psychological structures'. Social cohesion, cooperation, mutual respect, courage in the face of adversity, and the ability to bear hardship disintegrate when these 'psychological structures' are gravely damaged. Choice A is the answer.

Option B: Choice B has not been discussed in the passage. Hence choice B is not the answer.

Option C: None of these awesome problems figure noticeably in the cosy theories of most of our development economists. So choice C is negated in the passage.

Option D: No amount of economic growth can compensate for such losses. But the author does not say that the awesome problems are the ones that inhibit growth. Hence choice D is not the answer as it does not refer to 'awesome problems' as discussed in the passage.

Choice (A)

38. Refer to the last para that discusses neocolonialism. Choice D is negated and all the others are supported by the para.

Option A: This term appears to imply a deliberate intention on the part of the aid-givers. But there is no such intention. This makes the problem greater instead of smaller. Unintentional neo-colonialism is more insidious and infinitely more difficult to combat than neo-colonialism intentionally pursued. So choice A is correct and is not the answer.

Option B: Methods of production, standards of consumption, criteria of success or failure, systems of values and behaviour patterns establish themselves in poor countries which, being (doubtfully) appropriate only to conditions of affluence already achieved, fix the poor countries ever more inescapably in a condition of utter dependence on the rich. Hence choice B is correct and is not the answer.

Option C: Far more serious is the dependence created when a poor country falls for the production and consumption patterns of the rich. Poor countries slip -- and are pushed -- into the adoption of production methods and consumption standards which destroy the possibilities of self-reliance and self-help. Hence choice C is correct and is not the answer.

Choice (D)

39. Option A: Choice A is out of context and does not answer the question. The methods of production, the patterns of consumption, the systems of ideas that suit relatively affluent, educated city people are unlikely to suit poor, semi-illiterate peasants. Choice A is also negated by the author in the last para when he says: Far more serious is the dependence created when a poor country falls for the production and consumption patterns of the rich. Choice A is not the answer.

Option B: Refer to para 3. The methods of production, the patterns of consumption, the systems of ideas that suit relatively affluent, educated city people are unlikely to suit poor, semi-illiterate peasants. If the people cannot adapt themselves to the methods, then the methods must be adapted to the people. This is the whole crux of the matter. Choice B is the answer.

Option C: It is much easier to deal with goods than with people. But choice C is out of context and is not related to the question.

Option D: All important insights are missed if we continue to think of development mainly in quantitative terms and in those vast abstractions which have their usefulness in the study of developed countries but have virtually no relevance to development problems as such. But choice D is not the specific answer to the question.

Choice (B)

40. Those who need help are poor, uneducated, and village-based. The helpers are rich, educated and town-based. Three tremendous gulfs separate them: the gulf between rich and poor; and the gulf between city-men and country-folk.

Option A: Three tremendous gulfs separate them: the gulf between rich and poor. Hence choice A is true and is not the answer.

Option B: Three tremendous gulfs separate them: the gulf between educated and uneducated. Hence choice B is true and is not the answer.

Option C: Three tremendous gulfs separate them: the gulf between city-men and country-folk. Oppidan means 'of a town'; urban. Bucolic means 'rural'. Hence choice C is true and is not the answer.

Option D: Unintentional neo-colonialism is more insidious and infinitely more difficult to combat than neo-colonialism intentionally pursued. But choice D is vague and does not refer to the gulfs existing between the aid-givers and the aid-receivers as discussed in the passage. Hence choice D is the exception and it is the answer.

Choice (D)

Difficulty level wise summary - Section I	
Level of Difficulty	Questions
Very Easy	38
Easy	3, 4, 40
Medium	1, 17, 18, 29, 32, 35, 36, 37, 39
Difficult	2, 7, 8, 9, 10, 11, 13, 14, 15, 16, 19, 21, 23, 24, 25, 26, 27, 28, 30, 31, 33, 34
Very Difficult	5, 6, 12, 20, 22

SECTION – II

Solutions for questions 1 to 4:

As there are 25 persons in the queue (20 initially and 5 more after the five of them barged in on the queue), let 1 to 25 denote the positions in the queue.

From (v), we can determine the position of Praveen. Let x be the number of persons standing in front Praveen. The number of persons standing behind Praveen can be at least $x + 5$ and at most $x + 7$.

This is only possible if Praveen is in 10th position. There will be 9 persons in front of him and 15 persons behind him.

From (ii), both Mohit and Karan are in front of Praveen. Also, Karan is in front of Mohit.

From (iii), the number of persons in front of Amit can be 16 or more. Hence, his position can be from 17 to 25.

The number of persons standing between Praveen and Karan must be a minimum of 1 (since Mohit has to be between the two of them) and a maximum of 8 (if Karan is in the first position).

Mohit's position can be from 2 to 9 (since he has to be in front of Praveen and behind Karan).

The minimum number of persons between Mohit and Amit is 7 (if Mohit is at 9 and Amit is at 17).

Since the number of persons between Praveen and Karan must be the same as that between Mohit and Amit, the number of persons between the two pairs of persons can only be 7/8.

If there are 7 persons between them, Mohit must be at 9 and Amit must be at 17. In this case, the number of persons in front of Mohit is 8 and the number of persons behind Amit is also 8. Hence, this is not possible according to (i).

If there are 8 persons between them, Mohit can be at 8 or 9. If Mohit is at 9, Amit must be at 18. Since there are seven persons between Praveen and Amit, there must be 14 persons between Praveen and Uday (from (vi)). Hence, Uday must be at 25. But this will violate condition (i) since Karan is first. Hence, this case is not possible.

Hence, Mohit must be at 8 and Amit must be at 17. The number of persons between Praveen and Amit is 6. Hence, there must be 12 persons between Praveen and Uday. This is possible only if Uday is at 23. In this case, none of the conditions are violated. The following table provides the positions of each of the five friends in the queue:

Person	Position
Karan	1
Mohit	8
Praveen	10
Amit	17
Uday	23

1. 24 persons are standing in the queue behind Karan.
Ans: (24)

Solutions for questions 6 to 9:

Given that the average in each test was not more than 70. Hence, the four students who attempted each of 1701, 1702, 1703, 1704 and 1705 must have scored not more than 280.

