

# C2C MENTORS

## CAT 2019 SLOT 2 SOLUTIONS



### VARC

1. ANSWER – C

" This learning process—the embarrassments, the frustrations, the gradual sense of understanding and connection—is invariably transformative." From this sentence, the option A can be inferred. Hence it is incorrect.

" After all, you can always learn another language and change who you are." From this line, option B can be inferred. Hence it is incorrect.

"You are what you speak—the words that run throughout your mind are at least as fundamental to your selfhood as is your ethnicity or your gender" From this option D can be inferred. Hence it is incorrect.

The author makes no mention about the inherent ability of language to evolve over time to change a person. Hence, it is not responsible for language's ability to change us. Option C is the correct answer.

2. Answer: B

Explanation: The author is of the opinion that learning the language of local cultures would help bridge cultural barriers. Option D is against the author's point of view. Hence it is definitely incorrect. Option A is incorrect. The author is of the opinion that the ability to communicate is far more important than the racial divide between two people. Hence it is unlikely to be the view of the author. Option C is incorrect as the author, in the passage is much more concerned about the ability to communicate that racial and gender identity of the person. Option B falls in line with the viewpoint of the author. Hence it is the correct answer.

3. Answer: D

Explanation: "And that easily lobbed word—"Orientalist"—hardly captures the complexity of our interactions. What exactly is the dynamic when a man from Missouri observes a Zhejiang native selling lingerie to an Upper Egyptian woman? . . . If all of us now stand beside the same river, speaking in ways we all understand, who's looking east and who's looking west? Which way is Oriental?" From the above passage, it is clear that the author consider the word Orientalist an easily lobbed word that does not capture the complex nature of interactions between people of different cultures. The author is of the opinion that if people in different parts of the world all speak in tongues that all of them understand, then the east west divide would be broken. The author is of the opinion that learning new languages would help bridge the east west divide. There is no information provided in the passage that globalization has enabled people learn more languages and thereby mitigated cultural hierarchies and barriers. Hence, option A is incorrect. Option B is incorrect. The author never makes the claim that Orientalism has disappeared for the most part. The author makes no claim about goodwill. Hence option C is incorrect. Option D correctly encapsulates the arguments made by the author. Hence it is the correct answer.

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4. Answer: A

Explanation: The major idea put forth by the author is that cultural barriers can be broken down and an outsider can ingrain himself with the local culture by learning the language of the culture. The author himself says that an individual who wrestles with a difficult language would learn to be more sympathetic to outsiders. He also says that empathy is not tied to gender and race, and therefore a individual who learns languages is usually empathetic to different races in the world. Thus option B can be inferred from the passage and is incorrect. The passage makes no mention of linguistic politics. Also he is of the opinion that a person's characteristics can be changed for the good by learning another language. Hence option C can be inferred from the author's argument and is incorrect. The word orientalism itself means looking down upon middle eastern countries by the US and European countries. Hence, option D does not make sense. Option A is directly in conflict with the author's main point and that would be the major criticism by the author's critics. Hence it is the correct answer.

5. Answer: D

Explanation: From the passage it can be inferred that though the British enjoyed political eminence in India, they felt that they were still marginalised from Indian society, and hence, to bring the Indian state to the same footing, they sought to introduce modernity, which they felt was the next logical step into Indian society. It cannot be inferred from the passage that the British introduced modernity because they believed that the cost of their eminence was not settled. Hence, option A is incorrect. The colonial enterprise tried to introduce the logic of modernity because it felt marginalized, rather than to justify the cost of colonization. Hence option B is incorrect. Option C states that the introduction of modernity developed Indian society. However, the last paragraph states that the exercise proved counterproductive, and there was a development of underdevelopment. Option C is incorrect. Option D best explains the reason for the author introducing the statement mentioned in the question. Hence, option D is the correct answer.

6. Answer: C

Explanation: ".....empirically inclined theorists of that generation considered the colonies a massive laboratory of utilitarian or other theoretical experiments." From the aforementioned lines, option A can be inferred. "What happened was the creation of a degenerate version of capitalism —what early dependency theorists called the 'development of underdevelopment'." From these lines it can be inferred that, because modernity was imposed upon India by the British, it led to the development of underdevelopment. Option B can be inferred. From the passage, it can be understood that feudalism underwent a transformative process into capitalism, unlike the Indian transition which happened inorganically through external factors. Hence, option D can be inferred as well. The change in British colonial policy was not induced by resistance to modernity in Indian society, but due to the perception that the British were marginalised in the context of the Indian society. Hence, option C, which cannot be inferred is the correct answer.

7. Answer: B

Explanation: ".....empirically inclined theorists of that generation considered the colonies a massive laboratory of utilitarian or other theoretical experiments" From these lines option A can be inferred. Consider the lines, "the British colonial state represented the great conquering discourse of Enlightenment rationalism, entering India precisely at the moment of its greatest unchecked arrogance. . As inheritors and representatives of this discourse, which carried everything before it,

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this colonial state could hardly adopt for long such a self-denying attitude." Option C can be inferred from it. Consider the lines , " It had restructured everything in Europe—the productive system, the political regimes, the moral and cognitive orders —and would do the same in India, " Option D can be inferred from these lines. It is nowhere mentioned in the passage, that British colonialism faces resistance from the existing structural forms of Indian modernity. Hence , option B is the correct answer.

8. Answer: A

Explanation: The first part of the passage talks about British colonial policy, which went through two policy phases. Hence, the options B and C which have military power as the introductory idea are incorrect. The second idea mentioned in the passage is about Enlightenment rationalism, of which the British colonizers were inheritors and representatives of. The subsequent ideas are about how modernity was inorganically injected into India by subjecting it to external forces. The passage further talks about how these economic alterations did not give rise to the construction of a classical capitalist economy, but rather led to the development of underdevelopment. Option A mentions all the ideas correctly and hence it is the correct answer.

9. Answer: B

Explanation: ". Theoretically, because modernity was externally introduced, it is explanatorily unhelpful to apply the logical format of the 'transition process' to this pattern of change." From the given lines it can be understood that the general endogenous method of the process of transition could not be accepted to British colonisation of India, because modernity did not occur naturally but was externally introduced. The passage only states that initiatives for modernity were introduced to India through external sources. It does not state that all colonised societies cannot be changed by logic. Hence this option is incorrect. In the case of India, the transformational agents themselves are inorganic external forces. Hence, option C cannot be inferred.

The passage nowhere states that Indian society is exogamous. Hence option D is incorrect. Option B best describes the conclusion that can be drawn from the author's statement. Hence it is the correct answer.

10. Answer: B

Explanation: "In the post-colonial fervour of the 20th century, coastal capitals picked by trade-focused empires were spurned for "regionally neutral" new ones". From these lines, it can be inferred that the colonial empires had their capitals in the coasts as the empires were mostly focused on trade. It goes on to say that, post - colonisation, empires had their capitals changed to regionally neutral areas. Hence, it can be directly inferred that colonies had capitals in coasts to promote their trading interests. Option B is the correct answer.

11. Answer: A

Explanation: Option B is a problem of relocating government agencies and it can be inferred from this line " Pick small, poor towns, and areas of high unemployment get new jobs, but it is hard to attract the most qualified workers". Hence, option B is incorrect. Option C is true with respect to the passage. It can be inferred from the line " Others contend that decentralisation begets corruption by making government agencies less accountable ." Hence it is incorrect. Option D is also mentioned in the passage. Qualified workers do not want to live in smaller cities. Hence, it is also a reason for relocation not being a success. Option A is not mentioned in the passage and hence it is the correct answer.

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12. Answer: D

Explanation: The word pedigree has a meaning, " history of an idea or an activity". The term long pedigree indicates that the idea has been touted with a lot of times in the past. Option D is the only option that conveys this meaning and hence it is the correct answer.

13. Answer: A

Explanation: The passage states that regulators perform best if they are far from the lobbying of a big city. Hence, the people who support decentralizing central government functions are likely to cite the above reason for their view. Option B and C are incorrect for this reason. Option D is incorrect as the passage states that infrastructure costs and salaries would become lower in smaller cities. The argument is used in the passage. Hence it is correct.

The nexus between bureaucrats and media is not mentioned in the passage. Hence the argument is least likely to be used by people who support the decentralising of central government functions. Option A is the correct answer.

14. Answer: B

Explanation: "The dilemma is obvious. Pick small, poor towns, and areas of high unemployment get new jobs, but it is hard to attract the most qualified workers; opt for larger cities with infrastructure and better-qualified residents, and the country's most deprived areas see little benefit" Option A is incorrect. The passage makes no mention of having the government agencies in the "largest" city. It talks about having them in "larger cities". Hence it is incorrect. Option C talks about the relocation of private enterprises. This is not mentioned in the passage as the passage is primarily about the relocation of government bureaucrats. Option D makes no mention of decongesting large cities. Hence it is incorrect. Option B makes the right comparison. It compares the hard task of relocating qualified workers to smaller towns, to allocating workers to larger cities, which would result in smaller towns receiving little benefit. Option B is the correct answer.

