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

(Key and Solutions for AIMCAT1700)

Key

SECTION – I
SUB-SECTION: RC

1. D	7. C	13. C	19. B
2. C	8. D	14. 2345	20. D
3. B	9. C	15. A	21. C
4. B	10. D	16. C	22. C
5. C	11. A	17. D	23. 3
6. B	12. B	18. B	24. D

SUB-SECTION: VA

1. 2	6. D	11. 31524	16. C
2. 3	7. 4	12. 25413	17. 11110
3. 4	8. 1	13. A	18. 11101
4. 1	9. 24153	14. C	19. 10111
5. C	10. 53214	15. B	20. 11011

SECTION – II
SUB-SECTION: DI

1. 59600	5. 29	9. B	13. 22
2. A	6. 11	10. C	14. 7
3. D	7. B	11. A	15. 27
4. 8	8. A	12. 56500	16. 25

SUB-SECTION: LR

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

SECTION – III: QA

1. C	8. D	15. 44	22. B
2. B	9. 3	16. 120	23. A
3. D	10. 25	17. C	24. 80
4. 9	11. 9	18. A	25. C
5. 264	12. C	19. B	26. A
6. 15	13. A	20. 336	27. 4
7. B	14. A	21. –1	28. D

Solutions

SECTION – I
SUB-SECTION: RC

Solutions for questions 1 to 6:

Number of words and Explanatory notes for RC:

Number of words: 750

1. The Mozart effect is mentioned in the last paragraph of the passage. According to the author, "Zeising's theories became extremely popular" like the Mozart effect in the 19th century.
Option A: The passage defines Mozart effect as "the belief that listening to classical music improves your intelligence". Therefore, we cannot infer from the passage that it is related to the golden ratio.
Option B: The passage does not mention that Zeising advocated the golden ratio and hence, this is false.
Option C: The passage does not talk about Mozart composing his music. Therefore, this option is also not correct.
Option D: The last paragraph mentions that "it didn't matter if it was made up or not". We can infer from this that Zeising's theories were made up according to the author but still it became extremely popular. Therefore, we can infer that Mozart effect was also made up and not backed by scientific studies but became popular nevertheless. Hence, this is the correct answer. Choice (D)

2. The author mentions that Zeising found an example of golden ratio in the human body. However, Devlin states that "When measuring anything as complex as the human body, it's easy to come up with examples of ratios that are very near to 1.6."
Option A: In the third paragraph, the passage states that because of the decimal points, "it's impossible for anything in the real-world to fall into the golden ratio, because it's an irrational number. However, he does not present this as an argument to counter Zeising's claim. Therefore, this is not the correct answer.
Option B: The author does not mention that any complex system can be defined by a specific ratio. He mentions that in a complex system (like the human body), examples can be found to satisfy any ratio (including the golden ratio). Hence, this option is incorrect.
Option C: According to Devlin, it is easy to come up with examples of ratios that are approximately 1.6. He wants to emphasize that the golden ratio is nothing special. Therefore, this is the argument that he will most probably use to counter Zeising's claim.
Option D: The passage does not talk about how Zeising applied the golden ratio to human body. Therefore, we cannot infer about the number of people that he evaluated.
Hence, the correct answer is option C. Choice (C)

3. The author talks about the actual value of golden ratio which is 1.6180339887... and not 1.618. The problem he refers to is explained in the next paragraph by Keith Devlin.
Option A: According to Devlin, "Strictly speaking, it's impossible for anything in the real-world to fall into the golden ratio, because it's an irrational number." However, he does not talk about the difficulty in measuring things in the real world. Therefore, this is not the correct answer.
Option B: The passage states that "Just as it's impossible to find a perfect circle in the real world, the golden ratio cannot strictly be applied to any real world object. It's always going to be a little off." From this, we can state that the golden ratio cannot be applied to anything in real world because of its endless decimal part. (We can infer that the endless decimal part of the number implies that it is irrational because at the end of the second paragraph the author states that "the decimal points go on forever" and at the beginning of the next paragraph, the author talks about the irrational nature of the golden ratio) Therefore, this is the correct answer.
Option C: We cannot infer from the passage whether the golden rectangle accurately follows the golden ratio. Further, this does not refer to the problem mentioned by the author as this is just one example of golden ratio.
Option D: The author does not talk about art in the second paragraph and the problem does not refer to the difficulty of using golden ratio in art. Hence, this is not the correct answer.
Therefore, the correct answer is option B.
Choice (B)

4. The author talks about the opinion of various persons in the passage regarding golden ratio and other proportions.
Pacioli: According to the passage, "Pacioli didn't argue for a golden ratio-based theory of aesthetics as it should be applied to art, architecture, and design: he instead espoused the Vitruvian system of rational proportions, after the first-century Roman architect, Vitruvius". Therefore, we can say that he believed in using Vitruvian system of rational proportions for aesthetics. Hence, he is one of the persons who believed in using a system for aesthetics.
Zeising: We can infer from the passage that Zeising adovacated the use of golden ratio for art, architecture and design. Hence, this is also one of the persons.
Livio: The passage mentions that Livio is the "guy who literally wrote the book on the golden ratio". However, it does not present his opinion on using any system for art.
Dalí: The passage mentions that "Dalí painted his masterpiece *The Sacrament of the Last Supper* on a canvas shaped like a golden rectangle.". However, this is one instance where he seemed to have used the golden ratio and the passage does not provide any further information on whether Dalí believed that it should be used as a system for art.
Therefore, only two of the given persons believe in using a system for art. Choice (B)

5. The passage talks about various creations which were created based on the golden ratio. It also mentions "great designs in history" to which the golden ratio was retroactively applied.
Option A: The passage states that "Meanwhile, art historians started combing back through the great designs of history, trying to retroactively apply the golden ratio to Stonehenge, Rembrandt, the Chatres Cathedral, and Seurat." Therefore, this is not the answer.
Option B: According to the passage, "it was soon being said that Da Vinci himself used the golden ratio as the secret math behind his exquisitely beautiful paintings, such as the *Mona Lisa*." However, it does not mention whether Da Vinci actually painted the Mona Lisa keeping the golden ratio in mind. Hence, this cannot be the answer.
Option C: The author mentions in the last paragraph that "In the 20th century, the famous Swiss-French architect Le Corbusier based his Modulor system of anthropometric proportions on the golden ratio". Therefore, Modulor system was based on the golden ratio.
Option D: The author mentions Chatres Cathedral as an example of art historians retroactively applying the golden ratio. Hence, this is not the correct answer.
Therefore, the correct answer is the Modulor system.
Choice (C)

6. From the passage, it is clear that the author supports the views of Devlin and this is evident in the last sentence of the passage, "The link between the golden ratio and beauty has been a canard of the world of art, architecture, and design ever since"
Option A: The author does not mention that art created on the basis of golden ratio is not aesthetically pleasing. He only feels that the golden ratio should not be the basis for art. Hence, this is not the correct answer.
Option B: From the last sentence of the passage, we can infer that the author feels that the golden ratio should not be associated with art, architecture, and design. Hence, this can be inferred to be a view of the author.
Option C: The author primarily talks about golden ratio and does not talk about law governing art in general. Therefore, this cannot be inferred from the passage.
Option D: The author does not differentiate between art and architecture with respect to the application of golden ratio. Hence, this is also incorrect.
Therefore, the correct answer is option B.
Choice (B)

Solutions for questions 7 to 12:

Number of words and Explanatory notes for RC:

Number of words: 702

7. Darwin describes a scene full of "wedges of variously coloured rocks … in every possible shape and formation." Visions of this likely lodged in his mind (metaphorical sentence).
Option A: He wrote in his notebook of "a hundred thousand wedges trying [to] force every kind of adapted structure into the gaps in the **economy** of Nature, or rather forming gaps by thrusting out weaker ones." Hence choice A is true and is not the answer.
Option B: A few years later, in 1838, puzzling over the birth of new species, he was seized by an image different and stranger than natural selection. "species that fit well" would emerge as winners and those that didn't would lose out in the struggle for existence (mentioned in the penultimate para). So choice B would be in line with Darwin's theory of natural selection. So choice B is correct and is not the answer.
Option C: Nature does not accept or reject any species. Choice C cannot be inferred from the passage and from

specifically the last sentence of para 1. Hence choice C is the answer.
Option D: Choice D is also true from the last few sentences of para 1 (.... economy of nature ....)
Hence choice D is not the answer. Choice (C)

8. Refer to the fourth and fifth paragraphs. Darwin's one-time rival turned comrade-in-arms, Alfred Russell Wallace, was particularly critical. In a letter to Darwin, sent after publication of the *Origin*, Wallace argued – no doubt with a wink – that the metaphor was not well "adapted" to convey his theory of evolution to the public.
Option A: He was concerned that the word "selection" encouraged readers to (wrongly) view nature as a forward-looking, intelligent designer that was shaping the evolutionary course of life. Hence choice A is not the answer. Nature
Option B: According to Darwin biographer Janet Browne, Darwin often seemed to imagine nature as an "all-seeing farmer in the sky," a benevolent overseer that selects, scrutinizes, and rejects. As Wallace saw it, the problem with this rosy view is that, strictly speaking, it's wrong. Hence choice B is incorrect.
Option C: Choice C is false. Though Darwin and his contemporaries recognized natural selection as a metaphor for evolution, Wallace did not. Darwin did not take metaphors lightly but Alfred Wallace was particularly critical about the term "natural selection".
Option D: There is no nice, celestial farmer – just a struggle for existence, with winners and losers. Therefore choice D is correct. Choice (D)

9. Today, a century and a half later, Darwin's eerie metaphor of a vast and wedge-filled landscape, pounded by the blows of an unseen hammerer, is (almost) all but forgotten.
Option A: Whatever his reasons for abandoning the wedges, it was likely not a rash decision. Darwin did not take metaphors lightly. So choice A is negated.
Option B: The first part of choice B can be inferred from the passage. Darwin usually defended his metaphors and held on to them tightly, defying detractors. His one-time rival turned comrade-in-arms, Alfred Russell Wallace, was particularly critical. In a letter to Darwin, sent after publication of the *Origin*, Wallace argued that the metaphor was not well "adapted" to convey his theory of evolution to the public. But the passage does not state that Darwin's biographer Janet Browne displayed her criticism for the metaphor. Hence choice B is not true.
Option C: Darwin never explained why he dropped it, but one possible reason is that he doubted people would like it. To those with no interest in rocks, such a metaphor would have seemed bleak and alien: An invisible hammer drives one wedge down, then another, with no obvious rationale. Hence choice C is correct.
Option D: One modern scholar describes the idea as "grotesque" and even "shockingly sadistic." To Darwin's readers, imagining the history of life in such violent and mechanical terms might have been at least unpalatable, and at most unbearable. Choice D is incorrect as it is not Darwin who considered the metaphor "grotesque and shockingly sadistic". Choice (C)

