

(Key and Solutions for AIMCAT1720)

Key

SECTION – I

1. B	8. C	15. C	22. D	29. B
2. C	9. C	16. C	23. C	30. D
3. A	10. D	17. D	24. B	31. 51324
4. D	11. A	18. A	25. 1	32. 35142
5. B	12. C	19. B	26. 3	33. 24135
6. D	13. B	20. D	27. 1	34. 43152
7. B	14. D	21. A	28. 2	

SECTION – II

1. B	8. B	15. 3	22. C	29. 4
2. 15200	9. A	16. 2	23. B	30. A
3. 6	10. 3	17. A	24. B	31. B
4. B	11. C	18. B	25. D	32. 3
5. A	12. D	19. A	26. C	
6. B	13. C	20. C	27. B	
7. D	14. B	21. D	28. D	

SECTION – III

1. B	8. D	15. A	22. C	29. B
2. 1	9. A	16. D	23. B	30. A
3. C	10. 252	17. A	24. B	31. B
4. 1	11. 7	18. 15	25. 36	32. 2
5. 36	12. C	19. A	26. 5	33. 3
6. 32	13. C	20. B	27. D	34. 1
7. C	14. C	21. C	28. 1	

Solutions

SECTION – I

Solutions for questions 1 to 6:

Number of words and Explanatory notes for RC:

Number of words : 572

1. The author states the difference between professors and teachers in the second paragraph of the passage.

Option A: According to the passage, "Teachers are evaluated on the basis of learning outcomes, generally as measured by standardized tests." However, the author, who is a professor, also says that, "It is no part of my job to make you learn." Hence, while the first part of the statement mentioned in this option is correct, the second part is not correct. Therefore, this option is incorrect.

Option B: According to the passage, "a teacher's job is to make sure that you learn". Whereas, a professor does not have to ensure that a student learns. He leads a student to the "fountain of knowledge" and whether the student learns or not is up to him/her. Hence, this is the correct answer.

Option C: The author does not compare the teaching styles of teachers and professors. He only mentions a difference in the roles that they play. Hence, we cannot conclude that teachers are pedantic and professors are dogmatic.

Option D: The passage mentions that in a university, learning is the student's job. But it does not compare how much a student can learn from teachers and from professors. Hence, this option is also incorrect.

Therefore, the correct answer is option B.

Choice (B)

2. The author states, "We chalk-and-talk professors are told that we need to stop being the "sage on the stage," but should become the "guide on the side," helping students develop their problem-solving skills". From this we can infer that the author is currently a "sage on the stage". However, reformers want professors to be "guide on the side" instead.

Option A: The author mentions that reformers want professors to be guides. However, the author clearly does not want to be so. This is evident from the first line of the subsequent paragraph. Hence, this option is incorrect.

Option B: The author does not support the idea that a professor needs to act like a "guide on the side". Hence, we cannot conclude that the author believes that being a "guide on the side" will help the students to learn better.

Option C: The author clearly feels that lectures are important. This is evident in the way he rejects the view that lectures are ineffective ("Hogwash"). He also mentions that the students need to learn to listen. Hence, this option is the correct answer.

Option D: From the passage, it can be inferred that the author is currently acting as a "sage on the stage" (we need to stop being the "sage on the stage"). Therefore, the author does not want to become a sage on the stage, he is already one. Hence, this option is incorrect.

Therefore, the correct answer is option C.

Choice (C)

3. The author mentions that universities tend to do things the old fashioned way in the beginning of the third paragraph. Option A: The author mentions in the same paragraph that the "Though it galls ideologues, we university professors still enjoy a large degree of academic freedom". The use of the word 'still' suggests that this has been in practice for some time. Hence, Professors enjoying freedom over the content and format of their courses is one of the old fashioned ways mentioned in the passage. Therefore, this is the correct answer.
 Option B: While professors are not held responsible for students' learning, this was not mentioned in the passage in relation to universities doing thing in the old fashioned way. Hence, this option is incorrect.
 Option C: The passage mentions that teachers focus on test preparation and not professors. Hence, this option is also incorrect.
 Option D: The passage does not mention the opinion of professors on 'flipped learning'. Hence, this option cannot be inferred.
 Therefore, the correct answer is option A.
 Choice (A)
4. The author mentions various aspects of critical listening which will help a student in learning.
 Option A: The author mentions that "critical listening questions and evaluates what is being said and seeks key concepts and unifying themes". This does not imply that critical listening entails being sceptical about everything that one hears. It means that critical listening entails analysing and understanding what is being said. Hence, this is not the correct answer.
 Option B: While the passage states that "Critical listening means that you are not just hearing but thinking about what you are hearing", it does not imply that a student has to think about topics divergent to the topics that one hears. Hence, this is incorrect.
 Option C: The passage mentions that critical listening "is not passive absorption". Hence, this option is also incorrect.
 Option D: "Critical listening means that you are not just hearing but thinking about what you are hearing". Hence, a student has to think about what is being said and understand key concepts. Hence, this is the correct answer.
 Choice (D)
5. The passage mentions that "Flipped learning" is the current buzz term among higher-education reformers". In flipped learning, "Lecture... is an ineffective strategy for reaching today's young people".
 Option A: The passage does not imply that the roles of the student and teacher are reversed in flipped learning. Hence, this option is incorrect.
 Option B: The passage mentions that "Lecture is an ineffective strategy for reaching today's young people, whose attention span is measured in nanoseconds" and a professor should become the "guide on the side," helping students develop their problem-solving skills. Therefore, this is the correct answer.
 Option C: While the author mentions that students should learn to listen, he does not associate flipped learning with listening skills. Hence, this option is also incorrect.
 Option D: In flipped learning, the role of the professor changes. It has also been mentioned in the last sentence of para 4 that "We should not foolishly expect them (students) to listen to us, but instead cater to their conditioned craving for constant stimulation". From this, we cannot infer that in "flipped learning", students do not listen to dogmatic professors.
 Therefore, the correct answer is option B.
 Choice (B)
6. The author mentions that there will be a cultural difference between himself and his students. He provides an example in the last paragraph in which he talks about citations and plagiarism.
 Option A: According to the author, "the proper citation of a source is a small tribute to the hard work, diligence, intelligence and integrity of someone dedicated enough to

make a contribution to knowledge". Hence, the author, and not the students, considers citations to be a tribute to the hard work of another person. Therefore, this option is incorrect.

Option B: While the author does consider citations to be sacred, the students do not consider bibliographies to be sacred. Hence, this option is also incorrect.

Option C: The author mentions that students do not take plagiarism as seriously as the author does. From this we cannot conclude whether or not they have plagiarized in the past. Hence, this option is also incorrect.

Option D: The author considers the citations to be sacred. For the students, "citations and bibliographies are pointless hoops to jump through". Hence, the students consider citations more as an inconvenience. Hence, this option is correct.
 Choice (D)

Solutions for questions 7 to 9:

Number of words and Explanatory notes for RC:

Number of words : 445

7. Proctor states that "Ignorance is not just the not-yet-known, it's also a political ploy, a deliberate creation by powerful agents who want you 'not to know'".

Option A: Ignorance, according to Proctor, includes things that we do not yet know and also the things that are deliberately kept secret. But this does not include things that we think we know but, in reality, we do not know. Hence, this is not the correct option.

Option B: Ignorance includes things which are obfuscated by powerful agents. Because of this even if a person wants to know about something, he will not be able to. Hence, this is the correct answer.

Option C: While Proctor did mention that ignorance is also a political ploy, he does not imply that it means 'just' that. It includes things that are not yet known. Hence, this option is incomplete and is not the correct answer.

Option D: Ignorance includes things that we do not know but Proctor does not talk about things that we should not know. Hence, this is not the correct answer.

Therefore, option B is the correct answer.

Choice (B)

8. The passage states that "the common idea that there will always be two opposing views does not always result in a rational conclusion". This common idea was used by tobacco firms since the firms believe that "Doubt is our product since it is the best means of competing with the 'body of fact'".

Option A: We cannot infer that tobacco firms lobbied against banning tobacco products. The passage does not talk about banning the tobacco products – it only talks about the harmful nature of these products. Hence, this option is incorrect.

Option B: Introducing a harmless alternative to cigarettes will not gel with their ideology presented at the beginning of the passage. Introducing different product does not imply that they used science to make their product "look" harmless. If this option was followed by the tobacco companies, it would imply that their product was indeed harmless (and not just "look harmless"). Hence, this is not the correct answer.

Option C: Publicizing dubious studies to create doubt in the minds of the general public follows from their ideology. Also, it also fits well with what they did – "used science to make their product look harmless". Hence, this option is the correct answer.

Option D: If tobacco companies spent vast amounts of money on providing health care, it does not support the claim that they used science to make their product look harmless. Hence, this option is also incorrect.

Therefore, option C is the correct answer.

Choice (C)

9. According to the passage, agnotology is "the study of wilful acts to spread confusion and deceit, usually to sell a product or win favour". It is also "about the deliberate creation of ignorance".

Option A: Agnotology does not involve those of which we are necessarily ignorant, i.e., things that are beyond our comprehension. Hence, this is not the correct answer.

Option B: Agnotology does not study cognitive mechanisms and try to reduce ignorance through this. Hence, this option is also incorrect.

Option C: Study of acts that induce ignorance is the study of study of acts that spread confusion and doubt. Hence, this is the correct answer.

Option D: Agnotology does not deal with distortions in historical records. Hence, this option is also incorrect.

Therefore, option C is the correct answer.

