

Section : Verbal Ability

QNo:- 1 ,Correct Answer:- C

Explanation:- Refer to lines from first paragraph, "I use the term 'violence' because of the intentionality associated with it, both in the aggression of humans and, at times, the recently observed behavior of elephants.". so option 3 is the appropriate answer.

QNo:- 2 ,Correct Answer:- A

Explanation: Bradshaw says that elephants also feel the trauma of loss of loved ones just like human-beings; thus he would prefer a trauma-treatment for them as is mentioned in **option A**.

Option B can be ruled out as the main argument of Bradshaw is based on trauma and this study has no direct relationship with trauma.

Option C is rejected as research regarding human-elephant similarity has already been supported by Bradshaw. Option D is against what Bradshaw intends to counter.

QNo:- 3 ,Correct Answer:- C

Explanation:- The passage talks about growing frequency of aggression between humans and elephants and the author also mentions about traumatic stress that happens among the elephants as it happens among human-beings under similar conditions. All these points get focus in **option C.**

Option A is incorrect as it doesn't mention anything about the outcome of similarity in brain organization of elephants and human-beings.

Option B just mentions only a part of the passage not in totality, so rejected.

Option D is unrelated as regards the contents of the passage.

QNo:- 4 ,Correct Answer:- B

Explanation:- option 1 can be inferred from para 2

option 4 can be inferred from "The elephants of decimated herds, especially orphans who've watched the death of their parents and elders from poaching and culling, exhibit behavior typically associated with post-traumatic stress disorder and other trauma-related disorders in humans: abnormal startle response, unpredictable asocial behavior, inattentive mothering and hyperaggression"

option 3 is from ""Elephants are suffering and behaving in the same ways that we recognize in ourselves as a result of violence.... Except perhaps for a few specific features, brain organization and early development of elephants and humans are extremely similar.""

QNo:- 5 ,Correct Answer:- A

Explanation: Fabric of the society means social customs, practices, habits, rituals, etiquette, protocols, and similar interactions comprise the core behavior of a particular society (the paragraph mentions elephant community).

The paragraph line, "the fabric ------different habitats" has been used by the author as a **metaphor** (is a word or phrase used to compare two unlike objects, ideas, thoughts or feelings to provide a clearer description) to indicate the altercation among elephants that has resulted in their loss of habitat due to human intrusion. This idea has been highligted clearly in **option A**.

QNo:- 6 ,Correct Answer:- B

Explanation:- This is critical reasoning based wherein it is required to negate (weaken) the main message(argument) i.e. natural selection and inheritance cannot define attaining of acqired characteristics by next generation. **Option B** would negate the main idea as author has mentioned: " The traditional, and still dominant, view is that adaptations – from the human brain to the peacock's tail – are fully and satisfactorily explained by natural selection (and subsequent inheritance). Yet [new evidence] from genomics, epigenetics and developmental biology [indicates] that evolution is more complex than we once assumed...."

All other given options actually support the main message.



QNo:- 7 ,Correct Answer:- D

Explanation:- Refer to lines in 2nd and 3rd paragraph," The traditional, and still dominant, view is that adaptationsecological legacies and culture they bequeath."These lines give a description about how genes struggling to control human culture reflect the pathway of evolution and different factors like, genomics(genetics), epigenetics, developmental factors and ecological legacies influence the path of evolution which is appropriately highlighted in **option D**. Other given options do not present all the afore said factors, so are rejected.

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QNo:- 8 ,Correct Answer:- C

Explanation:- Entire passage talks about inheritance of the acquired characteristics. Refer first paragraph"generations of school children-----is impossible."Therefore, option C is thr most appropriate.

QNo:- 9 ,Correct Answer:- C

Explanation: Option C is correct as per the explanation given in the passage. The second paragraph speaks about the supposed dominance of Darwin and Mendel's theory of inheritance. But towards the third and susequent paragraphs the author mentions that Wilson's theory was able to explain how acquired traits are inherited in a better way as compared to Darwin and Mendel and this has been highlighted only in option C.

QNo:- 10 ,Correct Answer:- B

Explanation:- Refer to lines in 2nd paragraph, "The Indian government's conception of the war memorial was not merely absent-minded. Rather, it accurately reflected the fact that both academic history and popular memory have yet to come to terms with India's Second World War".

The same is highlighted in **option B** make it the best choice.

Option A does not clarify misplaced prioprities.

Option C is incorrect as it is nowhere mentioned about the inclusion of their names in India Gate memorial

Option D does not find reference in the passage.

QNo:- 11 ,Correct Answer:- D

Explanation:- Refer to 1st paragraph last line, "India's contribution to the Second World War is airbrushed out of existence". Ihis implies that the author feels down-hearted about such disregard. This makes **option D** being the appropriate choice. Option A is incorrect as the author is not sad about how many lives were lost but they were left unrecognised. Option B is incorrect as author is not having any problem with new war memorial, so no question of lamenting. Option C is again incorrect as he has nowhere mentioned about the wastage of money.

QNo:- 12 ,Correct Answer:- A

Explanation:- Refer to lines in 2nd paragraph,"Further, the political trajectory ------- wartime experiences." This suggests that India was primarily interested in self-legitimization(to make oneself acceptable). Therefore **option A** is correct which clearly emphasises the same.

