Section : Verbal Ability

QNo:- 1 ,Correct Answer:- B

Explanation:-
A thorough reading of the passage, with particular focus on the first sentence of the second paragraph "Given such a long period of .... considered to be on the top" and the second and third sentences of the last paragraph "It's tempting to.. at all" points to 2 being the correct choice; the passage corrects the misconception that Columbus and Megallan played a key role in north being decided as the top.
Option A and C are totally out of scope.
Option D is very generic and nothing about myths of map.

QNo:- 2 ,Correct Answer:- B

Explanation:-
North was not put at the top because it was the source of darkness (refer to the second paragraph). It was not put at the top because other religions like Christianity and Islam considered east and south respectively as the top (refer to the fourth paragraph). It was not put at the top because in early Christianity, east was considered sacred (refer to the third and fourth paragraphs).

QNo:- 3 ,Correct Answer:- B

Explanation:- The last three sentences of the third paragraph, particularly the phrase "look up to him", make 2 the clear choice.

QNo:- 4 ,Correct Answer:- C

Explanation:-
The last paragraph, particularly some of the last sentences "When Columbus describes the world, it is in accordance with east being at the top. Columbus says he is going towards paradise, so his mentality is from a medieval mappa mundi" clearly shows that he used an eastward orientation for religious reasons; please note from the previous paragraph that mappa mundi were Christian maps of that era.

QNo:- 5 ,Correct Answer:- D

Explanation:-
Please refer to the last paragraph, particularly the last sentence "We have got to remember that at the time, no one knows what they are doing and where they are going". This clearly shows that it is not clear as to what the biggest contributory factor to making the map north-oriented was. Choice (4)

QNo:- 6 ,Correct Answer:- A

Explanation:- After the passage, particularly the first two paragraphs, is read carefully, it is easy to arrive at 1 as the apt choice. Also, the subsequent paragraphs establish that factors like religion and deference to authority – and not natural phenomena – played a role in the map-making of the others.

QNo:- 7 ,Correct Answer:- A

Explanation:- The first part of the second paragraph points to 1 being the apt choice. The other choices are farfetched or off the mark.

QNo:- 8 ,Correct Answer:- D

Explanation:-

Please refer to the second paragraph. The sentence "The printing press offered the prospect that tyrants would never be able to kill a book or suppress an idea" (read with the second part of the fourth paragraph) means that 1 is true. The phrase "diminishing the sway of quacks" means that 2 is true. The first sentence and the last sentence of this paragraph show that books and pamphlets could now be printed much faster. This means that 3 is true.

QNo:- 9 ,Correct Answer:- C

Explanation:-
The first sentence of the fifth paragraph "Not long after Steve Jobs introduced his iPhone, he said the bound book (which means the printed book) was headed for history's attic. Clearly, he meant that reading these printed books would become a thing of the past.

QNo:- 10 ,Correct Answer:- C

Explanation:-
Although this sentence is in the fourth paragraph, elaboration of this is in the last paragraph. The sentences in this paragraph "The hope of the iPhone, and the Internet in general, was that it would free people in closed societies. But the failure of the Arab Spring, and the continued suppression of ideas in North Korea, China and Iran, has not borne this out" means that the author means to say that the iPhone has not been able to do the good that was done to religion and democracy by the printing press.

QNo:- 11 ,Correct Answer:- B

Explanation:- The part of the fourth paragraph, ".... the printing press opened more minds than anything else. it is hard to imagine the French or American revolutions without those enlightened voices in print" makes 2 the clear choice.

QNo:- 12 ,Correct Answer:- B

Explanation:-
Look at the sentences of the last paragraph, "The hope of the iPhone, and the Internet in general, was that it would free people in closed societies." and "But I am not sure if the world changed for the better with the iPhone – as it did with the printing press- or merely changed". These mean that the new technology, exemplified by iPhone and the Internet, have not been as successful as the printing press in opening the closed minds of people.

QNo:- 13 ,Correct Answer:- C

Explanation:-
The central idea of the passage is summed up in the last sentence of the passage - "Malls ... were built for patterns of social interaction that increasingly don't exist". The passage signifies malls as "gathering places", "societies have congregated around a central marketplace", "mall was an ecosystem" and "a combination of community and commercialism" and so on and so forth. Moreover, malls are not missed by America today, given the all-encompassing scope of digital lives. Hence, the advantages and disadvantages of malls, as given in (2) is irrelevant. People's shopping trends are not the focus of this particular passage, so (4) is ruled out. (1) is not at all true, given that "A growing number of Americans ... don't see the need to go to any Macy's at all." Hence, (3) is the answer.

QNo:- 14 ,Correct Answer:- A

Explanation:-
(2) is suspect, would all malls and distribution centers be located in the same area? Anyway, this is beside the point. Nowhere in the passage is it indicated that Amazon is assisting brands to go online, so (3) is also suspect. The change in the shopping habits of Americans have been mentioned much later in the passage in a different context altogether, so the point is not really pertinent here. Thus, (4) is also ruled out. The sentence in question is just an ironic observation of the author ("opened .... shutter (closed)"), which is likewise mentioned in passing, hence there is no need to read too much into it. The answer is (1).

QNo:- 15 ,Correct Answer:- B

Explanation:-
To "court" is to pay special attention to someone in an attempt to win his/ her support or favour. The sentence, thus, suggests that real estate developers were pursuing brand-name anchor outlets once upon a time in the past ; note the word "once". Clearly, real estate developers are no longer pursuing brand-name anchor outlets.

QNo:- 16 ,Correct Answer:- C

Explanation:-
The mall as an ecosystem is qualified in the passage as a combination of community and commercialism, so there is no need to look beyond (3). (1) skips the commercial aspect. (2) is on track, but though it mentions 'eat', it does not mention 'meet'. Nor does (4) touch upon the community aspect.

QNo:- 17 ,Correct Answer:- D

Explanation:-
The passage signifies malls as gathering places, and adds that “societies have congregated around a central marketplace”. That being the case, (4) is the answer. The restrictions in (1) are not mentioned in the passage. (2) is straightaway rejected, given in the third paragraph that “America went for far more than shopping”. (3) is maudlin, given that families only get a passing mention as “family photos” in the third paragraph.

QNo:- 18 ,Correct Answer:- A

Explanation:-
We have to link the given quote to “Think of your mall. Or think of the one you went to as a kid”. These sentences open the floodgates of memory. So (1) is the answer. (2) misses the point that malls are disappearing, hence the sense of urgency for the nostalgia trip down memory lane. (3) makes light of the ambience of malls - “fountains splashing below the skylights” and thus can be ruled out. The case in (4) – the smell of malls, and what contributes to the same, is beside the point.

QNo:- 19 ,Correct Answer:- C

Explanation:-
(1) is tricky, as it does not come to the point – if Mayr was wrong, what was 'right'? What is Ehrich and Raven's case? Likewise (2) is evidence, where is the thesis? State your point of view on the topic directly and in one sentence! (4) gets close, refer to “gene flow was not as predictable and ubiquitous as Mayr … maintained....”. So? The answer is (3) – refer to the third paragraph again - “isolation and gene flow were less important to evolutionary divergence than natural selection”. And the answer is (3).

QNo:- 20 ,Correct Answer:- B

Explanation:-
That gene flow contributes to evolutionary divergence is acknowledged by Ehrlich and Raven in the third paragraph – refer to “isolationand gene flow were less important to evolutionary divergence than natural selection”, which admits that isolation and gene flow is important to evolutionary divergence to some extent. This point is also reiterated in the last sentence of the passage. Hence, (2) is correct. (3) is supported by information in the first paragraph “when a population was separated … over geologic scales of time”. (4) is supported by information in the second paragraph - “there were three groups that rarely interacted despite their very close proximity”.

QNo:- 21 ,Correct Answer:- C

Explanation:- Nowhere in the passage is it suggested that evolution is a sensitive or controversial topic, so (1) is ruled out. Whether Ehrlich and Raven's thesis superceded Mayr's is not determined in the passage, so (2) is also ruled out. The merits or otherwise, of checkerspot butterflies, cannot be determined from the passage, so (4) is also ruled out. The passage mentions Mayr, Ehrlich and Raven in the context of the theories of speciation, so (3) is the answer.

QNo:- 22 ,Correct Answer:- C

Explanation:-
Whether the "lion's share" mentioned in the first paragraph is divided equally among the three organising committees or not is beside the point as far as the passage is concerned, so (1) is ruled out. Sources of revenue, whether from 'ticket sales' or "advertisements" or both, are not even mentioned in the first paragraph, so (2) is also ruled out. The discouraging view in (4) is not reflected in the first paragraph. The passage mentions that "The trick is converting … a basis for long-term economic returns", which is specifically found in (3).

QNo:- 23 ,Correct Answer:- A

Explanation:-
(2) is suspect, because nowhere is it mentioned that the sports facilities in question are located away from the city centre. Indifference on the part of authorities, as suggested by (2), is not reflected in the passage, so (3) is also ruled out. The passage also does not mention that the sports facilities get outdated due to poor planning, so (4) is ruled out. The passage mentions the sports facilities in Beijing and Sydney in the context of the large scale of an Olympic stadium and the huge operating costs to maintain it. Thus, (1) is the answer. Choice (1)

QNo:- 24 ,Correct Answer:- D

Explanation:-
(1) is mentioned in the third paragraph - "Even if they have future use, are they the best use of precious urban real estate?". (2) is explicitly mentioned in the fourth paragraph - "Residential areas often are razed … citizens relocated". (3) is implied in the last sentence of the passage - "other productive uses that can be made of vanishing fiscal resources". But visitors have not been cited as an Olympic headache as such in the passage, so (4) is the answer. Choice (4)

QNo:- 25 ,Correct Answer:- C

Explanation:-
The author of the paragraph defines a classic as giving access to very different forms of human consciousness for any reader at any time, enabling them to experience the different possibilities of being a human being. That being the case, (1) and (4) which advocate a unified experience of human consciousness are ruled out. Even (2) which refers to a common humanity is thus ruled out. Only (3) faithfully sticks to the classical experience going beyond the notion of a unified human consciousness to give access to different forms of human consciousness.

QNo:- 26 ,Correct Answer:- C

Explanation:-
The paragraph essentially reveals that an Indian translating works in an Indian language to English would find cultural equivalents in the western world easily, whereas a Westerner would find it very difficult to interpret cultural elements into English. Hence, it is better if an Indian translates Indian texts into English, as lapses in language are easily addressed, whereas flaws of content are a strict no-no! (4) does not mention translation at all and is thus found wanting. (3) does not explicitly recommend that Indians do the said translation either, hence it is also found wanting. (1) also does not sufficiently press that Indians translate Indian texts. (3) comprehensively reframes the paragraph.

QNo:- 27 ,Correct Answer:- C

Explanation:-
The paragraph argues that global warming causes sea levels to rise and fill the skies with water vapour, thus leading to wetter and more damaging storms and hurricanes. (1) contradicts received wisdom by stating that global warming and rampaging storms are unrelated. (2) focuses on the downsides of the Clausius-Clapeyron equation, which are not mentioned in the paragraph at all. (4) is verbose, refer to 'but this may not be true of all storms', an uncertain statement anyway from the paragraph point of view. (3) faithfully captures the essence of the paragraph.

QNo:- 28 ,Correct Answer:- 54312

Explanation:-

The correct order is:

5, 4, 3, 1, 2

Explanation

1. Sentence 5 introduces the relationship between tradition and innovation.
2. Sentence 4 follows up by stating that traditions are not handed down unchanged, but invented.
3. Sentence 3 then expands on this idea, stating that eveown ry generation selects and innovates from the past.
4. Sentence 1 explains that the process of handing down is not passive, reinforcing the idea that traditions are not fixed.
5. Sentence 2 concludes by discussing how the Western scholars' approach to the Indian past is a clear example of this process.

QNo:- 29 ,Correct Answer:- 15243

Explanation:-
Statement 1 introduces the paragraph describing the achievement made by the scientists in editing genes in a human embryo to repair a genetic mutation. 1 follows 5 explaining how the mutation, which results in hypertrophic cardio myopathy, was corrected. 2 follows 5 describing the consequences of cardio myopathy. 4 follows 2 explaining how cardio myopathy is caused – bya mutation in a particular gene which will cause a child to suffer even it inherits only one copy of the mutated gene. 3 concludes the paragraph with the reassuring statement that if the mutation in the gene is corrected the child can lead a healthy
life and it also prevents the transmission of the gene to the future generations. Statements 15243 form a coherent paragraph.

QNo:- 30 ,Correct Answer:- 54123

Explanation:- The opener is this case will be 5 as it introduces the topic of the discussion i.e. when black plague emerged. After this 4 will come as it furthers the result of the examination of DNA fragments. After this 1 will come as it adds to 4. After this 2 will come as it gives the evidence of what is stated in 1.3 will conclude the story as the word 'migration' can be linked togather.

QNo:- 31 ,Correct Answer:- 32145

Explanation:-
3 begins the paragraph stating that turning the pages of family albums, which belonged to the pre-digital era, would reconfirm our basic instinct of documenting our presence in a particular scene on an important occasion, with those who matter to us. 2 follows 3 stating that there is nothing new in framing the vision of who we are, visually or otherwise, on social media such as our Facebook page. “This visual turn” in 1 refers to “framing the vision in our Facebook page”. Therefore, 1 follows 2 stating that “this visual turn” has accentuated “the announcing instinct of ours”. 4 carries forward the paragraph stating that framing the vision on social media empowers us to act as celebrities within the confinement of our respective friend lists. 5 concludes the paragraph talking about the ease with which the broadcast operation can be executed and how this often provokes (un)anticipated responses from beyond one's location. Therefore, statements 3, 2, 1, 4, 5 form an appropriate sequence. Ans: (32145)

QNo:- 32 ,Correct Answer:- 3

Explanation:-
Only statement 1 can begin the paragraph as all the other statements have cross references and cannot, therefore, make sense as opening statements. 2 follows 1 describing how “they” (meaning the people who study children's language) make films and examine them carefully to see whether the babies show any signs of understanding what the adults say. 4, which says that sometimes the signs are subtle, is a continuation of 2. 5 concludes the paragraph elaborating on the “subtle signs”. Therefore, statements 1, 2, 4 and 5 form a sequence and 3, which says that babies begin to react to language from the moment they are born, does not form a part of this sequence and is, therefore, the odd man out.

QNo:- 33 ,Correct Answer:- 4

Explanation:-
1 begins the paragraph stating that neuroscientists have begun to study the impact of exercise within brain cells. 2 follows 1 reporting the findings. 3 follows 2 elaborating on the signs of the body's influence on the mind. 5, which states that each new

discovery – made by the neuroscientists – adds awe-inspiring depth to the picture, forms an ideal conclusion to the paragraph. Statement 4, which is a very generalized statement conveys a different idea and does not form a part of the sequence 1, 2, 3, 5. Hence, 4 is the odd man out. Ans: (4)

QNo:- 34 ,Correct Answer:- 1

Explanation:- The opener in this case will be 4 as it some solar storm swept the atmoshere away from the mars. After this 2 will come as it explains how the event described in 4, happened. After this 5 (chrono-pairing) will come as it talks about the recent study on presence of water on mars. After this 3 will come as it tells about the status of remaining water. 1 is odd one as it gives examples of the water resources (specific).

Section : DI & Reasoning

QNo:- 35 ,Correct Answer:- B

Explanation:- As the item which take the maximum time is burger, client 1 will be completely served by 10.00 + 10 minutes = 10.10

QNo:- 36 ,Correct Answer:- C

Explanation:- The time taken for the different clients are
Client 1 – 10.00 – 10.10 (burger)
Client 2 – 10.10 – 10.15 (fries)
Client 3 – 10.15 – 10.25 (burger)

QNo:- 37 ,Correct Answer:- A

Explanation:- When they are allowed to process multiple orders, the time taken would be
Client 1 – 10.00 – 10.10 (Anish)
Client 2 – 10.05 – 10.10 (Bani)

The second client can be served by 10.10

QNo:- 38 ,Correct Answer:- B

Explanation:- The time for which exactly one employee would be free would be
10.02 – 10.05 – (Bani) – 3 Minutes.
10.10 – 10.17 (Anish/Bani) – 7 minutes (depending on who prepares the order for client 3.
After 10.17 both of them would be free.
∴ One of them would be free for 3 + 7 = 10 minutes.

QNo:- 39 ,Correct Answer:- A

Explanation:- With the table given for kids in different schools whose mothers had dropped out of school we will be adding another value for each value already present and the new value will represent the number of kids in different types of schools for kids whose mothers completed primary education.

G			**P**		**O**		**Total**	
Dropped out	Completed		Dropped out	Completed	Dropped out	Completed		
NE	4200	1050	500	1150	300	300	7500	
W	4200	1050	1900	3850	1200	300	12500	
S	5100	900	300	3400	300	0	10000	

Total	13,500	3000	2700	8400	1800	600	30000

300 + 3400 = 3700 students out of 10,000 from S were studying in P, i.e., 37%

QNo:- 40 ,Correct Answer:- A

Explanation:- With the table given for kids in different schools whose mothers had dropped out of school we will be adding another value for each value already present and the new value will represent the number of kids in different types of schools for kids whose mothers completed primary education.