From the first tests that each student attempted, the sum of the scores of the five students is 358. For this total to be not more than 280, one of the students who scored more than $358 - 280 = 78$ must not have attempted this test. Hence, either Kiran or Ranjith must not have attempted this test.

Consider that Kiran did not attempt this test. Hence, Kiran must have attempted all the other tests, i.e., 1702, 1703, 1704 and 1705, and he must have scored 85, 77, 68 and 90 in these four tests respectively.

Also, Ankit, Pavan, Ranjith and Sravan must have attempted 1701 as their first test.

These four persons got 63, 51, 68 and 88 marks in the second test that they wrote. Also, Kiran got 85 in 1702. Adding these five numbers we get the sum to be 355. For this to be not more than 280, we need to reduce at least 75 marks. Of the four students, only Sravan scored more than 75. Hence, Sravan must not have attempted 1702. Hence, Sravan attempted 1703, 1704 and 1705 and got 88, 65 and 71 marks respectively.

In 1703, Kiran and Sravan got 77 and 88 marks respectively. The other students must have got a maximum of $280 - 77 - 88 = 115$ marks. The total marks scored by Ankit, Pavan and Ranjith in their third test is 188. We need to reduce $188 - 115 = 73$ marks from the total. But even if we consider one of Ankit, Pavan and Ranjith not to have written 1703, the total of the other two cannot fall below 115. Hence, this case is not possible.

Consider that Ranjith did not attempt 1701. The other four students attempted 1701 and got 50, 64, 85 and 77 marks. Ranjith attempted 1702, 1703, 1704 and 1705 and got 82, 68, 68 and 34 marks respectively.

Since Ranjith scored 82 marks in 1702, the other three students who attempted 1702 must have received not more than $280 - 82 = 198$ marks. Ankit, Pavan, Kiran and Sravan scored 63, 51, 77 and 88 marks in their second test. The sum of these four marks is 279. We need to reduce at least 81 marks from this for the sum of the marks of four students to be not more than 280. Since Sravan is the only person who scored at least 81, Sravan did not attempt this test.

Hence, Sravan attempted 1703, 1704 and 1705 and got 88, 65 and 71 marks respectively.

In 1703, Sravan and Ranjith scored 88 and 68 marks respectively. The other students must have scored at most $280 - 88 - 68 = 124$. The sum of the marks of Ankit, Pavan and Kiran in the third test that they wrote = 188

We need to reduce $188 - 124 = 64$ from this. Only Kiran scored at least 64 marks among these three students. Hence, Kiran must not have attempted 1703. Kiran attempted 1704 and 1705 and scored 68 and 90 marks respectively.

In 1704, Kiran, Sravan and Ranjith scored 68, 65 and 68 marks respectively. The other student who attempted this exam must have scored less than $280 - 68 - 65 - 68 = 79$ marks. Hence, Ankit must not have written 1704 and would have scored 80 marks in 1705. Pavan must not have attempted 1705 and scored 71 marks in 1704.

The following table provides the tests that each person attempted and the marks scored in each test, along with the total score of the four students that attempted the test:

2. Fourteen persons are standing between Uday and Mohit. Choice (A)
Ans: (17)
3. 17 persons are standing behind Mohit. Ans: (17)
4. The maximum number of persons are between Uday and Karan (21 persons). Choice (D)

Solution for question 5:

5. Given that Ankit marked 100 questions. Let c be the number of questions that he answered correctly (i.e., the number of questions for which the answer is option A) and w be the number of questions that he answered incorrectly. Hence, $c + w = 100$ and $2c - w = -40 \Rightarrow c = 20$
For 20 questions, the correct answer is option A.
Similarly, for Balu,
 $c + w = 100$ and $2c - w = -31 \Rightarrow c = 23$
For 23 questions, the correct answer is option B.
For Chaitu,
 $c + w = 100$ and $2c - w = -19 \Rightarrow c = 27$
For 27 questions, the correct answer is option C.
The number of questions for which the correct answer is option D = $100 - 20 - 23 - 27 = 30$ Choice (A)

Student	1701	1702	1703	1704	1705
Ankit	50	63	63	-	80
Pavan	64	51	57	71	-
Kiran	85	77	-	68	90
Ranjith	-	82	68	68	34
Sravan	77	-	88	65	71
Total	276	273	276	272	275

6. The minimum marks for any test was 272.
Ans: (272)
7. Pavan did not attempt 1705.
Choice (A)
8. Pavan scored the maximum marks in 1704.
Choice (C)
9. Kiran did not attempt three consecutive tests.
Choice (D)
13. Kiran was asked 7 questions and he answered 2 questions. Hiren was asked 8 questions and he answered 2 questions. Lalit was asked 8 questions and he answered 3 questions. Manju was asked 7 questions and he answered 2 questions. Prajwal was asked 7 questions and he answered 2 questions. The percentage is the highest for Lalit, which is equal to $\frac{3}{8} = 37.5\%$
Choice (C)
14. Hiren did not answer the maximum number of questions that he was asked.
Choice (D)

Solution for question 10:

10. Given that the second person had Lasagna. Also, D had lunch immediately before A. Since D and A had Noodles and Rice, they must be the third and fourth persons to have lunch.
C was not the first and hence, he must be the second. B must be the first and he must have had Steak.
Choice (C)

Solutions for questions 11 to 14:

The first question would have been posed to Kiran. But it was answered by Lalit. Hence, Kiran and Manoj would not have been able to answer the question. Lalit would have scored 3 points for this question.
The second question would have been posed to Manju but Prajwal answered it. Hence, Prajwal would have scored 4 points. The third question would have been posed to Kiran. But no one answered it.
The fourth question would have been posed to Hiren and Kiran answered it. Hence, Kiran would have scored 1 point.
The fifth question would have been posed to Hiren and Hiren answered it. Hence, Hiren would have scored 5 points.
Similarly, we can calculate the number of points that each person scored. The table below provides this information. It also mentions the persons who passed the question (from left to right in that order).