The remaining options are false as per the content of the passage.

QNo:- 13 ,Correct Answer:- B

Explanation:- The phrase "mood music " as used in 2nd paragraph is just indicating the **backdrop**; whereas struggle for independence was the main theme of "drama".

This is depicted in **option B** which makes it the correct choice.

Option A is rejected because it is not mentioned in the passage.

Option Cis incorrect because India- Pakistan rivalry was not in focus at the time of Second World War. Option D is irrelevant .

QNo:- 14 ,Correct Answer:- A

Explanation:- For option B, refer 2nd paragraph" Further, the political trajectory of the postwar subcontinent has militated against popular remembrance of the war. With partition and the onset of the India-Pakistan rivalry, both of the new nations needed fresh stories for self-legitimisation rather than focusing on shared wartime experiences."

For option D refer 4th paragraph,"This led the United States to take considerable interest in the country's future, and ensured that this was no longer the preserve of the British government."

For option C, refer 6th paragraph,"Such extraordinary mobilization for war was achieved at great human cost, with the Bengal famine the most extreme manifestation of widespread wartime deprivation. The costs on India's home front must be counted in millions of lives.

As per 5th paragraph," In a stunning reversal of its long-standing financial relationship with Britain, India finished the war as one of the largest creditors to the imperial power." **option A** is incorrect statement .

QNo:- 15 ,Correct Answer:- B

Explanation:- Refer to second last paragraph, "Its mission is/was to educate and encourage environmental public. . . . while simultaneously becoming a trusted name in the environmental movement."This indicates that the efforts maintained had actually shadowed real problem. So, **option B** properly depicts this and is correct choice.

QNo:- 16 ,Correct Answer:- D

Explanation:- Refer to 3rd paragraph of passage that depict all the options A,B and C except D

QNo:- 17 ,Correct Answer:- B

Explanation:-

Option B can be clearly infered from last paragraph of the passage " Our huge problem with plastic is the result of a permissive legal framework that has allowed the uncontrolled rise of plastic pollution, despite clear evidence of the harm it causes to local communities and the world's oceans. Recycling is also too hard in most parts of the U.S. and lacks the proper incentives to make it work well."

QNo:- 18 ,Correct Answer:- D

Explanation:- Refer to the last line of first paragraph where "lie" implies the that the burden of plastic pollution has been put on the consumers. So,**option D** is appropriate.

QNo:- 19 ,Correct Answer:- D

Explanation:- Througout the whole passage the author believes that the bigger problem is the production itself, that is causing plastic pollution rather than focusing on consumer behavior which is just a minor part of the giant problem like plastic pollution.

So option D explains the phrase "what hammering a nail is to halting a falling skyscraper" properly.

QNo:- 20 ,Correct Answer:- A

Explanation:- Refer 1st paragraph and also by going through the passage as a whole the author seems to emphasise that economists should incorporate psychological aspect, certain emotions in their research making **option A** as an appropriate choice. Others don't fit the bill.

Explanation:- Refer to lines from last paragraph " Since the 1970s, depression has come to be viewed as a cognitive ------ failure when things go badly", we can derive author's opinion which has been aptly depicted in **option D**

QNo:- 22 ,Correct Answer:- C

Explanation:- Throughout the passage the author is emphasising on incorporating psychological aspects in research findings by economists. Only **option C** goes against author's main argument

QNo:- 23 ,Correct Answer:- D

Explanation:- Refer to the second last paragraph of the passage"As the science grows more sophisticated ------ basis to transform or discipline individuals."It implies that **option D** is the best choice.

QNo:- 24 ,Correct Answer:- C

Explanation:- refer to para 4

QNo:- 25 ,Correct Answer:- C

Explanation:- Option C comprehensively sumarises the entire paragraph Option A talks about development and not formation of identical twins , hence rejected. Option B is lacking important point of genetic similarity, hence rejected. Option D is wrong as it suggests formation of twins"during fertilization", it is actually "one day after fertilization"

QNo:- 26 ,Correct Answer:- 2

Explanation:- The paragraph opens with the subject in question which is given in line 1."Translators are like bumblebees. Then we move further putting a chronological order(present-past).In 1934, the French entomologist August Magnan pronounced the flight of the bumblebee to be aerodynamically impossible, and though long since scientifically disproved, this factoid is still routinely trotted out. Similar pronouncements about the impossibility of translation have dogged practitioners since Leonardo Bruni's *De interpretatione recta*, published in 1424. Meanwhile, bees, unaware of these deliberations, have continued to flit from flower to flower, and translators continue to translate."