G			P		O		Total
Dropped out	Completed		Dropped out	Completed	Dropped out	Completed	
NE	4200	1050	500	1150	300	300	7500
W	4200	1050	1900	3850	1200	300	12500
S	5100	900	300	3400	300	0	10000
Total	13,500	3000	2700	8400	1800	600	30000

In W, 300 kids whose mothers had completed primary education were not in school.

QNo:- 41 ,Correct Answer:- A

Explanation:-
With the table given for kids in different schools whose mothers had dropped out of school we will be adding another value for each value already present and the new value will represent the number of kids in different types of schools for kids whose mothers completed primary education.

G			P		O		Total
Dropped out	Completed		Dropped out	Completed	Dropped out	Completed	
NE	4200	1050	500	1150	300	300	7500
W	4200	1050	1900	3850	1200	300	12500
S	5100	900	300	3400	300	0	10000
Total	13,500	3000	2700	8400	1800	600	30000

As there were initially 2400 students who were not in school and now 1200 of them are in G, with the mentioned percentages the only possibility is 50% of students in W, 25% of students in NE and 100% of students in S who were not going to school shifted to G.
∴ 50% of W = 50% of 1500 = 750
25% of NE = 25% of 600 = 150
100% of S = 100% of 300 = 300
Total = 1200
∴ now 4200 + 1050 + 750 = 6000 students were in G is W.

QNo:- 42 ,Correct Answer:- A

Explanation:- With the table given for kids in different schools whose mothers had dropped out of school we will be adding another value for each value already present and the new value will represent the number of kids in different types of schools for kids whose mothers completed primary education.

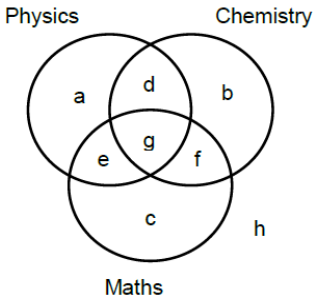
G			P		O		Total
Dropped out	Completed		Dropped out	Completed	Dropped out	Completed	
NE	4200	1050	500	1150	300	300	7500
W	4200	1050	1900	3850	1200	300	12500
S	5100	900	300	3400	300	0	10000
Total	13,500	3000	2700	8400	1800	600	30000

As explained in the previous question, all 300 in S who were not going to school, now shifted to G. Now of the 5700 students whose mothers had dropped out in S regions, 5400 are in G.

The required percentage = $\frac{5400}{5700} \times 100 = 94.7\%$

QNo:- 43 ,Correct Answer:- A

Explanation:- It is given that 200 candidates scored above 90th percentile overall in CET. Let the following Venn diagram represent the number of persons who scored above 80 percentile in CET in each of the three sections:

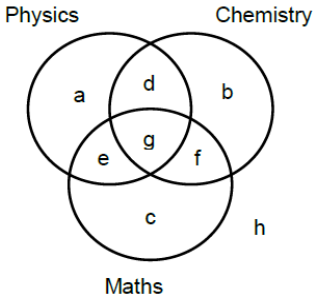


From 1, h = 0.
From 2, d + e + f = 150
From 3, a = b = c
Since there are a total of 200 candidates,
3a + g = 200 – 150 = 50
From 4, (2a + f) : (2a + e) : (2a + d) = 4 : 2 : 1
Therefore, 6a + (d + e + f) is divisible by 4 + 2 + 1 = 7.
Since d + e + f = 150, 6a + 150 is divisible by 7, i.e.,
6a + 3 is divisible by 7.
Hence, a = 3, 10, 17, . . .
Further, since 3a + g = 50, a must be less than 17. Therefore, only two cases are possible for the value of a, i.e., 3 or 10.
We can calculate the values of the other variables for the two cases.
a = 3 or 10
d = 18 or 10
e = 42 or 40
f = 90 or 100
g = 41 or 20
Among the candidates who are at or above 90th percentile, the candidates who are at or above 80th percentile in at least two sections are selected for AET. Hence, the candidates represented by d, e, f and g are selected for AET.
BIE will consider the candidates who are appearing for AET and are at or above 80th percentile in P. Hence, BIE will consider the candidates represented by d, e and g, which can be 104 or 80.
BIE will conduct a separate test for the other students who are at or above 80th percentile in P. Given that there are a total of 400 candidates at or above 80th percentile in P, and since there are 104 or 80 candidates at or above 80th percentile in P and are at or above 90th percentile overall, there must be 296 or 320 candidates at or above 80th percentile in P who scored less than 90th percentile overall.

The number of candidates sitting for separate test for BIE who were at or above 90th percentile in CET (a) is either 3 or 10.

QNo:- 44 ,Correct Answer:- 60

Explanation:- It is given that 200 candidates scored above 90th percentile overall in CET. Let the following Venn diagram represent the number of persons who scored above 80 percentile in CET in each of the three sections:

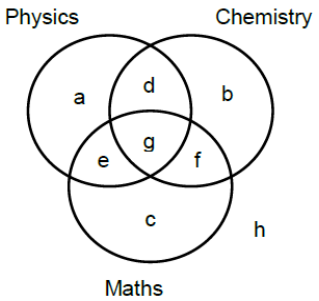


From 1, h = 0.
From 2, d + e + f = 150
From 3, a = b = c
Since there are a total of 200 candidates,
3a + g = 200 – 150 = 50
From 4, (2a + f) : (2a + e) : (2a + d) = 4 : 2 : 1
Therefore, 6a + (d + e + f) is divisible by 4 + 2 + 1 = 7.
Since d + e + f = 150, 6a + 150 is divisible by 7, i.e.,
6a + 3 is divisible by 7.
Hence, a = 3, 10, 17, . . .
Further, since 3a + g = 50, a must be less than 17. Therefore, only two cases are possible for the value of a, i.e., 3 or 10.
We can calculate the values of the other variables for the two cases.
a = 3 or 10
d = 18 or 10
e = 42 or 40
f = 90 or 100
g = 41 or 20
Among the candidates who are at or above 90th percentile, the candidates who are at or above 80th percentile in at least two sections are selected for AET. Hence, the candidates represented by d, e, f and g are selected for AET.
BIE will consider the candidates who are appearing for AET and are at or above 80th percentile in P. Hence, BIE will consider the candidates represented by d, e and g, which can be 104 or 80.
BIE will conduct a separate test for the other students who are at or above 80th percentile in P. Given that there are a total of 400 candidates at or above 80th percentile in P, and since there are 104 or 80 candidates at or above 80th percentile in P and are at or above 90th percentile overall, there must be 296 or 320 candidates at or above 80th percentile in P who scored less than 90th percentile overall.

From the given condition, g is a multiple of 5. Hence, g = 20. The number of candidates at or above 90th percentile overall and at or above 80th percentile in both P and M = e + g = 60.

QNo:- 45 ,Correct Answer:- 170

Explanation:- It is given that 200 candidates scored above 90th percentile overall in CET. Let the following Venn diagram represent the number of persons who scored above 80 percentile in CET in each of the three sections:



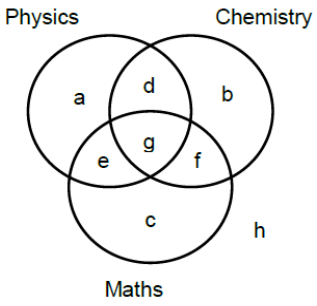
From 1, h = 0.
From 2, d + e + f = 150
From 3, a = b = c
Since there are a total of 200 candidates,
3a + g = 200 – 150 = 50
From 4, (2a + f) : (2a + e) : (2a + d) = 4 : 2 : 1
Therefore, 6a + (d + e + f) is divisible by 4 + 2 + 1 = 7.

Since d + e + f = 150, 6a + 150 is divisible by 7, i.e.,
6a + 3 is divisible by 7.
Hence, a = 3, 10, 17, . . .
Further, since 3a + g = 50, a must be less than 17. Therefore, only two cases are possible for the value of a, i.e., 3 or 10.
We can calculate the values of the other variables for the two cases.
a = 3 or 10
d = 18 or 10
e = 42 or 40
f = 90 or 100
g = 41 or 20
Among the candidates who are at or above 90th percentile, the candidates who are at or above 80th percentile in at least two sections are selected for AET. Hence, the candidates represented by d, e, f and g are selected for AET.
BIE will consider the candidates who are appearing for AET and are at or above 80th percentile in P. Hence, BIE will consider the candidates represented by d, e and g, which can be 104 or 80.
BIE will conduct a separate test for the other students who are at or above 80th percentile in P. Given that there are a total of 400 candidates at or above 80th percentile in P, and since there are 104 or 80 candidates at or above 80th percentile in P and are at or above 90th percentile overall, there must be 296 or 320 candidates at or above 80th percentile in P who scored less than 90th percentile overall.

In this case, g = 20. Number of candidates shortlisted for AET = d + e + f + g = 10 + 40 + 100 + 20 = 170

QNo:- 46 ,Correct Answer:- A

Explanation:- It is given that 200 candidates scored above 90th percentile overall in CET. Let the following Venn diagram represent the number of persons who scored above 80 percentile in CET in each of the three sections:



From 1, h = 0.
From 2, d + e + f = 150
From 3, a = b = c
Since there are a total of 200 candidates,
3a + g = 200 – 150 = 50
From 4, (2a + f) : (2a + e) : (2a + d) = 4 : 2 : 1
Therefore, 6a + (d + e + f) is divisible by 4 + 2 + 1 = 7.
Since d + e + f = 150, 6a + 150 is divisible by 7, i.e.,
6a + 3 is divisible by 7.
Hence, a = 3, 10, 17, . . .
Further, since 3a + g = 50, a must be less than 17. Therefore, only two cases are possible for the value of a, i.e., 3 or 10.
We can calculate the values of the other variables for the two cases.
a = 3 or 10
d = 18 or 10
e = 42 or 40
f = 90 or 100
g = 41 or 20
Among the candidates who are at or above 90th percentile, the candidates who are at or above 80th percentile in at least two sections are selected for AET. Hence, the candidates represented by d, e, f and g are selected for AET.
BIE will consider the candidates who are appearing for AET and are at or above 80th percentile in P. Hence, BIE will consider the candidates represented by d, e and g, which can be 104 or 80.
BIE will conduct a separate test for the other students who are at or above 80th percentile in P. Given that there are a total of 400 candidates at or above 80th percentile in P, and since there are 104 or 80 candidates at or above 80th percentile in P and are at or above 90th percentile overall, there must be 296 or 320 candidates at or above 80th percentile in P who scored less than 90th percentile overall.

From the given condition, the number of candidates at or above 90th percentile overall and at or above 80th percentile in P in CET = 104. The number of candidates who have to sit for separate test = 296 + 3 = 299

QNo:- 47 ,Correct Answer:- 1

Explanation:- The given data can be represented in a table as follows.

Scores	S	F	C
0			
1		2	1
2		1	3
3	3	2	4
4	3	1	1
5	2	3	
6	1		1
7	1	1	
Total	10	10	10

A and C had a total score of 7, with identical scores in all these parameters. So it can only be 1, 2 and 4 or 3, 3 and 1. As Zooma has a score of 17, and all three countries in the happy category had the highest score in exactly one parameter, he can only have a 7 in F, 6 in S and 4 in C as a score of 7 in S and 6 in C would be the scores of the other two countries and he cannot have a 7, 7 and 5 as there is no country which scored a 5 in C.

Amda can have a distribution of 3, 3, 1 or 4, 2, 1. In either case the only possible score of F is 1 as no other parameter has a score of 1 for two countries.

QNo:- 48 ,Correct Answer:- 6

Explanation:- The given data can be represented in a table as follows.

Scores	S	F	C
0			
1		2	1
2		1	3
3	3	2	4
4	3	1	1
5	2	3	
6	1		1
7	1	1	
Total	10	10	10

A and C had a total score of 7, with identical scores in all these parameters. So it can only be 1, 2 and 4 or 3, 3 and 1. As Zooma has a score of 17, and all three countries in the happy category had the highest score in exactly one parameter, he can only have a 7 in F, 6 in S and 4 in C as a score of 7 in S and 6 in C would be the scores of the other two countries and he cannot have a 7, 7 and 5 as there is no country which scored a 5 in C.

As explained before Zooma's score in C has to be 6.

QNo:- 49 ,Correct Answer:- B

Explanation:- The given data can be represented in a table as follows.

Scores	S	F	C
0			
1		2	1
2		1	3
3	3	2	4

4	3	1	1
5	2	3	
6	1		1
7	1	1	
Total	10	10	10

A and C had a total score of 7, with identical scores in all these parameters. So it can only be 1, 2 and 4 or 3, 3 and 1. As Zooma has a score of 17, and all three countries in the happy category had the highest score in exactly one parameter, he can only have a 7 in F, 6 in S and 4 in C as a score of 7 in S and 6 in C would be the scores of the other two countries and he cannot have a 7, 7 and 5 as there is no country which scored a 5 in C.

In the table given, among the highest scores, a score of 7 in F, 6 in S and 4 in S were the score of Zoom. The best possible scores remaining for Benga and Dalma would be

Benga	Dalma
S – 5	S – 7
C – 6	C – 3
F – 5	F – 5
16	15

As it is given that both had the some total score it can only be 15 for both , i.e. Benga's score in S or F was one less than the maximum possible.

QNo:- 50 ,Correct Answer:- B

Explanation:- The given data can be represented in a table as follows.

Scores	S	F	C
0			
1		2	1
2		1	3
3	3	2	4
4	3	1	1
5	2	3	
6	1		1
7	1	1	
Total	10	10	10

A and C had a total score of 7, with identical scores in all these parameters. So it can only be 1, 2 and 4 or 3, 3 and 1. As Zooma has a score of 17, and all three countries in the happy category had the highest score in exactly one parameter, he can only have a 7 in F, 6 in S and 4 in C as a score of 7 in S and 6 in C would be the scores of the other two countries and he cannot have a 7, 7 and 5 as there is no country which scored a 5 in C.

Considering the score of Zoom, Benga and Delma as 17, 16 and 15, we get

	S	F	C	Total
Zoom	6	7	4	17
Benga	5	5	6	16
Delma	7	5	3	15

If Benga score 16 and Dalma score 15 (as illustrated in the previous solution) the maximum possible values remaining are

Score	S	F	C
3	3	2	3
4	3	1	0
5	1	1	0

QNo:- 51 ,Correct Answer:- B

Explanation:-
Given that there are 10 SE and 11 RE.
In the first month, since T1 has one more SE than T2, who in turn has one more SE than T3, ... till T5, the number of SEs in T1, T2, T3, T4 and T5 must be 4, 3, 2, 1 and 0.

Also, the team that is assigned the challenging project has one more employee than the rest. Hence, the team that is assigned the challenging project will have 5 employees, while the other teams will have 4 employees.
Since T1 is assigned the Challenging project in the first month, T1 will have 5 employees, and the other teams will have 4 employees each.

The following table provides the composition of the teams in the first month:

Team	SE	RE	Total
T1	4	1	5
T2	3	1	4
T3	2	2	4
T4	1	3	4
T5	0	4	4

In the second month, T2 will be allotted the challenging project.
From a, two SEs will be transferred from T1 to T2. One RE is transferred from T2 to T1.
From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1. Similar transfers will happen between T2 and T4.

The following table provides the number of employees in each team in the second month:

Team	SE	RE	Total
T1	1	3	4
T2	4	1	5
T3	2	2	4
T4	2	2	4
T5	1	3	4

In the third month, T3 will be allotted the challenging project.
From a, two SEs will be transferred from T2 to T3. One RE is transferred from T3 to T2.
From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1.
Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.
The following table provides the number of employees in each team in the third month:

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	4	1	5
T4	3	1	4
T5	2	2	4

In the fourth month, T4 will be allotted the challenging project.
From a, two SEs will be transferred from T3 to T4. One RE is transferred from T4 to T3.

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	2	2	4
T4	5	0	5
T5	2	2	4

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.
Also, one SE must be transferred from T2 to T4 and one RE must be transferred from T4 to T2. However, there are no REs in T4. Hence, this transfer will not happen.
The following table provides the number of employees in each team in the fourth month:

In the fifth month, T5 will be allotted the challenging project.
From a, two SEs will be transferred from T4 to T5. One RE is transferred from T5 to T4.
From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.
Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.
The following table provides the number of employees in each team in the fifth month:

Team	SE	RE	Total
T1	0	4	4
T2	0	4	4
T3	2	2	4
T4	4	0	4
T5	4	1	5

The composition of T2 did not change once between the third and the fourth months.
The composition of T4 changed between any two successive months.
Hence, the answer is (1, 0).