10. Refer to the last paragraph of the passage.
Option A & B: Choices A and B cannot be inferred from the passage.
Option C: The first part of choice C can be inferred from the penultimate sentence of para 3 but the second part of choice C cannot be estblished as a reason. Hence choice C is not the answer.
Option D: Perhaps he sensed the power of his "all-seeing farmer" and, in doing so, intuited something deep about **human psychology**. People are deeply familiar with the logic of purposeful design, and research has shown that they like to view the world through this lens. When faced with **hard-to-explain phenomena**, they invoke higher powers or hidden plans – **concepts like God**, fate, and karma all speak to this impulse. The idea of nature as a selecting agency plays to our biases to brilliant effect. Hence choice D is correct. Choice (D)

11. Option A: Darwin's eerie metaphor of a vast and wedge-filled landscape, pounded by the blows of an unseen hammerer, is (almost) all but forgotten. An invisible hammer drives one wedge down, then another, with no obvious rationale. It's nature as whack-a-mole, with humans as just another mole being whacked into – and perhaps one day out of –existence. One modern scholar describes the idea as "grotesque" and even "shockingly sadistic." Hence choice A is the answer. (Modern thinkers think that unwanted traits in a human being can be weeded out by a process of natural selection and a more perfect human species can be formed. Darwin is of the view that the human species can itself be selected out).
[Note: "whack-a-mole" is also a game in an amusment arcade in which players use a mallet to hit toy moles, which appear at random, back into their holes.]
Option B: Choice B in itself is positive. The choice does not capture the negative thought "vast and wedge-filled landscape, pounded by the blows of an unseen hammerer". Hence choice B cannot be described "grotesque" and even "shockingly sadistic".
Option C: To Darwin's readers, imagining the history of life in such violent and mechanical terms might have been at least unpalatable, and at most unbearable. But choice C is not specific to the question.
Option D: Choice D appears later in the passage in the penultimate and final paragraphs but the characteristic ideas(s) of nature mentioned in choice D cannot be associated with the terms "grotesque" and even "shockingly sadistic". Hence choice D is not the answer.
Choice (A)

12. Option A: Sentence 2 of para 1 reads as follows: He had a longstanding love of geology – as a budding scientist he'd spend days with hammer in hand, breaking open rock specimens and pondering the histories of peculiar landscapes. This sentence is not out of context. "love of geology – breaking open rock specimens and pondering the histories of peculiar landscapes" links with the previous sentence "recent forays in the high passes and plateaus of the Andes". Hence choice A is not the answer.

Option B: Sentence 6 of para 3 reads thus: Charles Darwin gave us both kinds of metaphors, big winners and total flops. This objective sentence disrupts the thoughtflow. The previous sentences in para 3 highlight the reason that Darwin removed the wedges-as-species comparison or metaphor. The reference is to a particular metaphor that Darwin used earlier. Hence "both kinds of metaphors" as mentioned in sentence 6 of para 3 would need a precedent and more substantion. Sentence 6 of para 3 would be best placed in another paragraph – preferably in a paragraph prior to the start of the given passage – as it is a general sentence about metaphors.
So, the sentence (prior to choice B) "To those with no interest in rocks, such a metaphor would have seemed bleak and alien: An invisible hammer drives one wedge down, then another, with no obvious rationale." should be immediately followed by the sentence (after choice B) "It's nature as whack-a-mole, with humans as just another mole being whacked into – and perhaps one day out of – existence." Therefore choice B is correct.

Option C: Sentence 1 of para 5 read as follows: Wallace, it turns out, was astute in his reading of Darwin's language. This sentence is not out of scope of the fifth paragraph of the passage. The previous paragraph talks about Wallace showing his displeasure with the term "natural selection". Wallace felt that the metaphor was not well "adapted" to convey his theory of evolution to the public. Hence "astute in his reading ....." as given in sentence 1 of para 5 is justified. The idea finds a continuation in the penultimate sentence of para 5: As Wallace saw it, the problem with this rosy view is that, strictly speaking, it's wrong. Hence choice C is not the answer.

Option D: The last sentence of the passage brings the passage to a close in a perfect manner. The sentence is not redundant. It justifies why Darwin clung to "natural selection" even as he discarded the wedges.

Choice (B)

Solutions for questions 13 to 18:

Number of words and Explanatory notes for RC:

Number of words: 750

13. Refer to the first paragraph of the passage.
Option A: The first paragraph of the passage does not talk about migration becoming the lastest fashion. So choice A is not correct.
Option B: The first part of Choice B is true. At the turn of the century, there were more regional and international migrants than ever before in recorded history. But the second part of choice B cannot be inferred from the passage. Choice B is incorrect and does not include the complete or comprehensive reason for the question.
Option C: Choice C is correct. Today, the figure of the migrant exposes an important truth: social expansion has always been predicated on the social expulsion of migrants. The twenty-first century will be the century of the migrant not only because of the record number of migrants today but also because this is the century in which all the previous forms of social expulsion and migratory resistance have reemerged and become more active than ever before.
Option D: Choice D has not been mentioned in the passage. Choice (C)

14. Statement 1: Climate change **may** cause international migration to double over the next forty years. So statement 1 is not the current reason for an increase in migration in the 21st century.
Statement 2: More people migrate because of environmental, economic, and **political instability**. So statement 2 is also a reason.
Statement 3: Some of the migratory phenomena are directly related to recent events, such as the **impoverishment of middle classes** in certain rich countries after the financial crisis of 2008, subsequent austerity cuts to social welfare programs, and rising unemployment. Hence statement 3 is also a reason.
Statement 4: The subprime mortgage crisis led to the expulsion of millions of people from their homes worldwide.

Therefore statement 4 is also an important factor for migration.
Statement 5: Mining practices have become increasingly destructive around the world – including hydraulic fracturing and tar sands. The general increase in human mobility and expulsion is now widely recognized as a defining feature of the 21st century. So statement 5 is also true.

Ans: (2345)

15. The author mentions "A specter haunts the world and it is the specter of migration" in the last sentence of para 2, referring to the thought that migration is always a manifestation of 'expulsion' – whether temporary and mild, or long-lasting and grave.
Option A: Choice A summarizes the main points of the third paragraph. There is a negative side to all migration. Even if the end result of migration is a relative increase in money, power, or enjoyment, **the process of migration itself almost always** involves an insecurity of some kind and duration: the removal of territorial ownership or access, the loss of the political right to vote or to receive social welfare, the loss of legal status to work or drive, or the financial loss associated with transportation or change in residence. Hence choice A is the answer.
Option B: However, not all migrants are alike in their movement. For some, movement offers opportunity and profit with only a temporary expulsion. For others, movement is dangerous and their social expulsions are more severe and permanent. Today, most people fall somewhere on this migratory spectrum between the two poles of "inconvenience" and "incapacitation." All migrants on this spectrum share the experience that their *movement* results in a certain degree of expulsion from their territorial, political, juridical, or economic status. The remaining sentences of para 3 go on to emphasize the point that the negative consequences of migration far outweigh the beneficial aspects of migration. Choice B is not correct.
Option C: While choice C may be true, it has not been explicitly mentioned in the passage. It does not answer the question.
Option D: The first part of choice D has not been justified in the passage. The second part of choice D is not correct. Various parts of the passage indicate that today people are forced to migrate and do not necessarily migrate by choice. Choice D in itself is not negative to justify "specter of migration haunts the world." Choice (A)

16. Option A: The second problem is that the migrant has been predominantly understood from the perspective of *states*. Since the state has all too often written history, the migrant has been understood as a figure without its own history and social force. Hence statement A is not true.
Option B: Choice B is not one of the two problems that are needed to be overcome in order to develop a theory on migrants.
Option C: The first problem is that the migrant has been predominantly understood from the perspective of *stasis* and perceived as a secondary or derivative figure with respect to place-bound social membership. Place-bound membership in a society is assumed as primary; secondary is the movement back and forth between social points. So the problem is that migrants are studied with respect to their movement (secondary or derivative) but not with respect to place-bound social membership (primary). The last sentence of para 4 implies that if we want to develop a political theory of the migrant itself, we need to stop interpreting them under the viewpoint as given in choice C. Hence choice C is the correct answer.
Option D: Choice D is not the problem and can be easily eliminated. Choice (C)

17. Refer to the last para of the passage.
Option A: While the passage talks about the increase in migration in the first two paras, choice A does not become the objective of the book. Hence choice A is not the answer.
Option B: The aim of this book is not to explain the causes of all migration. So choice B is negated and is not the answer.