Apart from **option 2** rest of the options form a coherent paragraph

QNo:- 27 ,Correct Answer:- 1432

Explanation: Line 1 introduces the noun, Line 4 introduces "swifts" and thought is continued in line 3. so correct order is 1432

QNo:- 28 ,Correct Answer:- 4

Explanation:- corect order is 1325, passage talks about immunization and inconsistency, it does not concern with cost so line 4 is the odd one out

QNo:- 29 ,Correct Answer:- 4213

Explanation: Line 4 introduces noun, Line 2 furthers information about it, Line 3 talks about the diagnosis and 4 talks about how far it had spread . So correct order is 4213



QNo:- 30 ,Correct Answer:- 1

Explanation:- Statement 3 opens the paragraph as it is a generic statement. Statement 2 follows 3 as it gives reasons for the erosion of Ganges . Statement 4 follows 2 due to keyword"erosion" and statement 5 concludes the paragraph . So **statement 1** is the odd one which is actually contrary to the views expressed in the paragraph.

QNo:- 31 ,Correct Answer:- 1324

Explanation:- Line 1 introduces the two main subjects, Line 2 will follow Line3 as it is a mandatory pair (noun 'twitter'- pronoun'it'), Line 2 continues what is mentioned in Line 3. and 4 will be the concluding sentence expressing how Twitter poses as an example to what has been mentioned in line 1. So the correct order is 1324.

QNo:- 32 ,Correct Answer:- B

Explanation:-

Option A is incorrect as the artists only facilitated the understanding of the subject-matter, they were not responsible for the study of landscape as a subject of art. Option B is the best option amongst all Option C is incorrect because landscape was not major but became an independent subject.

Option D changes the **focus** of the paragraph from landscape to organism

QNo:- 33 ,Correct Answer:- 2413

Explanation:- Sentence 2 is the perfect opening statement as it mentions the subject matter of the paragraph.Sentence 4 furthers the thought stated in sentence 2.Sentence1 follows 4 that inroduces unwitting enablers who contribute the incompatibility and the paragraph concludes with sentence 3. The correct arrangement is **2413**

QNo:- 34 ,Correct Answer:- A

Explanation:- as author states that "Power is understood as a negative mechanism, which prevents the non-professional actors from offering their ideas and information as legitimate knowledge." It basically restricts knowledge to the ones in power.

Section : DI & Reasoning

QNo:- 35 ,Correct Answer:- 4

Explanation: Given that $n \times n$ square matrix to be filled with numerals so that no two adjacent cells have the same numeral. Also, two cells are called adjacent if they touch each other horizontally, vertically or diagonally.

As per the given information, in the following matrix, the cells adjacent to A_{11} are A_{12} , A_{21} and A_{22} i.e. 3 adjacent cells for corner cell and A_{11} , A_{21} , A_{22} , A_{23} , A_{13} are adjacent to A_{12}

A ₁₁	A ₁₂	A ₁₃
A ₂₁	A ₂₂	A ₂₃
A ₃₁	A ₃₂	A ₃₃

For minimum number of different numerals, to fill 3 x 3 matrix, we can fill the matrix in following manner, if we put 1 in A₁₁, A₃₁, A₁₃, A₃₃, then 1 cannot be put in any other cell. Again now put 2 in A₁₂ and A₃₂, so 2 cannot be put anywhere else. Similarly put 3 in A₂₁ and A₂₃ and put 4 in A₂₂

2	1
4	3
	4



So, we require minimum 4 different numerals to fill 3 x 3 square matrix.

QNo:- 36 ,Correct Answer:- 4

Explanation:- Given that $n \times n$ square matrix to be filled with numerals so that no two adjacent cells have the same numeral. Also, two cells are called adjacent if they touch each other horizontally, vertically or diagonally.

As per the given information, in the following matrix, the cells adjacent to A_{11} are A_{12} , A_{21} and A_{22} i.e. 3 adjacent cells for corner cell and A_{11} , A_{21} , A_{22} , A_{23} , A_{13} are adjacent to A_{12}

A ₁₁	A ₁₂	A ₁₃
A ₂₁	A ₂₂	A ₂₃
A ₃₁	A ₃₂	A ₃₃

For minimum number of different numerals to fill 5 x 5 square matrix, we can fill 1 in A_{11} , A_{13} , A_{15} , A_{31} , A_{33} , A_{51} , A_{51} , A_{53} , A_{55} , then 1 cannot be placed in any other cell. Again if we put 2 in A_{12} , A_{14} , A_{32} , A_{34} , A_{52} , A_{54} , then 2 cannot be place in any other cell. Similarly if we put 3 in A_{22} , A_{24} , A_{42} , A_{44} then 3 cannot be placed in any other cell , now we can put 4 in remaining places (A_{21} , A_{23} , A_{25} , A_{41} , A_{43} , A_{45})

1	2	1	2	1
4	3	4	3	4
1	2	1	2	1
4	3	4	3	4
1	2	1	2	1

So, we require minimum 4 different elements to fill 5 x 5 square matrix .

QNo:- 37 ,Correct Answer:- C

Explanation:- Given that n × n square matrix to be filled with numerals so that no two adjacent cells have the same numeral. Also, two cells are called adjacent if they touch each other horizontally, vertically or diagonally.

As per the given information, in the following matrix, the cells adjacent to A_{11} are A_{12} , A_{21} and A_{22} i.e. 3 adjacent cells for corner cell and A_{11} , A_{21} , A_{22} , A_{23} , A_{13} are adjacent to A_{12}

A ₁₁	A ₁₂	A ₁₃
A ₂₁	A ₂₂	A ₂₃
A ₃₁	A ₃₂	A ₃₃

As one mistake is allowed therefore let 1 be placed in cell A_{12} , we can easily see that even after one mistake we need minimum of 4 different numerals to fill 5 x 5 square matrix.