Choice (C)

Solutions for questions 10 to 15:

Number of words and Explanatory notes for RC:

Number of words : 626

10. The first paragraph of the passage describes the sights (houses on a street) and sounds (local school set the boys free) on North Richmond Street very minutely.

Option A: The style that the author adopts is not limited to the first paragraph of the passage. The author describes events and the background very minutely throughout the passage. So choice A is incorrect.

Option B: The first paragraph does create an element of mystery or suspense. So the second part of choice B is correct. However, the first part of choice B is incorrect. The first paragraph introduces the uninhabited house which is discussed in the later paragraphs. So we cannot say that the first paragraph is a standalone paragraph and is not related to the rest of the passage.

Option C: Though the main characters are introduced in the next few paragraphs, we cannot say that the first paragraph does not serve any purpose. The first paragraph describes the house that the author rented. The author details further descriptions of the house and North Richmond Street in the next paragraph. So choice C is wrong.

Option D: The first paragraph sets the scene of the passage. Phrases like "conscious of decent lives within them" and "gazed at one another with brown imperturbable faces" point to a metaphoric description. So choice D is correct. The houses have been described metaphorically to create an image of isolation and uncertainty which surrounded the uninhabited house. Choice (D)

11. The author is the protagonist of the passage.

Option A: It can be inferred from the passage that the narrator literally worships or is infatuated by Mangan's sister, as can be understood from the following expressions: "Her dress swung as she moved her body, and the soft rope of her hair tossed from side to side", "When she came out on the doorstep my heart leaped", "Her name was like a summons to all my foolish blood", "Her image accompanied me even in places the most hostile to romance", "Her name sprang to my lips at moments in strange prayers and praises which I myself did not understand", "My body was like a harp and her words and gestures were like fingers running upon the wires" etc. And while this is more in the nature of young love than mere admiration, the inadequacies in the other choices makes this the most appropriate one. So choice A is correct.

Option B: The author talks about playing in the street and the friend teasing his sister. Also refer to the third paragraph. "If my uncle was seen turning the corner, we hid in the shadow until we had seen him safely housed." While this gives us the impression of a teenager, it could, by a little stretch of imagination, also be an unemployed young adult 'hanging out' with friends, and a little scared of an uncle. But, even if that were so, there is not enough to infer that Mangan's sister is a "childhood sweetheart".

Option C: While the feelings described are those of a teenager or a young adult, they could also, by a little stretch of imagination, be ascribed to a very precocious child. However, there is nothing that indicates that the narrator is in awe of the surroundings.

Option D: There is no indication in the passage that the narrator misbehaved, threw tantrums or played the fool. Hence choice D is incorrect.

Choice (A)

12. The narrator describes a walk on Saturday evenings when the mind would be filled with images of, and love for, Mangan's sister.

Option A: The narrator's attitude towards love is positive. So choice A (love is a big responsibility that bogs one down) is inappropriate.

Option B: Choice B gives a partial description. "Throng of foes" in the question statement could mean 'enemy' if taken literally. But there isn't enough to understand that this encompasses the whole world around. So, choice B is not the correct and complete answer.

Option C: The word 'chalice' has a religious connotation (a vessel or cup containing the sacred wine or oil used in rituals). 'Throng of foes' is not being used literally, but figuratively, and can be understood to mean 'adversity'. So, choice C is an appropriate answer.

Option D: The passage is full of the emotional expression of one in a state of unrequited love, and this does not support the statement that the heart is incapable of reflecting love. So choice D cannot be the answer.

Hence, choice C is the correct answer. Choice (C)

13. The description that the narrator has given is of a locality that seems bleak, yet is the backdrop for the blooming of love.

Option A: The passage does not talk about the futility of love, so choice A can be ruled out. "Love's labour has been lost" would mean that the hours spent working out flattering images and melodious rhymes in response to the love for someone went in vain.

Option B: The narrator has fallen head over heels in love for the girl. From the fifth paragraph, we gather that the narrator has many feelings unexpressed (... I myself did not understand, I could not tell why, I did not know whether I would ever speak to her, how I could tell her of my confused adoration.) So choice B is correct.

Option C: "harbours negative feelings" in choice C is incorrect. The feelings are only of love, and not of any negative emotion.

Option D: There is nothing to indicate that the narrator's love for the girl was ephemeral (short-lived, transitory).

Choice (B)

14. References to the "dead priest" have been made in para 2 and the last para.

Option A: "Other griefs pale before love" would imply that love is grief, and this has not been hinted at in the passage. So choice A can be ruled out.

Option B: There is no such change in the mood of the author. So choice B is incorrect. We understand that the narrator was hoping that the love for the girl would blossom and she would also reciprocate.

Option C: The narrator is in love. The passage does not give us any idea about the future of this love. There is nothing to indicate that the narrator was related to the dead priest, so "death of a loved one" again is incorrect. Choice C is suspect.

Option D: This is the appropriate choice. The idea of a person who has died adds bleakness of situation to the bleak description of the building and its surroundings.

Choice (D)

15. Imperturbable here means aloof or impersonal, calm and collected, unruffled. It can be inferred from the way the houses have been described. Ruffled is an antonym. So (i) – e.

A ballad is a narrative song with a recurrent refrain. It can also be a narrative poem in short stanzas of popular origin, originally sung to a repeated tune. So (ii) – d.

A litany is any long and tedious address or recital. (A litany can also be a form of prayer consisting of a series of invocations, each followed by an unvarying response but this is not the contextual meaning of the word).

Hence (iii) – b.

Counterpane means cover (a cover for a bed or a bedspread). So (iv) – a.

'Gauntlet' literally means 'glove' or 'challenge'. But "to run the gauntlet" is an idiomatic expression that means to deal

with a lot of people who are out to criticize or attack you. (f) is incorrect as a meaning. So (v) – c.

The correctly matched elements are provided in choice C.
Choice (C)

Solutions for questions 16 to 18:

Number of words and Explanatory notes for RC:

Number of words : 519

16. "Calendar-year growth this time around can be expected to be a bit of a statistical mirage" has been mentioned in the second paragraph.

Option A: Choice A is incorrect as it is not mentioned that the estimation of the IMF is the reason for projected growth to be a statistical mirage.

Option B: Choice B is a distortion of a fact mentioned in the passage about certain non-export related business getting the benefit of export related business. However, this alone cannot be held responsible for the growth being a statistical mirage.

Option C: The author mentions that the growth decelerated the previous year and the base effect would show the growth of the current economic year much higher in terms of percentage increase over the previous year than it actually is. Therefore, choice C is the correct answer.

Option D: Choice D is not mentioned in the passage and can be ruled out.

Choice (C)

17. Refer to the last paragraph. The statement "After all, the objective of policy initiatives is to arrive at outcomes, for instance, of correcting market failure via more efficient market design" supports choice D.

Other options only give examples of the objective of the policy initiatives but do not cover the entire objective of the policy initiatives. Therefore, these options are not correct.

Choice (D)

18. Option A: Choice A is true from the statement "*For an increasingly globalising economy, the lacklustre external environment would tend to dampen investor sentiments and keep expectations range-bound*" mentioned in the second sentence of para 3.

Option B: Choice B is negated in the lines "*Studies do suggest that policy and institutions affect the level of efficiency with which resources are allocated economy-wide*" mentioned in the second sentence of para 4. Thus choice B is incorrect.

Option C: The last paragraph of the passage clearly states that inflation cannot be used as an indicator of performance. Thus choice C is incorrect.

Option D: Choice D is negated at the beginning of the passage in the lines "... long before the policy pundits ideated on economic growth and convergence in the community of nations". Thus choice D is incorrect.

Choice (A)

Solutions for questions 19 to 24:

Number of words and Explanatory notes for RC:

Number of words : 757

19. Option A: The second paragraph talks about a conversation between two people Dr Johnson and Boswell on the subject of free will. It does not illustrate or exemplify the idea of when free will is attacked, but the idea that extent of free will is an area of debate. So choice A is not the answer.
- Option B: By stating in the second paragraph that free will and responsibility are debated as much as ever, and the issue is taking some new twists; the author seems to reiterate his stand in the first paragraph: The notion of free will is under attack again, this time from the advance of neuroscience.

So the second paragraph supports the claim of the author in the first paragraph. Hence choice B is correct.

Option C: While the author does introduce the idea of free will, he just says that free will is under attack from new findings in neuroscience. He does not equate the

progresses made in the discipline of free will with those of the advances of neuroscience. Hence choice C is wrong.

Option D: The passage discusses a current scenario and not an investigation planned for the future.

Also the second paragraph does not discuss a plan for investigation of a phenomenon that is not yet fully understood. The second paragraph only states that free will and responsibility are debated even today with the issue taking new twists. So choice D is incorrect.

Choice (B)

20. According to the statement mentioned in the third paragraph of the passage, the more we find out about the brain, the less scope there is for any autonomous, rational self (i.e., free will) in it. The statement therefore implies that free will cannot completely exist in/emanate from the brain. From the given options, we need to find the statement that is both discussed in the passage and supports the above conclusion.

Option A: If free will is the result of the sum of the events in the brain, then free will emanates from the brain. Hence, this option is not the correct answer.

Option B: If this statement is true, then free will cannot exist in the brain. However, this option is not discussed in the passage and hence, cannot be the correct answer.

Option C: If the brain orders one to take a decision, this implies that brain can exercise free will. Therefore, free will can emanate from the brain in this case. Hence, this option is also incorrect.