QNo:- 52 ,Correct Answer:- A

Explanation:-
Given that there are 10 SE and 11 RE.
In the first month, since T1 has one more SE than T2, who in turn has one more SE than T3, ... till T5, the number of SEs in T1, T2, T3, T4 and T5 must be 4, 3, 2, 1 and 0.

Also, the team that is assigned the challenging project has one more employee than the rest. Hence, the team that is assigned the challenging project will have 5 employees, while the other teams will have 4 employees.
Since T1 is assigned the Challenging project in the first month, T1 will have 5 employees, and the other teams will have 4 employees each.

The following table provides the composition of the teams in the first month:

Team	SE	RE	Total
T1	4	1	5
T2	3	1	4
T3	2	2	4
T4	1	3	4
T5	0	4	4

In the second month, T2 will be allotted the challenging project.
From a, two SEs will be transferred from T1 to T2. One RE is transferred from T2 to T1.
From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1. Similar transfers will happen between T2 and T4.

The following table provides the number of employees in each team in the second month:

Team	SE	RE	Total
T1	1	3	4
T2	4	1	5
T3	2	2	4
T4	2	2	4
T5	1	3	4

In the third month, T3 will be allotted the challenging project.
From a, two SEs will be transferred from T2 to T3. One RE is transferred from T3 to T2.
From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1.
Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.
The following table provides the number of employees in each team in the third month:

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	4	1	5
T4	3	1	4
T5	2	2	4

In the fourth month, T4 will be allotted the challenging project.
From a, two SEs will be transferred from T3 to T4. One RE is transferred from T4 to T3.

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	2	2	4
T4	5	0	5
T5	2	2	4

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.
Also, one SE must be transferred from T2 to T4 and one RE must be transferred from T4 to T2. However, there are no REs in T4. Hence, this transfer will not happen.
The following table provides the number of employees in each team in the fourth month:

In the fifth month, T5 will be allotted the challenging project.
From a, two SEs will be transferred from T4 to T5. One RE is transferred from T5 to T4.
From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.
Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.
The following table provides the number of employees in each team in the fifth month:

Team	SE	RE	Total
T1	0	4	4
T2	0	4	4
T3	2	2	4
T4	4	0	4
T5	4	1	5

Number of SE in T1 in third month = 0
Number of SE in T5 in third month = 2.
Hence, the answer is (0, 2)

QNo:- 53 ,Correct Answer:- B

Explanation:-
Given that there are 10 SE and 11 RE.
In the first month, since T1 has one more SE than T2, who in turn has one more SE than T3, ... till T5, the number of SEs in T1, T2, T3, T4 and T5 must be 4, 3, 2, 1 and 0.

Also, the team that is assigned the challenging project has one more employee than the rest. Hence, the team that is assigned the challenging project will have 5 employees, while the other teams will have 4 employees.
Since T1 is assigned the Challenging project in the first month, T1 will have 5 employees, and the other teams will have 4

employees each.

The following table provides the composition of the teams in the first month:

Team	SE	RE	Total
T1	4	1	5
T2	3	1	4
T3	2	2	4
T4	1	3	4
T5	0	4	4

In the second month, T2 will be allotted the challenging project.
From a, two SEs will be transferred from T1 to T2. One RE is transferred from T2 to T1.
From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1. Similar transfers will happen between T2 and T4.

The following table provides the number of employees in each team in the second month:

Team	SE	RE	Total
T1	1	3	4
T2	4	1	5
T3	2	2	4
T4	2	2	4
T5	1	3	4

In the third month, T3 will be allotted the challenging project.
From a, two SEs will be transferred from T2 to T3. One RE is transferred from T3 to T2.
From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1.
Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.
The following table provides the number of employees in each team in the third month:

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	4	1	5
T4	3	1	4
T5	2	2	4

In the fourth month, T4 will be allotted the challenging project.
From a, two SEs will be transferred from T3 to T4. One RE is transferred from T4 to T3.

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	2	2	4
T4	5	0	5
T5	2	2	4

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.
Also, one SE must be transferred from T2 to T4 and one RE must be transferred from T4 to T2. However, there are no REs in T4. Hence, this transfer will not happen.
The following table provides the number of employees in each team in the fourth month:

In the fifth month, T5 will be allotted the challenging project.
From a, two SEs will be transferred from T4 to T5. One RE is transferred from T5 to T4.

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.
Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.
The following table provides the number of employees in each team in the fifth month:

Team	SE	RE	Total
T1	0	4	4
T2	0	4	4
T3	2	2	4
T4	4	0	4
T5	4	1	5

Given that challenging projects has 200 credits and standard projects have 100 credits.
In each type of project, the credits are equally shared by the employees in the team.
Hence, for a challenging project an employee earns 200/5 = 40 credits
For a standard project, an employee earns 100/4 = 25 credits.
For the five months, an employee can work in five challenging projects OR four challenging projects and one standard project OR three challenging projects and two standard projects OR two challenging projects and three challenging projects OR one challenging project and four standard projects OR five standard projects.
In each case, an employee will earn 200 or 185 or 170 or 155 or 140 or 125 credits.
Hence, it is not possible for an employee to earn 150 credits.

QNo:- 54 ,Correct Answer:- D

Explanation:-
Given that there are 10 SE and 11 RE.
In the first month, since T1 has one more SE than T2, who in turn has one more SE than T3, ... till T5, the number of SEs in T1, T2, T3, T4 and T5 must be 4, 3, 2, 1 and 0.

Also, the team that is assigned the challenging project has one more employee than the rest. Hence, the team that is assigned the challenging project will have 5 employees, while the other teams will have 4 employees.
Since T1 is assigned the Challenging project in the first month, T1 will have 5 employees, and the other teams will have 4 employees each.

The following table provides the composition of the teams in the first month:

Team	SE	RE	Total
T1	4	1	5
T2	3	1	4
T3	2	2	4
T4	1	3	4
T5	0	4	4

In the second month, T2 will be allotted the challenging project.
From a, two SEs will be transferred from T1 to T2. One RE is transferred from T2 to T1.
From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1. Similar transfers will happen between T2 and T4.

The following table provides the number of employees in each team in the second month:

Team	SE	RE	Total
T1	1	3	4
T2	4	1	5
T3	2	2	4
T4	2	2	4
T5	1	3	4

In the third month, T3 will be allotted the challenging project.
From a, two SEs will be transferred from T2 to T3. One RE is transferred from T3 to T2.

From b, one SE will be transferred from T1 to T5, one RE will be transferred from T5 to T1.
Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.
The following table provides the number of employees in each team in the third month:

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	4	1	5
T4	3	1	4
T5	2	2	4

In the fourth month, T4 will be allotted the challenging project.
From a, two SEs will be transferred from T3 to T4. One RE is transferred from T4 to T3.

Team	SE	RE	Total
T1	0	4	4
T2	1	3	4
T3	2	2	4
T4	5	0	5
T5	2	2	4

From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.
Also, one SE must be transferred from T2 to T4 and one RE must be transferred from T4 to T2. However, there are no REs in T4. Hence, this transfer will not happen.
The following table provides the number of employees in each team in the fourth month:

In the fifth month, T5 will be allotted the challenging project.
From a, two SEs will be transferred from T4 to T5. One RE is transferred from T5 to T4.
From b, one SE must be transferred from T1 to T5. However, since there are no SEs in T1, this will not happen.
Also, one SE will be transferred from T2 to T4 and one RE will be transferred from T4 to T2.
The following table provides the number of employees in each team in the fifth month:

Team	SE	RE	Total
T1	0	4	4
T2	0	4	4
T3	2	2	4
T4	4	0	4
T5	4	1	5

Since Aneek secured 185 credits, he worked in four challenging projects and one standard project. Option A: Aneek could have worked in T1 in first month (in challenging project), T2 in second month (in challenging project), T3 in third month (in challenging project), T4 in fourth month (in challenging project) and fifth month (in standard project). Hence, this is possible.

Option B: Aneek could have worked in T1 in first month (in challenging project), T2 in second month (in challenging project), T4 in third month (in standard project), T4 in fourth month (in challenging project) and T5 in fifth month (in challenging project). Hence, this is possible.

Option C: Aneek could have worked in T2 in first month (in standard project), T2 in second month (in challenging project), T3 in third month (in challenging project), T4 in fourth month (in challenging project) and T5 in fifth month (in challenging project). Hence, this is possible.

Option D: Aneek could have worked in T1 in first month (in challenging project). He can work in T1 or T5 in the second month. In either case, he cannot work in T3 without working in T2 first. If we assume, he worked in T3 in the first month, he could not have worked in four teams in the five months. Similarly, we can rule out the other possibilities for this option. Hence, this is the answer.

QNo:- 55 ,Correct Answer:- C

Explanation:- The heights of the platforms given is as below

6	1	2	4	3
9	5	3	2	8
7	8	4	6	5
3	9	5	1	2
1	7	6	3	9

The number of persons who can be reached by just one individual is circled

6	1	②	4	3
9	5	3	2	8
⑦	8	④	6	⑤
③	9	5	1	②
1	7	6	③	9

A total of 7 persons can be reached by just one individual.

QNo:- 56 ,Correct Answer:- D

Explanation:- The heights of the platforms given is as below

6	1	2	4	3
9	5	3	2	8
7	8	4	6	5
3	9	5	1	2
1	7	6	3	9

For individual at a platform of height 1, they cannot be reached by anyone as condition (II) will be violated.

QNo:- 57 ,Correct Answer:- C

Explanation:- The heights of the platforms given is as below

6	1	2	4	3
9	5	3	2	8
7	8	4	6	5
3	9	5	1	2
1	7	6	3	9

Only in the fourth column can we find two individuals who cannot be reached by anyone. In the fourth column the individual at height 2 and the individual at height 1 cannot be reached by
anyone.

QNo:- 58 ,Correct Answer:- C

Explanation:- The heights of the platforms given is as below

6	1	2	4	3
9	5	3	2	8
7	8	4	6	5
3	9	5	1	2
1	7	6	3	9

Statement 1 is wrong as no individual in row 1 can be reached by 5 or more individuals. Statement 2 is wrong as row 3 has no individual who cannot be reached by anyone.
Statement 4 is wrong as the individual at height 9 in column 1 can be reached by only 4 individuals.
∴ Only statement 3 is correct.

QNo:- 59 ,Correct Answer:- C

Explanation:- For any pair of cities, say A and B, to satisfy the underlying principle, there must be a morning flight from A to B, an evening flight from B to A and a morning flight from B to A and an evening flight from A to B. Only then can a person from A or B travel to B or A and return the same day. Hence, there must be four flights between any pair of cities.
Number of ways of selecting two cities from ten cities
$= \frac{10 \times 9}{2} = 45.$
Hence, the minimum number of flights that must be scheduled = 45 ×4 = 180.

QNo:- 60 ,Correct Answer:- C

Explanation:-
Let the ten cities be represented by A through J. Among these ten cities, consider A, B and C to be hubs and the other seven cities to be non-hub cities. It is given that any direct flight should originate and/or terminate at a hub.

Consider city D, which not a hub. D should be connected to each of A, B and C. Between D and each of A, B and C, there must be four flights (from the above solution). Hence, from D, there must be 4 × 3 = 12 flights to the three hubs, A, B and C. Similarly, for each of the other six non-hub cities, there must be 12 flights connecting each non-hub city with the three hubs. Hence, a total of 12 ×7 = 84 flights will connect a non-hub city with a hub. In addition to this, the three hubs must be connected amongst themselves. Since there must be four flights between any pair of cities, there must be a total of 4 × 3 = 12 flights connecting any pair of hubs. Hence, the total minimum number of flights that should be scheduled = 84 + 12 = 96.

QNo:- 61 ,Correct Answer:- 40

Explanation:-
Given that G1 has the cities A, B and C. G2, G3 and G4 have 3, 2 and 2 cities respectively. From the given conditions, we can see that a city in G2 cannot be connected by a direct flight to a city in G3 or G4. Hence, for a person to travel from a city in G2 to a city in G3 or G4, all the cities in G2 must be connected to A and from A, he can travel to B or C to travel to a city G3 or G4 respectively.

Hence, the 3 cities in G2 must be connected to A. Between each pair of cities there must be four flights. Hence, there must be 4 × 3 = 12 flights between cities in G2 and A.

Since there are 2 cities in G3, there must be 2 × 4 = 8 flights between cities in G3 and B.
Since there are 2 cities in G4, there must be 2 × 4 = 8 flights between cities in G4 and C.
Also, the cities in G1, i.e., A, B and C must be connected to each other. Hence, there must be an additional 4 × 3 = 12 flights between these three cities.
Therefore, the total minimum number of direct flights that must be scheduled = 12 + 8 + 8 + 12 = 40

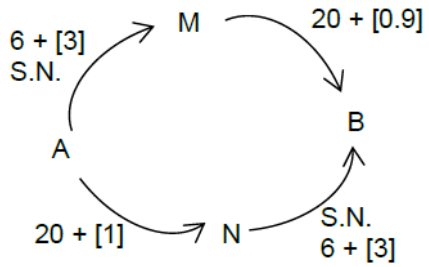
QNo:- 62 ,Correct Answer:- 4

Explanation:- It is given that the cities in G2 will be assigned to G3 or G4. However, this, by itself, will not result in any reduction in the number of flights because the cities in G2 will still have to be connected to either B or C.
However, it is also given that there are now no flights between A and C. Hence, the 4 flights that would have been scheduled in the previous case, will now not be scheduled.
Hence, the reduction in the number of flights can be a maximum of 4.

QNo:- 63 ,Correct Answer:- 2

Explanation:-
As there are four cars and as the time through each route is nearly the same, two cars should go through A-M-B and the other two through A-N-B. In case three cars are directed to go through any of the routes, one of the three cars can break the police order and reduce its travel time.

QNo:- 64 ,Correct Answer:- B



Explanation:-
According to the police order 2 cars each would pass through A – M – B and A – N – B.
Then time taken through A – M – B = 29.9 and time taken through A – N – B = 30.0
∴ Difference = 0.1

QNo:- 65 ,Correct Answer:- 2

Explanation:- No car should be able to reduce its travel time by not following the order and all the cars cannot take the same route. So either two or three cars should go through A-M. If two cars go through M-B, one car can break the police order and go through M-N and reach B in 9 + 7 + 12 = 28 minutes as compared to 29.9 minutes had both gone through A-M-B. If two cars go through A-M and one is directed to go through M-N, one of the cars which was directed to go through A-N can break the police order and go through A-M-B and save time as follows:
Original time (A-N-B) = 21 + 12 = (three cars) = 33
New time = 12 (3 cars) + 20 .9 = 32.9
The police department cannot direct both cars to go through M-N as in that case all four cars would go through N-B
In case three cars are directed to go through A-M, either one car can be directed through M-N or two cars can be directed through M-N.
If one car is directed through M-N, one of the two cars directed through M-B, can break the police order and go through M-N, and save time as shown.
Original time (A-M-B) = 12 (3 cars) + 20.9 = 32.9
New time (A-M-N-B) = 12 + 8 + 12 = 32 minutes.
∴ two cars must be directed through M-N such that any car breaking the police order cannot reduce the travel time.

QNo:- 66 ,Correct Answer:- B

Explanation:- When all cars follow the police order the time taken would be A-M-B (1 car) = 12 + 20 = 32 minutes.
A-M-N-B (2cars) = 12 + 8 + 12 = 32 minutes.
A-N-B (1 car) = 20 + 12 =32 minutes.

Section : Quantitative Ability

QNo:- 67 ,Correct Answer:- 20

Explanation:- Let Barun's age be 10x. Arun's age is 4x. The difference of these ages in 6x, a constant. When Arun's age is 50% of Barun's age, this difference also would be 50% ie Barun's age, at that stage would be 12x. It would be increase by 20%.

QNo:- 68 ,Correct Answer:- 15

Explanation:- Let the number of days required to complete the job be n.
1 person works on day 1, 2 on day 2, 3 on day 3, ... n on day n.
Each person has the same efficiency.

$$\text{Work} = 1\left(\frac{1}{120}\right)+2\left(\frac{1}{120}\right)+3\left(\frac{1}{120}\right).....+n\left(\frac{1}{120}\right).$$

This is also equal to 1.

$$\frac{1}{120}+\frac{2}{120}+\frac{3}{120}+.....+\frac{n}{120}=1$$

$\Sigma n = 120$
$n = 15.$

QNo:- 69 ,Correct Answer:- 11

Explanation:- Number of people in the group cannot exceed $\frac{630}{53}$ i.e., 11.8.
Maximum possible number of people in the group = 11.

QNo:- 70 ,Correct Answer:- 20

Explanation:- The speed in the second case is 5/4 times the speed in the first case. Therefore, the time would be 4/5 times the time, i.e., 1/5 less. This one fifth is 20 min. Therefore, the time taken in the first case is 100 min.

$\text{The distance} = (12)\left(\frac{5}{3}\right)\text{km} = 20\text{km}$

QNo:- 71 ,Correct Answer:- 70000

Explanation:- Let the total monthly savings be S.