1	1	1	2	1
4	3	4	3	4
1	2	1	2	1
4	3	4	3	4

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1	2	1	2	1	

QNo:- 38 ,Correct Answer:- C

Explanation:- Given that $n \times n$ square matrix to be filled with numerals so that no two adjacent cells have the same numeral. Also, two cells are called adjacent if they touch each other horizontally, vertically or diagonally.

As per the given information, in the following matrix, the cells adjacent to A_{11} are A_{12} , A_{21} and A_{22} i.e. 3 adjacent cells for corner cell and A_{11} , A_{21} , A_{22} , A_{23} , A_{13} are adjacent to A_{12}

A ₁₁	A ₁₂	A ₁₃
A ₂₁	A ₂₂	A ₂₃
A ₃₁	A ₃₂	A ₃₃

Given that all the cells adjacent to any particular cell must have different numerals, so let us put 1 in A₃₃, now put 2,3,4,5,6,7,8,9 respectively in A₂₃, A₂₂, A₃₂, A₄₂, A₄₃, A₄₄, A₃₄, A₂₄, in this way all the cells adjacent to A₃₃ have different numerals, Now we can put 1 in A₁₁, A₁₃, A₁₅, A₃₁, A₃₅, A₅₁, A₅₃, A₅₅ and 5 in A₁₂, A₁₄, 2 in A₅₂, A₅₄, 8 in A₂₁ and A₄₁, 3 in A₂₅ and A₄₅, in this way matrix can be filled. So minimum 9 different numerals are needed to fill a 5x 5 square matrix in required way.

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

QNo:- 39 ,Correct Answer:- A

Explanation:- Jatin and Indu scored 100% in exactly one section, So Jatin must have scored 20 in DI.

Composite score of Jatin = 20(2) + 16 + 14 = 70 and he will be recruited as he scores more than Indu and it is given that Indu is recruited.

Indu's score will be 70 - 10 = 60. Indu scored 100% in exactly one section but that cannot be DI because If Indu scores 20 in DI, Indus's score in GA = 60 - 40 - 8 = 12

In this case, Indu will not qualify as she will have two sections with less than 70%.

So she must have scored 20 in GA

Indu's score in DI= (60 - 20-8)/2= 16

So Danish, Harini and Indu scored 20 in GA

Score of Danish is 2(8) + 15 + 20 = 51

Hence, Score of Ajay is 2(8) + 20 + 16 = 52 because Ajay is unique highest scorer in WE section, so he must have scored 19 or 20 but 19 is not possible because in that case composite score of Ajay would also become 51, which is not possible. Chetna's composite score = 19(2) + 4 + 12 = 54 but she is not recruited as she scored less than 70% in two sections.

Ester's composite score = 12(2) + 18 + 16 = 58 so Ester also is recruited.

Geeta is recruited with lowest composite score, So she must have scored more than Ajay.

Maximum possible composite score of Geeta can be 54, but 54 is not possible.

So Geeta's composite score = 14(2) + 19 + 6 = 53

	DI	WE	GA	SCORE
А	8	20	16	52
В		9	11	



С	19	4	12	54
D	8	15	20	51
E	12	18	16	58
F	15	7	10	47
G	14	19	6	53
Н	5		20	
	16	8	20	60
J	20	16	14	70

(Jatin's composite score was more than that of Danish) and (Indu scored less than Chetan in DI).

QNo:- 40 ,Correct Answer:- D

Explanation:- Jatin and Indu scored 100% in exactly one section, So Jatin must have scored 20 in DI.

Composite score of Jatin = 20(2) + 16 + 14 = 70 and he will be recruited as he scores more than Indu and it is given that Indu is recruited.

Indu's score will be 70 - 10 = 60. Indu scored 100% in exactly one section but that cannot be DI because If Indu scores 20 in DI, Indus's score in GA = 60 - 40 - 8 = 12

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F	15	7	10	47
G	14	19	6	53
Н	5		20	
I	16	8	20	60
J	20	16	14	70

Bala scored same as Jatin in DI must be false because if Bala scores 20 in DI then composite score of Bala will be = 20(2)+9+11=60 which will be same as that of Indu.

QNo:- 41 ,Correct Answer:- 13

Explanation:- Jatin and Indu scored 100% in exactly one section, So Jatin must have scored 20 in DI.

Composite score of Jatin = 20(2) + 16 + 14 = 70 and he will be recruited as he scores more than Indu and it is given that Indu is recruited.

Indu's score will be 70 - 10 = 60. Indu scored 100% in exactly one section but that cannot be DI because If Indu scores 20 in DI, Indus's score in GA = 60 - 40 - 8 = 12

In this case, Indu will not qualify as she will have two sections with less than 70%.

So she must have scored 20 in GA

Indu's score in DI= (60 - 20-8)/2= 16

So Danish, Harini and Indu scored 20 in GA



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Ester's composite score = 12(2) + 18 + 16 = 58 so Ester also is recruited.