Question Number	Passed by	Answered by	Points
1	Kiran, Hiren	Lalit	3
2	Manju	Prajwal	4
3	Kiran, Hiren, Lalit, Manju, Prajwal	-	0
4	Hiren, Lalit, Manju, Prajwal	Kiran	1
5	-	Hiren	5
6	Lalit	Manju	4
7	Prajwal, Kiran, Hiren, Lalit	Manju	1
8	Prajwal, Kiran	Hiren	3
9	-	Lalit	5
10	Manju, Prajwal	Kiran	3
11	Hiren, Lalit, Manju	Prajwal	2
12	Kiran, Hiren	Lalit	3

11. The total points scored by the five persons is 34.
Ans: (34)
12. Kiran was not able to answer five questions (Q1, Q3, Q7, Q8, Q12).
Choice (B)
13. Kiran was asked 7 questions and he answered 2 questions. Hiren was asked 8 questions and he answered 2 questions. Lalit was asked 8 questions and he answered 3 questions. Manju was asked 7 questions and he answered 2 questions. Prajwal was asked 7 questions and he answered 2 questions. The percentage is the highest for Lalit, which is equal to $\frac{3}{8} = 37.5\%$
Choice (C)
14. Hiren did not answer the maximum number of questions that he was asked.
Choice (D)

Solutions for questions 16 to 19:

16. The letters on the board are 'BALJMPOSTR'. For the first child who wrote on the board, all the letters to the left of the letter that he wrote must appear in the alphabets before that letter. All the letters to the right of the letter that he wrote must appear in the alphabets after that letter. This need not necessarily be true for other children.
For example, if four children whose names start with H, K, A and D wrote the letters in that order, H will be written first, K will be to the immediate right of H, A must be to the immediate right of H and D must be to the immediate right of A. Hence, the string on the board will be 'DAHK'.
For the given string, 'BALJMPOSTR', the first letter cannot be B because if A is written after B, then A must be written to the left of B and not to its right. Similarly, A cannot be the first letter because B is to A's left. Similarly, we can eliminate L, J, P, O, S, T and R. Hence, the name of the child who wrote the first letter must start with M.
From the given options, the name of the child can be Manoj.
Choice (B)

17. Since the seven letters are 'RHCASLT', the first letter cannot be R, H, C, A, S or L. Hence, the first letter must be T. Since T is the first letter, the other six letters must have been written in the order L, S, A, C, H and R. Hence, the name of the fifth child to write on the board begins with C.

From the given options, the name of the child must be
Chintu.
Choice (B)

18. From the given string, the first letter can be P or Q.
If the first letter is P, J can be the third letter if F is the second letter. F can be the third letter if Q is the second letter. Similarly, Q and U can also be the third letter. In this case, T and R cannot be the third letters.
If the first letter is Q, each of J, F, P, U and T can be the third letter. But in this case, R cannot be the third letter.
In both the cases, R cannot be the third letter.

Choice (C)

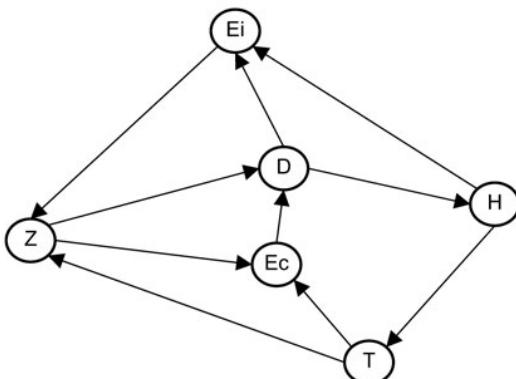
19. Since the first, third and fifth letters are S, T and R, these three letters cannot be the first letter to be written (if S was the first letter, R cannot be to the right of S; if T was the first letter, R cannot be to T's right; if R was the first letter, neither T nor S can be to R's left). Also, for any letter in the second place to be the first letter, that letter has to be between S and T, and also must appear in the alphabets before R. Clearly, no such letter exists.
For any letter in the fourth place to be the first letter, it has to be between T and R and must appear before R. This again is not possible.
The only possibility for the first letter is the last letter. All the letters which appear after T can be the first letter of the name of the first child. Hence, there are 6 possibilities.
Choice (A)

Solution for question 20:

20. By observation, we can see that for A, in April, the percentage increase was less than 10%.
For B, in May, the percentage increase was less than 10%.
For C, the percentage increase was between 10% and 15% for each of April and May.
For D, the percentage increase was more than 15% in May.
For E, the percentage increase was less than 10% for May.
Hence, for only one person, the given condition is satisfied.
Choice (B)

Solutions for questions 21 to 24:

Let D, Ec, Ei, H, T and Z represent the six cities. The diagram below provides the routes of the flights between the six cities:



21. Since Piyush wanted to go from Econio to Eiditpolis, he can go in either of these routes:
Ec → D → Ei
Ec → D → H → Ei
Any other route where he visits each city more than once will take more time.
If he takes the first route, he will start from Econio on 12:30 and reach Drocham on 14:55 (since this flight was not delayed on 4th March). He will be able to travel to Eiditpolis on that day because the flight from Drocham to Eiditpolis leaves at 16:00 (UT423) (as it was delayed by 2 hours on 4th March). Hence, he will take this flight the same day (i.e., 4th March)

and reach Eiditpolis by 18:05. The total time for this journey = 5 hours 35 minutes.

If he takes the second route, he will reach Drocham at 14:55. On 5th March, he would have travelled from Drocham to Hoclence and reach Hoclence by 07:15 (since the flight DE403 was delayed by 60 minutes on 5th March). From Hoclence, he can take the flight WW234 to reach Eiditpolis by 13:40 on 5th March. Hence, the time taken to travel using this route = 25 hours 10 minutes.

The minimum time will be 5 hours 35 minutes.
Choice (C)

22. He can go from Eiditpolis to Hoclence in the following ways:

Ei → Z → D → H

Ei → Z → Ec → D → H

Based on the Scheduled Time of Departures, he will reach Hoclence using the first route on the third day after he starts at 06:15.

Using the second route, he will reach Hoclence on the fourth day after he starts at 06:15.