Option D: If extra events or factors outside the brain (in the physical world) are involved in free will, free will could not completely exist in/emanate from the brain. Further, the role of extra events or factors is discussed in the penultimate paragraph of the passage. Since this option supports the above conclusion and is also discussed in the passage, this is the correct answer.

Choice (D)

21. The author's main viewpoint in the passage is that "whatever actions are done by a person cannot be understood or validated by just looking at brain activity." The author compares fMRIs and PET scanners to streetlights. He also likens the neuroscientist to the drunk man who has lost his car keys at night.

Option A: Refer to the sentences in the fifth paragraph. "Not because that's where they are likely to be but because it's where he can see". The author also states that "although our mental lives depend on the brain, it doesn't necessarily follow that our behaviour is best understood by looking inside it". But, we still look inside it because we can. This is similar to the behaviour of a drunk mentioned in the passage. Hence, option A is the correct answer.

Option B: Choice B would contradict the author's viewpoint in the passage. Brain scans cannot explain the behaviour of a person. So choice B is incorrect.

Option C: While choice C may be true, it is not the reason for the author's use of the analogy in the passage. So choice C is incomplete.

Option D: While the author is being satirical when he gives the analogy, he does not negate the importance of fMRI and Pet scanners completely. He just states their limitation. So choice A is incorrect.

Choice (A)

22. Refer to the sixth paragraph. Two psychologists at the University of California at Santa Barbara concluded in 2010 that the discipline of neuro-imaging had emerged from infancy, but was still rather a mixed-up adolescent.

Option A: It has been mentioned in the seventh paragraph that brain scanners and our ability to interpret them will improve in due course. But the two psychologists at the University of California at Santa Barbara state do not suggest that there is a (positive) scope of improvement in the art of neuro-imaging. So choice A cannot be the answer.

Option B: Choice B is a finding and an overall observation mentioned in the sixth paragraph. But it does not specifically answer the question as it does not state the conclusion of the two psychologists at the University of California at Santa Barbara state.

Option C: The psychologists do not state that the technology is still at the base level. Neuro-imaging had emerged from infancy (so it is not at the base level), but was still rather a mixed-up adolescent. Hence, option C is incorrect.

Option D: The technology or art of neuroimaging is still rather a mixed-up adolescent. So there is improvement in the technology but the field still needs a direction (since the author used the word 'mixed-up'). Hence, option D is the answer.

Choice (D)

23. Refer to the penultimate paragraph.

Option A: Choice A has not been stated as a limitation. The paragraph tells us that Benjamin Libet, wired up his subjects so that **he could** monitor the timing of some electrical events in their brains. So choice A is incorrect.

Option B: Choice B is invalidated by the last sentence of the penultimate paragraph. While twitches of the wrist may be simple to monitor, they're an odd place to search for free will. Hence choice B is not the answer.

Option C: From the penultimate paragraph we read: There are better examples of actions that we would like to regard as free and rational than are twitches of the wrist. So choice C is correct.

Option D: Choice D has not been stated in the passage.

Choice (C)

24. The first boldface portion reflects a comment of Dr. Johnson while the second boldface portion provides the comment of the author. The last statement of the passage ".... but it is at least a good beginning on it" implies that even "looking at our actions in the broader context of everyday life, does not in itself provide the knock-down demonstration of free will" but may be a good place to begin if human free will is to be understood.

Option A: The author points out that the brain may be the place to watch to dismiss the idea of free will, if at all. So "both boldfaced portions imply the same thing" is incorrect. Choice A is wrong.

Option B: Choice B is the best explanation of the stylistic flourish used by the author in ending the passage by using the same words as Dr. Johnson. Choice B is correct.

Option C: Choice C may appear correct, but what makes it incorrect is the phrasing that "the author dismisses Dr. Johnson's argument." The use of the word 'dismisses' is inappropriate. The author merely points out that "There are now hopeful signs of what might be called a backlash against the brain."

Option D: Choice D contradicts the information given in the passage.

Hence the correct option is choice B.

Choice (B)

Solutions for questions 25 to 28:

25. On a careful reading of the sentences, it can be observed that sentence 2 is a general sentence that begins the paragraph which describes tourism in the Jim Corbett National Park. "during the months of November to June" in sentence 2 links with "during this time" in sentence 5. Also "to view India's precious predators" in sentence 2 links with "explore the Indian wildlife" in sentence 5. And "five different tourism zones" in sentence 5 is for the "tourists" mentioned in sentence 2. Sentence 4 with the adverb "also" follows sentence 5. Besides exploring the Indian wildlife, there are other activities like rock-climbing that people can indulge in at Corbett park. Sentence 3 with the shortened name "Corbett" concludes the paragraph with the judgement or opinion: The best thing about being in Corbett So, 2543. Hence the paragraph flows from discussing wildlife exploration at Corbett to other adventure activities at Corbett to places of interest around Corbett. Sentence 1 is the odd sentence out as it talks about the person Jim Corbett and not specifically about the park. It forms a part of the history behind the origin or formation of the Jim Corbett National Park and is not related to the remaining sentences which talk about tourism at the park.

Ans: (1)

26. On a careful reading of the sentences, it can be observed that sentence 4 is a general sentence that begins the

paragraph. It has the time reference (1930s) and the full name of the economist: John Maynard Keynes. It also establishes the background: Keynes challenged the ideas of neoclassical economics. Sentence 2 continues after sentence 4. Sentence 2 tells us about the conventional viewpoint of neoclassical economics, that of the role of free markets in providing full employment. Sentence 5 talks about the view of Keynes. Keynes thought that aggregate demand influenced economic activity levels. So sentence 5 follows sentence 2. Sentence 1 continues after sentence 5 as the pronoun "he" in sentence 1 refers to Keynes. "Also stressed that inadequate aggregate demand" in sentence 1 links with "argued that aggregate demand" in sentence 5. "prolonged periods of high unemployment" in sentence 1 contrasts "free markets would automatically provide full employment" given earlier in sentence 1. So, 4251. Sentence 3 which specifically talks about "the global financial crisis of 2007–08" is not related to the other sentences. It leaves the thought-flow incomplete. It can be a part of another paragraph as it needs a precedent and more substantiation.

Ans: (3)

27. On a careful reading of the sentences, it can be observed that sentence (5) (**a person**) is a general sentence that begins the paragraph. Sentence 1 also sounds introductory in nature but it runs tangent to the remaining sentences of the paragraph and is not specific to a discussion on the company one keeps or the people one associates with. It can be gathered that sentence (3) (**that person's attitude**), sentence (4) (**the previously average individual**) and sentence (2) (**This is why**) need a precedent and cannot be introduction sentences. Sentence 5 is followed by sentence 3. "gone to work" in sentence 5 links with "In a few weeks...." in sentence 3 and "a person" in sentence 5 points to "that person" in sentence 3. Sentence 4 (By **continued association**) will logically follow sentence 1 (In **a few weeks**). Also "previously average individual" in sentence 4 refers to "person working at an average job, getting average results, and earning average pay" mentioned earlier in sentence 5. "association with optimistic, result-oriented, go-ahead people" in sentence 4 links with "gone to work with a highly progressive company" mentioned earlier in sentence 5. So 534. Sentence 2 summarizes and concludes the paragraph (**This is why.....**). Sentence 1 is a general sentence with a quote of Thoreau but cannot be placed in the same paragraph as the other sentences. It talks about man's ability to elevate his life by conscious endeavour. The other sentences focus on the importance of having optimistic, result-oriented, go-ahead co-workers/ friends. Hence sentence 1 is the odd sentence out. Sentences 5342 refer to a particular context and form a coherent paragraph.

Ans: (1)

28. On a careful reading of the sentences, it can be inferred that sentence 3 (Man is **made or unmade** by himself) is the sentence that begins the paragraph. Sentence 3 is followed by sentence 1 as sentence 1 expands on how man is **made** by himself (fashions the tools builds heavenly mansions of joy, strength and peace). Sentence 5 provides a contrast (**on the other hand**) to sentence 1 (**on one hand**) and it explains how man is **unmade** by himself (forges weapons destroys himself). So, 315. Sentences 5 and 4 form a mandatory pair. "armoury of thought" in sentence 5 links with "true application of thought" and "wrong application of thought" in sentence 4. Sentence 4 concludes the paragraph. It mirrors the introduction sentence 3 (Man is made or unmade by himself). "divine perfection" in sentence 4 refers to "heavenly mansions of joy, strength and peace" mentioned earlier in sentence 1 and "descends below the level of a beast" in sentence 4 links with "destroys himself" in sentence 5. So, 3154. Sentence 2 is a very general sentence that runs tangent to the remaining sentences. Though a reference is made to 'thought' in sentence 2, sentence 2 is not linked with the remaining sentences of the paragraph. It needs a precedent and more substantiation. Hence 2 is the odd sentence out.

Ans: (2)

Solutions for questions 29 and 30:

29. The paragraph bemoans the fact that even people interested in consciousness and the universe tend to exclude reason from their way of life and are happy to subscribe to a belief based on fashion and herd mentality. The penultimate sentence of the paragraph highlights that even scientists favour fashionable beliefs and not reason in their thinking. "excessive belief" and "dismiss any idea/theory that does not square with 'their' scientific views" in the penultimate sentence of the paragraph would amount to closed-mindedness. Hence choice B would be an apt ending of the paragraph. Theoretically, science would not involve closed-mindedness or narrow-mindedness.

Option A: This statement could serve as an introductory sentence of a paragraph much later in the text as it needs a precedent and further elaboration.