Geeta is recruited with lowest composite score, So she must have scored more than Ajay.

Maximum possible composite score of Geeta can be 54, but 54 is not possible.

So Geeta's composite score = 14(2) + 19 + 6 = 53

	DI	WE	GA	SCORE
A	8	20	16	52
В		9	11	
С	19	4	12	54
D	8	15	20	51
E	12	18	16	58
F	15	7	10	47
G	14	19	6	53
Н	5		20	
I	16	8	20	60
J	20	16	14	70

Bala cannot score 20 or 19 as they are already scored by Jatin and Chetna. If Bala scores 18 in DI then his composite score will be 56 which is more than that of Chetna. So it is not possible. If he scores 17 then his composite score will be 54 which is equal to Chetna's score. So it is again not possible. Next he cannot score 16 or 15. If he scores 13 then his composite score will be 46 which is possible.

QNo:- 42 ,Correct Answer:- 14

Explanation:- Jatin and Indu scored 100% in exactly one section, So Jatin must have scored 20 in DI.

Composite score of Jatin = 20(2) + 16 + 14 = 70 and he will be recruited as he scores more than Indu and it is given that Indu is recruited.

Indu's score will be 70 - 10 = 60. Indu scored 100% in exactly one section but that cannot be DI because If Indu scores 20 in DI, Indus's score in GA = 60 - 40 - 8 = 12

In this case, Indu will not qualify as she will have two sections with less than 70%.

So she must have scored 20 in GA

Indu's score in DI= (60 - 20-8)/2= 16

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Ester's composite score = 12(2) + 18 + 16 = 58 so Ester also is recruited.

Geeta is recruited with lowest composite score, So she must have scored more than Ajay.

Maximum possible composite score of Geeta can be 54, but 54 is not possible.

So Geeta's composite score = 14(2) + 19 + 6 = 53

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G	14	19	6	53
Н	5		20	
I	16	8	20	60

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J	20	16	14	70		

Harini cannot score 20, 19 and 18. If she scores 17 then her score will be 47 which is equal to Falak's score. Next she cannot score 16 and 15. If she scores 14 then her composite score will be 44 which is possible.

QNo:- 43 ,Correct Answer:- D

Explanation:- It is given that the sales figures during the three months of the second quarter (April, May, June) of 2016 form an arithmetic progression.

So 40 + (40 + x) + (40 + 2x) = 150 x = 10April 2016 = 40 May 2016 = 50 June 2016 = 60 Also, the same case holds for October, November, December of 2016. 100 + (100 + x) ++ (100 + 2x) = 360 x = 20October 2016 = 100 November 2016 = 120 December 2016 = 140

In case of December 2017, The total aggregate for the last quarter is 2017 is 500. October + November + December = 500 150 + 170 + Dec =500 Dec = 500 - 320 = 180.

	2016			2017	
Quarter	Month	Sales Figures	Quarter	Month	Sales Figures
	January	80		January	120
01(240)	February	60	04(380)	February	100
	March	100	Q((500)	March	160
	April	40		April	60
$O_{2}(150)$	May	50	0-(200)	May	75
Q2(150)	June	60	Q2(200)	June	65
	July	75		July	60
$O_{2}(250)$	August	120	$O_{2}(220)$	August	90
Q3(250)	September	55	Q3(220)	September	70
<u> </u>	October	100		October	150
0,(360)	November	120	0,(500)	November	170
	December	140	Q4(300)	December	180

Sales in December 2017 = 180 Sales in December 2016 = 140 Percentage increase = $\frac{40}{140} \times 100 = 28.57\%$

QNo:- 44 ,Correct Answer:- B

Explanation:- It is given that the sales figures during the three months of the second quarter (April, May, June) of 2016 form an arithmetic progression. So 40 + (40 + x) + (40 + 2x) = 150

x = 10April 2016 = 40 May 2016 = 50 June 2016 = 60



Also, the same case holds for October, November, December of 2016. 100 + (100 + x) + + (100 + 2x) = 360 x = 20October 2016 = 100 November 2016 = 120 December 2016 = 140

In case of December 2017, The total aggregate for the last quarter is 2017 is 500. October + November + December = 500 150 + 170 + Dec = 500 Dec = 500 - 320 = 180.

	2016			2017	
Quarter	Month	Sales Figures	Quarter	Month	Sales Figures
	January	80		January	120
01(240)	February	60	O ₁ (380)	February	100
Q((= 10)	March	100	Q[(500)	March	160
	April	40		April	60
$O_{2}(150)$	May	50	$O_{2}(200)$	May	75
Q2(150)	June	60	Q2(200)	June	65
	July	75		July	60
$O_{2}(250)$	August	120	$O_{2}(220)$	August	90
Q3(230)	September	55	Q3(LL0)	September	70
	October	100		October	150
0.(360)	November	120	0,(500)	November	170
Q ₄ (300)	December	140	Q ₄ (300)	December	180

	2017	2016	percentage increase
Ql	380	240	$\frac{140}{240} \times 100 = 58.33$
Q2	200	150	$\frac{50}{150} \times 100 = 33.33$
Q3	220	250	$\frac{-30}{250} \times 100 = -12\%$
Q4	500	360	$\frac{140}{360} \times 100 = 38.88\%$

So the percentage increase in the sales is highest for Q1.