Option C: The consequences of developing a political theory of the migrant are not discussed in the passage. Hence choice C is not true.
Option D: The aim of the said book is to offer better descriptions of the conditions, forces, and trajectories of its historical emergence and contemporary hybridity. This makes the first part of choice D correct. It has been mentioned in the penultimate para of the passage that the history of migrant social organizations has tended to be subsumed by state histories. The last para says that the book focuses on the more marginalized figures of historical migration (nomads, barbarians, vagabonds, and the proletariat). These can be referred to as migrant social organizations. Choice (D)

18. Option A: The last paragraph only says that it is in the history of nomads that the emergence of each new form of social expulsion (of which the tourist experiences only the smallest degree) is most sharply visible. But "allows one to diagnose the capacity of any migrant to create an alternative to social expulsion" as given in choice A cannot be inferred from the passage.
Option B: The said book focuses on the more marginalized figures of historical migration (nomads, barbarians, vagabonds, and the proletariat) for three reasons. First, because it is primarily their history that has been decimated and is in the most need of recovery and reinterpretation. This makes choice B correct.
Option C: Choice C has not been offered as a reason in the passage.
Option D: Choice D is too general. It sounds far-fetched and is not the answer. Choice (B)

Solutions for questions 19 to 21:

Number of words and Explanatory notes for RC:

Number of words: 465

19. Refer to para 2. Foucault looks at the continuities and discontinuities between 'epistemes' (taken by Foucault to mean the knowledge systems which primarily informed the thinking during certain periods of history: a different one being said to dominate each epistemological age), and the social context in which certain knowledges and practices emerged as permissable and desirable or changed. Hence choice B is correct. Choice (B)

20. Refer to the last sentence of the third paragraph (The 'panopticon ... modern individual).
Option A: The analogy of the Panopticon is used to suggest the processes whereby disciplinary technologies are used by the powers that be to 'police' both the minds and bodies of people. It also refers to the normative power of the state so as to continue the policing of an individual's mind and body. So choice A is not the answer.
Option B: In choice B, you are aware that your boss is inspecting your work. So choice B is not the correct analogy.
Option C: Choice C is a poor example of 'social surveillance' or the Panopticon analogy used in the passage.
Option D: Bentham's Panopticon was a nineteenth century prison system in which prison cells were arranged around a central watchtower from which the supervisor could watch inmates, yet the **inmates could never be certain when they were being watched**, therefore, over time, they began to police their own behaviour. In the case of CCTV in workplace, one cannot tell whether one is continuously monitored or not. Hence choice D best parallels the Panopticon analogy used in the passage. Choice (D)

21. Option A: In Foucault's view, there is no fixed and definitive structuring of either social (or personal) identity or practices, as there is in a socially determined view in which the subject is completely socialized. But choice A is not the focus of Foucault's work.
Option B: Foucault's conceptual analysis of a major shift in (western) cultural practices, from 'sovereign power' to 'disciplinary power', in *Discipline and Punish:The Birth of the Prison* (1979), is a good example of his method of genealogy. He charts the transition from a top-down form of social control in the form of physical coercion meted out by the sovereign to a more diffuse and insidious form of social surveillance and process of 'normalisation'. Choice B is not the main focus of Foucault's work.
Option C: Foucault's focus is upon questions of how some discourses have shaped and created meaning systems that have gained the status and currency of 'truth', and dominate how we define and organize both ourselves and our social world, whilst other alternative discourses are marginalised and subjugated, yet potentially 'offer' sites where hegemonic practices can be contested, challenged and 'resisted'. This makes choice C the correct answer.
Option D: In Foucault's view, there is no fixed and definitive structuring of either social (or personal) identity or practices, as there is in a socially determined view in which the subject is completely socialized. The following sentence "the formation of identities and practices are related to or a function of historically specific discourses" in para 4 only implies that dominant discourses are responsible for the identity and practices of our period i.e. Discourses are characteristic of eras. But Foucault's work does not refer to our experiences. Hence choice D is incorrect.
Choice (C)

Solutions for questions 22 to 24:

Number of words and Explanatory notes for RC:

Number of words: 596

22. Refer to the first paragraph.
Option A: Every frame of reference, however elevated or exalted, strengthens the mental prison. This is not the same as curbing the freedom of the soul. Hence choice A is not true.
Option B: Any frame of reference would involve a movement within consciousness and as long as my center is exclusively within consciousness – that is, within a subject-object relationship – I remain vulnerable to suffering. But "deliberate consciousness" in choice B is extreme. Hence choice B is not the answer.
Option C: Doing this sadhana amounts to the wiping away of all frames of reference, which is my only salvation, for every frame of reference, however elevated or exalted, brings about dualism. So if there is a frame of reference, there will appear two entities – an entity and another to which it is compared or referred. Hence choice C is correct.
Option D: When all frames of reference have been removed, I find myself back in a state of innocence that prevailed before the thought of a psychological "I" had occurred within me. But choice D with the condition "unless" cannot be inferred. Choice (C)

23. Statement 1: 'Happiness is not an attribute of one's individuality, it is oneself' (last para). Hence statement 1 is not true. We can say that happiness is indistinguishable from the inner self.
Statement 2: 'There is a happiness ..... noisy mind which is never entirely still.' (lines 1 to 5 of para 4). A turbulent mind can serve as a barrier to the enjoyment of absolute happiness, according to the passage. Hence statement 2 is incorrect. If statement 2 had read: Preoccupation with elimination of suffering can serve as a barrier to the enjoyment of absolute happiness, then this statement would be applicable, since 'preoccupation with elimination' would imply cogitation and therefore 'turbulence'. As it is, statement 2 is not true.
Statement 3: Refer to the first and second sentences of para 2. 'So, through this practice ..... any dread of the outcome. These sentences suggest that statement 3 is correct.
Statement 4: Statement 4 is not true. Refer to para 3. The Via Negativa towards self-realization and happiness is often questioned and criticized since it is considered strange (by the critics) that we should be preoccupied with sadness instead of attempting to be happy. (The author, of course, explains that man does not need to try to be happy. If he does consciously make such an effort, he would not be happy.)
Statement 5: Statement 5 is not true. When the author refers to a happiness which is not fragile and does not limit the individual, he implies that one should work diligently towards one's own deliverance. Ans: (3)

24. Refer to para 4. Happiness is a by-product of something else, the elimination of suffering which comes only through self-knowledge in this via negativa, and is why the deepest thinkers throughout time have never admonished, "Be happy!" but instead, "know thyself!"; never "Work diligently towards happiness!" but instead "Work diligently towards your own deliverance (i.e. from suffering!). In other words, clearing oneself of suffering > undertanding of oneself > one is left in one's pristine state – happiness. This makes choice D the correct answer. Choice (D)

Difficulty level wise summary - Section I	
Sub Section: RC	
Level of Difficulty	Questions
Very Easy	–
Easy	19, 20
Medium	1, 2, 5, 6, 7, 8, 9, 10, 11, 13, 14, 17, 18, 21, 22, 24
Difficult	3, 4, 12, 15, 16, 23
Very Difficult	

SUB-SECTION: VA

Solutions for questions 1 to 4:

1. On a careful reading of the sentences, it can be observed that sentence 4 is a general sentence that begins the paragraph. Sentence 4 introduces the person Benjamin Franklin and his concept of the self-made man. Sentence 4 is followed by sentence 1. The pronoun 'he' in sentence 1 refers to Benjamin Franklin. Sentences 1 and 5 form a mandatory pair. "describes his way from a poor, unknown son of a candle-maker to a very successful business man" in sentence 1 links with "someone coming from low origins, who, against all odds, breaks out of his inherited social position, climbs up the social ladder" in sentence 5. Sentence 3 concludes the paragraph. It tells us the ingredients or the factors involved in Franklin's rags to riches story. So, 4153. Sentence 2 is the odd sentence out. "similarities between Frederick Douglass' and Benjamin Franklin's concept of the self-made man" is out of scope of this para. It needs a precedent and more substantiation. Ans: (2)

2. On a careful reading of the sentences, it can be observed that sentence 2 is a general sentence that begins the paragraph. It tells us why beaver dams are built by beavers. Sentence 4 continues after sentence 2. "These structures" in sentence 4 refers to "beaver dams" in sentence 2. Sentence 1 then tells us how beavers build the dams. "making beavers a keystone species" in sentence 4 links with "Beavers work at night and are prolific builders" in sentence 1. Sentence 5 concludes the paragraph. So, 2415. Sentence 3 talks about a negative aspect of beaver dams. It can be a part of another paragraph as it needs further elaboration. Ans: (3)

3. On a careful reading of the sentences, it can be observed that sentence 2 is a general sentence that begins the paragraph. Sentence 5 continues after sentence 2 as the pronoun "it" in sentence 5 refers to the revolutionary solar-powered aircraft that touched down recently at Moffett Airfield, which is mentioned in sentence 2. Sentences 5 and 3 form a mandatory pair. "The aircraft will be reassembled" in sentence 3 links with "it arrived disassembled in the belly of a 747 cargo jet" in sentence 5. Sentence 1 follows sentence 3. "it should be ready to fly across America" in sentence 1 links with "then begin flight tests" in sentence 3.

   So, 2531. Sentence 4 is the odd sentence out as it will need further elaboration. It can come in another paragraph, much later in the text. Ans: (4)

4. On a careful reading of the sentences, it can be observed that sentence 5 is a general sentence that begins the paragraph. It has the proper nouns (Second World War and Wehrmacht) and also provides details about the time period: Nearly 70 years after the Second World War ..... Sentence 5 is followed by sentence 4. "A leading historian can praise the Wehrmacht" in sentence 5 is linked with "(for) its military prowess" in sentence 4. Sentence 4 is followed by sentence 2. "their capacity to react swiftly and fiercely to an assault on any front" in sentence 2 points to the "military prowess of the Wehrmacht" mentioned in sentence 4. "Paul Kennedy of Yale University" is the leading historian spoken about in sentence 5. Sentence 3 concludes the paragraph. "their capacity to react **swiftly** and **fiercely**" (sentence 2) is followed by other superlatives in sentence 3: ..... **fabulous capacity** .....; ..... **ultracompetent** .....; **astounding tenacity** ..... So, 5423. Sentence 1 is the odd sentence out as "Allies' success" in sentence 1 needs a precedent. The sentence will also need further elaboration. Ans: (1)

Solutions for questions 5 and 6:

5. There are no two types of economists. It has only been mentioned that Dani Rodrik has split economists into two camps. So choices A and B are distorted. Choice A does not highlight the hedgehog and fox like behaviour of the economists. The third sentence in choice A unnecessarily mentions an example or specific detail from the para (President Harry Truman requested a one-handed economist). There is no need of this example in the summary. "after a lot of dillydallying" in choice B is not a correct way of mentioning the point. Choice D mentions a wrong cause and effect (because they resemble hedgehogs ....., because they resemble foxes .....). Only choice C covers the main points correctly. The last idea of the plus point, of foxlike behaviour, has found place only in choice C. Choice (C)

6. Choice A is not a complete summary. It distorts the facts in the paragraph and unnecessarily makes the role of the media the focal point of discussion. Choice B is incomplete as a summary. It ignores the first half of the paragraph. Choice C has a number of distortions like "The printing press has been replaced with the computer" and "return of the computer". It is also incomplete as a summary. Choice D covers all the main points of the para. Choice (D)

Solutions for questions 7 and 8:

7. The word 'number' fits the blank in sentences (i) and (ii).
   The word 'address' fits the blanks in sentences (i), (ii) and (iv).
   The word 'low' fits the blanks in sentences (iii) and (v).
   The word 'speech' can fit the blanks in sentences (i) (in a particular context) and (iv).
   The word 'impression' fits the blank in sentence (i).
   Hence, sentence (i) can take the words 'number', 'address', 'speech' and 'low' i.e. 4 words.
   Sentence (ii) can take the words 'number' and 'address' i.e. 2 words.
   The blank in sentence (iii) can be filled by the word 'low' i.e. 1 word.
   Sentence (iv) can take the words 'address' and 'speech' i.e. 2 words.
   The blank in sentence (v) can be filled by the word 'low' i.e. 1 word.
   Since the maximum number of words (viz, 'number', 'address', 'speech' and 'impression') that can fit sentence (i) is 4, the correct answer is 4. Ans: (4)

8. The word 'investing' fits the blank in sentence (i).
   The word 'desert' fits the blanks in sentence (iii) and (v).
   The word 'magnet' completes the blank in sentence (iv).
   The word 'mystery' does not fit any of the blanks.