Option C: This cannot be the answer as the penultimate sentence does not refer to any threshold.

Option D: This statement would be an abrupt ending to the paragraph. The objective of the paragraph is not to highlight a difference between scientism and philosophy but to mention that people do not employ reason in any field – a philosophical subject like ethics or a scientific subject like physics.

Choice (B)

30. An important premise in the question paragraph is that each period of culture produces its own unique art which can never really be repeated. The work of old will remain soulless (unfeeling, lacking sensitivity or the capacity for deep feeling) to a viewer of another age. Repeating the work of an age gone by will only result in art that is still-born or there will be an achievement of only a similarity of form. The unique characteristics of the work of art can never be recaptured. So choice D best completes the paragraph. "Imitation" in choice D is in sync with the keywords "revival" or "repeated" or "strive to follow" as used in the paragraph. "mere aping" would be the correct (negative) interpretation (connotation) of ".... will at best produce an art that is still-born" or "achieve only a similarity of form". Choice D best connects with the penultimate sentence of the paragraph. It both concludes and completes the given paragraph.

Option A: This sentence cannot conclude the paragraph. "The art of today is a hollow entity" as given in choice A seems to contradict "Every work of art is the child of its age" mentioned in the opening sentence of the paragraph. Also "does not evoke any emotion in the observer" in choice A contradicts "..... mother of our emotions" given in the first sentence. The work of art of current times will evoke emotion in the observer of today. The para only tells us that a work of art of a particular culture cannot be repeated. So choice A is incorrect.

Option B: "**another kind of external similarity**" as given in choice B may seem to connect with "achieve only a similarity of form" as given in the penultimate sentence. But choice B leaves the thoughtflow incomplete. It needs further substantiation. It resembles an introductory sentence of another paragraph, may be that of the paragraph which follows the given paragraph. So choice B is incorrect.

Option C: Choice C does not go any further than state a related point (product of the emotions during creating of the work) referred to in the first sentence of the paragraph (the mother of our emotions). It cannot connect with the penultimate sentence of the paragraph. So choice C does not serve as an ending statement of this paragraph.

Choice (D)

Solutions for questions 31 to 34:

31. On a careful reading of the sentences, it can be observed that sentence 5 is a general sentence that begins the paragraph. It is followed by sentence 1. Here "couldn't" refers to "couldn't be able to drink milk" mentioned in sentence 5. Sentence 3 continues with some historical details. "that ability" in sentence 3 refers to the ability to drink milk mentioned in the introduction sentence (sentence 5) of the paragraph. Sentence 3 (last 9000 years) contrasts sentence 1 (our ancestors) as far as man's ability to drink milk is concerned. So, 513. Sentences 3 and 2 form a

mandatory pair. "gained that ability without becoming ill" in sentence 3 is followed by "children could manage it without becoming ill" in sentence 2. Sentence 3 with the time factor (It is only in the last 9,000 years.....) must precede sentence 2 (Now only when we turned to dairy farming). So, 5132. It can be observed that sentences 2 and 4 have the keywords "dairy farming" in it. "**dairy farming** adults acquired the ability to properly digest milk" in sentence 2 is linked with "**dairy farming** a much higher frequency of lactose tolerance" in sentence 4. So sentence 4 follows sentence 2. Therefore, sentence 4 which provides a finding concludes the paragraph. Hence 51324.

Ans: (51324)

32. On a careful reading of the sentences, it can be observed that sentence (3) is a general sentence that begins the paragraph. It introduces "zika virus". Sentence (1) (the virus), sentence (2) (the virus), sentence (4) (these) and sentence (5) (It) need a precedent and cannot be introductory sentences. Sentence (3) is followed by sentence (5) as "other pathogenic vector borne flaviviruses" in sentence (5) reiterates "Flaviviridae family" in sentence (3). Sentence (1) continues the discussion. It talks about the outbreaks caused by Zika virus. Sentences (1) and (4) form a mandatory pair. "These" in sentence (4) links with "several outbreaks" in sentence (1). So, 3514. Sentence (2) concludes the paragraph. "now considered spread to new areas" in sentence (2) continues after "first documented transmissions outside of its traditional endemic areas" in sentence (4). So 35142.

Ans: (35142)

33. On a careful reading of the sentences, it can be observed that sentence (2) is a general sentence that begins the paragraph. It introduces the fact that the Ojibwe allied themselves to the French militarily. Sentences (2) and (4) form a mandatory pair. "The Ojibwe allied themselves to the French economically" in sentence (2) links with "They traded with the French" in sentence (4). "They" in sentence (4) refers to the Ojibwe. Sentence (1) reiterates "trade" when it says "desire to obtain European trade goods richer fur-bearing lands" and introduces "they came into contact with the Dakota" in sentence (1). The pronouns "their" and "they" in sentence (1) refer to the noun "Ojibwe". So 241. Sentence (3) continues by detailing a fight between the Ojibwe and the Dakota. Sentence (5) tells us that the Ojibwe were successful in the fight. Sentence (5) concludes the paragraph. So, 24135. If one looks at the dates, then sentence (4) has to chronologically precede sentence (3).

Ans: (24135)

34. On a careful reading of the sentences, it can be observed that sentence (4) is a general sentence that begins the paragraph. It introduces the fact that classical music enables one to achieve tranquillity. Sentences 4 and 3 form a mandatory pair. "state of tranquillity" in sentence 4 links with "incredibly soothing, transport you to another world" in sentence 3. Also "Pachelbel's Canon" in sentence 3 is an example of a piece of classical music. So sentence 3 follows sentence 4. Sentence 1 follows sentence 3 as a recommendation on **how to** listen to classical music. "the music" in sentence 1 refers specifically to classical music. Sentence 5 follows sentence 1. The pronoun "it" in sentence 5 refers to "music" in sentence 1. "Let it enter your soul" in sentence 5 follows "concentrate fully on the music" in sentence 1. Sentence 2 concludes the paragraph providing the name of another genre of music (..... also works wonders.....) that can elevate the soul. Hence 43152.

Ans: (43152)

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

SECTION – II

Solutions for questions 1 to 4:

Let f be the food cost for each customer and c be the Gratuity Fee paid by each customer. Let T be the Service tax and V be the VAT.

$$\text{For any customer, Food Cost} = \frac{V}{0.15}$$

Service Tax (T)

$$= 0.12 \times 0.375 \times f + 0.12 \times 0.375 \times c$$

$$c = \frac{1}{0.045} \times (T - 0.045 \times f)$$

$$\Rightarrow c = \frac{T}{0.045} - \frac{V}{0.15} \Rightarrow c = \frac{10T - 3V}{0.45}$$

1. For c to be highest, $10T - 3V$ must be the highest.

Calculating the value of $10T - 3V$ for all customers,

A: 27 B: 8 C: 65 D: 124

E: 27 F: 43 G: 51 H: 24

I: 54 J: 50

Hence, the highest Gratuity Fee would have been paid by D.
Choice (B)

2. The total VAT for all the 10 customers = 2280

$$\text{Total food cost} = \frac{2280}{0.15} = 15200 \quad \text{Ans: (15200)}$$

3. The Gratuity Fee paid by each customer will be greater than 70 if the value of $10T - 3V$ is greater than 31.5. From the previous question, we can see that this value is greater than 31.5 for 6 customers (C, D, F, G, I and J).

Ans: (6)

4. The Gratuity Fee as a percentage of food cost

$$= \frac{1}{0.045f} \times (T - 0.045 \times f) = \frac{T}{0.3V} - 1$$

This value will be highest if T/V is highest. The value of T/V is the highest for F.

$$\text{The required percentage} = \frac{40.3}{0.3 \times 120} - 1 = 11.94\% \quad \text{Choice (B)}$$

Solutions for questions 5 to 8:

5. The vehicle that consumed the maximum quantity of petrol will be the vehicle for which the slope of the line connecting the origin to the corresponding point on the graph is the highest. By observation, we can see that this is the highest for Fortuner.

Choice (A)

6. The petrol consumed by

$$\text{Avenger: } \frac{450}{38} = 11.84$$

$$\text{Bonnieville: } \frac{750}{12} = 62.5$$

$$\text{Dawn: } \frac{700}{48} = 14.58$$

$$\text{Fazer: } \frac{600}{34} = 17.65$$

$$\text{Street 750: } \frac{900}{10} = 90$$

$$\text{Total petrol consumed} = 11.84 + 62.5 + 14.58 + 17.65 + 90 = 196.57 \quad \text{Ans: (B)}$$

7. The petrol consumed by

$$\text{Swift: } \frac{800}{22} = 36.36 \text{ liters}$$

$$\text{Santro: } \frac{1000}{24} = 41.67 \text{ liters}$$

$$\text{Fortuner: } \frac{1250}{8} = 156.25 \text{ liters}$$

$$\text{City: } \frac{1500}{14} = 107.14 \text{ liters}$$

Petrol consumed by the remaining vehicles is calculated in the previous question.

Total petrol consumed = $36.36 + 41.67 + 156.25 + 107.14 + 90 + 62.5 + 14.58 = 508.5$ liters. Choice (D)

8. The lowest quantity of petrol consumed for travelling one km will be for the vehicle with the highest mileage.

The quantity of petrol consumed by Dawn for travelling

$$1 \text{ km} = \frac{1}{48} = 0.0208 \text{ liters} = 20.8 \text{ ml}$$

Choice (B)

Solutions for questions 9 to 12:

From (ii), the GDP of Glubbdubdrib can be 19.8 or 23.4 or 38.5 or 65.8 and the GDP per capita can be 22 or 26 or 42.78 or 73.11.