QNo:- 45 ,Correct Answer:- A

Explanation:- It is given that the sales figures during the three months of the second quarter (April, May, June) of 2016 form an arithmetic progression.

So 40 + (40 + x) + (40 + 2x) = 150 x = 10April 2016 = 40 May 2016 = 50 June 2016 = 60 Also, the same case holds for October, November, December of 2016. 100 + (100 + x) + + (100 + 2x) = 360 x = 20October 2016 = 100 November 2016 = 120 December 2016 = 140



In case of December 2017, The total aggregate for the last quarter is 2017 is 500. October + November + December = 500 150 + 170 + Dec = 500 Dec = 500 - 320 = 180.

	2016			2017	
Quarter	Month	Sales Figures	Quarter	Month	Sales Figures
	January	80		January	120
0.(240)	February	60	0,(380)	February	100
	March	100	Q1(300)	March	160
	April	40		April	60
$O_{2}(150)$	May	50	$O_{2}(200)$	May	75
J ₂ (150)	June	60	Q2(200)	June	65
Q. (250)	July	75		July	60
	August	120	$O_{2}(220)$	August	90
Q3(200)	September	55	Q3(220)	September	70
0.(360)	October	100		October	150
	November	120	0,(500)	November	170
	December	140		December	180

Q2 of 2017 with compared with Q1 of 2017

= (200-380)/380 × 100 = - 47.36 or 47.36% decrease

 $\rm Q_1$ of 2017 compared with $\rm Q_4$ of 2016.

= (380 - 360)/360 × 100 = 5.55% increase.

 Q_2 of 2016 compared with Q_1 of 2016

= (150-240)/240 × 100 = -37.5% increase or 37.5% decrease

Q₄ of 2017 with compared with Q₃ of 2017

There is an increase from 220 to 500.

So, sales of Q_2 of 2017, had the highest percentage decrease compared with Q_1 of 2017.

QNo:- 46 ,Correct Answer:- A

Explanation:- It is given that the sales figures during the three months of the second quarter (April, May, June) of 2016 form an arithmetic progression.

So 40 + (40 + x) + (40 + 2x) = 150 x = 10April 2016 = 40 May 2016 = 50 June 2016 = 60 Also, the same case holds for October, November, December of 2016. 100 + (100 + x) + + (100 + 2x) = 360 x = 20October 2016 = 100 November 2016 = 120 December 2016 = 140

In case of December 2017, The total aggregate for the last quarter is 2017 is 500. October + November + December = 500 150 + 170 + Dec =500 Dec = 500 - 320 = 180.

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Quarter	Month	Sales Figures	Quarter	Month	Sales Figures
	January	80		January	120
0.(240)	February	60	0.(380)	February	100
	March	100		March	160
	April	40		April	60
$O_{2}(150)$	May	50	$O_{2}(200)$	May	75
Q2(130)	June	60	Q2(200)	June	65
	July	75		July	60
$O_{2}(250)$	August	120	$O_{2}(220)$	August	90
Q3(230)	September	55	Q3(220)	September	70
	October	100		October	150
0.(360)	November	120	0.(500)	November	170
	December	140	Q ₄ (300)	December	180

(1)	March 2017, 160	Feb 2017 100	$=\frac{60}{100}$ × 100 = 60% increase.
(2)	March 2016, 100	Feb 2016 60	$=\frac{40}{60} \times 100 = 66.66\%$ increase.
(3)	October 2016, 100	September 2016 55	$=\frac{45}{55} \times 100 = 81.81\%$ increase
(4)	October 2017, 150	September 2017 70	$=\frac{80}{70} \times 100 = 114.2\%$ increase.

: The highest percentage increase in this case is from September 2017 to October 2017.

QNo:- 47 ,Correct Answer:- A

Explanation:- To start of this question, lets analyze each statement individually. S1 : Out of first 5 pipes, there are 3 H. So remaining two will be M or L. S2 : Out of first 10 pipes, there is only 1 L.

Combining the above 2, it is clear that out of first 5, there will be 3 H and 2 M.

S3 : P7 and P8 both recorded HH/MM and other than these two, there are no other consecutive pipes of same type.

S4 : P16 to P20 there are no H. Also we can think, that since we cannot have consecutive pipes of same type, so out of these 5 there have to 3M + 2L OR 3L + 2M.

S5 : H = 2L which means that H has to be an even number.

Lets fill the values P1 to P20 with all possible combinations clear till now.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C1	Н	М	Н	М	Н	L	Н	Н	М	Н						М	L	М	L	М
C2	Н	М	Н	М	Н	L	М	М	Н	М						М	L	М	L	М
C3	н	М	Н	М	Н	L	Н	н	М	н						L	М	L	М	L
C4	Н	М	Н	М	Н	L	Μ	М	Н	М						L	М	L	М	L

Considering C2.