$\text{Investment in FD} = \frac{50}{100}\text{S}.$

$\text{Investment in stocks} = \frac{30}{100}\left(\text{S} - \frac{50}{100}\text{S}\right) = \frac{15}{100}\text{S}$

$\text{Investment in savings bank account} = \frac{35}{100}\text{S}$

$\frac{35}{100}\text{S} + \frac{50}{100}\text{S} = 59500$

S = 70000

QNo:- 72 ,Correct Answer:- D

Explanation:- Let the retail price be 100.
Discount = 15
Selling price = 85

$\text{Cost price} = \frac{85}{1.02} = \frac{500}{6}$

In order to make a profit of 20%, the selling price

$= \frac{500}{6}(1.2) = 100$

The seller must sell at the retail price

QNo:- 73 ,Correct Answer:- B

Explanation:- Let the speed of the boat in still water and the speed of the river be u and v respectively.

$\frac{d}{2x+y} + \frac{d}{2x-y} = \frac{1}{4}\left(\frac{d}{x+y} + \frac{d}{x-y}\right)$

$\frac{d(4x)}{4x^2 - y^2} = \frac{1}{4}\left(\frac{d(2x)}{x^2 - y^2}\right)$

$8(x^2 - y^2) = 4x^2 - y^2$

$\frac{x^2}{y^2} = \frac{7}{4}$

$\frac{x}{y} = \frac{\sqrt{7}}{2}$

QNo:- 74 ,Correct Answer:- A

Explanation:- The data is given below

C1	C2	C3	C4	C5
9	10	8		
	18		19	20

81	90	72	95	100

C5 – C1 = 19. The numbers above are the actual profits (and not just the ratio). The total profit = 438 crore.

QNo:- 75 ,Correct Answer:- D

Explanation:- Let the number of boys appearing for the admission test be b.
Percentage of candidates who get admission =

$$\frac{\frac{30}{100}(2b)+\frac{45}{100}b}{2b+b}(100)\% = 35\%$$

65% of the candidates do not get admission.

QNo:- 76 ,Correct Answer:- A

Explanation:- Let the total number of popcorn packets in stock be T.
Total number of chips packets in stock = T

$$\text{Required ratio} = \frac{16}{40}T : \frac{14}{35}T = 1:1$$

QNo:- 77 ,Correct Answer:- B

Explanation:- Let the price of each good mango be g.
Price of each medium quality mango = $\frac{g}{2}$.

$$\text{Total cost price} = 80g + 40\left(\frac{g}{2}\right) = 100g$$

Total selling price = 120(0.9g) = 108g
Overall profit = 8%

QNo:- 78 ,Correct Answer:- D

Explanation:- Let the printed price be p.
If 40% discount is given, selling price = 0.6(60p) =36p
As profit is 20%, the CP = 36p/1.2 = 30p

Ten toys are destroyed in the fire.
The remaining toys are sold at a price such that the same amount of profit is made as in the first case.
Profit made on remaining toys = 6p
Total selling price of remaining toys = 36p
Discount that should be given = 50p – 36p = 14p
Discount% =14p/50p × 100 = 28%

QNo:- 79 ,Correct Answer:- D

Explanation:- $\left(\frac{a+3}{b}\right)^2 = 9$ and $\left(\frac{a-1}{b-1}\right)^2 = 4$.
We get 4 cases

a + 3 = 3b a – 1 = 2b – 2	a +3 = 3b a – 1 = –2b + 2
a+3 = –3b a – 1 = 2b – 2	a + 3 = –3b a – 1 = –2b + 2

Subtracting the second equation from the first we get,

	I	II	III	IV
4	b+2	5b-2	-5b+2	-b – 2

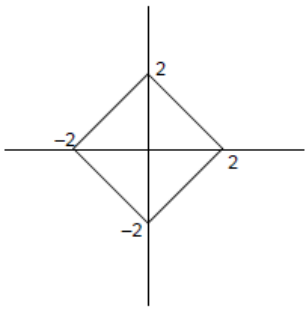
I ⇒ b = 2, a = 3 Rejected
II, III ⇒ b is not an integer. Rejected
IV ⇒ b = –6 , a = 15

$\therefore \frac{a^2}{b^2}=\left(\frac{15}{6}\right)^2=\frac{25}{4}$

QNo:- 80 ,Correct Answer:- A

Explanation:- Let the average score of the boys in the midsemester examination be b.
Average score of the girls = b + 5
In the final exam, average score of the girls = b + 5 – 3 = b + 2.
Average score of the entire class increased by 2
and is hence $\frac{20b+30(b+5)}{50}+2$ i.e. $b+5$
Average score of the boys
$\frac{50(b+5)-30(b+2)}{20}=b+9.5$
Increases in the average of boys is 9.5.

QNo:- 81 ,Correct Answer:- C



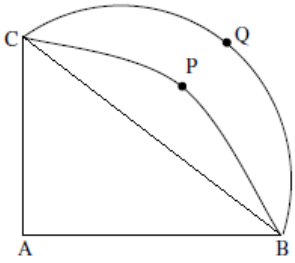
Explanation:-
The closed region bounded by |ax| + |by| = c in the two- dimensional plane has x-intercepts of $\pm\frac{c}{|a|}$ and y- intercepts of $\pm\frac{c}{|b|}$.
This is in general a rhombus. In the given question, we have a square which has each of its diagonals as 4.
Area = $\frac{1}{2}(4)(4)=8$

QNo:- 82 ,Correct Answer:- B

Explanation:- The medians of a triangle divide the triangle into six parts of equal area.
Area of GBC = $\frac{1}{3}$ (Area of the triangle)
$=\frac{1}{3}\sqrt{5(5-a)(s-b)(s-c)}=\frac{250}{\sqrt{3}}$
Area of the remaining portion = $2\left(\frac{250}{\sqrt{3}}\right)=\frac{500}{\sqrt{3}}$

QNo:- 83 ,Correct Answer:- B

Explanation:-



Let AB = a (a = 6)

CQB is a semicircle of radius $\frac{a}{\sqrt{2}}$

CPB is a quarter circle (quadrant) of radius a

$\therefore$ Area of semicircle = $\frac{\pi a^2}{4}$

Area of quadrant = $\frac{\pi a^2}{4}$

$\therefore$ Area of region enclosed by BPC, BQC = Area of ΔABC = 18.

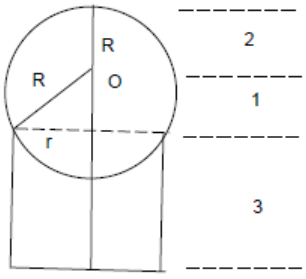
QNo:- 84 ,Correct Answer:- B

Explanation:-

The volumes of the 5 smaller cubes and the original big one are in the ratio 1 : 1 : 8 : 27 : 27 : 64. Therefore, the sides are in the ratio 1 : 1 : 2 : 3 : 3 : 4 while the areas are in the ratio 1 : 1 : 4 : 9 : 9 : 16. The sum of the areas of the 5 smaller cubes is 24 parts while that of the big cube is 16 parts. The sum is 50% greater.

QNo:- 85 ,Correct Answer:- 6

Explanation:-



The height of the cylinder (h) = 3

The volume = 9π

$\pi r^2 h = 9\pi \Rightarrow r = \sqrt{3}$

The radius of the ball (R) = 2

The height of O, the centre of the ball, above the line representing the top of the cylinder is say a.

(a = 1)

$\therefore$ The height of the topmost point of the ball from the base of the cylinder is h + a +R = 3 + 1 + 2 = 6

QNo:- 86 ,Correct Answer:- 24

Explanation:- In a 3, 4, 5 triangle, the length of the altitude to the hypotenuse = 3(4)/5 = 2.4. Therefore, in a 15, 20, 25 triangle, it is 12. This is the shortest distance from A to BC. At 60 km/hr, i.e., 1 km/min, it would take 24 min to cover 24 km.

QNo:- 87 ,Correct Answer:- D

Explanation:- $\log_3 x = a \Rightarrow x = 3^a$

$\log_{12} y = a \Rightarrow y = 12^a$

$\therefore xy = 36^a$ and $xy = G = 6^a$

$\therefore \log_6 G = a$

QNo:- 88 ,Correct Answer:- D

Explanation:- $x + 1 = x^2 \Rightarrow x^2 - x - 1 = 0 \Rightarrow x = \frac{1+\sqrt{5}}{2} (\because x > 0)$

Also, $x^2 = x + 1 \Rightarrow x^4 = x^2 + 2x + 1 = 3x + 2$

$\Rightarrow 2x^4 = 6x + 4 = 3 + 3\sqrt{5} + 4 = 7 + 3\sqrt{5}$

QNo:- 89 ,Correct Answer:- C

Explanation:- $0.008 = \frac{8}{1000} = 5^{-3}$

$\therefore \log_{0.008}\sqrt{5} = \frac{1/2}{-3} = \frac{-1}{6}$ and $\log_{\sqrt{3}} 81 = \frac{4}{1/2} = 8$

$\therefore$ The given expression is $\frac{5}{6}$

QNo:- 90 ,Correct Answer:- B

Explanation:- $9^{2x-1} - 9^{2x-2} = 9^{2x-2}(9 - 1) = 1944 = 8(243) = 8(9^{2.5})$

$\therefore 2x - 2 = 2.5 \Rightarrow x = \frac{4.5}{2} = \frac{9}{4}$

QNo:- 91 ,Correct Answer:- B

Explanation:- $x = 25 + y + z$. The possible values of x, y, z and the corresponding number of values of y, z are tabulated below (x, y, z are positive integers). We see that $27 \le x \le 40$

x	y	z	No of values of (x, y)
27	1	1	1
28	1,2	2,1	2
-	-	-	-
38	1, ... 2	12, ... 1	12
39	2, ... 12,	12, ... 2	11
40	3, ... 12	12, ... 3	10

The number of solutions is 1 + 2 + ... + 12 + 11 + 10 = 78 + 21 = 99

QNo:- 92 ,Correct Answer:- 11

Explanation:- $(n - 5)(n - 10) - 3(n - 2) \le 0$

$\Rightarrow n^2 - 18n + 56 \le 0$

$\Rightarrow (n - 4)(n - 14) \le 0$

As n is an integer, n can be 4, 5, 6 .....14, i.e. it can have 11 values.

QNo:- 93 ,Correct Answer:- 24

Explanation:- $x^2 + 11x + n = x \Rightarrow x^2 + 10x + n = 0$

Since the roots of this equation are real and distinct, $b^2 - 4ac > 0$

so $100 - 4n > 0 \Rightarrow n < 25$

The maximum value of n for which the equation has two distinct real roots is 24.

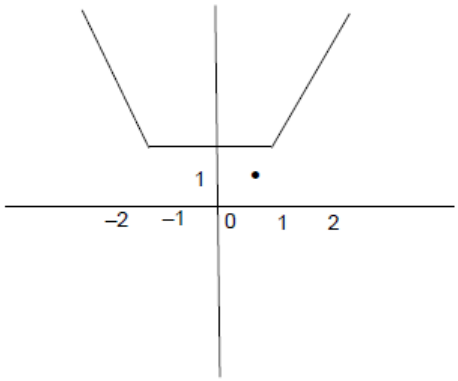
QNo:- 94 ,Correct Answer:- 2

Explanation:- a + b + c + d = 30, a, b, c, d are integers.
$(a - b)^2 + (a - c)^2 + (a - d)^2$ would have its maximum value when each bracket has the least possible value.
Let (a, b, c, d) = (8, 8, 7, 7)
The given expression would be 2. It cannot have a smaller value.

QNo:- 95 ,Correct Answer:- 160

Explanation:- There are 5 pairs of diametrically opposite points and the centre O.
If O is not selected, the number of triangles = $^{10}C_3$ = 120.
If O is selected, the other two points can be selected in 10(8)/2, i.e., 40 ways. The number of triangles is 160.

QNo:- 96 ,Correct Answer:- A



Explanation:-
The graph of y = |x – 1| + |x + 1| is shown above.
The shortest distance of $\left(\frac{1}{2},1\right)$ from the graph is 1.

QNo:- 97 ,Correct Answer:- A

Explanation:- Let the first term be a and the common difference be d.
$(a + 6d)^2 = (a + 2d)(a + 16d)$
$\Rightarrow a^2 + 12ad + 36d^2 = a^2 + 18ad + 32d^2$
$\Rightarrow 4d^2 = 6ad$
$\Rightarrow \frac{a}{d} = \frac{2}{3}$

QNo:- 98 ,Correct Answer:- A

Explanation:- After giving one eraser to each of the 4 kids, there are 3 left.
They can split 2, 1 or 1, 1, 1. (No kid can get 4)
There are $^4P_2 + {}^4C_3$, i.e., 16 ways of distributing the erasers.

QNo:- 99 ,Correct Answer:- A

$$f(x)=\frac{5x+2}{3x-5}, g(x)=x^2-2x-1$$

$$f(3)=\frac{5(3)+2}{3(3)-5}=\frac{17}{4}$$

$$f\left(\frac{17}{4}\right)=\frac{5\left(\frac{17}{4}\right)+2}{3\left(\frac{17}{4}\right)-5}=\frac{85+8}{51-20}=\frac{93}{31}=3$$

$$g(3)=3^2-2\times3-1=2$$

Explanation:-

QNo:- 100 ,Correct Answer:- B

Explanation:- $a_1 = 3, a_2 = 7, \ldots a_n = 4n - 1, \ldots a_{3n} = 4(3n) - 1$

$$a_1 + a_2 + \ldots + a_{3n} = \frac{3n(12n+2)}{2} = 1830$$

$\Rightarrow n(6n + 1) = 610$

$\Rightarrow 6n^2 + n - 610 = 0$

$\Rightarrow (6n + 61)(n - 10) = 0$

$\Rightarrow n = 10$ ($\because$ n is an integer)

$$\therefore a_1, a_2 + \ldots + a_n = 3 + 7 + \ldots + [4(10) - 1] = 3 + 7 + \ldots + 39 = \frac{10}{2}(3+39) = 210$$

Now $m (a_1 + a_2 + \ldots + a_n) > 1830$

$\Rightarrow 210m > 1830$

$\Rightarrow m > 1830/210 = 8.7$

The minimum integral value of m is 9

Actual CAT 2017 Slot II (Answer Keys)

Section : Verbal Ability

QNo:- 1 ,Correct Answer:- D

Explanation:- (1), (2) and (3) are mentioned in the second paragraph, refer to “diverse populations” - (2), “new ideas” - (1) and “infrastructure for finance, organization” - (3).

QNo:- 2 ,Correct Answer:- B

Explanation:- While (4) is beside the point, (1) does not address the question at hand. (3) goes contrary to received wisdom in the passage. (2) is explicitly mentioned in the third paragraph, refer to “what staunches creativity .... It's the very institutions”.

QNo:- 3 ,Correct Answer:- A

Explanation:- Neither (2) nor (3) are mentioned as such in the passage. (4) is a recommendation, not the central idea of the passage. The passage is on creativity, and the central idea can be found in the first paragraph itself - “What fosters creativity? ... the presence of other creative people”, a theme that resonates throughout the passage.

QNo:- 4 ,Correct Answer:- C

Explanation:- The alarming view in (2) is not echoed in the passage. (4) also runs contrary to the passage, Jane Jacobs argues in the fifth paragraph that all cities are filled with creative people. (1) is a lay opinion. Jane Jacobs argues that “some cities had more than their shares of leaders, people and institutions that blocked out that creativity”, hence we can safely infer that the more creative cities have leaders and institutions that do not block creativity.

QNo:- 5 ,Correct Answer:- B

Explanation:- (1) again runs contrary to the passage, which places creativity as inversely proportional to age. (4) is not mentioned in the passage. (3) paints with too brand a brush. (2) is resonated in the third paragraph, “staunches creativity ... many of our schools”.

QNo:- 6 ,Correct Answer:- A

Explanation:- (2) is not supported by the passage, refer to “the other 66 percent who toil” in the sixth paragraph. The recommendation in (3) is not the author's. (4) assumes that low-wage workers are creative, which is suspect. The author mentions “work which engages our creative faculties ... those of us who work with our minds”, the assumption then being that those who work with their hands are not creative.

QNo:- 7 ,Correct Answer:- C

Explanation:- (4) refers to an analogy, which by itself cannot be the purpose of the passage. (2) does not mention how the subnivium is compromised by climate change. (1) also occupies a safe orbit. Paragraph 5 comes to the point - refer to “Scientists are now beginning to explore how climate change will affect the subnivium”. Hence, (3) is the answer.

QNo:- 8 ,Correct Answer:- B

Explanation:- (1) finds mention in paragraph 5 - “Both depth and density of snow are sensitive to temperature”. (3) is mentioned in paragraph 2 - “a constant temperature of 32 degrees Fahrenheit can often be 30 to 40 degrees warmer than the air temperature”. (4) finds mention in the last paragraph - “In field experiments, researchers removed a portion of the snow cover to investigate the importance of the subnivium's insulation. They found that soil frost in the snow-free area resulted in damage to plant roots”. But positive effects of climate change, if any, cannot be discerned in the passage.