Hence, he would have planned to travel by the first route. Since he started on 3rd March, the flight from Eiditpolis to Zlans was delayed by 25 minutes. He will reach Zlans by 16:30 on 3rd March. He will be able to take the flight on 4th March from Zlans to Drocham and reach Drocham by 17:25. He will still be able to take the flight to Hoclence and he would be delayed by 60 minutes.

The difference between his planned travel time and actual travel time will only be 60 minutes.
Choice (D)

23. Two flights start from Drocham – DE403 and UT423.

DE403 was not delayed on 7th March. He could have reached Hoclence by travelling on a flight which was not delayed. From Hoclence, he can take two flights, one to Tria (AB893) and one to Eiditpolis (WW234). He could have travelled by AM893 which was not delayed on 8th March. He could have travelled to Eiditpolis on 8th March. He cannot travel anywhere from Tria or Eiditpolis as the flights from these places on 8th March were all delayed. Hence, his destination can be Hoclence or Tria or Eiditpolis.

Since there are two cities left, we can check whether he can reach either of these two cities by travelling first on UT423.

He can take UT423 on 4th March to reach Eiditpolis. He can reach Zlans from Eiditpolis by travelling on 6th March. He will reach Zlans at 16:05 on 6th March. He cannot take the flight from Zlans to Econio on 6th March because the flight leaves at 16:00. Hence, X can be four cities.

Choice (B)

24. From Drocham, he changed two flights to reach his destination. He could have gone to Zlans via Eiditpolis OR he could have gone to Eiditpolis via Hoclence or he could have gone to Tria via Hoclence.

In the first case, the latest that he could have reached Eiditpolis from Drocham is 18:30 (since the flight was delayed by maximum of 150 minutes). The flight from Eiditpolis to Zlans leaves at 13:00. He could take this flight only the next day whether the first flight is delayed or not. Hence, this cannot be his destination.

In the second case, the latest that he could have reached Hoclence is 09:35 (since the flight was delayed by a maximum of 200 minutes on 6th March). He would have missed the flight to Eiditpolis because of this delay. If there was no delay, he would have reached Hoclence by 6:15 and he would have been able to catch the flight to Eiditpolis which left at 8:55. Hence, Eiditpolis can be his destination.

In the third case, he could have reached Hoclence at 9:35 on 6th March. He could have missed the flight to Tria since it starts at 10:10. But on 6th March this flight was delayed by 200 minutes. Hence, he would have been able to catch this flight.

On any other day, for him to miss the flight from Hoclence to Tria the flight from Drocham to Hoclence must be late by at least 175 minutes (so that he will reach Hoclence at 9:10 which is 60 minutes prior to the actual departure of the

flight from Holcence to Tria). By observation, we can see that there are no such flights. Hence, the only possibility for his destination is Eiditpolis.
Choice (B)

Solution for question 25:

25. In 2010, the median revenue = $\frac{60 + 55}{2} = 57.5$

Average revenue = $\frac{75 + 60 + 55 + 50}{2} = 60$

Similarly, in 2011, median revenue is 47.5 and average revenue is 48.75.

In 2012, median revenue is 60 and average revenue is 58.75.

In 2013, the median revenue is 52.5 and average revenue is 51.25.

In 2014, the median revenue is 62.5 and average revenue is 63.75.

In two years (2012 and 2013), the median revenue is greater than the average revenue.
Choice (B)

Solutions for questions 26 to 29:

Given that B won a total of USD 22500 and he was not the first in any event. The only way he can win USD 22500 without being first in any event is if he won USD 7500 in two events, USD 5000 in one event and USD 2500 in another event.

From (ii), A and C did not win the highest amount in the sports meet. From (vi), E also did not win the highest amount in the sports meet.

From (iv), one of the persons was the first in two events and this person did not win the highest amount. This person must have won a minimum of $10000 + 10000 + 2500 + 2500 = \text{USD } 25000$ in the sports meet. The person who won the highest amount must have won more than this. From this, we can infer that B also cannot be the person who won the highest amount.

Hence, only D can be the person who won the highest amount. From (v), D was the first in one event. He is not the third in any event. Also, B was the second in two events (since he won USD 7500 in two events). Hence, the maximum amount that D can win = $10000 + 7500 + 7500 + 2500 = 27500$

Since D has to win more than USD 25000, he must have won USD 27500.

The person who was first in two events must have won USD 25000 (this is the only way for him to have won less than D). From (ii) and (vi), C and E cannot be the persons who won USD 25000. Hence, A must be the person who won USD 25000. This is possible if he was the first in two events and fourth/fifth in two other events.

From (ii), C must have won USD 20000. This is possible only if C was the first in one event, the third in another event and fourth/fifth in two events (C cannot be the second in any event because B and D are second in two events each). The amount that C wins in this case = $10000 + 5000 + 2500 + 2500 = 20000$. E must have been the third in two events and fourth/fifth in two events. The total amount that E won = $5000 + 5000 + 2500 + 2500 = \text{USD } 15000$.

The following table presents the positions of the five persons in the four events and the total prize money won by them in the sports meet:

Person	Standing	Prize money (USD)
A	1 st , 1 st , 4 th /5 th , 4 th /5 th	25000
B	2 nd , 2 nd , 3 rd , 4 th /5 th	22500
C	1 st , 3 rd , 4 th /5 th , 4 th /5 th	20000
D	1 st , 2 nd , 2 nd , 4 th /5 th	27500
E	3 rd , 3 rd , 4 th /5 th , 4 th /5 th	15000

26. C won a total of USD 20000 in the sports meet.
Ans: (20000)

27. The highest prize money won by any person is USD 27500.
Ans: (27500)
28. A won USD 2500 in two events. In these two events, E could have won USD 2500. Hence, we cannot say that A definitely won more than E in at least three events.

B could have won USD 2500 in the same event that E won USD 2500. In the event that B won USD 5000, E could have won only USD 2500 (since two persons could not have won USD 5000). In the other two events that B won USD 7500, E would have won less than B. Hence, B would have definitely won a higher prize money than E in three events.

C won USD 2500 in two events. In these two events, E could have won USD 2500. Hence, we cannot say that C definitely won more than E in at least three events.

D won USD 10000 in one event and USD 7500 in two events. In all the three events, D would have won a higher prize money than E.