15. Answer: A

Explanation: "The city is the most environmentally benign form of human settlement. Each city dweller consumes less land, less energy, less water, and produces less pollution than his counterpart in settlements of lower densities." Calthrope's major contention is that cities are eco-friendly as they consume less resources than people living in places that have lower population densities. Options B,C,D does not directly contradict Calthrope's statement. Hence , they cannot be the reason why the statement that jars with most people. Option A is directly opposed to Calthrope's viewpoints. Hence, this option is most likely to jar with most people. Option A is the correct answer.

16. Answer: A

Explanation: The author gives the example of Manaus to show how an entire community of people whose major job was deforestation of the jungle have now been able to prosper by making things such as mobile phones and televisions. Option A is the correct answer. It is the major reason for the author giving out the example of Manaus. Options D is incorrect and is not mentioned in the passage. Option B and C are the pros of being in a squatter city, but it is not the reason why the author gives the example of Manaus. Option A is the correct answer.

17. Answer: C

Explanation: Option A would help keep squatter cities environment friendly, as recycling material would reduce the amount of non-biodegradable materials present in the environment. Option B

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would also help squatter cities be more environment friendly by reducing pollution. Option D would also help squatter cities be more environment friendly as sorting garbage and treating them would go a long way in preventing soil and water pollution. Option C is incorrect. This is because, keeping the streets clean would mean that the wastes are somewhere in dumped in the environment near the local community. Hence, option C cannot be inferred from the passage and is the correct answer.

18. Answer: B

Explanation: The rapid spread of diseases in the slum would only affect the people in the slums and not the greenness of the cities. Hence it is incorrect. Option C is incorrect as the incidence of crime in the West would not impact the greenness of the cities. Increasing cost of utilities, in the same way would not affect the flora of the cities. An increase in carbon-di-oxide and global warming, however, would contribute greatly to the change in climate. A change in climate would adversely affect the greenery in the cities. Hence, this would greatly undermine the author's stand that cities are indeed green.

19. Answer: D

Explanation: From the sentence, "One hundred thousand people who would otherwise be deforesting the jungle around Manaus are now prospering in town making such things as mobile phones and televisions" given in the passage, option A can be inferred. "But if they are overall a net good for those who move there, it is because cities offer more than just jobs. They are transformative" From this line, option B can be inferred. The entire second paragraph of the passage mentions how multiple people have got jobs in squatter cities. Hence, option C can be inferred. Option D is not a reason for cities being a good place to live in. Hence, this option cannot be inferred and is the correct answer.

20. Answer: C

Explanation: "They want to make this material accessible so people will browse it and be filled with wonder by it," he says. "But at its core, it's all about advertisements and driving traffic." Watrall says these images belong on the site of a museum or educational institution, where there is serious scholarship and a very different mission". From the above mentioned lines it can be reasonably inferred that Dr. Watrall is not critical if the digitally scanned images are on official museum websites and archaeological sites. Watrall's objections do not touch upon the ownership of the copyright of the scanned images. His objections are mainly about the uneasy relationship between Cyark and Google, and the profit based motive of Google. Hence, option D is incorrect. Option C mentions the case when CyArk uploads the scanned images on museum sites only. This would invalidate the arguments made by Dr. Watrall.

Option A is incorrect as Dr. Watrall considers the venture as a medium to promote Google itself. Just taking down advertisements would not invalidate the professor's claim. Option B is incorrect as a ban in certain locations would certainly not prevent promotion of and commercialization by Google. The same reason can be attributed to option D. CyArk not owning the copyright of the archaeological sites would not prevent using it for commercial purposes. Hence, option C is the correct answer.

21. Answer: C

Explanation: From the lines, " [There's] another issue for some archaeologists and art historians. CyArk owns the copyrights of the scans — not the countries where these sites are located. That

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means the countries need CyArk's permission to use these images for commercial purposes", it can be seen that critics view the Google-CyArk project as one that appropriates the copyrights of the digital scans in such a way even the countries in which the sites are located need CyArk's permission to use the images. Option A, D, B are not mentioned anywhere in the passage. Option C describes perfectly why the critics of the Google-CyArk project term it as digital colonialism and hence it is the correct answer.

22. Answer: D

Explanation: The option that would not help a company that digitally scans cultural sites would be the given answer. Option A is incorrect as preserving images of sites in case they are damaged would be one of the foremost arguments made by these companies. Option B and C would surely help the cause of companies that scan cultural sites. Hence, they are incorrect. Option D is the correct answer. A company that digitally scans cultural sites would not give the reason of being able to project itself as a protector of culture as a reason to scan the cultural sites. This is a self-centered goal such a company and hence is the least likely of the arguments that would be used in this case. Hence, option D is the correct answer.

23. Answer: C

Explanation: From the passage, it can be inferred that Dr. Watrall is not comfortable with the arrangement between CyArk and Google. He is of the opinion that though the material is promoted as a means for people to view the artifacts, the ulterior motive is for advertisements and commercial purposes. Option A is incorrect. The professor is uneasy about the arrangement between a non-profit organisation and a commercial organisation, whose values are, in reality, different from what they portray. Option B is incorrect. The professor is not dismissive of laypeople's access to specialist images and such information is not given in the passage. Option D is incorrect. The professor is only dismissive of the commercial agreement between two organisations that portray themselves to be involved in non-profit work. He is not against the use of digital technology in archaeological and cultural sites in developing countries. Option C is correct and it correctly represents the views of professor Dr. Watrall.

24. Answer: B

Explanation: After reading the lines, "Erin Thompson, a professor of art crime at John Jay College of Criminal Justice in New York City, says it's the latest example of a Western nation appropriating a foreign culture, a centuries-long battle." it can be inferred that professor accuses CyArk of appropriating a foreign culture. The only option present that is an example of a western nation appropriating a foreign culture would be the seizing of ancient Egyptian artefacts by a Western museum. Hence, option B is the correct answer.

25. Answer: 2143

Explanation: After reading all the sentences, it can be inferred that though atonal music can sometimes sound random and chaotic, there is a lot of knowledge and skill that is required to perform atonal music. Sentence 2 talks about what exactly atonal music is. Hence, this sentence must be the first sentence of the paragraph. Sentence 1 talks about the misconceptions of atonal music that the uninitiated make. This sentence must be the second sentence of the passage. Sentence 4, now clears the misconception about atonality and states that it is one of the most important movements in music. Sentence 3 gives the reason why atonality is music is so difficult to attain and says that the untrained listener would change his mind when he understands the



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amount of knowledge and skill required to produce atonality. Therefore, sentences 4 and 3 form a block. Therefore the correct sequence of sentences is 2-1-4-3.

26. Answer: 2431

Explanation: After reading all the sentences, it can be inferred that the passage talks about how comparisons are made between objects in different aspects, and how such comparisons are important facets of cognitive ability and consequently our adaptive behaviour. Sentence 2 introduces how adaptive behavior depends on cognitive economy. Hence, it is the first sentence of the paragraph. Sentence 4 elaborates on how different objects are compared. This sentence logically follows sentence 2. Sentence 3 shows how such comparisons have structure and order, and how they are not arbitrary. Hence, sentence 3 follows sentence 4. Sentence 1 completes the passage in a way that elucidates how animals and plants are equivalent to each other by exhibiting correlational structure. The correct sequence is 2-4-3-1.

27. Answer: 4132

Explanation: After reading all the lines it can be seen that the paragraph talks about the deleterious results of introducing the concept of women's time, and how the everyday practices of both men and women incorporate a multiplicity of times. Sentence 4 introduces the concept of clock time which has been represented in feminist literature and it is the introductory sentence of the paragraph. The passage goes on to say that the concept of 'women's time' as is deleterious. Hence, sentence 1 follows sentence 4. Sentence 3 explains how the concept of clock time actually works out for working sole fathers and working sole mothers. It follows sentence 1. Sentence 2 gives a summary of the paragraph which states that the everyday caring practices involve a multiplicity of times hence it would be the last sentence of the paragraph. The correct order of sequence is 4-1-3-2.

28. Answer: A

Explanation: The passage states that language is only found in humans and not among any other primates. The passage also states that language is a bundle of traits such as memory that evolved over a period of time. The passage does not talk about language that has evolved over time. Hence, option B is incorrect. Option C does not completely summarise the passage. Hence, it is incorrect. Option D talks only about language being a distinctive human feature. It does not talk about language having evolved from a complex bundle of traits. Hence it is incorrect. Option A correctly summarises the main idea of the passage and is the correct answer.