   The word 'beeline' does not fit any of the blanks.
   Hence the blank in sentence (i) can be filled by the word 'investing'. i.e. 1 word
   Sentence (ii) cannot be filled by any of the given words. i.e. 0 words.
   The blank in sentence (iii) can be filled by the word 'desert'. i.e. 1 word
   The blank in sentence (iv) can be filled by the word 'magnet'. i.e. 1 word
   The blank in sentence (v) can be filled by the word 'desert'. i.e. 1 word
   Since the maximum number of words that can fit sentence (i) or (iii) or (iv) or (v) is 1, the correct answer is 1.
   Ans: (1)

Solutions for questions 9 to 12:

9. On a careful reading of the sentences, it can be observed that sentence 2 is a general sentence that can begin the paragraph. North Korea's dictator received praise and admiration from his own people. Sentence 2 is followed by sentence 4. It tells us of opposite feelings expressed by people abroad on the occasion of Kim Jong Un's birthday. Sentence 4 is followed by sentence 1. America has tightened sanctions against North Korea. Sentence 1 is followed by sentence 5 (Even China .....). "witnessing a public debate about whether to abandon its awkward ally (North Korea)" echoes the idea "few were wishing him many happy returns" mentioned in sentence 4. So, 2415. Sentence 3 concludes the paragraph with the climax: And perhaps most galling of all ..... Hence 24153.
   Ans: (24153)

10. On a careful reading of the sentences, it can be observed that sentence 5 is a general sentence that can begin the paragraph. None of the remaining sentences can begin the paragraph as they need a precedent. Sentence 5 is followed by sentence 3. "Never speaks to the press" in sentence 5 is followed by "secret reports" in sentence 3. Sentence 2 (..... even his brain .....) continues the thoughtflow. Sentence 1 provides an appropriate contrast to the earlier sentences with the contrast conjunction 'but'. Andrew Marshall's judgments have guided American defence policy inspite of his secret reports and reclusive behaviour. The pronoun 'his' in sentences 5, 3 and 2 refer to Andrew Marshall. So, 5321. Sentence 4 concludes the paragraph. "his supporters" applaud his judgements. Hence 53214. Ans: (53214)

11. On a careful reading of the sentences, it can be observed that sentence 3 is a general sentence that begins the paragraph. It has several proper nouns: Paul Ehrlich, Thomas Malthus, The Population Bomb and the year reference 1968. Sentences 3 and 1 form a mandatory pair. The argument of Paul Ehrlich, a biologist, in sentence 3 is followed by the counter-argument of the economists in sentence 1. "sending prices soaring and condemning people to hunger" in sentence 1 is followed by "rising prices should mitigate the squeeze by calling forth more supply" in sentence 3. Sentence 1 is followed by sentence 5. Sentence 5 gives the view of another economist Julian Simon. Sentence 5 is followed by sentence 2. "In a famous 1980 wager Julian Simon, an economist, bet Mr Ehrlich" in sentence 5 is followed by "he won" in sentence 2. "commodity prices would be lower a decade later" in sentence 5 links with "rising prices in the 1970s showed up in energy conservation and more oil exploration" in sentence 2. So, 3152. Sentence 2 is followed by sentence 4. " energy conservation and more oil exploration" in sentence 2 point to "Exuberance" in sentence 4. Though Julian Simon won the wager that commodity prices would be lower a decade later, the old arguments returned. "price pressure and shortages of resources will be a permanent feature of our lives" in sentence 4 mirrors the point in the introduction sentence 3 "exhaust the world's natural resources, sending prices soaring and condemning people to hunger". So, 31524. Ans: (31524)

12. On a careful reading of the sentences, it can be observed that sentence 2 (..... **the** soliloquy .....) is a general sentence that begins the paragraph. It tells us the origin and purpose of the soliloquy and how it survived the Middle Ages. Sentence 2 is followed by sentence 5 (**A** soliloquy .....) which throws more light on what a soliloquy is. "dramatic device that has bridged the gap between the **play's fiction** and its ***audience's*** reality" in sentence 2 links with "dramatic convention of exposing to the ***audience***, the intentions, thoughts and feelings of a character who speaks aloud to himself, **explaining events** ....." in sentence 5. Sentence 5 is followed by sentence 4. Sentence 4 introduces a new point of view – a soliloquy is different from an aside. The pronoun 'it' in sentence 4 refers to a 'soliloquy'. Sentence 1 then follows sentence 4 as it tells us the features of an aside. Sentence 3 concludes the paragraph by elaborating on contrasting features of a soliloquy. The word 'however' presents a contrasting . So, 25413. Ans: (25413)

Solutions for questions 13 to 16:

13. The main premise of the first paragraph is that more people, today, aspire to tech jobs or to entrepreneurship. The second paragraph highlights the fact that nerds or technology geeks need to be treated with respect. The author looks at geeks in a positive light. Choice A highlights this positive attitude of the author or positive factor. "every company is clamouring to hire them" in choice A links with "more than 25 million people have signed up for Codeacademy, more people aspire to tech jobs or running their own startup" in the first para.
Choice B can be the introduction sentence of another paragraph as it does not continue the thoughtflow of para 1. "influence well beyond technology: they hold greater cultural sway" in choice B needs further substantiation.
Choice C does not provide a reason for one to treat nerds with respect. "stretches well beyond their direct technology needs" would be an abrupt shift of thought.
Choice D again does not continue the thoughtflow. "all this nerdiness" needs a precedent and more substantiation.
Choice (A)

14. The paragraph begins by telling us how rare it is for a ballet to take a true story as its subject matter and how rarer still it is for the theme of a ballet to be overtaken by the march of science. This would mean that the study of Anna, or the case of Anna became more famous than the ballet itself. The penultimate sentence points out that the distressed young woman admitted to a Berlin mental asylum was unable to recall her real name. So choice C extends the thoughtflow and completes the paragraph. Choice A cannot be a part of this paragraph. It can be a point of discussion much later in the text. It sounds like an introductory sentence of another paragraph. Choice B sounds like a conclusion sentence but not of this paragraph. Choice D focuses only on the ballet itself, and not on the case that became even more well known. Choice (C)

15. Choice B best completes the given paragraph. The third sentence of the para tells us that Intel Capital was taking stakes in 16 startups now. It had been in the venture-capital business for a long time. So "over that time" in choice B links with "over 20 years" in the penultimate sentence of the para.
The penultimate sentence does not provide any reasons for the new generation of venture units to look better integrated with their parents. Hence choice A is out of scope.
Choice C disrupts the thoughtflow. The demonstrative pronoun "these" in choice C finds no suitable reference in the penultimate sentence of the para.
Choice D would need a precedent and further elaboration.
Choice (B)

16. On a careful reading of the sentences, it can be observed that the first paragraph is solely devoted to the treaty of the Danish West Indies. The first para states in the last sentence that the deal serves as an example of the last time a country sold control over territory to another.
"big examples" in the second sentence of para 2 indicates that land transfers were frequent and legal in the past. Hence choice C is an apt sentence to fit the blank. "a country has directly sold control over territory to another" in para 1 and "remain perfectly legal under international law" in para 2 contrast "borders move when a state breaks up, or countries settle a dispute or, occasionally, by use of force, not because two governments simply agree to trade a chunk of land" in the latter half of para 2.
Choice A cannot complete the blank as there is no reference to defence or military motivation in the sentences succeeding the blank.
Choice B would need a discussion, prior to the blank, about how climate change could stimulate demand for land trades. It also disrupts the thoughtflow.
We cannot infer that the examples provided in the second sentence of para 2 are of small, rich, densely populated countries vs land-rich, poorer states. So choice D cannot fit the blank. Choice (C)

Solutions for questions 17 to 20:

17. Sentences (a), (b), (c) and (d) have the correct usage of the word 'let'. In sentence (a), "let alone" means "Not to mention; much less; to say nothing of". In sentence (b), "let the cat out of the bag" is an idiom which means "reveal a secret". In sentence (c), the phrasal verb "letting on" means "pretending or making believe". The usage "let up on" in sentence (d) means "to become lenient or reduce pressure on". Sentences (a), (b), (c) and (d) will be indicated with the number 1.