QNo:- 9 ,Correct Answer:- B

Explanation:- If climate change is the critical factor, then regulations have to curb global warming. (1), (3) and (4) are stop-gap measures at best, and completely uncertain at worst. Hence, (2) is the apt answer.

QNo:- 10 ,Correct Answer:- D

Explanation:- Examples of crowberry and alpine azalea demonstrate that shrubs help maintain higher depths of snow, which in turn keeps soils insulated and increases plant decomposition and nutrient release. Conversely, lower depths of snow results in soil frost which damages plants. (1) does not address this aspect at all. (2) also misses the point. Nor does (3) address the impact shrubs have on the subnivium. (4) mentions how shrubs can protect the subnivium, among other factors.

QNo:- 11 ,Correct Answer:- A

Explanation:- Since equatorial and arid regions are not discussed in the passage, no conclusions as in (2) can be drawn. Likewise, we have no information to conclude whether the loss of the subnivium would affect only temperate and Arctic regions, so (4) is suspect. Which kind of blanket will provide maximum protection from the cold would trivialize the passage, hence (3) is ruled out. (1), however, can be inferred from the third paragraph of the passage. Refer to “disruptions to the subnivium brought about by climate change will affect everything from population dynamics to nutrient cycling through the ecosystem”.

QNo:- 12 ,Correct Answer:- C

Explanation:- The example of blankets is used to demonstrate the benefits of greater depths of low-density snow to insulate the ground. Hence, (1), (2) and (4) which explain the mechanics of winter bedtime are rejected. The answer is thus (3).

QNo:- 13 ,Correct Answer:- C

Explanation:- The sentence “ Ms Musk is selling a dream that the world wants to believe in” in the second paragraph gives a peep into the author's scepticism. The second sentence of the third paragraph talks about “unattainable self-fulfilment”. The subsequent sentences talk about how the potential car- buyer is never told of the traffic jams which will rob him of independence. Thus, the myth of independence of the private car is perpetuated.

QNo:- 14 ,Correct Answer:- D

Explanation:- The 4th paragraph mentions clearly that in place of today's oil despots, there will be new undeserving despots – those who control these rare material for batteries - who will become fantastically rich. This makes 1 true; thus 1 is ruled out. “...once more breathable ..” in the same paragraph makes 2 true ; thus 2 is ruled out. “Traffic jams will be abolished only when. . . . ” in the last paragraph makes 3 true ; thus 3 is ruled out.

QNo:- 15 ,Correct Answer:- D

Explanation:- “The sleek and swift .... autonomy and power” at the beginning of the 4th paragraph makes 4 the right choice. The other points : “ more cost-effective than fossil fuel-driven cars”, “tax subsidy for Tesla” or “ the company upscaling charging stations ...” are not explicitly mentioned in the passage .

QNo:- 16 ,Correct Answer:- C

Explanation:-
At the beginning of the last paragraph, the author says “the fantasy of autonomy comes full circle” . What the author suggests by the use of the term “comes full circle,” is that it completes a cycle and returns to its beginnings. That is, there will be no autonomy. He goes on to say, through the balance part of the paragraph, that public transport will be reinvented. Thus, the future may well be public transport.

QNo:- 17 ,Correct Answer:- C

Explanation:- In the last paragraph, the author says through the sentence "The logical outcome of cars which need no driver is that they will need no owner either". This means that they will become public transport. The author clinches his point through phrases like "summoned at will".

QNo:- 18 ,Correct Answer:- B

Explanation:- Note the sentences in the last paragraph, "Traffic jams will be abolished only when the car becomes a public utility. What will happen to our fantasies of independence? We will all have to take to electrically powered bicycles". Since independence and autonomy are synonymous, the author suggests that we will need to consider bicycles if we want autonomy.

QNo:- 19 ,Correct Answer:- A

Explanation:- Throughout the passage, the author is explaining why the typewriter continues to be used even in today's digital age. Some of the reasons he has given are that they are personal and private. The information typed on a typewriter cannot be leaked out. He also talks about its nostalgic value. It does not need electricity and can, therefore, be used even in remote locations.

QNo:- 20 ,Correct Answer:- D

Explanation:- The fourth sentence of the passage "Type a document and lock it away and more or less the only way anyone else can get it is if you give it to them" clearly shows that it is possible to control who reads the document.

QNo:- 21 ,Correct Answer:- D

Explanation:- Options 1, 2 and 3 are positive in connotation. Even "noisier than computers" seems to be a welcome thing; look at "encouraging clack" of keys. Clearly, the only thing that is not welcome about the typewriter is that it is messier than that the computer.

QNo:- 22 ,Correct Answer:- C

Explanation:- The passage begins with "Despite their fierce reputation...". It goes on to suggest that the Vikings were traders too. The second paragraph begins with "Since the artifacts were found in marketplaces...". Thus, they had trade relations with Europe.

QNo:- 23 ,Correct Answer:- D

Explanation:- The second paragraph clearly says that the raids began in 793 while some of the artifacts are as old as 725. Clearly, the trade relations of the Vikings with Europe predated the raids.

QNo:- 24 ,Correct Answer:- A

Explanation:- Options 2, 3 and 4 are explicitly mentioned in the passage. Read the lines" it arrived on Viking ships from Norway." The author says reindeer antlers arrived on ships from Norway not reindeer. Hence 1 is the right choice.

QNo:- 25 ,Correct Answer:- C

Explanation:- Option 1 cannot be the appropriate summary because it fails to mention that the walnut sphinx moth caterpillars make use of acoustic deception to ward off predators. Further, it is not stated in the paragraph that they have specialized vocal cords. Even option 2 fails to capture the essence of the paragraph as it does not mention the point – the acoustic deception used by the caterpillars to mimic bird alarm calls Between options 3 and 4, the former is appropriate as

option 4 talks about deception and not “acoustic deception” which is employed by the birds. Further, it is not mentioned in the paragraph that the caterpillars use “camouflage” to trick the predators. Hence option 3 captures the essence of the paragraph.

QNo:- 26 ,Correct Answer:- D

Explanation:- It can be understood from the paragraph that both Socrates and Bacon believed that arguments and theories can be validated only by examining them from both sides. This point is stated only in option 4. Option 1, which states that Socrates and Bacon advocated clever questioning in order to disprove the arguments and theories put forth by opponents, is not the appropriate summary of the paragraph. Option 2 captures only a part of the argument. Option 3 is a distortion of the paragraph.

QNo:- 27 ,Correct Answer:- C

Explanation:- The main point of the paragraph is that language is fluid and its meaning is derived from usage and exchange. Lexicographers abstract the meaning from that exchange and this meaning is then set within the meaning of the dictionary definition. This point is covered only in option 3. Options 2 and 4, which suggest the converse of what is stated in the paragraph, are easy eliminations. Option 1 captures only a part of the paragraph as it does not mention that the definitions of words are extracted from their meaning in exchange.

QNo:- 28 ,Correct Answer:- 25341

Explanation:- Statement 2, which is general statement, begins the paragraph declaring that the stories that we tell reflect the world around us. 5 complements 2 stating that as soon as we capture a story, the world we were trying to capture has changed. 3 carries the discussion forward by emphasizing that we cannot but retell the stories that we value. 4 is linked to 3 - “never quite right” (statement 3) and “even if we manage to get them quite right” (statement 4). 1 concludes the para stating that the implications of retelling stories take on a new meaning in a modern India. Therefore, 25341 is the appropriate sequence.

QNo:- 29 ,Correct Answer:- 53421

Explanation:- 5 begins the paragraph by talking about the importance of lightning. 3, which states that lightning starts the series of chemical reactions that need to happen to nitrogen, and ultimately helps it to nourish the earth, is a continuation of 5. 4 follows 3 by explaining how nitrogen nourishes the earth with its ubiquitous presence over each square mile on earth. 2 follows by describing that nitrogen, in its aerial form is insoluble and that it is in need of transformation. 1 complements 2 explaining how nitrogen must undergo transformation similar to the way that food undergoes transformation in our digestive machinery. The logical sequence is 53421.

QNo:- 30 ,Correct Answer:- 25431

Explanation:- 2 begins the paragraph describing placebo effect and goes on to state that placebo effect used to be dismissed by researchers as a psychological effect. 5 follows 2 stating that placebo effects are now being studied as a potential portal into the self-healing powers of the body. 4 follows 5 elaborating on the effectiveness of placebo effect in empowering chronic patients to believe in the notion of our bodies' capacity for self-healing. 3 carries forward the discussion stating that the placebo effect is not based only on believing in treatment and that the clinical setting in which treatments are administered is also important. 1 concludes the paragraph reiterating the importance of placebo effect in providing effective treatment. The appropriate sequence is 25431.

QNo:- 31 ,Correct Answer:- 43512

Explanation:- 4 begins the paragraph describing how the dictionary was a necessity for the 18th century reader and this cause was championed by a vigorous and practical champion. 3 follows 4 describing this champion – Samuel Johnson and goes on to describe Johnson's qualities. 5 follows 3 by elaborating on Johnson's watchwords, stating that Johnson believed that language must have a daily practical use. 1 complements 5 elaborating on how Johnson treated English very practically. 2 concludes the paragraph with the statement that Johnson masked a profound inner torment and found solace in compiling words.

QNo:- 32 ,Correct Answer:- 2

Explanation:- Statement 1, which states that although we are born with the gift of language, we are not skilled when it comes to communicating with others. 5 follows 1 explaining how we end up being unskilled in communicating with others. 3 and 4 further elaborate on how we are unskilled while communicating others. Therefore, 1,5,3 and 4 form a sequence and 2, which has an advisory tone and mentions how we must orchestrate our speech if we want to achieve our goals, conveys a different idea and is, therefore, the odd man out.

QNo:- 33 ,Correct Answer:- 4

Explanation:- It's elementary to pair (2) and (1) as “similar impression” in (1) refers to “the sense of timelessness” in (2). (3) comes to the point and identifies the “one ...finest champions” as Roger Federer. (5) follows by giving reasonable reasons for his longevity. However, (4) refers to match specifics, which is out of the broad scope of this particular paragraph.

QNo:- 34 ,Correct Answer:- 1

Explanation:- (2) introduces the Commonwealth Bank logo and (5) ups the ante for the bank logo. (4) explains what designers do thus to enhance a brand value and (3) takes the paragraph into a “deeper” context. Again, (1) makes reference to symbols, whereas only a 'logo' is specified in the passage, hence the answer is (1).

Section : DI & Reasoning

QNo:- 35 ,Correct Answer:- B

Explanation:-

	Thin Crust		Deep Dish		
	Normal Cheese	Extra Cheese	Normal Cheese	Extra Cheese	
Party 1	x	72 - x	w	48 - w	120
Party 2	y	66 - y	36 - y	18 + y	120
Party 3	z	162 - z	364 - z	34 + z	560
Total					800
	300		500		

Thin Crust pizzas delivered to party 3 = z + 162 – z = 162.

QNo:- 36 ,Correct Answer:- C

Explanation:-

	Thin Crust		Deep Dish		
	Normal Cheese	Extra Cheese	Normal Cheese	Extra Cheese	
Party 1	x	72 - x	w	48 - w	120
Party 2	y	66 - y	36 - y	18 + y	120
Party 3	z	162 - z	364 - z	34 + z	560
Total					800
	300		500		

Total Normal Cheese pizzas delivered to the three parties = 0.52 (800) = 416
From the table,
416 = (x + y +z) + (w +36 –y + 364 – z)
416 = 400 + w + x
⇒ w + x = 16
So, party 1 ordered 16 Normal Cheese pizzas

QNo:- 37 ,Correct Answer:- B

Explanation:-

	Thin Crust		Deep Dish		
	Normal Cheese	Extra Cheese	Normal Cheese	Extra Cheese	
Party 1	x	72 - x	w	48 - w	120
Party 2	y	66 - y	36 - y	18 + y	120
Party 3	z	162 - z	364 - z	34 + z	560
Total					800
	300		500		

Given, of the 36 Normal Cheese pizzas delivered to party 2, 50% or 18 were of Thin Crust variety
∴ y = 18.
Difference between 66 – y and 18 + y
= 48 –2y = 48 – 36
= 12

QNo:- 38 ,Correct Answer:- A

Explanation:-

	Thin Crust		Deep Dish		
	Normal Cheese	Extra Cheese	Normal Cheese	Extra Cheese	
Party 1	x	72 - x	w	48 - w	120
Party 2	y	66 - y	36 - y	18 + y	120
Party 3	z	162 - z	364 - z	34 + z	560
Total					800
	300		500		

We already know, w + x = 16
Further, we're told that of the x + w Normal Cheese pizzas delivered to party 1, 25% are of Deep Dish variety.

$\therefore \frac{w}{x+w} = \frac{1}{4} \Rightarrow x = 3w$

So, x = 12 and w = 4
Cost of a T-EC pizza = Rs. 500
Cost of a D-EC pizza = Rs. 550
Cost of a T-NC pizza = Rs. 330
Cost of a D-NC pizza = Rs. 330
Total pizza bill for part 1 = 12 (330) + 60(500) + 4(330) + 44(550)
= Rs. 59,480

QNo:- 39 ,Correct Answer:- C

Explanation:- STEP I:
Given that after change, E2 is 30 more than before. E2 before was at least 46. E2 (after was 76). So, E2 before must have been 76-30 = 46. That indicates that the two empty cells can be filled as 0 each across the row E2. Hence, the table will be as follows (after this condition).

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25			2	
E4		3	2	14		4	
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	**101**
Total		**76**					**300**

STEP II:
Given that before change E1 = E4 + 6. Now, E1 (before) = 31. Further, E4 (before) must be more than 23 (3 + 2 + 14 + 4 + data in two empty cells). That indicates, the two empty cells across E4 must be 1 and 1. So, after this step, the cells can be filled up as follows.

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25			2	
E4	**1**	3	2	14	**1**	4	**25**
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		**76**					**300**

STEP III:
Given that after change, E1 = E4 -3. It is to be noted that E1 (afterwards) can be at least 16 and at most 18. E4 (column) cannot be 20, as in that case, the total number of zeroes will cross 4. E4 must be 21. So, that E1 (afterwards) will be 18. This indicates, there must be 3 zeroes in E4 and one entry as "1" in the column E4. All other entries will be "1".

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25	**0**	**1**	2	**36**
E4	**1**	3	2	14	**1**	4	**25**
E5	**1**	5	**1**	**0**	30	**1**	**38**
E6	**1**	7	3	**1**	2	9	**23**
E7	4	16	30	5	5	41	**101**
Total	**18**	**76**	**79**	**21**	**45**	**61**	**300**

The electives which had a decrease in the enrollments after the change process are E1, E4. So, a total of 2 electives.

QNo:- 40 ,Correct Answer:- D

Explanation:- STEP I:
Given that after change, E2 is 30 more than before. E2 before was at least 46. E2 (after was 76). So, E2 before must have been 76-30 = 46. That indicates that the two empty cells can be filled as 0 each across the row E2. Hence, the table will be as follows (after this condition).

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25			2	
E4		3	2	14		4	
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	**101**
Total		**76**					**300**

STEP II:
Given that before change E1 = E4 + 6. Now, E1 (before) = 31. Further, E4 (before) must be more than 23 (3 + 2 + 14 + 4 + data in two empty cells). That indicates, the two empty cells across E4 must be 1 and 1. So, after this step, the cells can be filled up as follows.

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25			2	
E4	**1**	3	2	14	**1**	4	**25**
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		**76**					**300**

STEP III:
Given that after change, E1 = E4 -3. It is to be noted that E1 (afterwards) can be at least 16 and at most 18. E4 (column) cannot be 20, as in that case, the total number of zeroes will cross 4. E4 must be 21. So, that E1 (afterwards) will be 18. This indicates, there must be 3 zeroes in E4 and one entry as "1" in the column E4. All other entries will be "1".

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25	**0**	**1**	2	**36**
E4	**1**	3	2	14	**1**	4	**25**
E5	**1**	5	**1**	**0**	30	**1**	**38**
E6	**1**	7	3	**1**	2	9	**23**
E7	4	16	30	5	5	41	**101**
Total	**18**	**76**	**79**	**21**	**45**	**61**	**300**

After the change process, correct sequence of number of persons in electives E1 to E6 is as shown below:
⇒ 18, 76, 79, 21, 45 and 61.

QNo:- 41 ,Correct Answer:- D

Explanation:- STEP I:
Given that after change, E2 is 30 more than before. E2 before was at least 46. E2 (after was 76). So, E2 before must have been 76-30 = 46. That indicates that the two empty cells can be filled as 0 each across the row E2. Hence, the table will be as follows (after this condition).