Hence, the given condition is satisfied for two persons, B and D.
Choice (B)

29. The only persons who were second in any event were B and D. In the event that D was first, B must be second. Hence, the statement given in option A is definitely true. The other statements need not necessarily be true.

Choice (A)

Solution for question 30:

30. Given that each person had a distinct number of coins of each type and no two persons had the same number of coins of any type. Since there are three persons, one of them must have at least 3 coins of ₹5. The minimum amount with this person will be ₹19, if he has 2 coins of ₹1 and 1 coin of ₹2.

We can adjust the number of coins with the other persons such that the total amount with them is also ₹19.

The second person can have 1 coin of ₹1, 4 coins of ₹2 and 2 coins of ₹5.

The third person can have 10 coins of ₹1, 2 coins of ₹2 and 1 coin of ₹5.

Hence, the minimum amount with any person is ₹19.

Ans: (19)

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

SECTION – III

Solutions for questions 1 to 34:

1. When the ratio of the number of marbles with them becomes the reciprocal of the initial ratio, it effectively means that the number of marbles with them are interchanged. That means, Shiva initially had 12 more marbles than Hari. If Shiva gives 6 marbles to Hari then both of them will have equal number of marbles.

Alternative solution:

Let S and H be the number of marbles with Shiva and Hari respectively.

$$\frac{S}{H} = \frac{H+12}{S-12}$$

$$\Rightarrow S^2 - 12S = H(H+12) \Rightarrow S^2 - H^2 = 12(S+H)$$

$$\Rightarrow S - H = 12 \Rightarrow \text{Shiva has 12 marbles more than Hari.}$$

∴ If Shiva gives 6 marbles to Hari, both will have an equal number of marbles.
Choice (A)

2. Let n be the number of sides of the polygon

$$\text{Sum of } n \text{ terms in an A.P} = \frac{n}{2}[2a + (n-1)d]$$

$$\Rightarrow \frac{n}{2} \left[130 + (n-1) \frac{75}{4} \right] = (n-2) \times 180$$

$$n \left[130 + (n-1) \frac{75}{4} \right] = 2(n-2)180$$

$$130n + n(n-1) \frac{75}{4} = 2(n-2)180$$

As n is the number of sides of a polygon, $2(n-2)180$ and $130n$ are integers.

$$\therefore n(n-1) \frac{75}{4} \text{ should be an integer}$$

From the choices $n = 8$ or 9 . Substituting these values, we find that $n = 9$ satisfies the equation. Choice (B)

3. Let the four digit number be $pqr s$.

Given, $4(pqr s) = s r q p$ (i.e. $s \geq 4$)

If $p \geq 3$, $4(pqr s)$ is a 5-digit number.

$$\therefore p = 1 \text{ or } 2$$

$s r q p$ is a multiple of 4, $p \neq 1$

$$\therefore p = 2$$

As $p = 2$, s has to be 3 or 8. As $s > 4$, $s = 8$

$$\Rightarrow 4(2qr8) = 8rqp2$$

$$\Rightarrow 8000 + 400q + 40r + 32 = 8000 + 100r + 10q + 2$$

$$\Rightarrow 390q + 30 = 60r$$

$$r = \frac{13q+1}{2},$$

$$r = 6q + \frac{q+1}{2}$$

$$\Rightarrow q = 1, 3, 5, 7 \dots$$

$$\Rightarrow r = 7, 20 \dots$$

As q and r are single digit numbers

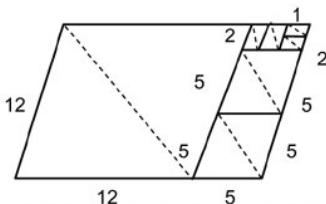
$$q = 1 \text{ and } r = 7$$

$$\therefore pqr s = 2178$$

$$\therefore \text{Sum of the digits} = 2 + 1 + 7 + 8 = 18.$$

Ans: (18)

- 4.



A parallelogram whose angles are 60° and 120° and for which the ratio of its sides is a rational number, can be perfectly split into equilateral triangles. First we split up the parallelogram into smaller parallelograms, in which the length is k times the breadth (where k is a positive integer). For each such parallelogram there are k such parallelograms whose length and breadth are equal and for each of these k parallelograms, there are 2 equilateral triangles. This the number of equilateral triangles into which the parallelogram can be perfectly cut out is given by

$$N = 2 \left(\left[\frac{17}{12} \right] + \left[\frac{12}{5} \right] + \left[\frac{5}{2} \right] + \left[\frac{2}{1} \right] \right)$$

Where $\left[\frac{p}{q} \right]$ is the greatest integer less than or equal to p/q . In the expression above, the numerator of each term (from the second onwards) is the denominator of the previous term and the denominator is the remainder obtained in the division indicated in the previous term.

$$\therefore N = 2(1 + 2 + 2 + 2) = 14$$

Ans: (14)

5. The bookworm begins from the first page of the first volume, bores its way through the cover and enters the second volume. It bores its way completely through volume 2 to volume 9. As the 10th volume is placed upside down it has to work its way through the front cover and all the pages. Therefore, it doesn't have to work through the pages of volume 1, the back cover of volume

1 and back cover of volume 10. It takes $1/2$ an hour for each volume. Thus it takes $10(1/2) - 1/2$ or $4\frac{1}{2}$ hours or 270 min. Choice (D)

6. There are a total of 10 characters – 6 alphabets and 4 numbers. Since only 2 numerals are allowed, all the alphabets are selected.

Given that no two of B, D, F should be together.

Other than B, D, F there are 5 other characters, represented by dashes (-), which have 6 gaps, represented by x.

x — x — x — x — x — x

But it is given that all the codes must start with B.

B — x — x — x — x — x

If D and F occupy any of the positions represented by x, then no two of B, D, F would be together.

∴ 2 positions out of the available 5 can be selected in ${}^5C_2 = 10$ ways.

2 numerals out of 4 can be selected in ${}^4C_2 = 6$ ways.

Once the selection is complete, the characters can be arranged in $2! \times 5!$ ways.