The usage of the word "let" is incorrect in sentence (e). The correct usage should be "letting himself in for" which means "to involve oneself or another in something more than is expected." Sentence (e) will be indicated with the number 0.
Hence the correct answer is 11110. Ans: (11110)

18. Sentences (a), (b), (c) and (e) have the correct usage of the word 'make'. In sentence (a), the idiom "made a clean breast of" means to confess fully. In sentence (b), the idiom "make no bones" means "to be forthright, candid or acknowledge freely". In sentence (c), the idiom "made light of the difficulties" means to treat as insignificant or trifling. In sentence (e), the idiom "make so bold" means "venture". Sentences (a), (b), (c) and (e) will be indicated with the number 1.
The usage of the word "make" is incorrect in sentence (d). The correct usage should be "made good the loss " which means "make compensation for, to make up for". Sentence (d) will be indicated with the number 0.
Hence the correct answer is 11101. Ans: (11101)

19. Sentences (a), (c), (d) and (e) have the correct usage of the word "go". The idiom "go off the deep end" in sentence (a) means "become angry or upset". The idiom "go out on a limb" in sentence (c) means "state an opinion or do something very different to most other people." The idiom "go the vole" in sentence (d) means "risk all resources in prospect of achieving great gains". In sentence (e), the phrasal verb "go at" means "to approach; undertake". Sentences (a), (c), (d) and (e) will be indicated with the number 1.
The usage of the word 'go' is incorrect in sentence (b). The usage "go at the jugular" is incorrect. The correct usage should be "goes for the jugular" which means to attack fiercely in order to have no doubt about winning. Sentence (b) will be indicated with the number 0.
Hence the correct answer is 10111. Ans: (10111)

20. Sentences (a), (b), (d) and (e) have the correct usage of the word "bow". In sentence (a), "bowed us out" means to escort deferentially. In sentence (b), the phrasal verb "bowed out" means "yield in defeat or out of courtesy". In sentence (d), the word 'bows' refers to "knot with loops or loose ends". The phrasal verb "bowed down" in sentence (e) means "overburdened". Sentences (a), (b), (d) and (e) will be indicated with the number 1.
The usage of the word "bows" is incorrect in sentence (c). The idiom is "bow and scrape"; it means "to be excessively polite and deferential", and is used as a verb, not a noun. Sentence (c) will be indicated with the number 0.
Hence the correct answer is 11011. Ans: (11011)

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

SUB-SECTION: DI

Solutions for questions 1 to 4:

The age of Carol at the beginning of 2009 will be 26 years and the age of Susan at the beginning of 2009 will be 34 years.

The following table gives the depreciated value of Carol's and Susan's cars, their ages and the insurance premium (calculated using the given formula):

Year	Depreciated Value		Age		Insurance Premium	
	Carol	Susan	Carol	Susan	Carol	Susan
2009	15000	18000	26	34	70400	85600
2010	14500	16000	27	35	68800	78000
2011	13500	15500	28	36	65200	76400
2012	12000	13000	29	37	59600	66800
2013	10500	9500	30	38	54000	53200
2014	8500	7000	31	39	46400	43600
2015	7000	4000	32	40	40800	32000

1. In 2012, the insurance premium for Carol's car was ₹59600. Ans: (59600)

2. The highest insurance premium paid was ₹85600.
Choice (A)

3. The average annual insurance premium paid by Susan

$$= \frac{85600 + 78000 + 76400 + 66800 + 53200 + 43600 + 32000}{7}$$

$$= \frac{435600}{7} = 62228.6$$

Choice (D)

4. Let c and s be the depreciated values of Carol's car and Susan's car in 2016 respectively.
Since the insurance premium is the same,

$$\frac{c + 33 \times 100000}{250} = \frac{s + 41 \times 100000}{250}$$

$\Rightarrow c - s = 800000$

Ans: (8)

Solutions for questions 5 to 8:

Let a be the number of ₹10 notes, b be the number of ₹50 notes and c be the number of ₹100 notes in his wallet at the beginning of the day.

The following table gives the notes in his wallet after each transaction:

Time	Notes in Wallet after Giving			Notes in Wallet after Receiving		
	₹10	₹ 50	₹100	₹10	₹50	₹100
10:00 AM	a	b	c-2	a+3	b+1	c-2
10:35 AM	a-4	b-1	c-2	a-2	b-1	c-2
11:35 AM	a-2	b-3	c-5	a-1	b-3	c-5
12:25 PM	a-1	b-5	c-8	a+3	b-5	c-7
1:45 PM	a-3	b-5	c-7	a-2	b-5	c-6
3:15 PM	a-6	b-5	c-6	a-5	b-3	c-4
4:50 PM	a-13	b-4	c-9	a-11	b-1	c-7
5:30 PM	a-11	b-2	c-7	a-11	b-2	c-5

Now, since the number of notes in his wallet at any point cannot be negative, a must be at least 13, b must be at least 5 and c must be at least 9.

If $a = 13$, $b = 5$ and $c = 9$, then the amount in his wallet will be 130 + 250 + 900 = 1280

Since he has ₹1300 at the beginning of the day, he must have 15 ₹10 notes, 5 ₹ 50 notes and 9 ₹ 100 notes.

5. The total number of notes that he had in his wallet at the beginning of the day = 15 + 5 + 9 = 29 Ans: (29)

6. Number of notes in his wallet at the end of the day
= 4 + 3 + 4 = 11 Ans: (11)

7. The highest number of ₹10 notes in his wallet will be
$a + 3 = 18$ Choice (B)

8. At 11:00 AM, he would have 7 ₹100 notes in his wallet. Choice (A)

Solutions for questions 9 to 12:

9. Profit per liter in January =

$$52 \times \frac{1}{2} + 110 \times \frac{1}{5} + 24 \times \frac{3}{40} + 32 \times \frac{3}{20} + 64 \times \frac{1}{8} - 26 - 12$$

$= 26 + 22 + 1.8 + 4.8 + 8 - 38 = 24.6$

Total Profit in January = 24.6 × 120

Calculating the total profit in the remaining months, we get
February: 22.8 × 100
March: 20.7 × 110
April: 16.4 × 150
May: 23.6 × 160
June: 24.5 × 160
July: 31.8 × 140
August: 20 × 190

By observation, we can see that only for July, the value exceeds 4000. Hence, the maximum total profit would have been for the month of July. Choice (B)

10. From the above question, we can see that for June and July, the profit per liter is greater than the price of crude oil. Choice (C)

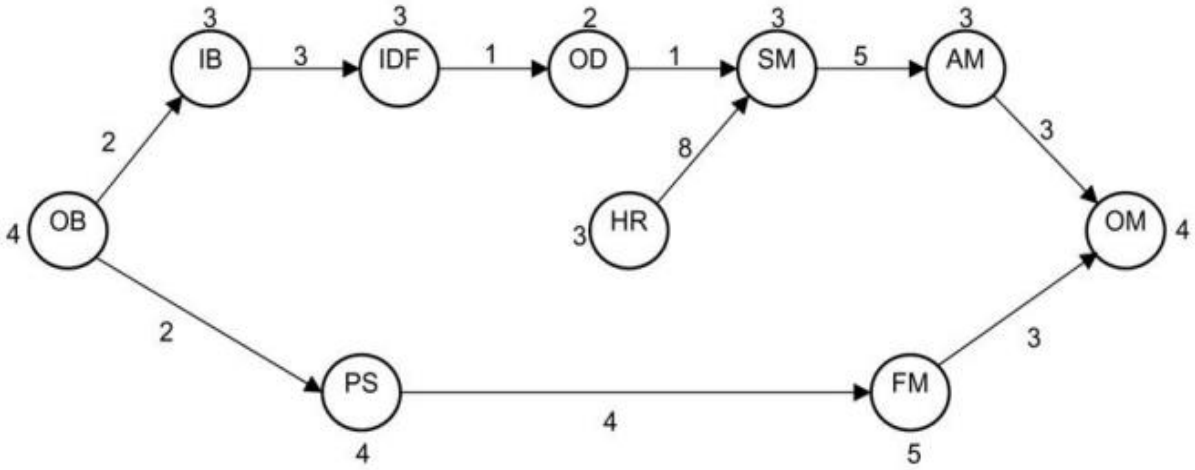
11. Total profit made by Harsha in April = 16.4 × 150000
= ₹24,60,000 Choice (A)

12. Refinery Gain = $\frac{50}{1000}$ × Total Crude Oil utilized

$= \frac{50}{1000} \times 1130000 = 56{,}500$ litres. Ans: (56500)

Solutions for questions 13 to 16:

The diagram below gives, for each course, the courses that needs to be completed before starting that course. The number adjacent to the circle represents the number of credits of a course and the number on the arrow represents the number of weeks required to complete the course.



13. To complete OB, IB, IDF and OD, a student will need 7 weeks. However, to complete HR, a student will need 8 weeks (which can be studied in parallel to the other courses). Hence, SM can be started only after 8 weeks. To complete all the courses until AM, a student will need 8 + 5 + 3 = 16 weeks.
To complete FM, a student will need 2 + 4 + 3 = 9 weeks. Hence, a student can start studying OM after 16 weeks. OM will need 6 weeks to complete. Hence, a student can finish all the ten courses in 16 + 6 = 22 weeks.
Ans: (22)

14. A student can study OB, IB, IDF, OD, HR and SM to complete 18 credits. This will take 13 weeks.
He can also study OB, PS, FM and HR to complete 16 credits. This will take 9 weeks (HR can be studied in 8 of these 9 weeks). The student can also study OB, IB, IDF, OD and PS for a total of 16 credits. Since PS can be studied immediately after completing OB, he can finish these courses in 7 weeks. Hence, the minimum time required will be 7 weeks. Ans: (7)

15. Except for AM and OM, a student can complete OB, IB, IDF, OD, HR, SM in 13 weeks. This will earn him 18 credits. He can also complete PS and FM in 9 weeks.
Since he can study these courses in parallel, the maximum credits that he can earn will be 18 + 9 = 27
Ans: (27)

16. To complete FM, a student will need 9 weeks. In these 9 weeks, he can also complete HR. Further, after completing OB, he can finish IB in the next three weeks. To complete IDF, OD, it will take him 2 weeks. Since he completed HR, he can start SM immediately. To complete SM, AM, the student will need an additional 8 weeks. To complete OM, he will require 6 weeks.
Total time required = 9 + 2 + 8 + 6 = 25 weeks
Ans: (25)

Difficulty level wise summary - Section II	
Sub Section: DI	
Level of Difficulty	Questions
Very Easy	–
Easy	1, 2, 5, 6
Medium	3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
Difficult	–
Very Difficult	–

SUB-SECTION: LR

Solutions for questions 1 to 4:

Given that at least four persons were standing in front of Uday and all these persons have higher number of items than Uday. Hence, Uday can have at most 3 items and at least 1 item (since no one can have more than 7 items). From (v), the person in front of Anant had two items less than what Uday had. Hence, Uday must have at least 3 items. Therefore, Uday has exactly 3 items and the person in front of Anant has 1 item. This person must be the one with the least number of items. Further, this person cannot be in front of Uday (since he has lesser number of items). Hence, Uday must be in the 5th position, the person with the lowest number of items in the 6th position and Anant must be in the last position.

From (iii), the person with the lowest number of items was standing two places away from Vikas. Hence, Vikas must be in the 4th position. Further, the four persons in front of Uday must have 4, 5, 6 and 7 items in any order. Since Rohit and Yuvraj are in front of Uday, and from (i), Rohit must have 7 items and Yuvraj 4 items. Also, Anant must have 2 items.