29. Answer: C

Explanation: After reading the entire paragraph, it can be inferred that the main idea of the passage is that while the inventors of the open-plan offices had the liberation of office dwellers from boxes in mind, the companies used it to pack as much people as possible inside. Option A is incorrect as the passage makes no mentions about workers satisfaction. Option B is incorrect as it misrepresents the timeline given in the passage. Cubicles existed earlier and only later were wall free office spaces invented. Option D is incorrect as it could not be inferred from the passage that the companies that did not believe in democratic ideology. Option C correctly encapsulates the main idea of the passage and hence it is the correct answer.

30. Answer: B

Explanation: After reading all the lines of the paragraph, it is evident that social movement organisations depend on organisations with hybrid identities because, within them they contain

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individuals with multiple points of views on different movements and issues. The example gives shows how people who are campaigning for non-anti-war movements are more likely to join hybrid organisations. It also says that organisations with hybrid identities occupy more central positions within organisations that are involved in anti-war movements. Option A is incorrect. The passage talks more about why hybrid organisations are vital to providing participants in social movements. Option C is just an illustration of the idea that the paragraph is trying to make. Hence, it would not be the most appropriate summary of the paragraph. Option D is incorrect. From the paragraph we can infer that hybrid organisations attract individuals that are deeply involved in non-antiwar movements. Option B is an appropriate summary of the passage and hence it is the correct answer.

31. Answer:2

Explanation: After reading all the sentences it can be inferred that the passage talks about the impact of ocean plastic on marine organisms. Sentence 4 introduces the important and pervasive environmental problem of having plastic in the oceans. Hence it is the first sentence of the passage. Sentence 1 gives the reason behind why ocean plastic is problematic, elucidating that marine animals eat it. Hence it should follow sentence 4. Sentence 5 gives the consequences of marine animals eating ocean plastic. Sentence 3 further elaborates sentence 5 and follows it. Hence the correct order of sentences is 4-1-5-3. Sentence 2 does not fit in with the rest of the passage and is the correct option.

32. Answer:3421

Explanation: After reading all the sentences it can be reasonably inferred that the passage talks about the ancient belief system called teleology which describes how nature has a predetermined destiny associated with its component parts, and how these parts fit together into an ordered system. Sentence 3 introduces the idea of the notion of balance of nature. Hence, this would serve as the introductory sentence. Sentence 4 gives an example of a system that tries to explain the balance in nature called teleology. Hence, this sentence follows sentence 3. Sentence, 2 follows sentence 4 as it furthers the idea given in sentence 4. It explains about how the component parts explained in sentence 4 fit together. Sentence 1 would serve as the concluding sentence as it gives the necessary condition required to have a belief that has been explained in sentences 4 and 2. Hence, the correct ordering of the sentences is 3-4-2-1.

33. Answer:1

Explanation: After reading all the sentences, it can be reasonably inferred that the passage talks about how rumination is not the way to achieve-self realization, but another method favored by Caesar, 'illeism' would help a person see past his biases. Sentence 4 introduces the idea of rumination. Hence this sentence would serve as the introductory sentence. Sentence 3 follows sentence 4 because it indicates the results of the research done on rumination. Sentence 2 would be the next logical progression, since it puts forth an alternative to rumination, known as illeism. Sentence 2 and sentence 5 would form a block as sentence 5 explains the consequences of adopting the ancient method of illeism, mentioned in sentence 2. 4-3-2-5 would be the correct ordering of the sentences. Sentence 1 does not fit in with the passage and hence, it is the correct answer.

34. Answer:2



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Explanation: After reading all the sentences it is clear that the paragraph talks about how to understand the humor behind the single panel comics. The sentence 1 sets the platform for the author to explain how to infer humour in a single panel comic. Consider the sentences 3,4,5. Those sentences are aimed at the reader. "3. Often, the humor requires y o u to imagine what happened in the instant immediately before or immediately after the panel you're being shown." "4.To get the joke, y o u actually have to figure out what some of these missing panels must be." "5. It is as though the cartoonist devised a series of panels to tell the story and has chosen to show y o u only one - and typically not even the funniest." Sentence 2 on the other hand is a stand alone sentence that does not fit in with the rest of the paragraph. Hence, it is the odd sentence.

### DILR

#### QUESTION 35 – 38.

Explanation: From the condition given in the premise, we can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A		X	X	X	X		8					18
B			X	X	X	X	2					5
C				X	X	X	3	X				6
D					X	X	6	X	X			6
E						X	3	X	X	X		10
F							10	X	X	X	X	10
G	X						17		X	X	X	17
H	X	X					1			X	X	4
I	X	X	X				2				X	17
J	X	X	X	X			14					17

The information known about Rounds 1 through 6:

1. Gordon(G) did not score consecutively in any two rounds.
2. Eric(E) and Fatima(F) both scored in a round.

By observing the table:

1. Jordan(J) scored 7 points in both the rounds 5th & 6th.
2. Amita (A) scored 1,7 points then she scored 7 in the first round.
3. Bala (B) scored 1 point in both the rounds 1st and 2nd.
4. Ikea (I) scored 1 point in the round 4th and 5th.
5. Gordon(G- 7,7,3 ) did not score consecutively in any two rounds so it scored in 2 4 and 6 rounds respectively.

We can make the following table from the details given in the question.

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	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8					18
B	1	1	X	X	X	X	2					5
C	3	0	0	X	X	X	3	X				6
D	0	3	0	3	X	X	6	X	X			6
E	0	0	3	0	0	X	3	X	X	X		10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17		X	X	X	17
H	X	X	1	0	0	0	1			X	X	4
I	X	X	X	1	1	0	2				X	17
J	X	X	X	X	7	7	14					17

T: Total after the sixth round and TT: Total after the 10th round.

- Only two players scored in three consecutive rounds. One of them was Chen. So He scored 1 point in the rounds 8th, 9th and 10th.
- Ikea scored 15 points (1,7,7) in three rounds respectively.
- Eric scored 7 in round 10.
- Amita will score 3 in round 10, and 7 in round 7.

We can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8	7	0	0	3	18
B	1	1	X	X	X	X	2	0	0	3	0	5
C	3	0	0	X	X	X	3	X	1	1	1	6
D	0	3	0	3	X	X	6	X	X	0	0	6
E	0	0	3	0	0	X	3	X	X	X	7	10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17	0	X	X	X	17
H	X	X	1	0	0	0	1	0	3	X	X	4
I	X	X	X	1	1	0	2	1	7	7	X	17
J	X	X	X	X	7	7	14	3	0	0	0	17

35. Answer – B

36. Answer – D

37. Answer – D

38. Answer - D

39. Answer: A

Explanation: The states which satisfy the condition given in the question: Maharashtra, Mizoram, Sikkim, Goa, Arunachal, Kerla, Meghalaya.....7 states

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The 'Heavy Monsoon States' have a negative deviation: Arunachal, Kerla, Meghalaya =  $\frac{3}{7} \times 100 = 42.86\%$

40. Answer: A

Explanation: All the states which satisfy the condition for 'Low monsoon state' are Gujarat (+25%), Karnataka (+20%), Rajasthan (+15%), MP (+10%), Assam (-10%), WB (-30%), Jharkhand (-35%), Delhi (-40%) and Manipur (-60%).

The median of all the deviation is -10% Assam.

41. Answer: D

Explanation: The states Assam, WB, Jharkhand, Delhi and Manipur satisfy the conditions given in the question. The actual rainfall of all these states in 2019 are 600, 600, 400, 300, 400. Average of these states =  $\frac{2300}{5} = 460\text{mm}$

42. Answer: C

Explanation: The actual rainfall in Gujarat in 2019 is 20% more than the rainfall in 2009.

So If the actual rainfall in 2009 = x mm Then the actual rainfall in 2019 = 1.2x mm

Actual rainfall in 2019 = 600mm

Then, actual rainfall in 2009 = 500mm

As deviation is +25% so average 2009 - 2018 is  $\frac{600}{1.25} = 480$

LPA 2019 =  $\frac{(480 \times 10 - 500 + 600)}{10} = 490\text{mm}$

#### QUESTIONS 43 – 46

Explanation:

All six sections had a common midterm (MT) and a common end term (ET) worth 100 marks each.

Each of MT and ET had at least four questions that were worth 5 marks, at least three questions that were worth 10 marks, and at least two questions that were worth 15 marks.

$5 \times 4 = 20$ ,  $10 \times 3 = 30$ ,  $15 \times 2 = 30$

The total possible with considering the minimum number of questions of each type =  $20 + 30 + 30 = 80$  marks.