∴ Total number of codes

= No. of ways of selection \times No. of ways of arrangement

= $(10 \times 6) \times (2! \times 5!) = 14400$ ways. Choice (C)

7. Varun and Gajini do not work individually. Both work on the second and third days and neither works on the first day. We can treat them as one unit (VG). P takes m hours and VG takes $(m + 5)$ hours. Working together, P and VG take $(m - 4)$ hours. P alone takes 4 hours more. VG alone take 9 hours more.

$$\therefore (m - 4) = \sqrt{(4)(9)} = 6 \text{ or } m = 10$$

Alternative solution:

Prakash does $\frac{1}{m}$ units of work in 1 hour.

Gajini and Varun together do $\frac{1}{m+5}$ units of work in 1 hour.

Prakash, Gajini and Varun together do $\frac{1}{m} + \frac{1}{m+5}$ units of work in 1 hour.

But it is given that the three of them do $\frac{1}{m-4}$ units of work in 1 hour.

$$\therefore \frac{1}{m} + \frac{1}{m+5} = \frac{1}{m-4}$$

$$\Rightarrow (2m+5)(m-4) = m(m+5)$$

$$\Rightarrow m^2 - 8m - 20 = 0$$

$$\Rightarrow (m+2)(m-10) = 0$$

Hence, $m = 10$

Choice (C)

8. $\frac{2b-a}{a-2c} < 0 \quad a^2 - 4bc > 0 \quad (\because ac > 0)$

⇒ roots are real

The nature of the roots depends on the nature of coefficients a, b, c. When a, b, c are all rational, both the roots must be of a similar nature, i.e., both rational or both irrational.

Since there is no mention about the rationality of co-efficients a, b, c, if one root is rational the other root can be irrational

For example: solve for roots of $\sqrt{3}x^2 - (7 + \sqrt{3})x + 7 = 0$

Choice (D)

9. Since, x, y, z are distinct prime numbers; the sum of xy, yz, zx is always an odd number. Hence, there is no (x, y, z)

- Such that $xy + yz + zx = 120$ Choice (C)
10. Given, $f(x) = a|x| - bx^2$,
when $a < 0$ and $b > 0$,
 $f(x) = a|x| - bx^2 \leq 0$ for all real values of x .
Also, $f(0) = 0$.
Hence, $f(x)$ is maximum at $x = 0$ whenever $a < 0$ and $b > 0$. Choice (D)
11. Each of the nine friends may either be invited or not invited. Hence 2 ways for each person. That is, a total of 2^9 ways of inviting but to invite at least two friends, we must subtract the following two cases
(i) inviting none $= {}^9C_0 = 1$ way
(ii) inviting one $= {}^9C_1 = 9$ ways
The number of ways of inviting at least two friends is
 $\therefore 2^9 - 1 - 9 = 512 - 10 = 502$ ways. Choice (B)
12. As N should take a value between 400 and 999, N must be a three-digit number. Also, as the digits are equally distributed between three children, N should be a multiple of 3. Let N be abc . Hence, $N = 100a + 10b + c$
The number formed by reversing the digits of N will be $cba = 100c + 10b + a$.
Sum of the two numbers = 101 (a + c) + 20b. The units digit of the sum will be the units digit of (a + c).
As the units digit of the sum is 9, (a + c) can be 9, 19, 29 ...
However, as both a and c are single-digit numbers, (a + c) can have a maximum value of 18. Thus a + c must be 9.
Thus the required numbers are 4b5, 5b4, 6b3, 7b2, 8b1 and 9b0. As the number is a multiple of 3, b can take only the values 0, 3, 6 and 9. Thus the total number of values N can assume is $6 \times 4 = 24$
Choice (C)
13. Let the common difference be d . Let the sum of the 1st, 3rd, (2k - 1)th terms be S_d and the sum of the 2nd, 4th, (2k)th terms be S_e .
Given $S_d = 186$, $S_e = 216$ and $(2k - 1)d = 55$ ----- (1)
 $S_e - S_d = kd = 216 - 186 = 30$ ----- (2)
- $$(1), (2) \Rightarrow \frac{2k-1}{k} = \frac{55}{30} = \frac{11}{6}$$
- $$\Rightarrow k = 6 \text{ and } d = 5.$$
- The average of $T_1, T_3, T_5, T_7, T_9, T_{11}$ (i.e., T_6) is $\frac{186}{6} = 31$
 $\therefore T_4 = 31 - 2 (5) = 21$ Choice (D)
14. Let the number of apples purchased by Raman, Ram, Ramu and Ramana be a, b, c and d respectively and $a + b + c + d = T$.
Given $a = \frac{2}{5}(b + c + d) \Rightarrow (b + c + d) \left(1 + \frac{2}{5}\right) = T$
Similarly $d = (a + b + c) \left(1 + \frac{1}{2}\right) = T$
and $c = (a + b + d) \left(1 + \frac{1}{3}\right) = T$
- $$\Rightarrow T = \frac{7}{5}(b + c + d) = \frac{3}{2}(a + b + c) = \frac{4}{3}(a + b + d)$$
- $$\Rightarrow T \text{ is a multiple of 7 and 3 and 4}$$
- $$\text{LCM of } (7, 3, 4) = 84$$
- $$\text{Assume } T = 84$$
- $$\Rightarrow b + c + d = 84 \times \frac{5}{7} = 60 \Rightarrow a = 24$$
- $$\text{Similarly } a + b + c = 56 \Rightarrow d = 28$$
- $$\text{and } a + b + d = 63 \Rightarrow c = 21$$
- $$a + d + c = 24 + 28 + 21 = 73$$
- $\Rightarrow b = T - (a + d + c) = 84 - 73 = 11$
 $\Rightarrow \frac{b}{T} = \frac{11}{84}$
- Alternative Solution:**
Let total number of apples purchased by all four = x
 \Rightarrow Ramana purchased $\frac{1}{3}x$ apples
Ramu purchased $\frac{1}{4}x$ apples
Raman purchased $\frac{2}{7}x$
 \Rightarrow Ram purchased $x - \left(\frac{1}{3}x + \frac{1}{4}x + \frac{2}{7}x\right) = \frac{11}{84}x$ apples.
Hence, required ratio = 11 : 84. Choice (A)
15. $y = f(x)$ can be obtained by reflecting the graph of $y = F(x)$ in the x -axis
i.e., $f(x) = -F(x)$; OR by reflecting $y = F(x)$ in the y -axis and then in the x -axis
i.e., $f(x) = -F(-x)$ OR by taking the modulus of $y = F(x)$
i.e., $f(x) = |F(x)|$.
Hence 3 relations are satisfied. Choice (C)
16. The graph $y = f(x)$ can be obtained by reflecting $y = F(x)$ in the y -axis i.e., $f(x) = F(-x)$, or by taking the modulus of $y = F(x)$, i.e., $f(x) = |F(x)|$.
Hence two relations are satisfied. Choice (B)
17. Given that Akhil starts from Surat at 11:00 a.m. and reaches Ahmedabad at 4:00 p.m., i.e., he takes 5 hours to travel from Surat to Ahmedabad. Also, given that Rahim starts from Ahmedabad at 1:00 p.m. and reaches Surat at 5:00 p.m., i.e., he takes 4 hours to travel from Ahmedabad to Surat. Since for a given distance, the ratio of the speeds is the ratio of the reciprocals of times taken, the ratio of the speeds of Akhil and Rahim is $\frac{1}{5} : \frac{1}{4}$ i.e., 4 : 5
Let the speeds of Akhil and Rahim be $4x$ km/hr and $5x$ km/hr. Given that Ritika started from Surat at a speed which is 25% more than that of Akhil at 12:00 noon. So the speed of Ritika is $\frac{5}{4} \times 4x$
i.e., $5x$ km/hr.
∴ The distance between Surat and Ahmedabad = $4x (5) = 20x$ km
Positions of the three of them at 1:00 p.m.
-
- The above positions are obtained as by 1:00 p.m., Akhil and Ritika have travelled for 2 hours and 1 hour respectively, starting from Surat, while Rahim has just started from Ahmedabad.
- Consider statement I
- Akhil and Rahim cross each other at 1:00 p.m. + $\frac{12x}{4x+5x}$
= 1:00 p.m. + $\frac{4}{3} = 2:20$ a.m.
- Ritika and Rahim cross each other at 1:00 p.m. + $\frac{15x}{5x+4x}$
= 1:00 p.m. + $\frac{3}{2} = 2:30$ p.m.
- So, Ritika crosses Rahim 10 minutes after Akhil crosses Rahim.