Sandeep cannot be in the first place (from (iv)). He cannot be in the second place, because then, Yuvraj and Rohit cannot be next to each other. Hence, he has to be in the third place. Yuvraj must be in the first place and Rohit in the second place. Vikas and Sandeep must have 5 and 6 items in any order.

The following table presents the order and the number of items that each person had:

Order	1	2	3	4	5	6	7
Person	Yuvraj	Rohit	Sandeep	Vikas	Uday	Imran	Anant
Number of Items	4	7	6/5	5/6	3	1	2

1. Rohit had the highest number of items.
Choice (A)

2. Except for Imran, all the other persons have a higher number of items than Anant. Ans: (5)

3. The person with the second highest number of items can be Vikas or Sandeep. Hence, the answer cannot be determined. Choice (D)

4. Only for Rohit will the given condition be satisfied.
Choice (B)

Solutions for questions 5 to 8:

Given that Krishna got off immediately after Kumar. From (vi), Krishna got off immediately before the person who got off at Dadar. Since Kumar was not the first to get off, he can be 2nd, 3rd or 4th. Further, From (iii) and (vi), Kiran can be the 2nd, 3rd or 4th person to get off the bus.

If Kumar is 2nd, Krishna will be 3rd and the person who got off at Dadar will be 4th. The person who got down at Dadar cannot be Kiran (since he got down at Egmore). Hence, Kiran's position cannot be fixed in this case and therefore, this case is not possible.

If Kumar is 3rd, Krishna will be 4th and the person who got off at Dadar will be 5th. In this case, Kiran must be the 2nd person to get off the bus. From (v), the person who got off at Brigade Road would be 6th and Kalyan can only be 5th. Karan can only be 1st but this will violate condition (iv). Hence, this case is also not possible.

If Kumar is 4th, Krishan will be 5th and the person who got off at Dadar will be 5th. Kiran cannot be 2nd in this case because the person who got off at Brigade Road and Kalyan would not get off the bus in consecutive stops. Hence, Kiran has to be 3rd. The person who got off at Brigade Road must be 2nd and Kalyan must be the first person to get off the bus. Since Karan got off the bus after the person who got off at Saket, Kalyan must be the person who got off at Saket (since Karan cannot be the last person to get off the bus). From (ii), Kumar would have got off at Esplanade and Krishna would have got off at Secretariat. Keerthan would be the last person to get off the bus.
The following table presents this information:

Order	1	2	3	4	5	6
Person	Kalyan	Karan	Kiran	Kumar	Krishna	Keerthan
Stop	Saket	Brigade Road	Egmore	Esplanade	Secretariat	Dadar

5. Keerthan got off the bus at Dadar. Choice (C)

6. Kalyan was the first person to get off the bus. Choice (A)

7. Four persons got off the bus before the bus stopped at Secretariat. Choice (D)

8. Karan and Kiran got off the bus one immediately after the other. Choice (D)

Solutions for questions 9 to 12:

Given that City A has Tianenmen Gardens and City E has Taj Tower. City B has the monument constructed in 17th century (from (i)) which is not Suez Mahal (from (iii)). City C also does not have Suez Mahal (from (iii)). Hence, City D has Suez Mahal. Since City B does not have Babylonian Canal (from (i)), it must have Eiffel Square and City C will have Babylonian Canal.

City B has the monument constructed in 17th century. City C has monument constructed in 16th century (from (i)). City D cannot have the monument constructed in the 14th or 18th century (from (ii)). Hence, City D will have the monument constructed in the 15th century. City E must have the monument constructe in the 18th century, since it cannot have the monument constructed in the 14th century (from (iv)). Therefore, City A will have the monument constructed in the 14th century.

The following table presents the monuments in the five cities and the centuries in which they were constructed:

City	Monument	Century
A	Tiananmen Gardens	14th
B	Eiffel Square	17th
C	Babylonian Canal	16th
D	Suez Mahal	15th
E	Taj Tower	18th

9. Babylonian Canal is present in City C. Choice (B)

10. City E has the monument constructed in the 18th century. Choice (D)

11. Only option C correctly matches the city with the monument present in the city. Choice (C)

12. The statement given in option C is false. Choice (C)

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

SECTION – III: QA

Solutions for questions 1 to 28:

1. Let the cost prices of the three items be ₹200, ₹300 and ₹400 respectively.

	X	Y	Z	Total
CP	200	300	400	900
Profit/loss	40	75	– 40	75

Overall profit% $= \frac{75}{900} \times 100 = 8\frac{1}{3}\%$

Choice (C)

2. Let the present age of Sushma be x
Since $m = 4$ is given, we have
$(x + 6) = 4(x - 12)$
$\Rightarrow x = 18$
$\therefore (x + 14) = n(x - 10)$ (given)
$\Rightarrow (18 + 14) = n(18 - 10)$
$\Rightarrow n = 4$. Choice (B)

3. Since PQ||TS, ΔPUQ is similar to ΔTSU (as all three angles are equal).
(The information that $\angle PQU = 30°$ is redundant for the required answer)

$\therefore \frac{SU}{PU} = \frac{TS}{PQ} = \frac{6}{36}$

$\therefore \frac{SU}{PU} = \frac{1}{6}$

Considering SU = K, we get PU = 6K
and PS = 7K = QR = 28
$\therefore$ PU = 6K = 24 cm. Choice (D)

4. Now $3x + 7y = 168$. Where $x, y \geq 0$
The solutions are

x	56	49	42	. . .	. .	0
y	0	3	6			24

Thus, there are 9 solutions for (x, y). Ans: (9)

5. $360 = 2^3 \times 3^2 \times 5^1$

$\therefore$ Number of natural numbers less than or equal to 360 which are coprime to 360 = $360\left(1-\frac{1}{2}\right)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{5}\right)$

$= 360\times\frac{1}{2}\times\frac{2}{3}\times\frac{4}{5}$

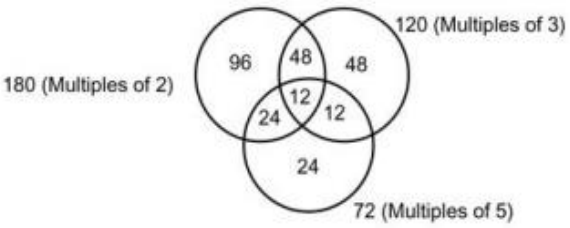
= 96 (numbers that are divisible by none of 2, 3 or 5)

Therefore, 360 – 96 = 264 numbers are divisible by 2 or 3 or 5.

Alternative Solution:

This question can also be solved using venn diagrams representing the multiples of 2, 3 and 5, where number of multiples of 2, 3 and 5 (upto 360) are 180, 120 and 72 respectively. Also, the common multiples of (2×3), (3×5), (2×5) and $(2 \times 3 \times 5)$ are 60, 24, 36 and 12 respectively.

All these numbers will be represented in the venn diagram appropriately.



Required total = 96 + 48 + 48 + 24 + 12 + 12 + 24 = 264

Ans: (264)

6. $\frac{2}{a}+\frac{3}{b}=\frac{1}{6}$

$\Rightarrow ab - 18a - 12b = 0$

Adding 12×18 to both sides, we get

$ab - 18a - 12b + 216 = 216$

$(a - 12)(b - 18) = 216$

As a and b are even integers $a - 12$ and $b - 18$ must both be even. Now 216 can be expressed as a product of two even numbers in the following ways.

$a-12$	$b-18$	a	b
2	108	14	126
4	54	16	72
6	36	18	54
12	18	24	36

$a-12$	$b-18$	a	b
108	2	120	20
54	4	66	22
36	6	48	24
18	12	30	30

Again, we can take negative values for both a – 12 and b – 18, which gives us the following cases (note that $a \neq 0$; $b \neq 0$)

$a-12$	$b-18$	a	b
–2	–108	10	–90
–4	–54	8	–36
–6	–36	6	–18

$a-12$	$b-18$	a	b
–108	–2	–96	16
–54	–4	–42	14
–36	–6	–24	12
–18	–12	–6	6

Therefore, the number of ordered pairs (a, b) is 15.

Ans: (15)

7.

	Ajay	Bimal	Chanchal
Investment	48000	48000	24000
Time period of investment (in months)	12	12 – t	12 – 2t
Profit sharing ratio	2(12)	2(12 – t)	12 – 2t

It is given that,

$2(12) = 2(12 - t) + 12 - 2t$

$\Rightarrow 4t = 12$

$\Rightarrow t = 3$

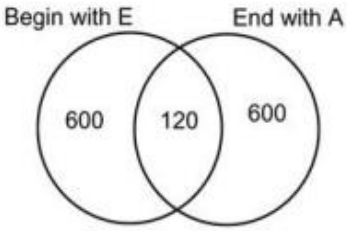
Choice (B)

8. Number of words beginning with E = 6! = 720

Number of words ending with A = 6! = 720

Number of work beginning with E and ending with A = 5! = 120

These 120 words are present among those words which begin with E as well as those that end with A



Therefore, the number of words that begin with E or ends with A = 600 + 120 + 600 = 1320

Choice (D)

9. Let the three-digit number satisfying the condition be denoted by abc.

$(abc) = 75\frac{(a+b+c)}{3}$

$100a + 10b + c = 25(a + b + c)$

$5(5a - b) = 8c$

to satisfy the equation above, c must be divisible by 5.

$\therefore c = 0$ or 5

If $c = 0$, $5a - b = 0 \Rightarrow b = 5a$

$\therefore a = 1$ and $b = 5$ is the only possibility, i.e., $abc = 150$.

If $c = 5$, $5a - b = 8 \Rightarrow b = 5a - 8$

If $a \geq 4$, b exceeds 9

If $a = 0$ or 1, b is negative

$\therefore a$ can be only 2 or 3

If $a = 2$, $b = 2$, If $a = 3$, $b = 7$, i.e., $abc = 225$ OR 375

$\therefore$A total of only 3 numbers satisfy the given condition.

Ans: (3)

10. It is given that $f(x) = ax^2 + bx + 5$

As (2, 3) is a point on the curve,

$4a + 2b + c = 3 \rightarrow (1)$

Similarly as (1, 7) lies on the curve,

$a + b + c = 7 \rightarrow (2)$

$4 \times (2) - (1)$ gives $2b + 3c = 25$.