Rest 20 marks are possible by the following cases: {5,5,5,5} {5,5,10} {10,10} {5,15}

ET contained more questions than MT.

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Thus MT cannot consider the case  $\{5,5,5,5\}$

The number of questions in each case:

1)  $\{5,5,5,5\} = 9+4 = 13$  questions

2)  $\{5,5,10\} = 9+3 = 12$  questions

3)  $\{10,10\} = 9+2 = 11$  questions

4)  $\{5,15\} = 9+2 = 11$  questions

Considering MT and ET together, each faculty member prepared the same number of questions. The total number of questions should be multiple of 6, thus the total number of questions will be 24.

For ET and MT, there are 2 cases :

$\{5,5,5,5\}\{5,15\}$

$\{5,5,5,5\}\{10,10\}$

According to the statement (i), Annie prepared the fifth question for both MT and ET. For MT, this question carried 5 marks. Thus  $\{10,10\}$  case is not possible.

MT  $\{5,5,5,5,10,10,10,15,15,15\}$

ET  $\{5,5,5,5,5,5,5,10,10,10,15,15\}$

From statement (i),(ii),(iv),(v), every other faculty member prepared two questions for MT. we can create the following table:

	1	2	3	4	5	6	7	8	9	10	11
MT	5	5	5	5	5	10	10	10	15	15	15
	F	F	C	C	A	B	B	E	E	D	D

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D		C		A			E					F

{ Annie(A), Beti(B), Chetan(C), Dave (D), Fakir(F) }

There are 24 questions in total so each faculty will make 4 questions. We can create the following table for ET.

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D	D	C	C	A	A	A	E	E	B	B	F	F

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43. Answer- D

44. Answer-A

45. Answer-D

46. Answer –D

#### QUESTION 47 – 50

Explanation: We can make the following table from "the total amount of money kept in the three pouches in the first column of the third row is Rs. 4." If the minimum and maximum value are 1, then the sum of the three pouches in the middle will be Rs 3.

	Column 1	Column 2	Column 3
Row 1			
Row 2		3 (1,1,1)	
Row 3	4 (1,1,2)		

If we calculate the maximum and minimum value possible for each slot in column 1. For the slot, column 1 and row 1, the maximum value possible is 10{2,4,4} while the minimum value possible is 8{2,2,4}.

Similarly, for the slot, column 1 and row 2, the maximum value possible is 13{3,5,5} while the minimum value possible is 11{3,3,5}.

It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Thus the sum of coins in a row or column must be a multiple of 9.

So, we can iterate that 10,13,4 ...{27} is the only sum possible for the slots of column 1.

We now know two elements of row 2, thus we can iterate from the maximum and the minimum value possible for the slot {column 3, row 2} that 38 is the only value possible for the slot.

We can make the following table:

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	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)		
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)		

Similarly, we can find the amount for Column 2.

For the slot, column 2 and row 1, the maximum value possible is 22{6,8,8} while the minimum value possible is 20{6,6,8}.

For the slot, column 2 and row 3, the maximum value possible is 5{1,2,3} while the minimum value possible is 4{1,1,2}.

Thus {20,3,4} is the only solution possible.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	

We can similarly make the following table for the last column.



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	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	6 (1,2,3)
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	10 (2,3,5)

47. Answer- 13

48. Answer-8

49. Answer - 2

50. Answer -3

51. Answer: C

Explanation: If all the doctors served the patients one after the other, then in 2.5 hrs, Ben will serve 15 patients, Kane will serve 10 patients and Wayne will serve 6 patients.

A total of 31 patients can be served on a particular day.

52. Answer: B

Explanation: If all the doctors served the patients one after the other, then in 2.5 hrs, Ben will serve 15 patients, Kane will serve 10 patients and Wayne will serve 6 patients.

Ben will earn =  $15 \times 100 = \text{Rs } 1500$

Kane will earn =  $10 \times 200 = \text{Rs } 2000$

Wayne will earn =  $6 \times 300 = \text{Rs } 1800$

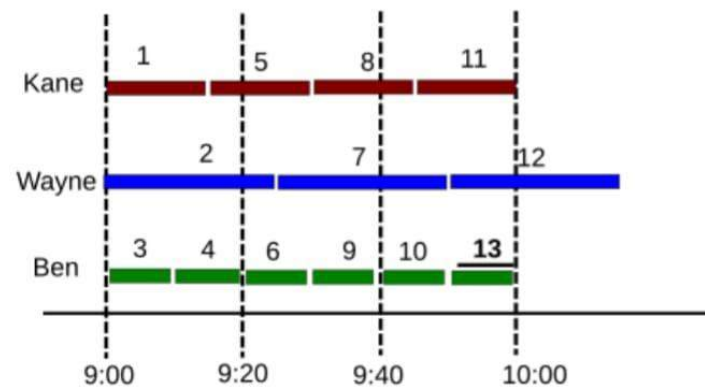
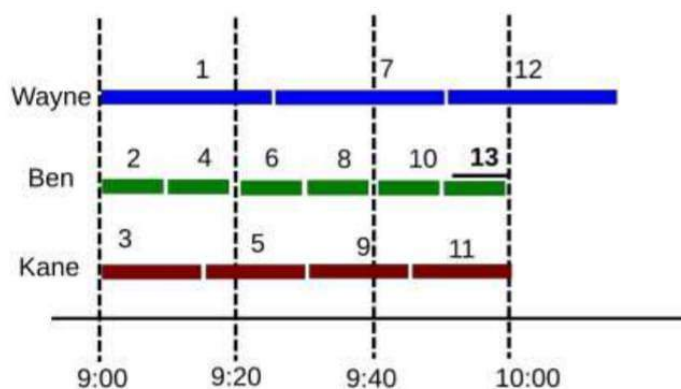
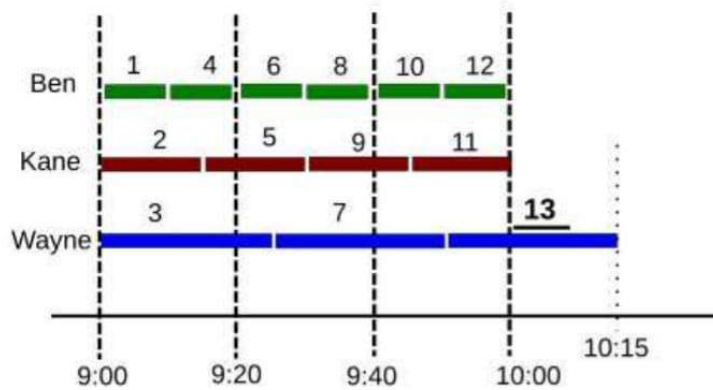
So Kane will earn the maximum amount in consultation charges on that day.

53. Answer: C

Explanation: Mr Singh is 13th in the sequence on all the three days.

The following table will show the sequence for Monday, Wednesday and Friday.

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He will stay the longest when the 13th guy is served by Doctor Wayne.

From the table, on Monday he had to wait at the clinic for the maximum duration: till 10:15.

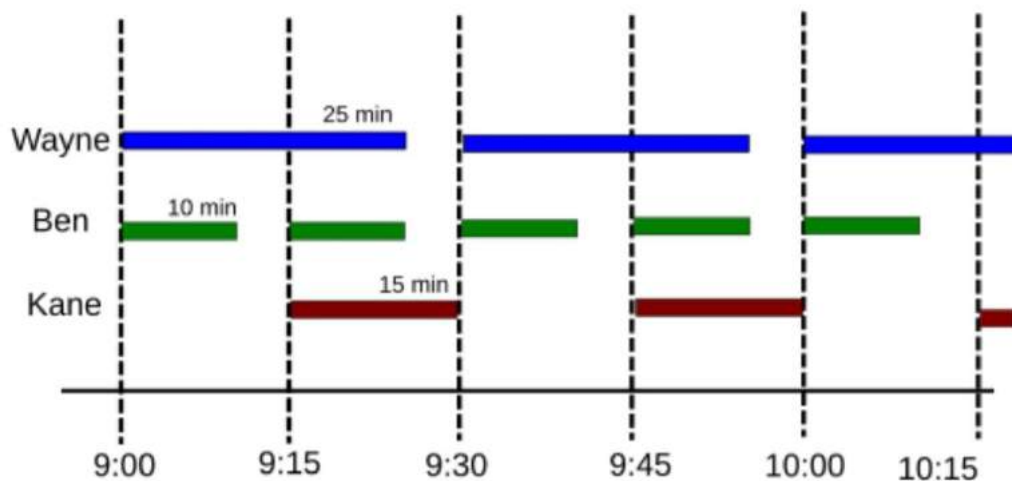
54. Answer: D

Explanation: On Thursday, the preference order for the patients is Wayne, Ben and Kane.