∴ Statement I is true.

Consider statement II

We have already found that Ritika crosses Rahim at 2:30 p.m. and it is given that Rahim reaches Surat at 5.00 p.m. So, he still has to travel for 150 minutes to reach Surat.
∴ Statement II is not true.

Consider statement III

Time at which Akhil reaches Ahmedabad

$$= 1:00 \text{ p.m.} + \frac{12x}{4x} = 4:00 \text{ p.m.}$$

Time at which Ritika reaches Ahmedabad

$$= 1:00 \text{ p.m.} + \frac{15x}{5x} = 4:00 \text{ p.m.}$$

∴ Statement III is true.

Statement I and statement III are true.

Choice (A)

18. $D_1 = 0. \overline{q_1 q_2 q_3 q_4} = \left(\frac{q_1 q_2 q_3 q_4}{9999} \right) \rightarrow (1)$

$$D_2 = 0. \overline{q_1 q_2 q_3 q_4} = \left(\frac{q_1 q_2 q_3 q_4 - q_1 q_2}{9900} \right) \rightarrow (2)$$

$$D_3 = 0. \overline{q_1 q_2 q_3 q_4} = \left(\frac{q_1 q_2 q_3 q_4 - q_1}{9990} \right) \rightarrow (3)$$

$$D_4 = 0. \overline{q_1 q_2 q_3 q_4} = \left(\frac{q_1 q_2 q_3 q_4 - q_1 q_2 q_3}{9000} \right) \rightarrow (4)$$

When any of the above fractions is multiplied with the respective denominator or its multiple, the result is an integer.

From among the given options, 19,980 is double the denominator of D_3 .

None of the other three given numbers is a multiple of any of the other denominators.

Choice (B)

19. The given equations are quadratic in x and y and x has a unique value, which is negative.

If y^2 is eliminated from the given two equations, the result is $(3p - x)^2 - 1 + 9x^2 = 0$

$$9p^2 + x^2 - 6px - 1 + 9x^2 = 0$$

$$\Rightarrow 10x^2 - 6px + (9p^2 - 1) = 0 \quad \dots \dots (1)$$

x can have a UNIQUE solution,

only when the discriminant of (1) is equal to zero.

$$\text{Hence } (-6p)^2 - 4(10)(9p^2 - 1) = 0$$

$$\Rightarrow 36p^2 - 40(9p^2 - 1) = 0$$

$$\Rightarrow 9p^2 - 90p^2 + 10 = 0$$

$$\Rightarrow p^2 = 10/81; p = (\pm \sqrt{10}/9) \quad \dots \dots (2)$$

$$\text{From (1)} \quad x < 0, \text{ for } \frac{6p}{10} < 0 \Rightarrow p < 0$$

$$\therefore p = -\sqrt{10}/9$$

Alternative Solution:

Once the quadratic equation is obtained as $10x^2 - 6px + 9p^2 - 1 = 0$, for a unique solution to exist, discriminant is zero.

$$\Rightarrow x = \frac{6p}{10}. \text{ Since } x \text{ is negative, } p < a$$

Only choice (4) satisfies.

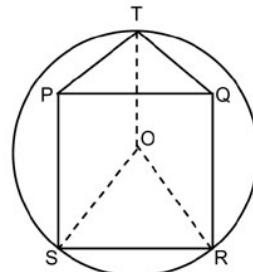
Choice (D)

20. Since the slips are picked up one after the other without replacement, they have distinct numbers on them and 4 distinct numbers can be arranged among themselves in $4!$ ways. (i.e., 24 ways). Of these 24 ways only one arrangement is in ascending order.

∴ The required probability = $1/24$.

Choice (C)

21.



In the above diagram let TPSRQ be the pentagon. Let us construct an equilateral triangle SOR and join OT.