Ans: (25)

11. Assume that a and b are the digits of the two-digit number.
Given, $(a + b)^2 = a^2 - b^2$
$\Rightarrow (a + b)(a + b) = (a + b)(a - b)$
$\Rightarrow a + b = a - b \Rightarrow b = 0$
$\Rightarrow$ Maximum value of $a = 9$
$\Rightarrow$ Maximum sum $= 9 + 0 = 9$ Ans: (9)

12. Let the roots of $ax^2 + bx + c = 0$ be α and β.

$\frac{1}{\alpha}+\frac{1}{\beta}=\frac{\alpha+\beta}{\alpha\beta}=\frac{-b/a}{c/a}=\frac{-b}{c}=\frac{11}{28}$ (given)

The product of the roots of $cx^2 + bx + a = 0$ is

$\frac{a}{c}=\frac{1}{28}$ (given)

$\therefore$ The given equation is $bx^2 + ax + c = 0$

The sum of its roots is $\frac{-a}{b}=\frac{a}{c}\times\frac{-c}{b}=\frac{1}{28}\times\frac{28}{11}=\frac{1}{11}$

Alternative Solution:

If sum of two reciprocals is $\frac{11}{28}$ the first combination to be tried must be 4 & 7. Also, $\frac{-b}{a}=11$

Product of roots in $ax^2 + bx + c = 0$ is $\frac{c}{a}=28$.

$\therefore$ 4 & 7 satisfy.

In $bx^2 + ax + c$, sum of roots $= \frac{-a}{b}=\frac{1}{11}$ Choice (C)

13. $a = 2^{88} \times 5^{44} = (2^4 \times 5^2)^{22} = 400^{22}$
$b = 18^{40} = (18^2)^{20} = (324)^{20}$
$c = 7^{63} = (7^3)^{21} = 343^{21}$
$\therefore a > c > b$ Choice (A)

14. The minimum value of $\frac{48}{\left|8-\left|11-x\right|\right|}$, occurs when $|8 - |11 - x||$ is maximum,
i.e., infinity (by taking a large value for x).

The minimum value of $\frac{48}{\left|8-\left|11-x\right|\right|}$ will be zero, since the denominator can be infinity.

Since the zero is not present in the given choices, this question has been ignored during evaluation of results.

15. We are given the set of values
32, 37, 40, 45, 45, 45 and a.
If $a \le 40$, the median is 40.
If $40 < a < 45$, the median is a, whereas if $a \ge 45$, the median is 45.
The mode of the given set of values is 45.

Now, let us consider three cases:

Case I: Median = 40, Mode = 45 and Mean = $\frac{244 + a}{7}$.

As $a \le 40$, $\frac{244 + a}{7} \le \frac{284}{7}$

$\therefore$ Mean, Median and Mode are in AP

$\Rightarrow \frac{244 + a}{7} + 45 = 2(40)$

$\Rightarrow a = 1$

Case II: Median = a, where $40 < a < 45$.
Therefore, Mean, Median and the mode are in AP.

$\frac{244 + a}{7} + 45 = 2a$

$\Rightarrow a = 43$

$\therefore$ The mean $= \frac{244 + 43}{7} = 41$

Case III: Median = 45, Mode = 45 and the mean $= \frac{244 + a}{7}$

This contradicts the condition that the AP has a positive common difference.
Thus, a can assume two values, 1 and 43, and their sum is 44 Ans: (44)

16. Let the number of boys and girls in the class be deonted by b and g respectively.

It is given that, $\frac{60}{100}g+\frac{50}{100}b$ students opted for dancing

and $\frac{50}{100}g+\frac{55}{100}b$ students opted for singing.

It is given that,

$\frac{60}{100}g+\frac{50}{100}b=\frac{50}{100}g+\frac{55}{100}b+6$

$\Rightarrow \frac{10}{100}g=\frac{5}{100}b+6$

$\Rightarrow 10g - 5b = 600$

$\Rightarrow 2g - b = 120 \rightarrow (1)$

Again, $\frac{\frac{60}{100}g-\frac{50}{100}b}{\frac{50}{100}g-\frac{55}{100}b}=\frac{14}{9}$

$\Rightarrow \frac{12g - 10b}{10g - 11b}=\frac{14}{9}$

$\Rightarrow 108g - 90b = 140g - 154b$

$\Rightarrow 64b = 32g$

$\Rightarrow g = 2b$

Substituting $g = 2b$ in equation (1), we get

$4b - b = 120$

$\Rightarrow b = 40$

$\therefore$ There are 40 boys and 80 girls in that class. Thus, there are a total of 120 students in the class. Ans: (120)

17. Let the four angles of the quadrilateral be 114, $114 - d$, $114 - 2d$ and $114 - 3d$ respectively.

Now $114 + (114 - d) + (114 - 2d) + (114 - 3d) = 360$
[Sum of all the angles in a quadrilateral is 360^0]
$\Rightarrow 456 - 6d = 360$
$\Rightarrow 6d = 96$
$\therefore d = 16^0$
The measure of the smallest angles $= 114 - 3d$
$= 114 - 3(16)$
$= 66°$
Choice (B)

18. $\left(\frac{2\sqrt{2}-6\sqrt{6}}{\left(\sqrt{2}-\sqrt{6}\right)}\right)=\frac{\sqrt{2}\left(2-6\sqrt{3}\right)}{\sqrt{2}\left(1-\sqrt{3}\right)}$

$=\frac{2-6\sqrt{3}}{1-\sqrt{3}}=\frac{2-6\sqrt{3}}{1-\sqrt{3}}\times\frac{1+\sqrt{3}}{1+\sqrt{3}}$

$=\frac{2-6\sqrt{3}+2\sqrt{3}-18}{-2}$

$=\frac{-16-4\sqrt{3}}{-2}=\frac{-2\left(8+2\sqrt{3}\right)}{-2}=8+2\sqrt{3}$

Alternative Solution:
This question can also be solved using approximation (or by using the online calculator), since the answer choices are not very close numerically.

$\frac{2\sqrt{2}-6\sqrt{6}}{\sqrt{2}-\sqrt{6}}\equiv\frac{2\times1.4-6\times2.4}{1.4-2.4}\equiv 11.6.$

Only choice (A) (i.e., 11.4) is close. Choice (A)

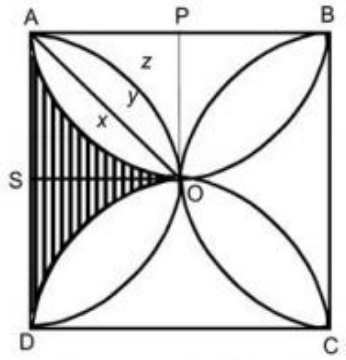
$\Rightarrow (a_2 - 1) + a_2 + (a_4 - 1) + a_4 + (a_6 - 1) + a_6 + \ldots (a_{50} - 1) + a_{50} = 75$ ($\therefore a_1 = a_2 - 1$, $a_3 = a_4 - 1$ and so on)

$\Rightarrow 2a_2 + 2a_4 + 2a_6 + \ldots 2a_{50} - 25 = 75$

$2(a_2 + a_4 + a_6 + \ldots a_{50}) = 100$

$\therefore a_2 + a_4 + a_6 + \ldots a_{50} = 50$ Choice (B)

20.



Let each side of the square be $2r$ ($2r = 28$ cm given)

We need 4 × the shaded area shown in the figure above.

Top half of shaded area = square APOS – quadrant PAO

$= \left(1 - \frac{\pi}{4}\right) r^2$

$\therefore$ Shaded area $= \left(2 - \frac{\pi}{2}\right) r^2$

$= \left(2 - \frac{11}{7}\right)\left(14^2\right) = 84$ sq.cm.

The required are = 4 × 84 = 336 sq.cm Ans: (336)

21. Since $-10 < x < y < z < 10$, and x, y, z are non-zero, for the given expression to be minimum, we need to arrive at a negative but large number. Hence, taking $x = -1$, $y = 1$ and $z = 2$, will give $\frac{1}{(-1)} + \frac{1}{(2)} + \frac{1}{(-2)} = -1$

Note: any other (positive) value for z will also yield a result of –1, as long as $x = -1$ and $y = 1$ (or vice-versa). This is the minimum value of the given expression.

$\Rightarrow m = -1$. Ans: (–1)

22. The difference between the two numbers whose product is 2016 will be minimum when the numbers are as close to each other as possible.

Now $\sqrt{2016} \approx 45$

$2016 = 2^5 \times 3^2 \times 7$

The two numbers will be closest when we take them as 42 and 48. Whose sum is 90. Choice (B)

23. Let the population of the country and its total wealth be denoted by P and W respectively.

Population of state X = $\frac{a}{100}$ P

Population of state Y = $\frac{c}{100}$ P

Wealth of state X = $\frac{b}{100}$ W and

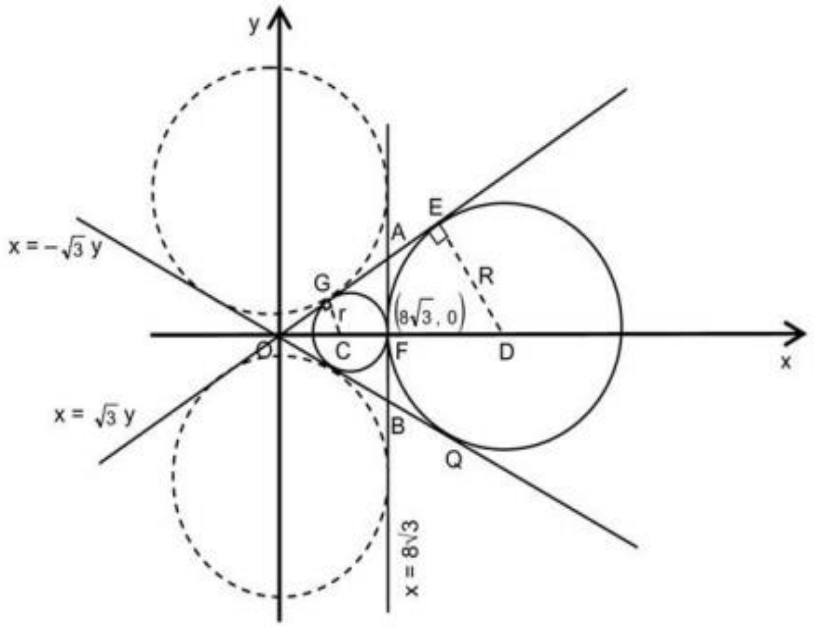
Wealth of state Y = $\frac{d}{100}$ W

Now, the wealth of a citizen of state X = $\frac{\frac{b}{100}W}{\frac{a}{100}P} = \frac{b}{a}\frac{W}{p}$

The wealth of a citizen of state Y = $\frac{\frac{d}{100}W}{\frac{c}{100}P} = \frac{d}{c}\frac{W}{P}$

Therefore, the ratio of the wealth of a citizen of state X to that of state Y = $\frac{\left(\frac{b}{a}\frac{W}{P}\right)}{\left(\frac{d}{c}\frac{W}{P}\right)} = \frac{bc}{ad}$ Choice (A)

24. The following figure shows the three straight lines given and the all circles that have all three lines as tangents:



The three lines intersect at O = (0, 0); A = $\left(8\sqrt{3}, 8\right)$ and B = $\left(8\sqrt{3}, -8\right)$

We can consider the equilateral triangle OAB, of which, the smaller circle, of radius r, is the incircle, and the three larger circles, indicated as shown (they are also known as ex-circles of ΔOAB), are of radius R each (they will all be of equal size as ΔOAB is equilateral).