The first two customers will be served by Wayne and Ben. While Kane will be empty for the first 15 mins. Then he and Ben will serve the next two customers and Wayne will be empty for 5 minutes as shown in the figure below.

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As we can see that the cycle will repeat after every 30 mins.

So all three doctors are never simultaneously free.

#### QUESTION 55 – 58

Explanation: From statement 1 and 2, Each team speaks exactly four languages.

English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team, multiple options are possible.

In the following tables: A, B, C can be any team among Team 1, Team 2, Team 3.

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A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
French	French	Dutch

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Dutch
Arabic	French	French

From the data given in the question, the person who speaks Arabic also speaks French.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

Thus the only option possible is 'Table 2'.

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According to statement 4, "Paula and Sally are together in exactly two teams."

Sally knows Basque, thus, she will be in group A and B, with Paula.

According to statement 5, Robert(Arabic) is in Team 1 and Quentin(Dutch) is in Team 3.

Thus, Group C is Team 1 and Group A is Team 3.

Team 3		Team 2		Team 1	
English	Paula, Sally, Quentin	English	Paula, Sally	English	Paula
Chinese	Paula	Chinese	Paula, Terence	Chinese	Paula, Terence
Basque	Sally	Basque	Sally	Arabic	Terence, Robert
Dutch	Quentin	French	Terence	French	Robert

55. Answer – C

56. Answer –C

57. Answer –C

58. Answer –A

#### QUESTION 59. -62

Explanation:

We can make the following table from the web chart given in the question:

	Revenue				Cost			
	Clothing	Produce	Electronics		Clothing	Produce	Electronics	
2016	20	30	50		30	40	30	
2017	30	40	30		30	30	40	
2018	40	40	20		20	50	30	

If we consider the total cost in the year 2016 as 100, then according to Statement 1, the total revenue in 2016 must be 200.

The store's revenue doubled from 2016 to 2017, thus the total revenue in the year 2017 = 400.

We can find the revenue for the individual department in the year 2017, from the table.

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There was no profit from the Electronics department in 2017, thus, we can find the total cost in 2017= 300

Considering the statement 4, we can find the total revenue in 2018 and tabulate the following table.

Cost							
	Clothing		Produce		Electronics		Total
2016	30%	30	40%	40	30%	30	100
2017	30%	90	30%	90	40%	120	300
2018	20%	40	50%	100	30%	60	200

Revenue							
	Clothing		Produce		Electronics		
2016	20%	40	30%	60	50%	100	200
2017	30%	120	40%	160	30%	120	400
2018	40%	100	40%	100	20%	50	250

59. Answer –25

The percentage profit of the store in 2018=  $(250-200)/200 = 25\%$

60. Answer –60

The ratio of revenue generated from the Produce department in 2017 to that in 2018 =  $160:100 = 8:5$

61. Answer-70

Profit in 2016 =  $200-100 = 100$  Profit in the electronic department in 2016=  $100-30=70$

The total profits= for the store in 2016 were from the Electronics department 70%

62. Answer – C

Profit percentage in 2017=  $(400-300)/300 \% = 33.33\%$

Profit percentage in 2018=  $(250-200)/200 \% = 25\%$

The approximate difference in profit percentages of the store in 2017 and 2018=  $(33.33-25)\% = 8.33\%$



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Option C.

#### QUESTION 63 – 66

Explanation: Total number of students surveyed= 500

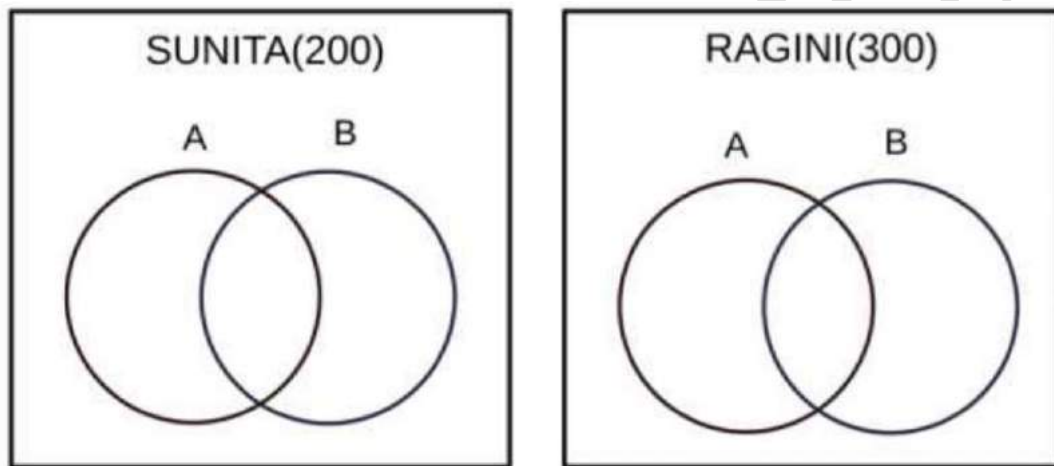
Every student prefers one of the two candidates. Ragini(R) and Sunita(S).

Thus,  $R+S=500$ .

According to statement 2, "Among the 200 students who preferred Sunita as student union president, 80% supported proposal A."

The number of students who support Sunita(S)=200

The number of students who supported Ragini(R)=300

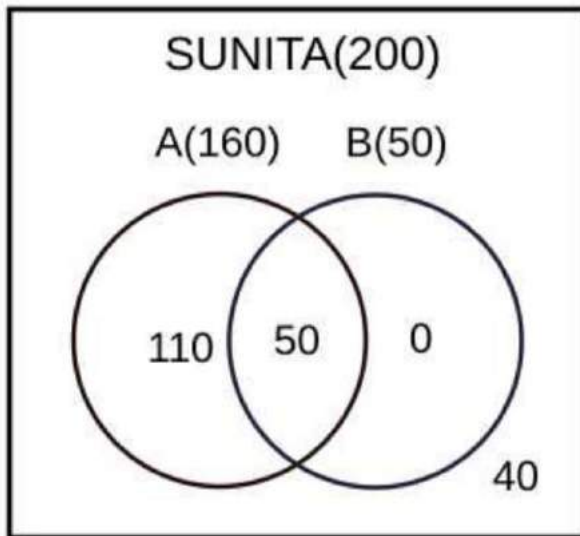


According to statements 2 and 3, 160 students who supported Sunita also supported the proposal A & 90 students who supported Ragini also supported proposal A.

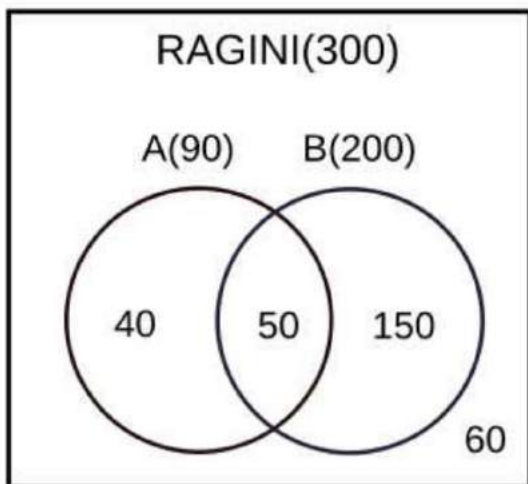
According to statements 4 and 6, we can make the following Venn diagram for Sunita.

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According to statement 5 and 7, we can make the following Venn diagram.



63. Answer – 64

The number of students who preferred Sunita and the proposal A =  $160 = 160/250 = 64\%$

64. Answer – 84

The percentage of the students surveyed who did not support proposal A preferred Ragini as student union president =  $210/250 = 84\%$

65. Answer - 50

66. Answer – A

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### QUANTITATIVE APTITUDE

67. Answer – C

We are told that exactly 20 of the 30 integers do not exceed 5...

That means exactly 10 of the 30 integers do exceed 5.

In order to keep the average of the 20 integers as high as possible, we need to keep the average of the 10 integers above 5 as low as possible. Since we are dealing with integers, the least value that the 10 integers above 5 can take is 6.

So, the sum of the 10 integers =  $10 * 6 = 60$

So the sum of the remaining 20 integers = Total sum - 60 =  $5 * 50 - 60 = 90$

Hence the average of the remaining 20 is  $90/20 = 4.5$

68. Answer -20920

The amount on the first investment of Anmol =  $12,000 * (1.08) = 12,960$

So the Interest on this investment is  $12,960 - 12,000 = 960$ .

The amount on the second investment of Anmol =  $10,000 * (1.03)^2 = 10,609$

So the Interest on this investment is  $10,609 - 10,000 = 609$ .