The GDP of Balnibarbi can be 16.5 or 19.8 or 23.4 or 38.5 and the GDP per capita can be 36.67 or 44 or 52 or 85.56.

However, from (iv), GDP of Glubbdubdrib cannot be 19.8 (because then Balnibarbi must lie next to Glubbdubdrib in the graph). If the GDP of Glubbdubdrib is 65.8, the GDP of Balnibarbi has to be 38.5 if the GDP per capita of the former is to be less than that of the latter. But this will violate condition (iv). Hence, this is not possible. Therefore, the GDP of Glubbdubdrib can only be 23.4 or 38.5.

The following values are possible for GDP of Glubbdubdrib and Balnibarbi respectively (23.4, 16.5) OR (38.5, 19.8).

From (i), the GDP of Luggnagg cannot be 16.5 (since the population of Luggnagg is more than that of Brobbingnag, the GDP of Luggnagg has to be more than that of Brobbingnag). If the GDP of Luggnagg is 19.8, the GDP of Brobbingnag can be 16.5. In this case, the GDP per capita of the two countries will be 28.28 and 33. Since this violates condition (i), this is also not possible.

Therefore, the GDP of Luggnagg can be 23.4 or 38.5 or 65.8. From (iii), the highest possible GDP per capita for Houyhnhnms can be $65800/800 = 82.25$. If the GDP of Luggnagg is 65.8, its GDP will be more than the highest possible GDP of Houyhnhnms. Hence, the GDP of Luggnagg can only be 23.4 or 38.5.

Given that the GDP per capita of Luggnagg is more than the GDP per capita of Balnibarbi. The minimum possible GDP per capita of Balnibarbi is 36.67. Hence, the GDP of Luggnagg cannot be 23.4 (since the GDP per capita will be 33.43 in this case). Therefore, the GDP of Luggnagg has to be 38.5.

The GDP of Brobbingnag can be 16.5 or 19.8 or 23.4. If the GDP of Brobbingnag is either 16.5 or 23.4, there can be no possible values for Glubbdubdrib and Balnibarbi. Hence, the GDP of Brobbingnag has to be 19.8. This implies that the GDP of Glubbdubdrib and Balnibarbi has to be 23.4 and 16.5 respectively. The GDP of Houyhnhnms has to be 65.8.

The following table provides the GDP, population and the GDP per capita of the five countries:

Country	GDP	Population	GDP per capita
Balnibarbi	16.5	450	36.67
Brobbingnag	19.8	500	39.6
Glubbdubdrib	23.4	900	26
Houyhnhnms	65.8	800	82.25
Luggnagg	38.5	700	55

9. The per capita GDP of Houyhnhnms is USD 82.25.
Choice (A)
10. Three countries – Broddingnag, Luggnagg and Houyhnhnms – have per capita GDP more than USD 38.
Ans: (3)
11. Glubbdubdrib and Luggnagg are adjacent each other in the graph.
Choice (C)
14. The following table gives the price per kg for each crop in different years:

	2008-09	2009-10	2010-11	2011-12	2012-13
Tomato	14.0	8.8	11.5	7.5	16.5
Potato	4.5	5.0	5.5	5.3	4.0
Capsicum	24.0	23.5	30.8	14.5	42.5
Onion	3.1	2.7	4.4	6.3	3.5
Carrot	36.5	19.5	56.5	39.6	29.0

- The price per kg for 1 kg of each crop is the lowest in 2009-10 (₹59.5).
Choice (B)
15. We can see that for Potato, there was an increase of around 25% between 2011-12 and 2012-13.
Calculating the exact value, $\frac{167.5 - 134.5}{134.5} = 24.5\%$.
Hence, this is not one of the crops.
For Capsicum, there was an increase of around 45% between 2008-09 and 2009-10.
For Onion, there was an increase of around 45% between 2008-09 and 2009-10.
For Carrot, there was an increase of more than 25% between 2010-11 and 2011-12.
Therefore, there are a total of 3 crops.
Ans: (3)
16. The price of tomato was more than ₹10 in one year and less than ₹10 in the next year for all the five years. Hence, tomato is not one of the crops.
The price of potato increased for two consecutive years from 2008-11.
The price of capsicum did not increase or decrease for two consecutive years.
The price of onion increased for two consecutive years from 2009-12.
The price of carrot decreased for two consecutive years from 2010-13.
Hence, only two crops, i.e., tomato and capsicum, satisfy the required condition.
Ans: (2)

Solutions for questions 17 to 20:

Let the first statement be true. Then (iii), (v), (vii) and (ix) must also be true. Hence, Luke must be a plumber. From (vi), Boba must be a locksmith. From (vii), Luke owns a rat. From (viii), Yoda cannot be a mechanic. Hence, Leia is a mechanic and Yoda, a carpenter. From (ix), Yoda owns a cat. From (ii), Boba cannot own a dog. Hence, Leia owns a dog and Boba owns a bat.

If the first statement is false, statements (iii), (v), (vii) and (ix) are also false and the remaining statements must be true. From (ii) and (iii), Leia must be a locksmith and owns a dog. From (v), Luke must also own a dog. This leads to a contradiction. Hence, this case is not possible.

The following is the only possible case:

Person	Profession	Pet
Boba	Locksmith	Bat
Leia	Mechanic	Dog
Luke	Plumber	Rat
Yoda	Carpenter	Cat

17. Luke owns a rat.
Choice (A)
18. Boba is a locksmith.
Choice (B)
19. Only the statement given in option A is true.
Choice (A)
20. Boba, the locksmith, owns a bat.
Choice (C)

Solutions for questions 21 to 24:

Given that there are 6 questions in the quiz and all the five students got different number of points. The maximum number of questions a single student could have answered has to be 2 (if one student answered 3 questions, then two students will end up with the same number of points). Also, from (iv), there has to be 4 questions wrongly answered and two questions correctly answered. The only possibility for the students to answer the six questions has to be (R – right, W – wrong) RW, WW, R, W and one person does not answer any question.

From (ii), Sai answered the fourth question and moved to the beginning of the queue. From (i), Kiran could have answered 5th and 6th questions. But this would mean that Kiran must have won the quiz (from (iv)). However, the student who answered two questions could not have won the quiz (since he can only get a maximum of 5 points and the student who answered only one question correctly would have won the quiz). Hence, Kiran must have answered 2nd and 3rd questions. There has to be another person who answered two

questions. This person also could not have answered 5th and 6th questions. Hence, he must have answered 1st and 5th questions. From (ii), this person has to be Praveen because only by answering the fifth question Praveen can move in front of Kiran. Therefore, the last question must have been answered by Vijay.

Since Kiran is not last, he must have answered one question correctly and one incorrectly. Praveen must have answered both incorrectly. Sai must have answered one question incorrectly and Vijay must have answered one question correctly.

Also, Bhaskar would have been first at the beginning of the quiz, 2nd at the end of 1st question, third at the end of 2nd and 3rd questions, 4th at the end of 4th and 5th questions and 5th at the end of the last question. Kiran will be 4th at the end of the quiz. From (vi), Kiran must have been last at the beginning of the quiz. The following tables give the positions of the students and their standings:

End of Question	Fifth	Fourth	Third	Second	First
0 (initial)	Kiran	Praveen/Sai	Praveen/Sai/Vijay	Vijay/Praveen	Bhaskar
1	Kiran	Sai	Vijay	Bhaskar	Praveen
2	Sai	Vijay	Bhaskar	Praveen	Kiran
3	Sai	Vijay	Bhaskar	Praveen	Kiran
4	Vijay	Bhaskar	Praveen	Kiran	Sai
5	Vijay	Bhaskar	Kiran	Sai	Praveen
6	Bhaskar	Kiran	Sai	Praveen	Vijay

Person	Points
Vijay	10
Kiran	5
Bhaskar	0
Sai	-5
Praveen	-10

21. Vijay stood first in the quiz. Choice (D)
 22. Question 1 was definitely answered incorrectly since Praveen answered Question 1. Choice (C)
 23. Vijay was fourth in line at the end of third question. Choice (B)
 24. Praveen must have been second at the beginning of the quiz. Hence, Vijay must have been third. Choice (B)

Solutions for questions 25 to 28:

From (ii), she received a gift on her second, third, sixth and tenth birthdays. From (iv), she must have received a gift on her eighth birthday. The other gift she could have received on her 4th or 5th birthday.

From (v), she could have been gifted the set of Crayons on her 5th, 6th or 8th birthday. If she was gifted the set of Crayons on her 6th birthday, she must have been gifted the Barbie doll on her third birthday. But she would have lost both from (ii) which violates condition (v). If she was gifted the set of Crayons on her 8th birthday, she must have received the Barbie doll on her fifth birthday. In this case, she could not have received the Bean Bag and the Toy Car two years apart. Hence, she must have received the set of Crayons on her 5th birthday and the Barbie doll on her 2nd birthday.

From (i), she did not lose the Toy Car. Hence, she could not have been gifted the Toy Car on 3rd or 6th birthday from (ii). Also, from (iii), she was gifted the Toy Car before she was gifted the Bean Bag. Hence, she must have received the Toy Car on her 8th birthday and the Bean Bag on her 10th birthday. She could have received the Toy Gun and the Toy Dog 3rd and 6th birthdays in any order.