We need to find $(r + 3R)$.

Now, since ΔOAB is equilateral, C is the incentre and also the centroid, i.e., $r = CF = \frac{1}{3}$ OF (because centroid divides median in the ratio 2 : 1) $= \frac{1}{3} \times 8\sqrt{3} = \frac{8}{\sqrt{3}}$

Also, in ΔOED, OE = OA + AE, where OA = 16 ($\because$ OA = OB = AB) and AE = AF = 8 ($\because$ AF and AE are tangents to the larger circle from the same point)

$\therefore$ OE = 16 + 8 = 24

Also, OD = OF + FD = $8\sqrt{3} + R$

$\therefore OE^2 + ED^2 = OD^2$

$\Rightarrow 24^2 + R^2 = \left(8\sqrt{3} + R\right)^2$

$\Rightarrow 576 + R^2 = 192 + 16\sqrt{3}\,R + R^2 \Rightarrow R = 8\sqrt{3}$

$\therefore$ The required sum $= r + 3R = \frac{8}{\sqrt{3}} + 3\left(8\sqrt{3}\right)$

$\frac{8}{\sqrt{3}} + 24\sqrt{3} = \frac{8}{\sqrt{3}}(1+9) = \frac{80}{\sqrt{3}}$

$\therefore S = \frac{80}{\sqrt{3}}$ and $\sqrt{3}\,S = 80$.

Alternative Solution:

After we observe that the three lines form an equilateral triangle, of side 16 cm, and that we need to find the value of $(r + 3R)$, where r is the inradius and R is the ex-radius (i.e., the radius of the ex-circle) we can use the formulas for r and R as follows

In-radius $(r) = \frac{\text{Area of triangle}}{\text{semiperimeter}}$ $\left(\text{i.e., } \frac{\Delta}{s}\right)$

Ex-radius $(R) = \frac{\text{Area of triangle}}{\text{semiperimeter} - \text{side}}$ $\left(\text{i.e., } \frac{\Delta}{(s-a)}\right)$

where, Area $= \frac{\sqrt{3}}{4} \times a^2 = \frac{\sqrt{3}}{4} \times (16)^2 = 64\sqrt{3}$

and semiperimeter $= \frac{3a}{2} = 24$

$\therefore r = \frac{64\sqrt{3}}{24} = \frac{8}{\sqrt{3}}$

and $R = \frac{64\sqrt{3}}{24 - 16} = 8\sqrt{3}$

Hence, $r + 3R = \frac{8}{\sqrt{3}} + 24\sqrt{3} = \frac{8}{\sqrt{3}}(1+9) = \frac{80}{\sqrt{3}}$.

$\therefore S = \frac{80}{\sqrt{3}}$ and $\sqrt{3}\,S = 80$.

Ans: (80)

25. Let the time taken to complete the work by A alone and B alone be 'a' and 'b' respectively.

Given $\frac{a}{3} + \frac{2b}{3} = 40$

and $\frac{2a}{3} + \frac{b}{3} = 35$

$\Rightarrow b = 45$ and $a = 30$

$\therefore$ together they will take $\frac{45 \times 30}{45 + 30} = 18$ days

Choice (C)

26. It is given that $f\left(\frac{x}{4}\right) = x^2 + x - 4$

$\therefore f(2y) = f\left(\frac{8y}{4}\right) = (8y)^2 + 8y - 4 = 8$ (given)

$\Rightarrow 64y^2 + 8y - 12 = 0 \rightarrow (1)$

The product of all the possible values of y will be equal to the product of the roots of equation (1), i.e., $-\frac{12}{64} = -\frac{3}{16}$

Choice (A)

27. $4^{5^6} = 4^{(6-1)^6} = 4^{6k+1}$

Now, $\frac{4^{6k+1}}{9} = \frac{\left(4^3\right)^{2k} \cdot 4^1}{9} = \frac{(63+1)^{2k} \cdot 4}{9}$

$\frac{(63\,m+1).\,4}{9}$

$= \frac{4(63\,m) + 4}{9}$

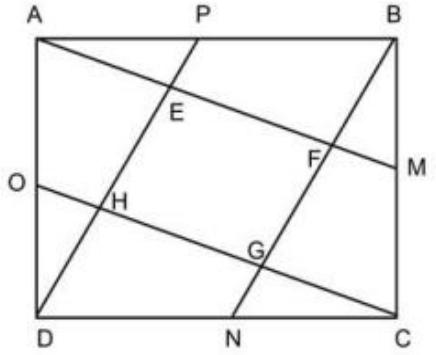
Therefore the remainder is 4

Alternative Solution:
The remainder when 4^n is divided by 9, follows the pattern 1, 4, 7, 1, 4, 7....., i.e., a cycle of 3.
Now, $5^6 = 15625$, which is of the form $3k + 1$.

Hence $R\left[\frac{4^{5^6}}{9}\right]$ is of the form $R\left[\frac{4^{3k+1}}{9}\right]$, the remainder of which will be same as that of $R\left[\frac{4^1}{9}\right]$, i.e., 4.

Ans: (4)

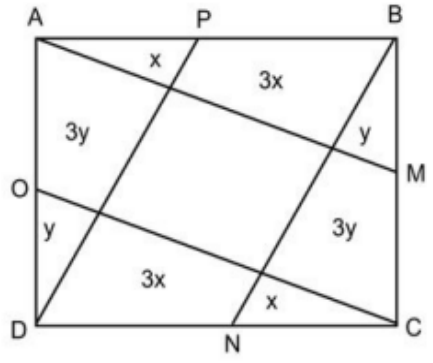
28.



As P and N are the midpoints of the rectangle ABCD, whose length is twice its breadth, APND and BCNP are squares and PD || BN.
Similarly AM || CO.
In ΔAFB, AE : AF = AP : AB = 1:2 [$\because$ PE || FB]

$\therefore$ Area of $\Delta APE = \frac{1}{4}$ Area of Δ ABF

[For similar triangles APE and ABF, area ratio is square of the side ratio]
Let area of $\Delta APE = x$.
$\therefore$ Area of Δ ABF = $4x$ and that of quadrilateral PBFE = $3x$.
Again the area of $\Delta DHO = y$ and that of quadrilateral OAEH = $3y$.



$\therefore$ Considering area of ΔABM, $x + 3x + y$

$= \frac{1}{4}$ (Area of ABCD)

Considering area of Δ BCN $y + 3y + x$

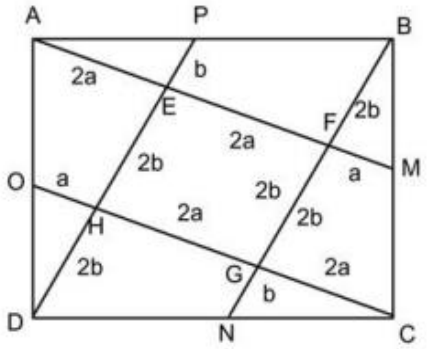
$= \frac{1}{4}$ (Area of ABCD)

$\therefore 4x + y = 4y + x$
$\Rightarrow x = y$

$5x = \frac{1}{4}$ Area of ABCD $\therefore x = \frac{1^{th}}{20}$ Area of ABCD

$\therefore 16x = \frac{16}{20}$ or $\frac{4}{5}$ th the area of rectangle ABCD

$\therefore$ Area of quadrilateral EFGH = $\frac{1^{th}}{5}$ the area of the rectangle ABCD.



In the above figure, let AE = $2a$
$\therefore$ EF = $2a$ [$\because$ AE : AF = AP :AB = 1 : 2]
Similarly CG = $2a$ and GH = $2a$
Now FM = OH = a [$\because \Delta DHO \approx \Delta DEA$ and $\Delta BFM \approx \Delta$ BGC]
Let BF = $2b$.

$\therefore$ FG = $2b$ [$\because \frac{BF}{BG} = \frac{BM}{BC} = \frac{1}{2}$]

Similarly DH = $2b$, HE = $2b$

Again, as EP = $\frac{1}{2}$ BF and GN = $\frac{1}{2}$ HD, EP = GN = b

Now in Δ ABM, $AM = 5a = \sqrt{AB^2 + BM^2}$

$\Rightarrow 5a = \sqrt{20^2 + 5^2}$

$\therefore a = \sqrt{17}$
In ΔBCN,

$BN = 5b = \sqrt{BC^2 + CN^2} = \sqrt{10^2 + 10^2} = 10\sqrt{2}$

$\therefore b = 2\sqrt{2}$

$\therefore$ The perimeter of the quadrilateral EFGH = $4a + 4b$
$= 4 \times \left(2\sqrt{2} + \sqrt{17}\right)$

Area of the quadrilateral EFGH = $\frac{1}{5}$ (20) (10) = 40

$\therefore$ The required ratio
$= \frac{4\left(2\sqrt{2} + \sqrt{17}\right)}{40} = \frac{2\sqrt{2} + \sqrt{17}}{10}$

Choice (D)

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