OS || PT and OT || PS. Thus PSOT is a parallelogram.

→ OS = PT and PS = OT

Thus OS = OR = OT.

→ O is the centre of the circle with radius OS.

As OS = PT = 5 cm, the radius of the circle is 5 cm.

Choice (A)

22. Let the age of the son be s .

Hence age of man = $42 + s$.

Given $42 + s = 3s \Rightarrow s = 21$ and $42 + s = 63$

Let x years ago the man be seven times as old as his son.

$$\Rightarrow (63 - x) = 7(21 - x)$$

$$\Rightarrow 6x = 84, \text{ i.e., } x = 14$$

Hence the son was $21 - 14 = 7$ years old.

Alternative Solution:

Let age of son = x and age of father = $7x$

Since difference in ages is always constant, it remains 42.

$$\therefore 7x - x = 42 \Rightarrow x = 7$$

Choice (A)

23. Let the number of boys and girls be b and g respectively.

$$\text{Given, } b + g = 60 \text{ and } \frac{b}{2} + \frac{7g}{4} = 60$$

$$\Rightarrow b = 36 \text{ and } g = 24$$

Let the average age of boys and girls be x and y respectively.

$$\text{Given, } 36x + 24y = 720 \text{ and } 18x + 42y = 810$$

$$\text{Solving, } x = 10 \text{ years}$$

Choice (B)

24. $1005 \times 1006 \times 1007 \times \dots \times 2009 = \frac{2009!}{1004!}$

Hence the required answer is simply the difference in the highest power of 2 in $2009!$ And $1005!$.

Highest power of 2 in $2009!$

Quotient of $\left[\frac{2009}{2} \right]$ + the highest power of 2 in the

factorial of the Quotient of $\left[\frac{2009}{2} \right]$

$$= 1004 + \text{Highest power of 2 in } 1004!$$

∴ Highest power of 2 in the given product = 1004

Ans: (1004)

25. Given that $n(H) = 55$, $n(C) = 60$, $n(F) = 65$ and $(H \cup C \cup F) = 95$

Let a , b and c be the number of students playing exactly one, exactly two and all the three games, respectively.

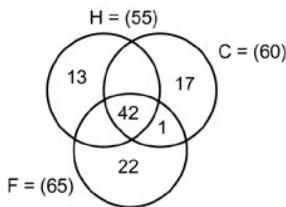
$$\Rightarrow a + 2b + 3c = 55 + 60 + 65 = 180 \quad \dots \dots (1)$$

$$a + b + c = 95 \quad \dots \dots (2)$$

By (1) and (2) we get $b + 2c = 85$

Since we are maximising c , let c take the maximum possible value

$$\Rightarrow c = 42 \Rightarrow b = 1 \text{ and } a = 95 - 1 - 42 = 52$$



Since we have a combination possible for $c = 42$, the maximum value of c is 42. Ans: (42)

26. We have the n^{th} term as

$$\begin{aligned} & (n-1)! [n^2 + n - 1] \\ &= (n-1)! [n(n+1) - 1] \\ &= (n+1)(n) - (n-1)! - (n-1)! \end{aligned}$$

$$= (n+1)! - (n-1)!$$

$$0! [1^2 + 1 - 1] = 2! - 0!$$

$$1! [2^2 2 + - 1] = 3! - 1!$$

Hence the given sum is

$$(2! - 0!) + (3! - 1!) + (4! - 2!) + (5! - 3!) + (6! - 4!) + \dots + (19! - 17!) + (20! - 18!) + (21! - 19!) + (22! - 20!) \quad (\text{There are a total of 21 terms})$$

$$= -0! - 1! + 2! + 22! = 22! + 21! - 2. \quad \text{Choice (D)}$$

27. Given

$$|x-3| + |y-5| + |z-7| = 3 \quad \dots \quad (1)$$

We need the max value of $P = (x+3)(y+5)(z+7)$

$$\text{Consider } (x, y, z) = (3, 5, 7)$$

$$P = (3+3)(5+5)(7+7) = (6)(10)(14) = 840$$

To satisfy (1), we need to increase these factors by a total of 3 and we should aim to maximum P . This can be achieved if the smaller factors are increased.

i.e., instead of (6) (10) (14), we consider (9) (10) (14), i.e., we take $x = 6$, $y = 5$, $z = 7$. This would yield the max value of P , which is 1260. Ans: (1260)

28. To check for the minimum possible value of b , consider

$$\text{the area of the triangle } ABC = \frac{1}{2} bc \cdot \sin A = 1$$

$\Rightarrow b = \frac{2}{c \cdot \sin A}$ for b to minimum, c and $\sin A$ should be maximum

$\Rightarrow \sin A = 1$ and $c = b$ ($\therefore b \geq c$)

$$\Rightarrow b = \frac{2}{b} \Rightarrow b = \sqrt{2} \quad \therefore b \geq \sqrt{2}$$

To find the minimum value of a , the 3 sides should be made equal. This is so because $a \geq b \geq c$; when a is reduced, b is also reduced. In the limiting case, $a = b = c$ and the triangle is equilateral.

$$\therefore \frac{\sqrt{3}}{4} a^2 = 1 \Rightarrow a = \frac{2}{3^{1/4}} \quad \therefore a \geq \frac{2}{3^{1/4}}$$

But 'a' need not be greater than $6^{1/4}$ Choice (C)

29.

Operation	3-l bucket	4-l bucket	Drum
Initially	0	0	9
1	3	0	6
2	0	3	6
3	3	3	3

\therefore Three operations are needed. Ans: (3)

30. We need to check for possible values of n ($n \geq 5$) for which the answers given are feasible.

$$(3)_5 + (4)_5 = (12)_5 \rightarrow \text{Chandu}$$

$$(3)_7 + (4)_7 = (10)_7 \rightarrow \text{Dinesh}$$

but $(3)_5 + (4)_n \neq (14)_n$, or $(21)_5$, for any $n \in \mathbb{N}$.

This is because $n \geq 5$, and $(14)_5 = 9$, which is greater than $(3)_5 + (4)_5$.

Similarly, $(21)_5 = 11$.

\therefore Amar and Bhanu gave unacceptable answers.

Choice (D)

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