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25			2	
E4		3	2	14		4	
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	**101**
Total		**76**					**300**

STEP II:
Given that before change E1 = E4 + 6. Now, E1 (before) = 31. Further, E4 (before) must be more than 23 (3 + 2 + 14 + 4 + data in two empty cells). That indicates, the two empty cells across E4 must be 1 and 1. So, after this step, the cells can be filled up as follows.

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25			2	
E4	**1**	3	2	14	**1**	4	**25**
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		**76**					**300**

STEP III:
Given that after change, E1 = E4 -3. It is to be noted that E1 (afterwards) can be at least 16 and at most 18. E4 (column) cannot be 20, as in that case, the total number of zeroes will cross 4. E4 must be 21. So, that E1 (afterwards) will be 18. This indicates, there must be 3 zeroes in E4 and one entry as "1" in the column E4. All other entries will be "1".

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25	**0**	**1**	2	**36**
E4	**1**	3	2	14	**1**	4	**25**
E5	**1**	5	**1**	**0**	30	**1**	**38**
E6	**1**	7	3	**1**	2	9	**23**
E7	4	16	30	5	5	41	**101**
Total	**18**	**76**	**79**	**21**	**45**	**61**	**300**

The maximum change occurs in E6. From 23 to 61. A change of 38 and a % change of approx 165%

QNo:- 42 ,Correct Answer:- A

Explanation:- STEP I:

Given that after change, E2 is 30 more than before. E2 before was at least 46. E2 (after was 76). So, E2 before must have been 76-30 = 46. That indicates that the two empty cells can be filled as 0 each across the row E2. Hence, the table will be as follows (after this condition).

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25			2	
E4		3	2	14		4	
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	**101**
Total		**76**					**300**

STEP II:

Given that before change E1 = E4 + 6. Now, E1 (before) = 31. Further, E4 (before) must be more than 23 (3 + 2 + 14 + 4 + data in two empty cells). That indicates, the two empty cells across E4 must be 1 and 1. So, after this step, the cells can be filled up as follows.

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25			2	
E4	**1**	3	2	14	**1**	4	**25**
E5		5			30		
E6		7	3		2	9	
E7	4	16	30	5	5	41	101
Total		**76**					**300**

STEP III:

Given that after change, E1 = E4 -3. It is to be noted that E1 (afterwards) can be at least 16 and at most 18. E4 (column) cannot be 20, as in that case, the total number of zeroes will cross 4. E4 must be 21. So, that E1 (afterwards) will be 18. This indicates, there must be 3 zeroes in E4 and one entry as "1" in the column E4. All other entries will be "1".

	E1	E2	E3	E4	E5	E6	Total
E1	9	5	10	1	4	2	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25	**0**	**1**	2	**36**
E4	**1**	3	2	14	**1**	4	**25**
E5	**1**	5	**1**	**0**	30	**1**	**38**
E6	**1**	7	3	**1**	2	9	**23**
E7	4	16	30	5	5	41	**101**
Total	**18**	**76**	**79**	**21**	**45**	**61**	**300**

Total number of persons in E1 (after the shift) is less than 20. All the 31 persons (earlier in E1) stayed back in E1. This implies no one shifted to E2, E3, E4, E5 and E6. In this scenario, total number of persons is as shown below.

	E1	E2	E3	E4	E5	E6	Total
E1	31	0	0	0	0	0	**31**
E2	**0**	34	8	**0**	2	2	**46**
E3	2	6	25	**0**	**1**	2	**36**
E4	**1**	3	2	14	**1**	4	**25**
E5	**1**	5	**1**	**0**	30	**1**	**38**
E6	**1**	7	3	**1**	2	9	**23**
E7	4	16	30	5	5	41	**101**
Total	**40**	**71**	**99**	**20**	**41**	**59**	**300**

The number of persons in decreasing order: E2, E3, E6, E5, E1, E4.

QNo:- 43 ,Correct Answer:- C

Explanation:- Total amount distributed by the old woman = Rs.70 lakh (bank deposits) + Rs.50 lakh (House) + Rs.90 lakhs (3 flats) i.e Rs.210 lakhs + Gold coins worth Rs.1 lakh each

Given that Neeta received the least amount and Geeta received the highest amount in bank deposits. Given, all assets are equally distributed. Hence each one should get Rs.70 lakh. Neeta should get 2 flats (Rs.60 lakh), Seetha should get the house

and Geeta should get 1 flat (Rs.30 lakh). Hence the bank deposits received by the three are Rs.10 lakh, Rs.20 lakh and Rs.40 lakh respectively. Choice (3)

QNo:- 44 ,Correct Answer:- 2

Explanation:- Total amount distributed by the old woman = Rs.70 lakh (bank deposits) + Rs.50 lakh (House) + Rs.90 lakhs (3 flats) i.e Rs.210 lakhs + Gold coins worth Rs.1 lakh each

Given that Neeta received the least amount and Geeta received the highest amount in bank deposits. Given, all assets are equally distributed. Hence each one should get Rs.70 lakh. Neeta should get 2 flats (Rs.60 lakh), Seetha should get the house and Geeta should get 1 flat (Rs.30 lakh).

So Neeta should get 2 flats.

QNo:- 45 ,Correct Answer:- B

Explanation:- Total amount distributed by the old woman = Rs.70 lakh (bank deposits) + Rs.50 lakh (House) + Rs.90 lakhs (3 flats) i.e Rs.210 lakhs + Gold coins worth Rs.1 lakh each.
From the given data, the gold coins were distributed in the ratio 2 : 3 : 4, and the total assets were distributed in the ratio 1 : 2 : 3.
From both the ratios, we can see that Seeta received 1/3 of the total property and 1/3 of the gold coins. This means her share is 1/3 (Bank deposits + house + flats) = Rs.70 lakhs.
Also, one child got all the three flats but not the house. One child other than Geeta got Rs.30 lakhs in bank deposits.
From this we can conclude that Seeta cannot get all the three flats. As her share is Rs.70 lakhs + 1/3 (gold coins).
∴Seeta should receive one house and bank deposits of Rs.20 lakhs. This implies Neeta should get Rs.30 lakhs in bank deposits. Hence Geeta should get Rs.20 lakhs in bank deposits. From this all the three flats should be received by Geeta.
Let the number of gold coins received by Neeta, Seeta and Geeta be 2x, 3x and 4x respectively.
From these we've, $\frac{30+2x}{70+3x}=\frac{1}{2}\Rightarrow x=10$
∴Number of gold coins must be 90. Choice (2)

QNo:- 46 ,Correct Answer:- 20

Explanation:- Total amount distributed by the old woman = Rs.70 lakh (bank deposits) + Rs.50 lakh (House) + Rs.90 lakhs (3 flats) i.e Rs.210 lakhs + Gold coins worth Rs.1 lakh each

From the given data, the gold coins were distributed in the ratio 2 : 3 : 4, and the total assets were distributed in the ratio 1 : 2 : 3.
From both the ratios, we can see that Seeta received 1/3 of the total property and 1/3 of the gold coins. This means her share is 1/3 (Bank deposits + house + flats) = Rs.70 lakhs.
Also, one child got all the three flats but not the house. One child other than Geeta got Rs.30 lakhs in bank deposits.
From this we can conclude that Seeta cannot get all the three flats. As her share is Rs.70 lakhs + 1/3 (gold coins).
∴Seeta should receive one house and bank deposits of Rs.20 lakhs. This implies Neeta should get Rs.30 lakhs in bank deposits. Hence Geeta should get Rs.20 lakhs in bank deposits.

QNo:- 47 ,Correct Answer:- D

Explanation:- From the data, there are 2 dorms which require Rs.1 crore, 1 dorm which requires Rs.2 crore, 3 dorms which require Rs.3 crore, 1 dorm which requires Rs.4 crore, 1 dorm which requires Rs.5 crore and two dorms which require Rs.6 crore. Hence the total amount needed is Rs.34 crore.
Dorms 4 to 9 have different repair costs. Dorm 7 needs the maximum and Dorm 8 needs the minimum. From the other conditions given, we have the following table with partial data.

Dorm Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Repair Type	H/M	L /H	M	L/H	M/H	L	M/H	L/H	M	L /H
Conclusion (Rs. in Cr)	3	1/6	3	5	3/4	2	6	1	4/3	6/1

L = Light
M = Moderate
H = Extensive
Going by the options, Dorm 1 needs a moderate repair is possibly true. Dorm 5 not needing more than Rs.4 crore is true. Hence Dorm 10's repair not costing more than Rs.4 crore is not necessarily true as it may require Rs.6 crore or Rs.1 crore.
Choice (4)

QNo:- 48 ,Correct Answer:- 19

Explanation:- From the data, there are 2 dorms which require Rs.1 crore, 1 dorm which requires Rs.2 crore, 3 dorms which require Rs.3 crore, 1 dorm which requires Rs.4 crore, 1 dorm which requires Rs.5 crore and two dorms which require Rs.6 crore. Hence the total amount needed is Rs.34 crore.
Dorms 4 to 9 have different repair costs. Dorm 7 needs the maximum and Dorm 8 needs the minimum. From the other conditions given, we have the following table with partial data.

Dorm Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Repair Type	H/M	L /H	M	L/H	M/H	L	M/H	L/H	M	L /H
Conclusion (Rs. in Cr)	3	1/6	3	5	3/4	2	6	1	4/3	6/1

L= Light
M= Moderate
H = Extensive
The total cost for the odd numbered dorms are 3 + 3 + 3 (or) 4 + 6 + 4 (or) 3 i.e. Rs.19 crore
Ans : 19

QNo:- 49 ,Correct Answer:- 3

Explanation:- From the data, there are 2 dorms which require Rs.1 crore, 1 dorm which requires Rs.2 crore, 3 dorms which require Rs.3 crore, 1 dorm which requires Rs.4 crore, 1 dorm which requires Rs.5 crore and two dorms which require Rs.6 crore. Hence the total amount needed is Rs.34 crore.
Dorms 4 to 9 have different repair costs. Dorm 7 needs the maximum and Dorm 8 needs the minimum. From the other conditions given, we have the following table with partial data.

Dorm Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Repair Type	H/M	L /H	M	L/H	M/H	L	M/H	L/H	M	L /H
Conclusion (Rs. in Cr)	3	1/6	3	5	3/4	2	6	1	4/3	6/1

L= Light
M= Moderate
H = Extensive

Additional data for Solutions
4 of the 10 dorms are women's dorms which need Rs.20 crore for repairs. Also from 1 to 5 there is only one women's dorm. This is possible with repairing costs Rs.6, Rs.6, Rs.5 and Rs.3 crore. Among the first 5, dorm 4 should be women's dorm. Rs.6 cr dorms can only be dorm 7 and dorm 10. Rs.3 crore can be from dorm 1, 3, 5 or 9. But 1, 3 or 5 are not women's dorm. So it has to be dorm 9.

From the above, the repair cost for dorm 9 is Rs.3 crore Ans : 3

QNo:- 50 ,Correct Answer:- D

Explanation:- From the data, there are 2 dorms which require Rs.1 crore, 1 dorm which requires Rs.2 crore, 3 dorms which require Rs.3 crore, 1 dorm which requires Rs.4 crore, 1 dorm which requires Rs.5 crore and two dorms which require Rs.6 crore. Hence the total amount needed is Rs.34 crore.
Dorms 4 to 9 have different repair costs. Dorm 7 needs the maximum and Dorm 8 needs the minimum. From the other conditions given, we have the following table with partial data.

Dorm Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Repair Type	H/M	L /H	M	L/H	M/H	L	M/H	L/H	M	L /H

Conclusion (Rs. in Cr)	3	1/6	3	5	3/4	2	6	1	4/3	6/1

L= Light
M= Moderate
H = Extensive

Additional data for Solutions
4 of the 10 dorms are women's dorms which need Rs.20 crore for repairs. Also from 1 to 5 there is only one women's dorm. This is possible with repairing costs Rs.6, Rs.6, Rs.5 and Rs.3 crore. Among the first 5, dorm 4 should be women's dorm. Rs.6 cr dorms can only be dorm 7 and dorm 10. Rs.3 crore can be from dorm 1, 3, 5 or 9. But 1, 3 or 5 are not women's dorm. So it has to be dorm 9.

From the above, dorm 10 should be women's dorm. Choice (4)

QNo:- 51 ,Correct Answer:- 7

Explanation:- Let the ratings be such that the tea with the highest rating is ranked 1 and the tea with the lowest rating is ranked 6. From (2) and (5), we get the following:

Ranking	Place	Cup No	Rating
1	Ooty		
2			
3			
4			
5			
6		Cup 2	

From (4), only two cups have been given even numbered ratings and one of them is given to the tea in Cup 2 (from (5))
From (3), it can be inferred that the rating of the tea in Cup 3, is an even number.
Hence, the rating of the tea in Cup 5 is an odd number.
Besides, the tea in Cup 3 has a higher rating than those in Cup 5, Cup 2 and Cup 1 (from (6))
Therefore, the ranking of Cup 3 is either 2 or 3. It cannot be 1 since the tea from Ooty is not in Cup 6.
From (5), the rating of the tea in Cup 2 can either be 2 or 4. Any other even number below 10 cannot be assigned to it since there are five other cups in which the tea has been rated from 1 to 10 and all the ratings are distinct numbers.
If the rating of the tea in Cup 2 is 4, the minimum possible rating for the tea in Cup 5 will be 5 and from that, the rating of the tea in Cup 3 will be 10. But 10 is the highest rating and it is not given to the tea in Cup 3 (from (2)).
Therefore, the tea in Cup 2 has a rating of 2.
The only rating that can be given to the tea in Cup 5 is 3. (Since it cannot be an even number and it has to be less than 5).
Therefore, the rank of the tea in Cup 5 will be 5 with a rating of 3. Hence, the rating of the tea in Cup 3 will be 6.
Between the ratings 3 and 6, only one rating is possible i.e. 5, because there are only two even ratings that are given to the tea in Cup 3 and Cup 2. Also, the tea in Cup 1 has a less rating than the tea in Cup 3. So the only possibility is that the tea in Cup 1 has a rating of 5 and is ranked fourth and the tea in Cup 3 has a rating of 6 and is ranked third.
From (1), only the tea which has got the second highest rating can belong to Himachal and it is the tea in Cup 6. Therefore, the tea from Himachal is in Cup 6 and it has the second highest rating. The rating has to be an odd number greater than 6 and less than 10. The only number possible is 7. If it were 9, then the tea from Ooty has to be given a rating of 10 but there are only two even ratings. Hence, the tea from Himachal has got a rating of 7.
The tea from Ooty will be in Cup 4. The rating of the tea from Ooty should be an odd number greater than 7 and less than 10. The only possible value is 9.
The final table will be as follows:

Ranking	Place	Cup No	Rating
1	Ooty	Cup 4	9
2	Himachal	Cup 6	7
3		Cup 3	6
4		Cup 1	5
5		Cup 5	3
6		Cup 2	2

The second highest rating is given to the tea from Himachal and it is 7. Ans: 7

QNo:- 52 ,Correct Answer:- 4

Explanation:- Let the ratings be such that the tea with the highest rating is ranked 1 and the tea with the lowest rating is ranked 6. From (2) and (5), we get the following:

Ranking	Place	Cup No	Rating
1	Ooty		
2			
3			
4			
5			
6		Cup 2	

From (4), only two cups have been given even numbered ratings and one of them is given to the tea in Cup 2 (from (5))
From (3), it can be inferred that the rating of the tea in Cup 3, is an even number.
Hence, the rating of the tea in Cup 5 is an odd number.
Besides, the tea in Cup 3 has a higher rating than those in Cup 5, Cup 2 and Cup 1 (from (6))
Therefore, the ranking of Cup 3 is either 2 or 3. It cannot be 1 since the tea from Ooty is not in Cup 6.
From (5), the rating of the tea in Cup 2 can either be 2 or 4. Any other even number below 10 cannot be assigned to it since there are five other cups in which the tea has been rated from 1 to 10 and all the ratings are distinct numbers.
If the rating of the tea in Cup 2 is 4, the minimum possible rating for the tea in Cup 5 will be 5 and from that, the rating of the tea in Cup 3 will be 10. But 10 is the highest rating and it is not given to the tea in Cup 3 (from (2)).
Therefore, the tea in Cup 2 has a rating of 2.
The only rating that can be given to the tea in Cup 5 is 3. (Since it cannot be an even number and it has to be less than 5).
Therefore, the rank of the tea in Cup 5 will be 5 with a rating of 3. Hence, the rating of the tea in Cup 3 will be 6.
Between the ratings 3 and 6, only one rating is possible i.e. 5, because there are only two even ratings that are given to the tea in Cup 3 and Cup 2. Also, the tea in Cup 1 has a less rating than the tea in Cup 3. So the only possibility is that the tea in Cup 1 has a rating of 5 and is ranked fourth and the tea in Cup 3 has a rating of 6 and is ranked third.
From (1), only the tea which has got the second highest rating can belong to Himachal and it is the tea in Cup 6. Therefore, the tea from Himachal is in Cup 6 and it has the second highest rating. The rating has to be an odd number greater than 6 and less than 10. The only number possible is 7. If it were 9, then the tea from Ooty has to be given a rating of 10 but there are only two even ratings. Hence, the tea from Himachal has got a rating of 7.
The tea from Ooty will be in Cup 4. The rating of the tea from Ooty should be an odd number greater than 7 and less than 10. The only possible value is 9.
The final table will be as follows:

Ranking	Place	Cup No	Rating
1	Ooty	Cup 4	9
2	Himachal	Cup 6	7
3		Cup 3	6
4		Cup 1	5
5		Cup 5	3
6		Cup 2	2

The number of the cup that contained tea from Ooty is Cup 4. Ans: 4

QNo:- 53 ,Correct Answer:- B

Explanation:- Let the ratings be such that the tea with the highest rating is ranked 1 and the tea with the lowest rating is ranked 6. From (2) and (5), we get the following:

Ranking	Place	Cup No	Rating
1	Ooty		
2			
3			
4			
5			
6		Cup 2	

From (4), only two cups have been given even numbered ratings and one of them is given to the tea in Cup 2 (from (5))
From (3), it can be inferred that the rating of the tea in Cup 3, is an even number.
Hence, the rating of the tea in Cup 5 is an odd number.
Besides, the tea in Cup 3 has a higher rating than those in Cup 5, Cup 2 and Cup 1 (from (6))

Therefore, the ranking of Cup 3 is either 2 or 3. It cannot be 1 since the tea from Ooty is not in Cup 6.
From (5), the rating of the tea in Cup 2 can either be 2 or 4. Any other even number below 10 cannot be assigned to it since there are five other cups in which the tea has been rated from 1 to 10 and all the ratings are distinct numbers.
If the rating of the tea in Cup 2 is 4, the minimum possible rating for the tea in Cup 5 will be 5 and from that, the rating of the tea in Cup 3 will be 10. But 10 is the highest rating and it is not given to the tea in Cup 3 (from (2)).
Therefore, the tea in Cup 2 has a rating of 2.
The only rating that can be given to the tea in Cup 5 is 3. (Since it cannot be an even number and it has to be less than 5).
Therefore, the rank of the tea in Cup 5 will be 5 with a rating of 3. Hence, the rating of the tea in Cup 3 will be 6.
Between the ratings 3 and 6, only one rating is possible i.e. 5, because there are only two even ratings that are given to the tea in Cup 3 and Cup 2. Also, the tea in Cup 1 has a less rating than the tea in Cup 3. So the only possibility is that the tea in Cup 1 has a rating of 5 and is ranked fourth and the tea in Cup 3 has a rating of 6 and is ranked third.
From (1), only the tea which has got the second highest rating can belong to Himachal and it is the tea in Cup 6. Therefore, the tea from Himachal is in Cup 6 and it has the second highest rating. The rating has to be an odd number greater than 6 and less than 10. The only number possible is 7. If it were 9, then the tea from Ooty has to be given a rating of 10 but there are only two even ratings. Hence, the tea from Himachal has got a rating of 7.
The tea from Ooty will be in Cup 4. The rating of the tea from Ooty should be an odd number greater than 7 and less than 10. The only possible value is 9.
The final table will be as follows:

Ranking	Place	Cup No	Rating
1	Ooty	Cup 4	9
2	Himachal	Cup 6	7
3		Cup 3	6
4		Cup 1	5
5		Cup 5	3
6		Cup 2	2

It is given that the rating of the tea from Munnar is less than that of the teas from Wayanad and Assam. So it can be ranked either fifth or sixth. If the tea from Munnar did not get the minimum rating, it will be ranked fifth with a rating of 3. Therefore, the teas from Assam and Wayanad will be ranked third and fourth respectively. Hence, the rating of the tea from Wayanad will be 5. Choice (2)

QNo:- 54 ,Correct Answer:- B

Explanation:- Let the ratings be such that the tea with the highest rating is ranked 1 and the tea with the lowest rating is ranked 6. From (2) and (5), we get the following:

Ranking	Place	Cup No	Rating
1	Ooty		
2			
3			
4			
5			
6		Cup 2	

From (4), only two cups have been given even numbered ratings and one of them is given to the tea in Cup 2 (from (5))
From (3), it can be inferred that the rating of the tea in Cup 3, is an even number.
Hence, the rating of the tea in Cup 5 is an odd number.
Besides, the tea in Cup 3 has a higher rating than those in Cup 5, Cup 2 and Cup 1 (from (6))
Therefore, the ranking of Cup 3 is either 2 or 3. It cannot be 1 since the tea from Ooty is not in Cup 6.
From (5), the rating of the tea in Cup 2 can either be 2 or 4. Any other even number below 10 cannot be assigned to it since there are five other cups in which the tea has been rated from 1 to 10 and all the ratings are distinct numbers.
If the rating of the tea in Cup 2 is 4, the minimum possible rating for the tea in Cup 5 will be 5 and from that, the rating of the tea in Cup 3 will be 10. But 10 is the highest rating and it is not given to the tea in Cup 3 (from (2)).
Therefore, the tea in Cup 2 has a rating of 2.
The only rating that can be given to the tea in Cup 5 is 3. (Since it cannot be an even number and it has to be less than 5).
Therefore, the rank of the tea in Cup 5 will be 5 with a rating of 3. Hence, the rating of the tea in Cup 3 will be 6.
Between the ratings 3 and 6, only one rating is possible i.e. 5, because there are only two even ratings that are given to the tea in Cup 3 and Cup 2. Also, the tea in Cup 1 has a less rating than the tea in Cup 3. So the only possibility is that the tea in Cup 1 has a rating of 5 and is ranked fourth and the tea in Cup 3 has a rating of 6 and is ranked third.
From (1), only the tea which has got the second highest rating can belong to Himachal and it is the tea in Cup 6. Therefore, the tea from Himachal is in Cup 6 and it has the second highest rating. The rating has to be an odd number greater than 6 and less than 10. The only number possible is 7. If it were 9, then the tea from Ooty has to be given a rating of 10 but there

are only two even ratings. Hence, the tea from Himachal has got a rating of 7.
The tea from Ooty will be in Cup 4. The rating of the tea from Ooty should be an odd number greater than 7 and less than 10. The only possible value is 9.
The final table will be as follows:

Ranking	Place	Cup No	Rating
1	Ooty	Cup 4	9
2	Himachal	Cup 6	7
3		Cup 3	6
4		Cup 1	5
5		Cup 5	3
6		Cup 2	2

If the cups containing teas from Wayanad and Ooty have consecutive numbers, then the Cup containing tea from Wayanad can either be Cup 5 or Cup 3. But the tea from Wayanad cannot be in Cup 3 because the tea from Assam got a higher rating than the tea from Wayanad. Therefore, the tea from Wayanad should be in Cup 5. In this case, the tea from Munnar will be in Cup 2 and the tea from Darjeeling can either be in Cup 1 or Cup 3. Choice (2)

QNo:- 55 ,Correct Answer:- C

Explanation:- Following is a chess board for 8 X 8.
Queen is at C5 (as shown below). Pieces which are under attack are A3, C2, G1, G5. So, a total of 4 pieces are under attack.

		QUEEN				(G5) Piece	
(A3) Piece						(G3) Piece	
		(C2) Piece					
A	B	C	D	E	F	(G1) Piece	H

QNo:- 56 ,Correct Answer:- D

Explanation:- Pieces are at A1, A3, B4, D7, H7 and H8 (These are as indicated below)
Option (1): If Queen is at F8, it will attack H8 and B4. A total of 2 pieces.
Option (2): If Queen is at A7, it will attack A3 and D7. A total of 2 pieces.
Option (3): If Queen is at C1, it will attack A1 and A3. A total of 2 pieces.
Option (4): If Queen is at D3, it will attack A3, D7 and H7, a total of 3 pieces.
So, Queen at D3 implies 3 pieces will be under attack (which is the maximum).

							Piece (H8)
			Piece (D7)				Piece (H7)
	Piece (B4)						
Piece (A3)							
Piece (A1)	B	C	D	E	F	G	H

QNo:- 57 ,Correct Answer:- C

Explanation:- Queen cannot be placed in Columns -A, B, D, and H.
From the remaining columns, it has to be assessed.
For e.g.
COLUMN C:-> If Queen is placed in C2, it will attack H7. Further, other positions in the column C can be ruled out. Similarly, analyzing other squares, the result is as follows:->
Queen can be placed in E2, F2, G2, G5 (such that the pieces on board are NOT under attack).

So, there are a total of 4 such squares for the Queen.

							Piece (H8)
			Piece (D7)				Piece (H7)
	Piece (B4)						
Piece (A3)							
Piece (A1)	B	C	D	E	F	G	H

QNo:- 58 ,Correct Answer:- C

Explanation:- Given that Queen is at d5. The squares which will be under attack are as indicated below (by the term under Attack).
These squares are either lying in the diagonal, or in the row or in the column.
The remaining squares are marked safe. A total of 36 such squares are safe (by counting).

Under Attack			Under Attack			Under Attack	
	Under Attack		Under Attack		Under Attack		
		Under Attack	Under Attack	Under Attack			
Under Attack	Under Attack	Under Attack	**QUEEN**	Under Attack	Under Attack	Under Attack	Under Attack
		Under Attack	Under Attack	Under Attack			
	Under Attack		Under Attack		Under Attack		
Under Attack			Under Attack			Under Attack	
			Under Attack				Under Attack

QNo:- 59 ,Correct Answer:- A

Explanation:- For discussion we take the initial letter of each friend.
From the given data, one can observe that Row number 1 to 20 have extra charges except for middle seat.
J, A, B must be in Aisle seats to get the sum as 4600; and we know that J, A, B paid different amount. Therefore,

Row/No	A	B	C	D	E	F	Remarks
10			J	M			500 × 2 = 1000
11			A				400 × 1 = 400
12			B				1000 × 1 = 1000
13					G	K	1000 × 2 = 2000 (6 persons = 4400)
20						P	200 × 1 = 200 (7 persons = 4600)
21						T	No extra charge

Note: G, K and K, G can be interchanged. Moreover they can be placed in row 1 to 0. So also the right window positions and aisle seats can be interchanged.

Row number (10) Choice (1)

QNo:- 60 ,Correct Answer:- C

Explanation:- For discussion we take the initial letter of each friend.
From the given data, one can observe that Row number 1 to 20 have extra charges except for middle seat.
J, A, B must be in Aisle seats to get the sum as 4600; and we know that J, A, B paid different amount. Therefore,

Row/No	A	B	C	D	E	F	Remarks
10			J	M			500 × 2 = 1000
11			A				400 × 1 = 400
12			B				1000 × 1 = 1000

13					G	K	1000 × 2 = 2000 (6 persons = 4400)
20						P	200 × 1 = 200 (7 person = 4600)
21						T	No extra charge

Note: G, K and K G can be interchanged. Moreover they can be placed in row 1 to 0. So also the right window positions and aisle seats can be interchanged.

He paid (500) Choice (3)

QNo:- 61 ,Correct Answer:- D

Explanation:- For discussion we take the initial letter of each friend.
From the given data, one can observe that Row number 1 to 20 have extra charges except for middle seat.
J, A, B must be in Aisle seats to get the sum as 4600; and we know that J, A, B paid different amount. Therefore,

Row/No	A	B	C	D	E	F	Remarks
10			J	M			500 × 2 = 1000
11			A				400 × 1 = 400
12			B				1000 × 1 = 1000
13					G	K	1000 × 2 = 2000 (6 persons = 4400)
20						P	200 × 1 = 200 (7 person = 4600)
21						T	No extra charge

Note: G, K and K G can be interchanged. Moreover they can be placed in row 1 to 0. So also the right window positions and aisle seats can be interchanged.

He paid Rs. (1000) Choice (4)

QNo:- 62 ,Correct Answer:- D

Explanation:- For discussion we take the initial letter of each friend.
From the given data, one can observe that Row number 1 to 20 have extra charges except for middle seat.
J, A, B must be in Aisle seats to get the sum as 4600; and we know that J, A, B paid different amount. Therefore,

Row/No	A	B	C	D	E	F	Remarks
10			J	M			500 × 2 = 1000
11			A				400 × 1 = 400
12			B				1000 × 1 = 1000
13					G	K	1000 × 2 = 2000 (6 persons = 4400)
20						P	200 × 1 = 200 (7 person = 4600)
21						T	No extra charge

Note: G, K and K G can be interchanged. Moreover they can be placed in row 1 to 0. So also the right window positions and aisle seats can be interchanged.

Tapesh (option 4)

QNo:- 63 ,Correct Answer:- 11

Explanation:- Since the order of exactly one out of the five scans can't be changed, either all the scans are in the correct order or one pair of scans can be varied, i.e. their positions can be interchanged.
Case (1): when all the scans are in the correct order = 1 way
Case (2): when exactly two are interchanged:

We can choose any two of the five scans that can be interchanged in 5C2 ways, viz. 10
Both case (1) and case (2) together = 11. Ans: (11)

QNo:- 64 ,Correct Answer:- C

Explanation:- Let the original scan be: TIMRL
(1) All sequence as original = 1 way
(2) Interchange of TI = 1 way
(TI) + (RL) = 1 way
→ 2 way
(3) Interchange of IM = 1 way
(IM) + (RL) = 1 way
→2 way
(4) Interchange of MR = 1 way
(MR) + (TI) = 1 way
→2 way
(5) Interchange of RL = 1 way

Total = 1 + 2 + 2 + 2 + 1 = 8 ways.
Choice (3)

QNo:- 65 ,Correct Answer:- 15

Explanation:- Let us say original input: TIMTRL.
Case (1): None of them misplaced : 1.
Case (2): When exactly two are misplaced.
T can be misplaced →4 ways.
I can be misplaced →4 ways.
M can be misplaced →3 ways.
T can be misplaced →2 ways.
R can be misplaced →1 way.
Total ways in case (2) = 4 + 4 + 3 + 2 + 1
= 14 ways.
Both case (1) and case (2) = 14 + 1 = 15 ways

QNo:- 66 ,Correct Answer:- C

Explanation:- Given LRLTIM
The distinct possibilities are:
1. No shift = 1 way
2. (a) LR = 1 way
   (b) LR + LT = 1 way
   (c) LR + LT + IM = 1 way
   (d) LR + IM = 1 way
   (e) LR + IT = 1 way (Total 5 ways)
3. (a) RL = 1 way
   (b) RL + TI = 1 way
   (c) RL + IM = 1 way (Total 3 ways)
4. (a) LT = 1 way
   (b) LT + IM = 1 way (Total 2 way)
5. TI = 1 way
6. IM = 1 way

Total ways = 1 + 5 + 3 +2 +1 + 1 = 13 ways.
Choice (3)

Section : Quantitative Ability

QNo:- 67 ,Correct Answer:- 3

Explanation:- The square grid is filled by 9 numbers from 1 to 9. Their sum (1 + 2 + 3 +... 9) equals 45. Since the sum of numbers in each row and each column and each diagonal must be equal, the sum of terms in each row and in each column and in each diagonal, must be 15. For this to happen, the middle element in the 2nd row and the 2nd column must be the middle-most term of the 9 terms, i.e. 5. The corner elements in the first row are 6 and 2 (given), so the middle element in the first row must be 7. In the 2nd column, the top most element is 7 and the middle element is 5, so the bottom row middle element must be 3.

QNo:- 68 ,Correct Answer:- 1900

Explanation:- A beats B by 1 km, means A travels 10 km in the same time that B travels 9 km. The ratio of speeds of A and B is 10 : 9. Similarly, the ratio of speeds of B and C is 10 : 9.
A : B = 10 : 9
B : C = 10 : 9
⇒ The ratio of speeds of A : B : C = 100 : 90 : 81
In the same time that A travels 100 m, C travels 81 metres
⇒ In the same time that A travels 10000 m, C would travel 8100 m or A would beat C by 1900 m. Ans: (1900)

QNo:- 69 ,Correct Answer:- B

Explanation:- Concentration of milk in the first bottle is 7/9 and that in the second bottle is 9/13. They need to be mixed in a certain ratio to get a solution which has 3/4th milk.
Applying alligation,
(Liquid taken from bottle 1)/(Liquid taken from bottle 2) =

$$\text{bottle 2)} = \frac{\frac{9}{13}-\frac{3}{4}}{\frac{3}{4}-\frac{7}{9}} = \frac{27}{13}.$$

QNo:- 70 ,Correct Answer:- C

Explanation:- Let the distance from his home to his hostel be x miles.
Time taken on his onward journey = x/60 hours
Time taken on his return journey = (x/2)/25 + (x/2 + 5)/50
Given, his return journey took 0.5 hours more than his onward journey
⇒ x/60 + 0.5 = x/50 + (x/2 + 5)/50
Upon solving, x = 30
Therefore, total distance travelled = 30 + 15 + 20 = 65 miles.