C2 has 4H, 3L already. As per condition S5, H can either be 6 or 8. If we take H as 6, then L will be 3. See C2 carefully, it already has 3 L's. This means that P11 to P15 will have 2H and 3M which can happen only if P11 is M. This is not possible since P10 and P11 will get same values which is not allowed.



If we take H as 8, then we need 4H from P11 to P15 which again is not possible. So C2 is rejected completely.

Considering C4.

C4 has 4H, 4L already. As per S5, even if we keep L at 4, we need total 8H, which means 4H are required from P11 to P15 which again is not possible. So C4 is also rejected.

Considering C1.

It has 6H, 3L already. So we need to add more H, L to this otherwise P11 to P15 will be all M, which is not allowed. So next possible value is 4L,8H. Infact this is the only possible combination, because if we go higher to 5L,10H then total will go beyond 20 considering already existing 6M. Continuing with 4L, 8H we see that from P11 to P15 we need 1L, 2H, 2M.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C1	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	Н	L	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	L	Н	М	L	М	L	М
	Н	Μ	Н	Μ	Н	L	Н	Н	М	Н	М	Н	L	М	Н	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	L	М	Н	М	Н	М	L	М	L	М

Similarly considering C3, there are 6H, 4L, 5M. So to match condition S5, we need total 8H, 4L, 8M which means that there should be 2H, 3M from P11 to P15.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C3	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	Н	М	L	М	L	М	L

Another possibility is we can have final 10H, 5L, 5M, already present are 6H, 4L, 5M which means we need 4H and 1L from P11 to P15 which is clearly rejected because this would result in consecutive H's.

So total 5 cases are possible.

Out of all 5 possible cases, all have H on P10. So option 1 has to be true.

QNo:- 48 ,Correct Answer:- D

Explanation:- To start of this question, lets analyze each statement individually. S1 : Out of first 5 pipes, there are 3 H. So remaining two will be M or L. S2 : Out of first 10 pipes, there is only 1 L.

Combining the above 2, it is clear that out of first 5, there will be 3 H and 2 M.

S3 : P7 and P8 both recorded HH/MM and other than these two, there are no other consecutive pipes of same type.

S4 : P16 to P20 there are no H. Also we can think, that since we cannot have consecutive pipes of same type, so out of these 5 there have to 3M + 2L OR 3L + 2M.

S5 : H = 2L which means that H has to be an even number.

Lets fill the values P1 to P20 with all possible combinations clear till now.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C1	Н	М	Н	М	Н	L	Н	Н	М	Н						М	L	М	L	М
C2	Н	М	Н	М	Н	L	М	М	Н	М						М	L	М	L	М
C3	Н	М	Н	М	Н	L	Н	Н	М	Н						L	М	L	М	L
C4	Н	М	Н	М	Н	L	М	М	н	М						L	М	L	М	L

Considering C2.

C2 has 4H, 3L already. As per condition S5, H can either be 6 or 8. If we take H as 6, then L will be 3. See C2 carefully, it already has 3 L's. This means that P11 to P15 will have 2H and 3M which can happen only if P11 is M. This is not possible

since P10 and P11 will get same values which is not allowed.

If we take H as 8, then we need 4H from P11 to P15 which again is not possible. So C2 is rejected completely.

Considering C4.

C4 has 4H, 4L already. As per S5, even if we keep L at 4, we need total 8H, which means 4H are required from P11 to P15 which again is not possible. So C4 is also rejected.

Considering C1.

It has 6H, 3L already. So we need to add more H, L to this otherwise P11 to P15 will be all M, which is not allowed. So next possible value is 4L,8H. Infact this is the only possible combination, because if we go higher to 5L,10H then total will go beyond 20 considering already existing 6M. Continuing with 4L, 8H we see that from P11 to P15 we need 1L, 2H, 2M.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C1	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	Н	L	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	L	Н	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	L	М	Н	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	L	М	Н	М	Н	М	L	М	L	М

Similarly considering C3, there are 6H, 4L, 5M. So to match condition S5, we need total 8H, 4L, 8M which means that there should be 2H, 3M from P11 to P15.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C3	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	Н	М	L	М	L	М	L

Another possibility is we can have final 10H, 5L, 5M, already present are 6H, 4L, 5M which means we need 4H and 1L from P11 to P15 which is clearly rejected because this would result in consecutive H's.

So total 5 cases are possible. All the possible cases have exactly 8 M's. So option 4.

QNo:- 49 ,Correct Answer:- D

Explanation:- To start of this question, lets analyze each statement individually. S1 : Out of first 5 pipes, there are 3 H. So remaining two will be M or L. S2 : Out of first 10 pipes, there is only 1 L.

Combining the above 2, it is clear that out of first 5, there will be 3 H and 2 M.

S3 : P7 and P8 both recorded HH/MM and other than these two, there are no other consecutive pipes of same type.

S4 : P16 to P20 there are no H. Also we can think, that since we cannot have consecutive pipes of same type, so out of these 5 there have to 3M + 2L OR 3L + 2M.

S5 : H = 2L which means that H has to be an even number.