The following table presents this information:

Birthday	Gift	Lost (Y/N)
Second	Barbie Doll	N
Third	Toy Gun/Toy Dog	Y
Fifth	Crayons	Y
Sixth	Toy Dog/Toy Gun	Y
Eighth	Toy Car	N
Tenth	Bean Bag	N

25. Ramya lost the Toy Gun and the Toy Dog. Choice (D)
 26. Ramya was gifted the Toy Car on her eighth birthday. Choice (C)
 27. Ramya must have been gifted the Toy Gun on her sixth birthday. Hence, the Toy Dog must have been gifted on her third birthday. Choice (B)
 28. She could have lost any of Toy Dog, Toy Gun or Crayons the year she was gifted the Toy Car. Hence, the answer cannot be determined. Choice (D)

Solutions for questions 29 to 32:

From (v), J and H are not in the Volleyball team. From (iii) and (vi), if G is in the Volleyball team, both A and E cannot be in the

team. Then, there cannot be 7 members in the Volleyball team. Hence, G is not in the Volleyball team. All the remaining players will be in the Volleyball team.

From (v), B and C are in Basketball and Volleyball teams. From (vii), D and H are also in Basketball team. A and E cannot be in Basketball team together because the size of this team is only 5. From (vi), G is a part of the Basketball team. Hence, B, C, D, G and H are in the Basketball team. These players cannot be in Badminton team from (i).

If G is in the Dodgeball team, A and E cannot be in the Dodgeball team. Since B and C are not a part of this team, all the other members should be a part of this team. However, this will violate (iv), since J and H have to be in this team together. Therefore, G is not in the Dodgeball team. A and E both are in this team. Between J and H, one person will be in this team and all the others will also be in the team. Therefore, the Dodgeball team will comprise A, D, E, F, I and J/H.

From (ii), it can be inferred that two players are in only one team. A and E will also be a part of badminton team from (vi). Hence, A and E will be in three teams. B and C will be in two teams. D will also be in three teams. G can only be in the Basketball team. Between F, H, I and J, one has to be in three teams, two have to be in two teams, one person has to be in only one team. The person who has to be in one team cannot be F (already in Dodgeball and Volleyball teams) or I (already in Dodgeball and Volleyball teams). This can only be H or J. If J is in two teams, he has to be in Dodgeball and Badminton teams. If J is in one team, he has to be in Badminton team (if he is only in Dodgeball team, H cannot be in Dodgeball team and he can then be in only one team as well which is not possible). Hence, J is anyway a part of Badminton team.

The following table presents the possibilities:

Sport	Teams
Badminton	A, E, J, F/I
Basketball	B, C, D, G, H
Dodgeball	A, D, E, F, I, H/J
Volleyball	A, B, C, D, E, F, I

29. The coach could have selected the four teams in four ways.
Ans: (4)
30. D is definitely a part of three teams. Choice (A)
31. J will be a part of two teams. H will be in only one team.
Choice (B)
32. Three players – B, C and D – were a part of both the teams.
Ans: (3)

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

SECTION – III

Solutions for questions 1 to 34:

1. $x^{1/5} > x^{1/3}$
 $\Rightarrow x < -1$ or $0 < x < 1$. Now we can consider the cases for
 $x = \frac{1}{8}$ and $x = -8$, and check for each of the options.
- (I) $x^2 > x^3 \Leftrightarrow x < 1$
 \therefore This statement is true
- (II) $x^{1/3} > x^4 \Leftrightarrow 0 < x < 1$
 But this statement is not true for $x < -1$
- (III) $x^{1/3} > x^{-3} \Leftrightarrow x > 1$ or $-1 < x < 0$
 $\Rightarrow x > 1$ or $-1 < x < 0$
 Hence, this is false.

$$(IV) x^{-1/3} > x^3$$

$$\Rightarrow x < -1 \text{ or } 0 < x < 1$$

\therefore this statement is true.

So, of the four statements only two are true.

Choice (B)

2. Let α, β be the roots of the equation $x^2 - (k+1)x + 2k-1 = 0$.

$$\text{Then, } \alpha + \beta = \frac{-(-k+1)}{1} = k+1$$

$$\text{and } \alpha\beta = 2k-1$$

$$\text{We have, } \alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta \\ = (k+1)^2 - 2(2k-1) = k^2 + 2k + 1 - 4k + 2$$

$$= k^2 - 2k + 3 = (k-1)^2 + 2$$

Clearly, $\alpha^2 + \beta^2$ is minimum when $k-1 = 0$ i.e., $k = 1$.

Ans: (1)

$$3. \text{ Given, } f(x) = \frac{1}{1+x} \Rightarrow 1+x = \frac{1}{f(x)}$$

$$\Rightarrow x = \frac{1}{f(x)} - 1 = \frac{1-f(x)}{f(x)}$$

$$\text{Now } f(3x) = \frac{1}{1+3x} = \frac{1}{1+3\left(\frac{1-f(x)}{f(x)}\right)}$$

$$= \frac{f(x)}{f(x)+3-3f(x)}$$

$$\text{Hence, } f(3x) = \frac{f(x)}{3-2f(x)}$$

Alternative Solution:

By observation, $f(0) = 1$ and $f(3.0) = f(0) = 1$. Considering each answer choice, we see that only option (C) satisfies.

Choice (C)

4. Let the ages of the man, and his wife, four years ago, be $4k$ and $3k$ respectively.

$$\text{Given, } \frac{4k+4}{3k+4} = \frac{9}{7} \Rightarrow k = 8$$

\therefore The age of the man and his wife presently are 36 years and 28 years respectively.

Also, the present ages of the son and daughter are 4 years and 0 years respectively.

Let after k years, their average age be 18 years.

$$\frac{36+28+4+4k}{4} = 18 \Rightarrow k = 1. \quad \text{Ans: (1)}$$

5. No. of digits in a natural number N is
 (Characteristic of $\log_{10}N$) + 1

\therefore No. of digits in 3^{74}

$$= (\log_{10}3^{74}) + 1 = 74(\log_{10}3)$$

Now $\log_3 = 0.4771$ (students are expected to remember values of $\log_{10}2$, $\log_{10}3$, $\log_{10}5$ and $\log_{10}7$)

Characteristic of $\log_{10}N + 1$

$$= 74 (0.4771)$$

$$= 35.30$$

$$= 35$$

$$\therefore \text{No. of digits in } 3^{74} = 35 + 1 = 36.$$

Ans: (36)

6. Let the number of layers be N .

The n th layer from the top of the pile contains

$$\frac{n(n+1)}{2} \text{ balls}$$

$$\text{Total number of balls in the pile} = \sum_{n=1}^N \frac{n(n+1)}{2}$$

$$= \frac{1}{12} N(N+1)(2N+1) + \frac{N(N+1)}{4} = 5984.$$

$$\Rightarrow \frac{N(N+1)}{4} \left(\frac{2N+1}{3} + 1 \right) = 5984$$

$\Rightarrow N(N+1)(N+2) = 6(4)(1496) = 6(4^2)(374)$
 $= 2^6(3)(11)(17) = (32)(33)(34) \Rightarrow N = 32$
 Alternatively, after we get $N(N+1)(N+2) = 6 \times 5984 \approx 36000$ we can use the approximation that N would be just less than $\sqrt[3]{3} \approx 33$.
 OR we could just check for the product $N(N+1)(N+2)$ for each choice.
 Ans: (32)

7. Here the actual length of the wall is not important. Let A and B do a and b units of work per day. Let total work = 1 unit.

When A and B work together $11\frac{1}{9}a + 11\frac{1}{9}b = 1$ ---- (1)

When they work on alternate days, with A starting the work, they take $22\frac{1}{4}$ days.

Hence A works for $\frac{1}{4}$ day on the 23rd day.

$$\Rightarrow 11\frac{1}{4}a + 11b = 1 \text{ ---- (2)}$$

Subtracting (2) from (1)

$$\left(\frac{1}{4} - \frac{1}{9}\right)a = \frac{1}{9}b$$

$$\Rightarrow \frac{5}{36}a = \frac{1}{9}b \Rightarrow \frac{a}{b} = \frac{4}{5}$$

Now irrespective of the length of the second wall, since both work together, the shares of A and B in the earnings will be as per the ratio of their rates of work.

$$\text{Hence, B's share} = \frac{5}{(4+5)}(1800) = ₹1000 \text{ Choice (C)}$$

8. The volumes of liquid oxygen and liquid nitrogen in the three containers are tabulated below.

	A	B	C
Oxygen	20	40	80
Nitrogen	80	60	20
Total	100	100	100

First 20% of the contents of A are poured into B. Then 40% of the contents of B are poured into C.

$$\therefore \text{Oxygen in } C = 80 + 40\% \text{ of } 40 + 40\% \text{ of } 20\% \text{ of } 20 \\ = 80 + 16 + 1.6 = 97.6$$

$$\text{Total in } C = 100 + 40\% \text{ of } 100 + 40\% \text{ of } 20\% \text{ of } 100 \\ = 100 + 40 + 8 = 148$$

$$\therefore \text{Required percentage} = \frac{97.6}{148} \times 100\% \approx 65.9\%. \text{ Choice (D)}$$

9. Given, $4^{|3x+1|} = 16^{2x-4}$
 $\Rightarrow 4^{|3x+1|} = 4^{4x-8}$
 $\Rightarrow |3x+1| = 4x-8$
 For $3x+1 > 0$, For $3x+1 < 0$,
 $\Rightarrow 3x+1 = 4x-8 \quad 3x+1 = 8-4x$
 $\Rightarrow x=9 \quad x=1$
 We can observe that for $x=1$, $3x+1$ is not less than zero.
 Hence $x=9$ is the only possible value of x .
 \therefore Sum of all possible values of x is also 9. **Choice (A)**
10. Let us initially find the number of ways Sethi can win. If Sethi wins, the match he should be the one who wins the last game and the previous results could be internally arranged to get the number of ways.