So the total interest on these returns =  $960 + 609 = 1,569$ .

Bimal has to get this as Simple Interest by investing X rupees at 7.5%

That means,  $X * 0.075 = 1,569$

$X = 20,920$

So, Bimal has to invest 20,920 rupees.

69. Answer – D

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$\frac{n^2+7n+12}{n^2-n-12}$  can be rewritten as

$$\frac{(n^2-n-12)+(8n+24)}{n^2-n-12}$$

$$\frac{(n^2-n-12)+(8n+24)}{n^2-n-12} = 1 + \frac{(8n+24)}{n^2-n-12}$$

$$1 + \frac{(8n+24)}{n^2-n-12} = 1 + \frac{8(n+3)}{(n-4)(n+3)}$$

n cannot be -3

$\frac{8}{(n-4)}$  has to be an integer

And this value has to be equal to 1, for

n to be high

$$\text{So, } \frac{8}{(n-4)} = 1$$

$$8 = n - 4$$

$$n = 12$$

70. Answer – 4

We know that  $m^2 + 105 = n^2$

$$105 = n^2 - m^2$$

$$105 = (n+m)(n-m)$$

105 can be written as  $3 \times 5 \times 7$ , which can be written in 4 ways

$(1 \times 105)$ ,  $(3 \times 35)$ ,  $(5 \times 21)$ ,  $(7 \times 15)$  can be the possible values of m and n respectively

4 pairs

71. Answer – D

Explanation: When A and B met for the first time at 10:00 AM, A covered 60% of the track.

So B must have covered 40% of the track.

It is given that A returns to P at 10:12 AM i.e A covers 40% of the track in 12 minutes

60% of the track in 18 minutes

B covers 40% of track when A covers 60% of the track.

B covers 40% of the track in 18 minutes.

B will cover the rest 60% in 27 minutes, hence it will return to B at 10:27 AM

72. Answer – B

Given that  $a_1 - a_2 + a_3 - a_4 + \dots + (-1)^{n-1} a_n = n$

So,  $a_1 = 1$

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$$a_1 - a_2 = 2 \Rightarrow a_2 = 1 - 2 = -1$$

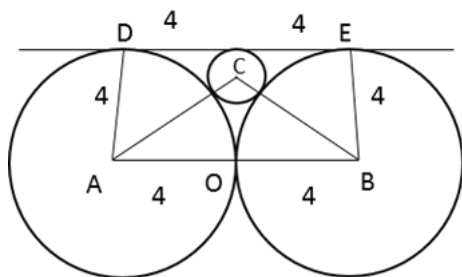
$$a_1 - a_2 + a_3 = 3 \Rightarrow a_3 = 1$$

So, the series proceeds as 1, -1, 1, -1, ...

$$\text{Then } a_{51} + a_{52} + \dots + a_{1023} = 1 + (-1) + \dots + 1$$

$$a_{51} + a_{52} + \dots + a_{1023} = 1$$

73. Answer – D



For three circles to have a common tangent, the third circle must lie in between the two circles. Let the radius of the third circle be  $r$  cms

Now, Connect the centres of the circles with one another and with the intersection points. Let them be A,B,C,D,E respectively.

Now, from observing the constructed diagram, we find

$$AB = 8 \text{ cms}$$

$$AC = (4 + r) \text{ cms}$$

$$BC = (4 + r) \text{ cms}$$

$$OC = (4 - r) \text{ cms}$$

Now, consider the right triangle OBC,

Applying Pythagoras theorem,

$$(4+r)^2 = 4^2 + (4 - r)^2$$

$$16 + r^2 + 8r = 16 + 16 + r^2 - 8r$$

$$16r = 16$$

$$r = 1 \text{ cms}$$

74. Answer – A

For roots of any Quadratic equation to be real and distinct,  $D > 0$

$$\text{So, for } x^2 - 4x - \log_2 A = 0,$$

$$D = (-4)^2 - (4 \times 1 \times (-\log_2 A)) > 0$$

$$16 + 4 \log_2 A > 0$$

$$4 + \log_2 A > 0$$

$$\log_2 A > -4$$

## C2C MENTORS

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$$A > \frac{1}{2^4}$$

$$A > \frac{1}{16}$$

75. Answer – D

Given quadratic equation is  $x^2 + bx + c = 0$

Sum of roots =  $-b$

$$-b = 4a + 3a$$

$$-b = 7a$$

Product of the roots =  $c$

$$c = 4a \times 3a$$

$$c = 12a^2$$

$$b^2 = 49a^2 \text{ and } c = 12a^2$$

$$b^2 + c = 49a^2 + 12a^2$$

$$b^2 + c = 61a^2$$

Our answer must be a multiple of 61, which should be a perfect square

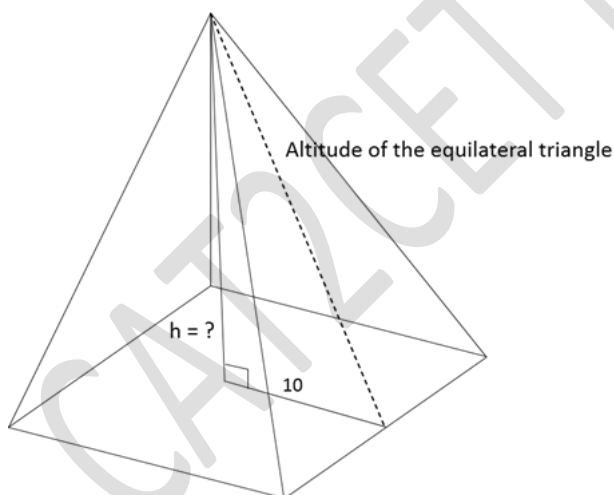
Going through the options,

$$549 = 61 \times 9$$

$$549 = 61 \times 3^2$$

Thus, possible value of  $b^2 + c = 549$

76. Answer –B



It is given that the diagram is a square pyramid and all 4 sides of the triangle are of equal sides.

Now, we need to plug in a right triangle and apply Pythagoras theorem to find the vertical height of the triangle.

Draw a vertical from the apex of the pyramid and draw a line to the base along the equilateral triangle. Connect the points in the base to form a right triangle.

The hypotenuse would be the slant height of the pyramid, which is the altitude of the equilateral triangle.

Length of the base = 10 cms



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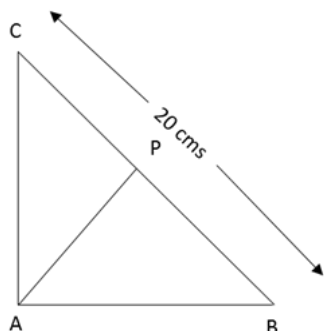


Hypotenuse = Altitude of the equilateral triangle =  $\frac{\sqrt{3}}{2} \times 20 = 10\sqrt{3}$  cms

Therefore,  $(\text{Vertical height})^2 = (10\sqrt{3})^2 - 10^2 = 200$

Vertical height =  $\sqrt{200} = 10\sqrt{2}$  cms

77. Answer – A



Now, the length of AP would be maximum, when  $AB = AC$  (ABC is an Isosceles Right Triangle)

So,  $AB = AC = 10\sqrt{2}$  cms

Applying Pythagoras theorem to  $\Delta APB$ , we get

$$AB^2 = AP^2 + PB^2$$

$$(10\sqrt{2})^2 = 10^2 + x^2$$

$$x^2 = 100$$

$$x = 10 \text{ cms}$$

78. Answer – A

It is given that,  $\sqrt{\log_e \frac{4x - x^2}{3}}$  is a real number

Therefore,  $\log_e \frac{4x - x^2}{3} \geq 0$

$$\frac{4x - x^2}{3} \geq 1$$

$$4x - x^2 \geq 3$$

$$x^2 - 4x + 3 \leq 0$$

$$(x-1)(x-3) \leq 0$$

$$x \in [1, 3]$$

79. Answer – 13

It is given that  $5^x - 3^y = 13438$  and  $5^{x-1} + 3^{y+1} = 9686$

Let  $5^{x-1} = k$  and  $3^y = m$

So,  $5k - m = 13538$  ---- (1)

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$$k + 3m = 9686 \text{ ---- (2)}$$

Multiply (1) by 3,

$$15k - 3m = 40314 \text{ ----(3)}$$

Adding (2) and (3) we get,

$$16k = 50000$$

$$k = 625 \times 5$$

$$k = 5^5$$

$$\text{We know, } 5^{x-1} = k$$

$$\text{So, } x - 1 = 5$$

$$x = 6$$

$$\text{We know, } k + 3m = 9686$$

$$3125 + 3m = 9686$$

$$3m = 6561$$

$$m = 2187$$

$$m = 3^7 = 3^y$$

$$y = 7$$

$$x + y = 6 + 7 = 13$$

80. Answer – D

Vessels A, B and C contains salt solution of strengths 10%, 22% and 32% respectively