QNo:- 71 ,Correct Answer:- B

Explanation:- A total of 15% shirts are defective. Of the remaining 85%, 20% are sold in the domestic market. So, 20% of 85%, i.e. 17% are sold in the domestic market and the remaining 68% are exported. But, it is given that 8840 shirts were exported.

$$\text{If 68\% is 8840, 100\%} = \frac{(100)(8840)}{68} = 13000.$$

QNo:- 72 ,Correct Answer:- C

Explanation:- Let the average height of the 20 toddlers be x inches. When the 2 toddlers are included, the average of the group comes down by 2, i.e. it becomes x – 2. Also, given, that the average height of the 2 toddlers is one-third of the average height of the 22 toddlers, viz. x – 2.

$$\frac{20(x)+\frac{2(x-2)}{3}}{22} = x-2$$

Upon solving, x = 32 inches.

QNo:- 73 ,Correct Answer:- B

Explanation:- Let the manufacturing cost of the table be Rs. m.
The wholesaler buys it for Rs.1.1m.
The retailer buys it for Rs.(1.1)(1.3)m.
The customer buys it for Rs.(1.1)(1.3)(1.5)m, viz. Rs. 2.145m.
Given, 2.145m = 4,290
⇒ m = Rs.2,000

QNo:- 74 ,Correct Answer:- A

Explanation:- The inlet pipe can normally fill the tank in 8 hours, but it takes 10 hours when the outlet pipe is also open. In the two additional hours, the inlet pipe fills 2/8 or 25% more, and the outlet pipe took 10 hours to drain the additional 25%. So, the outlet pipe can drain 25% in 10 hours, and to drain 50%, it'll take 20 hours.
Alternately, we can assume total capacity of the tank as LCM [8, 10] or 40 litres. We'll know the filling rates and the emptying rates of both the pipes and we can answer the question based on the same.

QNo:- 75 ,Correct Answer:- A

Explanation:- He buys x dozen candies at Rs.15 a dozen and x more dozen at Rs.12 a dozen, so the average cost per dozen is Rs.(15 + 12)/2 = Rs.13.5 a dozen.
By selling a dozen at Rs.16.5, he'll make a profit of Rs.3 per dozen.
To make an overall profit of Rs.150, he needs to sell 50 dozen.

QNo:- 76 ,Correct Answer:- C

Explanation:- Let the initial production be p, population be x and the initial per capita consumption be c.

As p = (c)(x), we can say Let p = 1, c = 1 and x = 1 so that 1 = 1 × 1
Finally, production became 1.4 times and per capita consumption became 1.27 times.
⇒ 1.4 = 1.27 × x ⇒ x = 1.4/1.27 = 1.10. So the population increased by 10%.

QNo:- 77 ,Correct Answer:- C

Explanation:- a : b = 3 : 4 and b : c = 2 : 1
Multiplying the second ratio by 2, we have
a : b = 3 : 4
b : c = 4 : 2
Therefore, a : b : c = 3 : 4 : 2.
⇒ a = 3k, b = 4k, c = 2k.
Since a, b and c are positive integers, their sum should be 9k, a positive integer.
From the options, only choice (3), which is 207, is a multiple of 9.

QNo:- 78 ,Correct Answer:- B

Explanation:- The motorbike that left A travelled 168 km from 1:00 p.m. to 3:40 p.m., i.e. in 2 2/3 hours or 8/3 hours.
The car that left B, started at 2:00 p.m. and travelled till 3:40 p.m., i.e. for 1 2/3 hours or 5/3 hours.
The car would've travelled 5/8th of the distance as the bike, but since the car travelled at twice the speed, the car would've travelled 10/8th of the distance, i.e. (10/8) x 168 = 210 km.
Therefore, total distance between A and B = 168 + 210 = 378 km.

QNo:- 79 ,Correct Answer:- A

Explanation:- The team completes the job in 4 days.
Since Amol needs 10 days to complete the job, in 4 days, he does 4/10th or 40% of the work.
Since Bimal needs 8 days to complete the job, in 4 days, he does 4/8th or 50% of the work.
Therefore, Kamal did 10% of the work and for doing 10% of the work, he gets 10% of the payment, i.e. Rs. 100.

QNo:- 80 ,Correct Answer:- C

Explanation:- First mixture has 2/3rd A and the rest water. Second mixture has 3/4th B and the rest water. Third mixture has 4/5th C and the rest water.
The 3 mixtures are mixed in the ratio 4 : 3 : 2. Let's say we get a 1 litre mixture containing the three mixtures.

There will be $\frac{4}{9}\left(\frac{2}{3}\right)$rd A, $\frac{3}{9}\left(\frac{3}{4}\right)$th B and $\frac{2}{9}\left(\frac{4}{5}\right)$th

C. (the remaining part would be water)
8/27 litres A, 9/36 litres B, 8/45 litres C

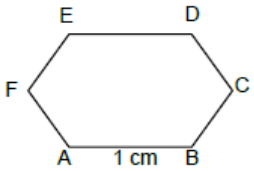
Water = $1-\left[\frac{8}{27}+\frac{9}{36}+\frac{8}{45}\right]=\frac{149}{540}$ litres

We can see that $\frac{149}{540}<\frac{8}{27}$ and $\frac{149}{540}>\frac{9}{36}$

∴ There is more water than B in the resultant solution.Option C

QNo:- 81 ,Correct Answer:- B

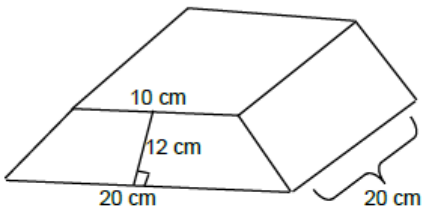
Explanation:-

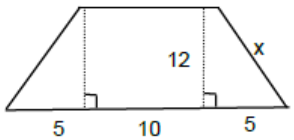


In ΔABC, AB = 1 cm, BC = 1 cm
As ∠B = 120,
$AC^2 = 1^2 + 1^2 - 2(1)(1)\cos(120°)$ (Cosine rule)
$= 1^2 + 1^2 + 1 = 3$
⇒ AC = √3 cm
The square of side √3 cm will have an area of $(\sqrt{3})^2 = 3\ cm^2$

QNo:- 82 ,Correct Answer:- C

Explanation:-





Given, the non-parallel sides are equal.
Let the non-parallel sides be x cm each
$x = \sqrt{12^2 + 5^2} = 13$
So, we have 6 faces, two are trapezoid faces and 4 are rectangular faces.
Area of 2 trapeziums

$=2\left[\frac{1}{2}(12)(10+20)\right]=360\ cm^2$

Area of 4 rectangles

$= 2[13 \times 20] + 20(20) + 10(20) = 1120\ cm^2$

Total area = $1120 + 360 = 1480\ cm^2$ Choice (3)

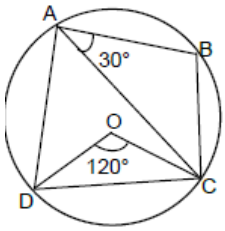
QNo:- 83 ,Correct Answer:- D

Explanation:- In a rectangle, diagonals bisect each other, so one diagonal should pass through the midpoint of the other.
Midpoint of the diagonal connecting (2, 5) and (6, 3)

$=\left(\frac{2+6}{2},\frac{5+3}{2}\right)=(4,4)$

The other diagonal, y = 3x + c should also pass through (4, 4).
On substitution, $4 = 3 (4) + c \Rightarrow -8$.

QNo:- 84 ,Correct Answer:- 90



Explanation:-
Given, ∠COD = 120° and ∠BAC = 30°.
As ∠COD = 120°, ∠DAC = 60° (Central angle)
∠DAC + ∠BAC = 60° + 30° = 90°
∠A = 90° ⇒ ∠BCD = 90° (Opposite angles are supplementary in a cyclic quadrilateral)

QNo:- 85 ,Correct Answer:- 200

Explanation:- Let one side be l and the other be b. (l is not necessarily greater than b)
Given, 2l + b = 400
For area to be maximum, lb should be maximum.
∴ l (400 – 2l) should be maximum
l (400 – 2l) = l (2) (200–l) = 2 (l) (200 – l)
l (200 – l) will be maximum when l = 200 – l or 2l = 200
⇒ l = 100
If l = 100, b = 200.
∴ The longer side must be 200 feet long.

QNo:- 86 ,Correct Answer:- 16

Explanation:- As P is equidistant from the sides, P is the in center of the triangle.
r is the in radius of the triangle, viz. $4(\sqrt{2} - 1)$ cm
Let the sides of the triangle be a, a, $a\sqrt{2}$

$\text{As } \Delta=\frac{1}{2}(a)(a)=r(s),$

$\frac{a^2}{2}=4(\sqrt{2}-1)\frac{(a+a+a\sqrt{2})}{2}$

$\Rightarrow a = 4\sqrt{2}$

$\text{Area } =\frac{1}{2}(a^2)=16\ \text{sq.units}$

QNo:- 87 ,Correct Answer:- D

Explanation:- Given, (n – 1) (n) (n + 1) = 15600
As 15600 has 2 zeroes in it, one of n – 1, n or n + 1 should be a multiple of 25.

Dividing 15600 by 25, we get 624, but 624 = 24*26 so, the numbers are 24, 25 and 26
$24^2 + 25^2 + 26^2 = 1877$

QNo:- 88 ,Correct Answer:- D

Explanation:- $\log_3 5 = \log_5 (x + 2)$
$\log_3 3 < \log_3 5 < \log_3 9$
$1 < \log_3 5 < 2$
So, $1 < \log_5 (x + 2) < 2$
$5^1 < x + 2 < 5^2$
$3 < x < 23$

QNo:- 89 ,Correct Answer:- B

Explanation:- f(f(g(x)) + g(f(x)).
At x = 1, we get f(f(g(1))) + g(f(1))
On putting x = 1 in g(x) and f(x), we get g(1) = 2 and f(1) = 1.
Putting these values in the required function, we get f(f(2)) + g(1).
f(2) = 4. So f(4) = 16 and g(1) = 2. Hence the required value = 16 + 2 = 18.

QNo:- 90 ,Correct Answer:- C

Explanation:- $x^2 + (a + 3) x - (a+5) = 0$
$\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta = (-(a + 3))^2 - 2(-(a + 5))$
$= a^2 + 9 + 6a + 2 (a + 5)$
$= a^2 + 8a + 19$
$= (a + 4)^2 + 3$
The minimum value is 3, at a = –4. Choice (3)

QNo:- 91 ,Correct Answer:- A

Explanation:-

$$9^{x-\frac{1}{2}} - 2^{2x-2} = 4^x - 3^{2x-3}$$
$$\frac{9^x}{9^{1/2}} - \frac{2^{2x}}{4} = 4^x - \frac{3^{2x}}{27}$$
$$\frac{9^x}{3} - \frac{2^{2x}}{4} = 4^x - \frac{9^x}{27}$$
$$\frac{9^x}{3} - \frac{4^x}{4} = 4^x - \frac{9^x}{27}$$
$$\frac{9^x}{3} + \frac{9^x}{27} = 4^x + \frac{4^x}{4}$$
$$9^x \frac{(10)}{27} = 4^x \frac{(5)}{4}$$

$$\frac{9^x}{4^x} = \frac{27}{8}$$
$$\left(\frac{3}{2}\right)^{2x} = \frac{27}{8} = \frac{3^3}{2^3} = \left(\frac{3}{2}\right)^3$$
$$2x = 3 \Rightarrow x = \frac{3}{2}$$

Alternately, we could've substituted the value of x from the options and it would've taken much less time.

QNo:- 92 ,Correct Answer:- 3

$\log (2^a \times 3^b \times 5^c) = \frac{1}{3}[\log (2^2 \times 3^3 \times 5) + \log (2^6 \times 3 \times 5^7) + \log (2 \times 3^2 \times 5^4)]$

$\log (2^a 3^b 5^c) = \frac{1}{3}[\log (2^2 \times 3^3 \times 5 \times 2^6 \times 3 \times 5^7 \times 2 \times 3^2 \times 5^4]$

$\log (2^a 3^b 5^c) = \frac{1}{3}[\log (2^9 \times 3^6 \times 5^{12})]$

Explanation:- $\log (2^a 3^b 5^c) = \log (2^3 \times 3^2 \times 5^4)$

While it is not explicitly stated that a, b and c are integers, going by the spirit of the question, we are forced to assume that they are integers. In that case, we can equate the powers of 2, 3 and 5 on the LHS and the RHS and say that a= 3, b = 2, and c = 4.

QNo:- 93 ,Correct Answer:- 51

Explanation:- The 5 consecutive odd numbers are
a_1, a_2, a_3, a_4, a_5
The 5 consecutive even numbers are
$2a_3 - 8, 2a_3 - 6, 2a_3 - 4, 2a_3 - 2, 2a_3$
The sum of these 5 numbers = $10a_3 - 20 = 450$ (given)
$\therefore a_3 = 47$ and $a_5 = 51$. Ans: (51)

QNo:- 94 ,Correct Answer:- 3

Explanation:- $\frac{1}{a}+\frac{1}{b}=\frac{1}{9}$
$\Rightarrow 9(a + b) = ab$
$\Rightarrow ab - 9a - 9b + 81 = 81$
$\Rightarrow (a - 9)(b - 9) = 81 = 3^4$
As a, b > 0 and a ≤ b, there are only 3 ordered pairs, given by a – 9 = 1, 3 or 9 and correspondingly b – 9 = 81, 27, 9.

QNo:- 95 ,Correct Answer:- 6

Explanation:- The data is shown below.
A B K
1 2 3
The remaining 2 pens can go to different people
(3 ways – 1,1,0; 0,1,1; 1,0,1) or the same person
(3 ways – 2,0,0; 0,2,0; 0,0,2).
Alternately, we can distribute the last 2 identical pens among the three of them using
$x_1 + x_2 + x_3 = 2$, which has $^4C_2$ non-negative integral solutions, i.e. 6.

QNo:- 96 ,Correct Answer:- 50

Explanation:- The sum of the digits must be a multiple of 3. We can use (A) 2,4,0,3 or (B) 2,4,0,6 or (C) 2,4,3,6
(A) _ _ _ 0 (6 numbers)
_ _ _ 2 (4 numbers)
_ _ _ 4 (4 numbers)
(B) _ _ _ 0 (6 numbers)
_ _ _ 2 (4 numbers)
_ _ _ 4 (4 numbers)
_ _ _ 6 (4 numbers)
(C) 2, 4, 3, 6 (18 numbers, with even digit in the units place)

There are a total of 50 numbers.

QNo:- 97 ,Correct Answer:- 1

Explanation:- f (1 × 1) = f (1) f (1) Let f (1) = x
∴ x = x^2 i.e., x = 0 or 1. The 'largest' value is1.
Ans: (1)

QNo:- 98 ,Correct Answer:- D

Explanation:- f(x) = 2x – 5, g(x) = 7 – 2x.
Given, |f(x) + g(x)| = |f(x)| + |g(x)
2 = |f(x)| + |g(x)|
In the 3 ranges $\left(-\infty,\frac{5}{2}\right],\left[\frac{5}{2},\frac{7}{2}\right]$ and $\left[\frac{7}{2},\infty\right)$,
$|f(x)|+|g(x)|=2$ only when $x \in \left[\frac{5}{2},\frac{7}{2}\right]$

QNo:- 99 ,Correct Answer:- C

Explanation:-

For any $n \geq 1$, $a_n = 3(a_{n+1} + a_{n+2} + \ldots\ldots)$
$\therefore a_1 = 3(a_2 + a_3 + \ldots\ldots) \ldots\ldots(i)$

Let 'r' be the common ratio of the G.P. and $a_1 = a$, $a_2 = ar$, $a_3 = ar^2$ and so on

$$(i) \Rightarrow a = 3\left(\frac{ar}{1-r}\right)$$

$$\Rightarrow 1-r = 3r \text{ or } r = \frac{1}{4}$$

$$a_1 + a_2 + a_3 + \ldots\ldots\ldots = \frac{4a_1}{3} = 32(given)$$

$$\Rightarrow a_1 = 24$$

The G.P. is $24, 6, 1.5, \frac{1.5}{4}, \frac{1.5}{16}, \ldots\ldots$

$$\therefore a_5 = \frac{1.5}{16} = \frac{3}{32}$$

QNo:- 100 ,Correct Answer:- A

Explanation:-

$a_1 = \frac{1}{2(5)} = \frac{1}{3}\left(\frac{1}{2} - \frac{1}{5}\right)$

$a_2 = \frac{1}{5(8)} = \frac{1}{3}\left(\frac{1}{5} - \frac{1}{8}\right)$

.
.
.
.
.

$a_{100} = \frac{1}{299(302)} = \frac{1}{3}\left(\frac{1}{299} - \frac{1}{302}\right)$

All the terms like 1/5, 1/8,.....1/299 will cancel out.

$\therefore$ The sum $= \frac{1}{3}\left(\frac{1}{2} - \frac{1}{302}\right)$

$= \frac{1}{3}\frac{(300)}{(2)(302)} = \frac{50}{302} = \frac{25}{151}$