Games won by		
Sethi	Wilson	Number of ways
5	0	1
5	1	$5!/4! = 5$
5	2	$6!/4!2! = 15$
5	3	$7!/4!3! = 35$
5	4	$8!/4!4! = 70$

\therefore Sethi can win in 126 ways.

Similarly Wilson can win in 126 ways. Hence the match can conclude in 252 ways.

Alternative Solution:

Consider a string of 5 wins (W's) and 4 Losses (L's). Now these nine games can be arranged in $\frac{(5+4)!}{5!4!} = 126$ ways.

These ways include all cases where the match ends after five wins. Hence, there are 126 ways in which Sethi wins and 126 cases in which Wilson wins. Therefore a total of 252 ways.
 Ans: (252)

11. Let the number of notes of denominations ₹50, ₹20 and ₹10 with Ramu be x, y and z respectively.

Total money with Ramu = 200 – 30 = 170

$$50x + 20y + 10z = 170.$$

Since $x, y, z > 1$, x cannot be 3, therefore $x = 2$.

When $x = 2$, y can be only 2, otherwise if $y = 3$, then x will be equal to 1, which is not possible.

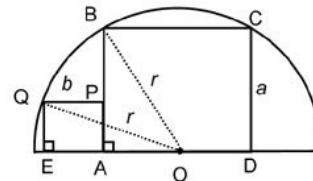
Therefore $x = 2, y = 2$ and $z = 3$.

The total number of notes with Ramu = 7.

Alternative Solution:

We can directly start with two notes of each denomination, which gives us $100 + 40 + 20 = ₹160$. Now, the only possibility of having exactly ₹170 is to have just one additional note of ₹10. Hence, 7 notes.
 Ans: (7)

12. Let the centre of the semicircle be O. Let the side of a square ABCD be a cm and let the side of the smaller square EAPQ be b cm



Now from $\triangle BAO$, $AB^2 + AO^2 = OB^2$.

$$\Rightarrow a^2 + \frac{a^2}{4} = r^2 \quad \text{--- (1)}$$

$$\Rightarrow a = \frac{2r}{\sqrt{5}} \text{ and } r^2 = \frac{5}{4}a^2 \text{ (where } r \text{ is the radius)}$$

$$\therefore \text{Side of ABCD in terms of the radius of the circle} = \frac{2r}{\sqrt{5}}$$

Also from $\triangle QEO$, $EQ^2 + EO^2 = OQ^2$

$$\Rightarrow b^2 + \left(b + \frac{a}{2}\right)^2 = r^2 = \frac{5}{4}a^2 \quad (\because r^2 = \frac{5}{4}a^2) \quad \text{--- (2)}$$

$$\Rightarrow 2b^2 + ab + \frac{a^2}{4} = \frac{5}{4}a^2$$

$$\Rightarrow 2b^2 + ab - a^2 = 0$$

$$\Rightarrow 2b^2 + 2ab - ab - a^2 = 0$$

$$\Rightarrow 2b(b+a) - a(b+a) = 0 \Rightarrow (2b-a)(b+a) = 0$$

$$\Rightarrow b = \frac{a}{2} \text{ (since } b \text{ is not negative)}$$

$$\Rightarrow b = \frac{r}{\sqrt{5}}$$

Now, given $r = 14 \text{ cm}$

\Rightarrow Area of a semicircle not covered by the two squares,

$$\begin{aligned} & \left(\frac{\pi r^2}{2}\right) - (\text{Area of ABCD} + \text{Area of QPAE}) \\ &= r^2 \left(\frac{11}{7} - \left(\frac{4}{5} + \frac{1}{5} \right) \right) \end{aligned}$$

$$= r^2 \times \frac{4}{7} = 14^2 \times \frac{4}{7} = 112 \text{ sq.cm}$$

Alternative Solution:

Using the calculator in eqs (1) and (2), we can get $a = 12.52 \text{ cm}$ and $b = 6.26 \text{ cm}$. Now required area

$$= \frac{1}{2} \times \left(\frac{22}{7} \right) \times (14)^2 - (12.52^2 + 6.26^2) \approx 112 \text{ sq.cm.}$$

Choice (C)

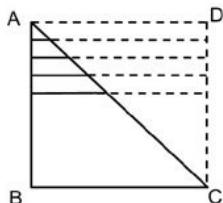
13. In order that the boys may not be adjacent to each other, we have to position the girls first. The 5 girls can be positioned in 120 ways. Rahul has to be positioned right at the end. In the 5 slots between the 5 girls we have to position the other 3 boys. This can be done in 5P_3 or 60 ways.
 \therefore The total number of ways in which the 9 children can form the queue is $(120)(60)$ or $10(6!) = 7200$.

Choice (C)

14. As the police took one hour for the round trip and they travelled with a constant speed, they took half an hour for catching the thief and half an hour for bringing him back. The thief on the whole ran for half an hour before the police started chasing and half an hour after police started chasing him. So, he ran for 10 km before he was caught.

Choice (C)

15.



Constructing triangle ADC as shown above we get a square ($\because AB = BC$)

Now, the length of each line is equal to the side of the square which is $6\sqrt{2}$

So, the total length of the 12 lines will be $12(6\sqrt{2})$.

But we need only half of this i.e., $6 \times 6\sqrt{2} = 36\sqrt{2} \text{ cm.}$
 Choice (A)

16. Given

$$3C + 2B = 2C + 3B + 1$$



chocolates biscuits

$$\Rightarrow B = C - 1 \rightarrow (1)$$

And assume ice cream as I

$$C + 2B + 5 = B + 2I$$

From (1)

$$C + 2(C - 1) + 5 = B + 2I$$

$$\Rightarrow 2C = 2I - 4$$

$$I = C + 2 \rightarrow (2)$$

From (1) and (2) the cost of 6 chocolates, 7 biscuits and 5 ice cream is $6C + 7B - 7 + 5C + 10 = 18C + 3$
 Calculating each of the options, we get

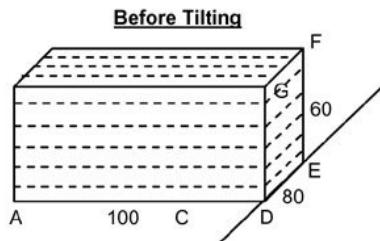
- (a) $18C + 1$
- (b) $18C - 3$
- (c) $18C + 6$
- (d) $18C + 3$

So (D) is the answer.

Alternately, after we get $B = C - 1$ and $I = C + 2$, we can simply assume $B = 1$, $C = 2$ and $I = 4$. Hence, given $6C + 7B + 5I = 39$. Now, calculating the options similarly gives (A) 37, (B) 33, (C) 42 and (D) 39. Hence choice (D).

Choice (D)

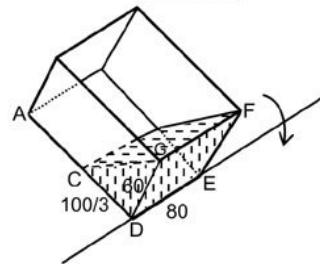
17.



We see that when the box is tilted along DE, the water level comes upto C, where

$$CD = \frac{100}{3} \text{ cm}$$

After Tilting



Let the length, breadth and height of the cuboid be ℓ, b, h respectively. ($\ell = 100 \text{ cm}$, $b = 80 \text{ cm}$, $h = 60 \text{ cm}$)

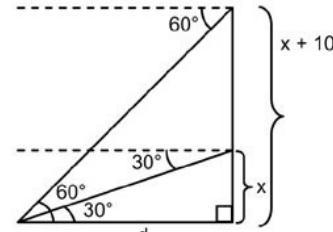
Volume of water before tilting = ℓbh

$$\text{Volume of water after tilting} = \frac{1}{2} \left(\frac{\ell}{3} \right) bh = \frac{\ell bh}{6}.$$

\therefore After the cuboid is restored to the initial position, only $\frac{1}{6}$

the volume of the water is left and the height drops to $\frac{1}{6}$ its original value, i.e. by 50 cm. Choice (A)

18. Let Dennis board the elevator on floor no. x.
 Let us assume, for convenience, that height of each floor = 1 m.
 Let d be the horizontal distance from the elevator to the fire hydrant.