It is also given that the amount of salt solution = 500 ml

So, Vessels A, B and C contains salt of 50 grams, 110 grams and 160 grams respectively

100 ml of Solution is transferred from A to B:

A would have 400 ml, B would have 600 ml of solution

$$\text{Amount salt from A which is transferred to B} = \frac{\text{Initial salt amount}}{5} = 10 \text{ grams}$$

So, Total salt in B = 110 + 10 = 120 grams (After first transfer)

Total salt in A = 40 grams (After first transfer)

Now, 100 ml from Vessel B is transferred to Vessel C

So similarly,  $\frac{1}{6}^{th}$  of salt would transfer from B to C

Total Salt in B = 120 - 20 = 100 grams (After second transfer)

Total Salt in C = 160 + 20 = 180 grams (After second transfer)

Now, 100 ml from Vessel C is transferred to Vessel A

So similarly,  $\frac{1}{6}^{th}$  of salt would transfer from C to A

Total Salt in C = 160 - 30 = 130 grams (After third transfer)

Total Salt in A = 40 + 30 = 70 grams (After third transfer)

So, Vessel A contains 70 grams Salt in 500 ml solution

Strength of Salt Solution in Vessel A = 14%

81. Answer – C

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It is given that starting from 10:01 am, every minute a motorcycle leaves A and moves towards B.

Forty-five such motorcycles reach B by 11 am. It means that the forty-fifth motorcycle starts at 10:45 AM at A and reaches B by 11:00 AM i.e 15 minutes.

Since the speed of all the motorcycles is the same, all the motorcycles will take the same duration i.e 15 minutes.

If the cyclist doubles the speed, then he will reach B by 10:30 AM. (Since if the speed is doubled, time is reduced by half)

Since each motorcycle takes 15 minutes to reach B, 15 motorcycles would have reached B by the time the cyclist reaches B.

82. Answer – A

Firstly, the three materials are not reduced, mixed and then moulded. Instead a cylinder is formed with one material and one material only.

The base area of the cylinders to be casted is the same (because the base radius is the same)... Which is  $\pi 3^2 = 9\pi$

Let's us imagine that each sphere is casted into a single cylinder, In this case we will have 3 cylinders, each made up of a different material and having different heights.

So, the heights of these cylinders will be  $4059/\pi, 7839/\pi, 3519/\pi = 45/\pi, 87/\pi, 39/\pi$ .

But we need to have cylinders with equal volume.

Since the base area is the same, this translates to the condition that the cylinders should have the same height. And they should be as high as possible, because the question also wants us to have as less number of cylinders as possible...

So, we need the height of each cylinder to be HCF of  $(45/\pi, 87/\pi, 39/\pi) = 3/\pi$ . this implies there will be a total of  $15+29+13 = 57$  cylinders.

The total surface area of one such Cylinder is  $2\pi r^2 + 2\pi rh = 2\pi 3^2 + 2\pi 33/\pi = 18\pi + 18 = 18(\pi+1)$

The TSA of all the 57 cylinders is  $57 \cdot 18(\pi+1)$

$= 1026(\pi+1)$

83. Answer – B

Given equation -  $2^{6x} + 2^{3x+2} - 21 = 0$

The idea is to convert the above equation to a quadratic one.

So,  $2^{6x} = (2^{3x})^2$

Let  $y = 2^{3x}$

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Now,  $2^{6x} + 2^{3x+2} - 21 = 0$  can be rewritten as  $(2^{3x})^2 + 2^2 \cdot 2^{3x} - 21 = 0$

$$y^2 + 4y - 21 = 0$$

Solving the above quadratic equation,

$$(y + 7)(y - 3) = 0$$

So,  $y = -7$  or  $+3$

$y = 2^{3x} \Rightarrow y$  should always be positive

Therefore,  $y = -7$  is not a valid solution. So, only  $y = +3$  exists.

$$2^{3x} = 3$$

Taking log on both sides,

$$\log_2 2^{3x} = \log_2 3$$

$$3x = \log_2 3$$

$$x = \frac{1}{3} \log_2 3, \text{ which is the real solution to the given equation}$$

84. Answer – 44

$$2^4 \times 3^5 \times 10^4$$

$$2^4 \times 3^5 \times 2^4 \times 5^4$$

$$2^8 \times 3^5 \times 5^4$$

Now, for any number to be a perfect square, it must have an even number of factors.

So, if we consider  $2^8$ , only powers of 0, 2, 4, 6, 8 can lead to perfect squares - 5 ways

If we consider  $3^5$ , only powers of 0, 2, 4 can lead to perfect squares - 3 ways

If we consider  $5^4$ , only powers of 0, 2, 4 can lead to perfect squares - 3 ways

So, total number of possibilities =  $5 \times 3 \times 3$  ways = 45 ways

Since we need to find the number of factors greater than 1,

Required number of ways =  $45 - 1 = 44$  ways

85. Answer – 7

Let the six-digit number be ABCDEF

$$F = A+B+C, E = A+B, C=A, B=2A, D = E+F.$$

$$\text{Therefore } D = 2A+2B+C = 2A + 4A + A = 7A.$$

A cannot be 0 as the number is a 6 digit number.

A cannot be 2 as D would become 2 digit number.

Therefore A is 1 and D is 7.

86. Answer – 48

Let the track length for John be 'a' and for Mary be 'b'

So, Distance travelled by John =  $9a$

Distance travelled by Mary =  $5b$

Now, Time taken by John =  $\frac{9a}{6}$  hours

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Time taken by Mary =  $\frac{5b}{7.5}$  hours

We know that Time taken by John = Time taken by Mary

$$\frac{9a}{6} = \frac{5b}{7.5}$$

$$a = \frac{4}{9} b$$

Total track length = 325 meters

$$\text{So, } \frac{4}{9} b + b = 325 \text{ meters}$$

$$\frac{13}{9} b = 325 \text{ meters}$$

$$b = 225 \text{ meters}$$

$$a = 100 \text{ meters}$$

$$\text{Mary jogs at } 7.5 \text{ Kmph} = 7.5 \times \frac{5}{18}$$

$$\text{So, time taken} = \frac{100}{7.5 \times \frac{5}{18}} = 48 \text{ seconds}$$

87. Answer –B

Explanation: Let the number of fiction and non-fiction books in 2010 = 100a, 100b respectively

It is given that the total number of books in 2010 = 11500

$$100a + 100b = 11500 \quad \text{-----Eq 1}$$

The number of fiction and non-fiction books in 2015 = 110a, 112b respectively

$$110a + 112b = 12760 \quad \text{-----Eq 2}$$

On solving both the equations we get, b=55, a= 60

$$\text{The number of fiction books in 2015} = 110 \times 60 = 6600$$

88. Answer – 12

Explanation: It is given that John works altogether 172 hours i.e including regular and overtime hours.

Let a be the regular hours, 172-a will be the overtime hours

$$\text{John's income from regular hours} = 57 \times a$$

$$\text{John's income for working overtime hours} = (172-a) \times 144$$

It is given that his income from overtime hours is 15% of his income from regular hours

$$a \times 57 \times 0.15 = (172-a) \times 144 \quad a=160$$

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The number of hours for which he worked overtime =  $172 - 160 = 12$  hrs

89. Answer – 4851

Given series -  $(2n+1) + (2n+3) + (2n+5) + \dots + (2n+47) = 5280$

Isolate  $2n$  terms on one side

$$(2n + 2n + \dots + 2n) + (1 + 3 + 5 + \dots + 47) = 5280$$

Odd numbers from 1 to 47 are added in the above series.

Number of terms from 1 to 47 = 24 terms

Therefore, the number of  $2n$  terms = 24

For computing the value of  $(1 + 3 + 5 + \dots + 47)$ ,

We know  $1 = 1^2$ ,  $1 + 3 = 2^2$ ,  $1 + 3 + 5 = 3^2$  and so on

$$\text{So, } (1 + 3 + 5 + \dots + 47) = 24^2$$

$$\text{So, } 2n \times 24 + 24^2 = 5280$$

$$2n \times 24 = 5280 - 24^2$$

$$2n = 220 - 24$$

$$n = 110 - 12$$

$$n = 98$$

$$\text{So, value of } 1+2+3+\dots+98 = \frac{n(n+1)}{2} = \frac{98(98+1)}{2} = \frac{98 \times 99}{2}$$

$$\text{Value of } 1+2+3+\dots+98 = 4851$$

90. Answer: A

Explanation: CP of the table at which the shopkeeper procured each table =  $p$

It is given that shopkeeper sold the tables to Amal and Asim at a profit of 20% and at a loss of 20%, respectively

The selling price of the tables =  $1.2p$  and  $0.8p$  to Amal and Asim respectively.