Given,

When he boarded the elevator

$$\frac{x}{d} = \tan 30^\circ \quad \text{--- (1)}$$

When he has travelled 10 more floors.

$$\frac{x+10}{d} = \tan 60^\circ \quad \text{--- (2)}$$

(1)/(2) \Rightarrow we get

$$\frac{xd}{x+10} = \frac{\tan 30^\circ}{\tan 60^\circ}$$

$$\frac{x}{x+10} = \frac{1}{\sqrt{3}}$$

$$\frac{x}{x+10} = \frac{1}{3}$$

$$3x = x + 10 \Rightarrow x = 5$$

\therefore The angle of depression was 60° when he was $(x + 10)^{\text{th}}$ floor = $5 + 10 = 15^{\text{th}}$ floor

Ans: (15)

19. Given

$$S = \frac{3}{2} + \frac{5}{4} + \frac{9}{8} + \frac{17}{16} \dots \dots \text{ (99 terms)}$$

$$S = \left(1 + \frac{1}{2}\right) + \left(1 + \frac{1}{4}\right) + \left(1 + \frac{1}{8}\right) + \left(1 + \frac{1}{16}\right) \dots \dots + \left(1 + \frac{1}{2^{99}}\right)$$

$$\Rightarrow S = (1+1+\dots\text{99 times}) + \left(\frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} + \dots + \frac{1}{2^{99}}\right)$$

$$\Rightarrow S = 99 + \frac{1}{2} \left[1 - \left(\frac{1}{2}\right)^{99}\right] \Rightarrow S = 99 + 1 - \frac{1}{2^{99}}$$

$$S = 100 - \frac{1}{2^{99}}$$

Choice (A)

20. Let the marked price be 100.

$$\therefore \text{The selling price} = \frac{100 - 20}{100} \times 100 = 80$$

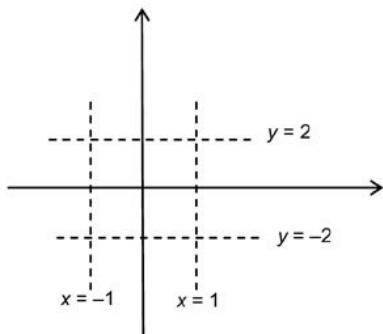
As he made a profit of 25%, C.P. $\times (1.25) = 80 \Rightarrow$ C.P. = 64
Now, to get a profit of 10%

$$\text{S.P.} = 1.1(64) = 70.4$$

$$\therefore \text{Discount percentage} = \frac{100 - 70.4}{100} \times 100 = 29.6\%$$

Choice (B)

21. If the origin is shifted to the point $(-a, b)$ the new equations would be $|x| = 1$ and $|y| = 2$



\therefore The required area is the area of the rectangle ABCD
 $= (2 + 2)(1 + 1) = 8$

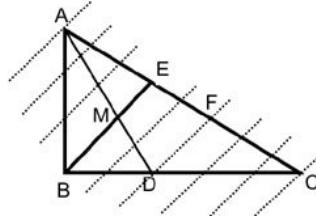
Choice (C)

22. $g(x)$ is a symmetric function in x . If $x = 0$, $g(x) = 0$.
If $p > 0$ and $q < 0$, $g(x)$ will always be positive when $x \neq 0$.
 $\therefore g(x)$ will be minimum when $x = 0$, $p > 0$ and $q < 0$.

Choice (C)

23. In the figure given in the question, consider triangle BEC.
Draw DF parallel to BE. Now, by basic proportionality theorem, $EF : FC = BD : DC = 2 : 3 \rightarrow (1)$
Now, consider triangle ADF where ME is parallel to DF.
Again, by basic proportionality theorem, $AM : MD = AE : EF = 3 : 2 \rightarrow (2)$
Hence, if $AE = 3k$, $EF = 2k$ and if $EF = 2k$, $EC = (EF + FC) = (2k + 3k) = 5k$. (from (1))
Hence $AE : EC = 3 : 5$

Alternative Solution:



As $AM : MD = 3 : 2$, we can divide AM and MD into 3 and 2 equal parts with lines parallel to BE as shown above. As $BD : DC = 2 : 3$, BD and DC can be divided into 2 and 3 equal parts with lines parallel to BE. Now, we can see (as in figure above) that $AE : EC = 3 : 5$.

Choice (B)

24. The exchange of speeds and directions at the first meeting does not make a difference to the time or place of their second meeting. The two cars start together. By the first meeting (when the 2 cars together cover L, the distance between A and B), Q covers 40 km. By the 2nd meeting, the two cars together cover 3L and the distance covered by Q upto the first meeting plus the distance covered by P between the 1st and 2nd meetings is 120 km. Since the point of the 2nd meeting is 20 km from A, L = 100 km.

Choice (B)

25. 6, 9, 12, 15, ..., 543 is the 1st AP. (180 terms)
8, 13, 18, 23, ..., 753 is the 2nd AP. (150 terms)
The common terms of the two series would be in AP with the common difference as 15 (LCM of 3 and 5)
They are 18, 33, ..., 543
i.e., 3 + 15(1), 3 + 15(2), ..., 3 + 15(36)
The number of common terms = 36

Ans: (36)

26. The following are the possible ways of distribution:

1	7	8
2	6	8
3	5	8
3	6	7
4	5	7

\therefore The total number of ways is 5.

Ans: (5)

27. The information regarding B is not relevant here, since the ratio of A and C alone is required.

Initial ratio of A : C = 2 : 5, i.e., $\frac{1}{2.5}$. The ratio of the

increases in A and C = 1 : 3, i.e., $\frac{1}{3}$.

Hence the final ratio must be less than $\frac{1}{2.5}$ (when the increase in A's earnings is negligibly small when compared to his initial earnings) but more than $\frac{1}{3}$ (when the increase in A's earnings is very large when compared to his initial earnings), i.e., if the final ratio is $\frac{1}{k}$, then $2.5 < k < 3$.

Now $7 : 17 \approx \frac{1}{2.43}$; $9 : 22 \approx \frac{1}{2.44}$; $13 : 40 \approx \frac{1}{3.08}$ and

$16 : 45 \approx \frac{1}{2.82}$

Hence only 16 : 45 is a possible ratio.

Choice (D)

28. $5^1 - 5$
 $5^2 - 25$
 $5^3 - 125$
 $5^4 - 625$
 $5^5 - 3125$
 $5^6 - 15625$

If we observe the powers of 5, the 100's place digit is always either 1 or 6. When power is odd we will get 1, when power is even we get 6.

Any power of 5 is an odd number, so 5^{678} is odd.

$$\therefore 5^{678} \text{ the hundreds digit is one.} \quad \text{Ans: (1)}$$

29. Given that the two lines $4x + 5y = t$ and $ux + 3y = 2$ have infinite number of solutions.

\Rightarrow The given two lines are coincident

$$\Rightarrow \frac{4}{u} = \frac{5}{3} = \frac{t}{22} \Rightarrow t = \frac{110}{3} \text{ and } u = \frac{12}{5}$$

Choice (B)

30. Let the height of each cylinder be h and the radii of the two cylinders be r_1 and r_2 .

Given, $2\pi h r_1 - 2\pi h r_2 = 440$.

$$2 \times \left(\frac{22}{7} \right) h (r_1 - r_2) = 440$$

$$\Rightarrow h(r_1 - r_2) = 70$$

$$\Rightarrow r_1 - r_2 = \frac{70}{h}$$

As we want greatest difference in radii, height should be the least. As h is a multiple of 5, when $h = 5$, $r_1 - r_2 = 14$ cm, is the greatest difference.

Choice (A)

31. The first clock will show the correct time after losing exactly 12 hours, while the second clock will do so after gaining exactly 12 hours.

i.e., the first clock shows the correct time after every

$$(12) \left(\frac{\frac{60}{3}}{2} \right) = 480 \text{ days}$$

the second clock shows the correct time after every

$$(12) \left(\frac{\frac{60}{5}}{2} \right) = 288 \text{ days}$$

\therefore They will simultaneously show the same time after LCM (480, 288) = 1440 days

Choice (B)

32. Piyush writes down the 100 numbers from 1 to 100. Consider the digit 2. It occurs 10 times as the tens digit in

20, 21...29 and 10 times in the units digit in 2, 12, 22... 92, i.e. a total of 20 times.

The same is the case with digits from 3 to 9.

Consider the case of the digits 0 & 1.

'0' occurs once in all numbers from 10, 20 90.

i.e., 9 times and twice in 100 or a total of 11 times.

1 occurs 20 times from 1 to 99 and once in 100.

So 1 occurs 21 times.

\therefore 1 and 0 occur an odd number of times, i.e., a total of two digits.

Ans: (2)

33. Among the conclusions, 13 ordered pairs appear we the But, we note that $(a * b)$ depends only on the product ab.

$$\therefore (3 * 2) = (2 * 3) = (1 * 6) = (6 * 1) = -4$$

$$(4 * 2) = (8 * 1) = -6$$

$$(-1 * 2) = (-2 * 1) = 4$$

$$(2 * 8) = -14$$

$$6 * 3 = -16, 1 * 2 = 0, 7 * 3 = -19$$

We consider the conclusions

I. $GE = (-4) * (-4) = -14$ True

II. $LHS = (-6) * (-4) = -22$

RHS = $(-4) * (-6) = -22$ True

III. $LHS = 4 * 4 = -14$

RHS = -14 True

IV. $LHS = (-4) * (-4) = -14$

RHS = $(-19) * 0 = 2$ False

\therefore Exactly three statements are true.

Ans: (3)

34. The given sequence of digits is X = 12223333.... i.e., the sequence formed by writing 1 one, 3 twos, 5 threes and so on. The number of digits in X, after all the single digit numbers are written down is sum of first nine odd numbers $1 + 3 + 5 + \dots + 17 = 9^2 = 81$.

We need the next 288 – 81 = 207 digits after that.

There are 19 tens, 21 elevens, 23 twelves, 25 thirteens. We will have $19 + 21 + 23 + 25 = 88$ two-digit numbers as the 176 digits.

The next $207 - 176 = 31$ digits will come from the group of 27 fourteens. In this part all the odd-positioned digits are 1. Therefore, the 31st digit is 1. That is, the 288th digit is 1.

Alternatively, since, $9^2 = 81$ and $19^2 = 361$, every other digit starting from the 82nd digit till the 361st digit will be 1. Hence, the 288th digit will be 1.

Ans: (1)

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