Amal sells his table to Bimal at a profit of 30%

$$\text{So, CP of the table by Bimal (x)} = 1.2p \times 1.3 = 1.56p$$

Asim sells his table to Barun at a loss of 30%

$$\text{So, CP of the table by Barun (y)} = 0.7 \times 0.8p = 0.56p$$

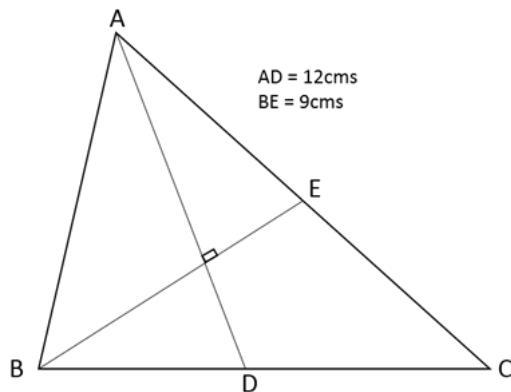
$$(x-y)/p = (1.56p - 0.56p)/p = p/p = 1$$

91. Answer – C



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We know that intersection of two medians is called a Centroid  
We know, a Centroid divides the median in the ratio 2:1

AD = 12cms,

AG = 8cms, GD = 4cms

And similarly, BG = 6cms, GE = 3cms

Now, area ( $\triangle ABE$ ) can be easily found out

$$\text{area } (\triangle ABE) = \frac{1}{2} \times BE \times AG$$

$$\text{area } (\triangle ABE) = \frac{1}{2} \times 9 \times 8 = 36 \text{ cm}^2$$

$$\text{area } (\triangle ABE) = \text{area } (\triangle BEC)$$

$$\text{area } (\triangle ABC) = 2 \times 36 = 72 \text{ cm}^2$$

92. Answer – B

First series - 15, 19, 23, 27, ....., 415  $\rightarrow$  Common difference = 4

Second series - 14, 19, 24, 29, ....., 464  $\rightarrow$  Common difference = 5

Common terms in both sequences = 19, 39, 59, ....., (Common difference = LCM (4,5) = 20)

Now, observing the new series

19, 39, 59, ....., = (20 - 1), (40 - 1), (60 - 1), ....., (400 - 1) (There is no room for 419, as the first series ends at 415)

$$399 = 400 - 1 = 20 \times 20 - 1$$

Hence, the number of common terms in the two sequences = 20

93. Answer – D

Given equations are  $a^2 + b^2 = 25$  and  $x^2 + y^2 = 169$

We know  $5^2 = 25$  and  $13^2 = 169$

Multiply both equations to get  $(a^2 + b^2)(x^2 + y^2) = 25 \times 169$

$$(a^2 + b^2)(x^2 + y^2) = 6225$$

$$\text{We know, } 6225 = 65^2$$

We also know that  $ax + by = 65$

So, numerically (Not algebraically),  $(a^2 + b^2)(x^2 + y^2) = (ax + by)^2$

$$(a^2 + b^2)(x^2 + y^2) = (ax + by)^2$$

Expanding the equation,

$$a^2 x^2 + a^2 y^2 + b^2 x^2 + b^2 y^2 = a^2 x^2 + b^2 y^2 + 2axby$$

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$$a^2 y^2 + b^2 x^2 = 2axby$$

$$a^2 y^2 + b^2 x^2 - 2axby = 0$$

This is of the form,  $(a-b)^2$

$$(ay-bx)^2 = 0$$

$$ay - bx = 0$$

$$K = 0$$

94. Answer – C

Let the cost of each bicycle = 100b

CP of 10 bicycles = 1000b

It is given that he sold six of these at a profit of 25% and the remaining four at a loss of 25%

SP of 10 bicycles =  $125b \times 6 + 75b \times 4 = 1050b$

Profit =  $1050b - 1000b = 50b$

$$50b = 2000$$

$$CP = 100b = 4000$$

95. Answer – 80

From the data,

A scored 72

A's score was 10% less than B

So, Score of B = 80

We know that B was 25% more than C

$$\text{So, } C \times \frac{5}{4} = 80$$

$$C = 64$$

Now, we know that D scored 20% less than D

$$\text{So, } C = \frac{4}{5} \times D$$

$$64 = \frac{4}{5} \times D$$

$$D = 80 \text{ marks}$$

96. Answer – B

The salaries of Ramesh, Ganesh and Rajesh were in the ratio 6: 5: 7 in 2010

In 2015, their salaries are in the ratio 3: 4: 3 respectively.

It is also given that; Ramesh's salary increases by 25% during 2010 - 2015

$$\text{So, Ramesh's salary in 2015} = \frac{5}{4} \times 6 = 7.5$$

Salary in 2015 = 3: 4: 3 (Given)

Salary in 2015 = 7.5: x: y (From data)

3 in order to jump to 7.5, must be multiplied by 2.5

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So, multiplying 2.5 to all the other values,

Salary in 2015 = 7.5: 10: 7.5

Percentage increase in Rajesh's salary during 2010 - 2015 = Percentage increase from 7 to 7.5 =  $\frac{0.5}{7} \times 100$ , which is close to 7%

97. Answer – 150

Sum of the interior angles of a n-sided Polygon =  $(n-2) \times 180$

Measure of each interior angle =  $\frac{(n-2) \times 180}{n}$

So, Interior angle of the polygon with side a =  $\frac{(a-2) \times 180}{a}$

Interior angle of the polygon with side b =  $\frac{(2a-2) \times 180}{2a}$

It is given that interior angle of side b is  $\frac{3}{2}$  times to that of the polygon with side A

$$\frac{(2a-2) \times 180}{2a} = \frac{3}{2} \times \frac{(a-2) \times 180}{a}$$

$$(2a-2) \times 180 = (3a-6) \times 180$$

$$2a-2 = 3a-6$$

$$a = 4$$

$$\text{So, } b = 8$$

$$(a+b) \text{ sides} = 8+4 = 12 \text{ sides}$$

$$\text{Interior angle} = \frac{(12-2) \times 180}{12} = 150^\circ$$

98. Answer – 12

It is given that  $f(2) > 1$  and  $f(mn) = f(m) f(n)$

So,  $f(2) = f(2) f(1)$ , as m and n are positive integers.

Only possible value for  $f(1) = 1$

$$f(2) > 1$$

$$\text{Now we know, } f(24) = 54$$

$$\text{So, } f(2) f(3) f(4) = 54$$

$$f(3) f(2)^3 = 54$$

$$\text{Now we know, } 54 = 2 \times 3^3$$

$$\text{Therefore, } f(2) = 3, f(3) = 2 \text{ and } f(1) = 1$$

Now, we need to find the value of  $f(18)$

$$f(18) = f(3) \times f(2) \times f(3)$$

$$f(18) = 2 \times 3 \times 2 = 12$$

$$f(18) = 12$$

99. Answer – B

Anil in one day can do  $\frac{1}{20^{\text{th}}}$  of the work

Sunil in one day can do  $\frac{1}{40^{\text{th}}}$  of the work

Anil starts the job and Sunil joins him after three days.

So, Anil would have done  $\frac{3}{20^{\text{th}}}$  of the work by the time Sunil joins

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After Sunil joins, they both would be doing  $\frac{3}{40}$  of work everyday  
Now, it is known that Bimal joins them after some days and finishes 10 % of the work.

Now, Anil alone had done  $\frac{6}{40}$  of the work and Bimal completes  $\frac{4}{40}$  of the work

So, in total they would have done  $\frac{6}{40} + \frac{4}{40} = \frac{10}{40}$  of the work ( $\frac{4}{40}$  is the work done by Bimal)

Remaining work =  $\frac{30}{40}$ , which would be done by Anil and Sunil in 10 days.

Combining everything,

Total number of days = 3 + 10 = 13 days

100. Answer – B

It is given that the scores of Anjali, Mohan and Rama after review were in the ratio 11: 10: 3

So, let their values be 11x, 10x and 3x respectively.

It is known that their score increased by 6 after review.

So, scores before review = 11x-6, 10x-6 and 3x-6 respectively

Now, from the data given

$$(11x - 6 + 10x - 6) \times \frac{1}{12} = 3x - 6$$

$$21x - 12 = 36x - 72$$

$$60 = 15x$$

$$x = 4$$

So, marks after revision are 44, 40 and 12 respectively.

Therefore, Anjali's score exceeded Rama's by 44 - 12 = 32 marks