Lets fill the values P1 to P20 with all possible combinations clear till now.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C1	Н	М	Н	М	Н	L	Н	Н	М	Н						М	L	М	L	М
C2	Н	М	Н	М	Н	L	М	Μ	Н	М						М	L	М	L	М
C3	Н	М	Н	М	Н	L	Н	Н	М	Н						L	М	L	М	L
C4	Н	М	Н	М	Н	L	М	М	н	М						L	М	L	М	L

Considering C2.

C2 has 4H, 3L already. As per condition S5, H can either be 6 or 8. If we take H as 6, then L will be 3. See C2 carefully, it already has 3 L's. This means that P11 to P15 will have 2H and 3M which can happen only if P11 is M. This is not possible

since P10 and P11 will get same values which is not allowed.

If we take H as 8, then we need 4H from P11 to P15 which again is not possible. So C2 is rejected completely.

Considering C4.

C4 has 4H, 4L already. As per S5, even if we keep L at 4, we need total 8H, which means 4H are required from P11 to P15 which again is not possible. So C4 is also rejected.

Considering C1.

It has 6H, 3L already. So we need to add more H, L to this otherwise P11 to P15 will be all M, which is not allowed. So next possible value is 4L,8H. Infact this is the only possible combination, because if we go higher to 5L,10H then total will go beyond 20 considering already existing 6M. Continuing with 4L, 8H we see that from P11 to P15 we need 1L, 2H, 2M.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C1	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	Н	L	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	L	Н	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	L	М	Н	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	L	М	Н	М	Н	М	L	М	L	М

Similarly considering C3, there are 6H, 4L, 5M. So to match condition S5, we need total 8H, 4L, 8M which means that there should be 2H, 3M from P11 to P15.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C3	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	Н	М	L	М	L	М	L

Another possibility is we can have final 10H, 5L, 5M, already present are 6H, 4L, 5M which means we need 4H and 1L from P11 to P15 which is clearly rejected because this would result in consecutive H's.

So total 5 cases are possible.

There is only 1 case where P11 is low. In this arrangement, we have P14 as M. So option 4.

QNo:- 50 ,Correct Answer:- B

Explanation:- To start of this question, lets analyze each statement individually. S1 : Out of first 5 pipes, there are 3 H. So remaining two will be M or L. S2 : Out of first 10 pipes, there is only 1 L.

Combining the above 2, it is clear that out of first 5, there will be 3 H and 2 M.

S3 : P7 and P8 both recorded HH/MM and other than these two, there are no other consecutive pipes of same type.

S4 : P16 to P20 there are no H. Also we can think, that since we cannot have consecutive pipes of same type, so out of these 5 there have to 3M + 2L OR 3L + 2M.

S5 : H = 2L which means that H has to be an even number.

Lets fill the values P1 to P20 with all possible combinations clear till now.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C1	Н	М	Н	М	Н	L	Н	Н	М	Н						М	L	М	L	М
C2	Н	М	Н	М	Н	L	М	Μ	Н	М						М	L	М	L	М
C3	Н	Μ	Н	М	Н	L	Н	Н	М	Н						L	М	L	М	L
C4	Н	М	Н	М	Н	L	М	М	Н	М						L	М	L	М	L

Considering C2.

C2 has 4H, 3L already. As per condition S5, H can either be 6 or 8. If we take H as 6, then L will be 3. See C2 carefully, it already has 3 L's. This means that P11 to P15 will have 2H and 3M which can happen only if P11 is M. This is not possible

since P10 and P11 will get same values which is not allowed.

If we take H as 8, then we need 4H from P11 to P15 which again is not possible. So C2 is rejected completely.

Considering C4.

C4 has 4H, 4L already. As per S5, even if we keep L at 4, we need total 8H, which means 4H are required from P11 to P15 which again is not possible. So C4 is also rejected.

Considering C1.

It has 6H, 3L already. So we need to add more H, L to this otherwise P11 to P15 will be all M, which is not allowed. So next possible value is 4L,8H. Infact this is the only possible combination, because if we go higher to 5L,10H then total will go beyond 20 considering already existing 6M. Continuing with 4L, 8H we see that from P11 to P15 we need 1L, 2H, 2M.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C1	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	Н	L	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	L	Н	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	L	М	Н	М	L	М	L	М
	Н	М	Н	М	Н	L	Н	Н	М	Н	L	М	Н	М	Н	М	L	М	L	М

Similarly considering C3, there are 6H, 4L, 5M. So to match condition S5, we need total 8H, 4L, 8M which means that there should be 2H, 3M from P11 to P15.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C3	Н	М	Н	М	Н	L	Н	Н	М	Н	М	Н	М	Н	М	L	М	L	М	L

Another possibility is we can have final 10H, 5L, 5M, already present are 6H, 4L, 5M which means we need 4H and 1L from P11 to P15 which is clearly rejected because this would result in consecutive H's.

So total 5 cases are possible.

There is only 1 case where P15 is M. In this arrangement, we have P11 and P16 different. So option 2.

QNo:- 51 ,Correct Answer:- A

Explanation:- It is given that the satellites serving either B, C or S do not serve O.

From (1), let the number of satellites serving B, C and S be 2K, K, K respectively.

Let the number of satellites exclusively serving B be x.

From (3), the number of satellites exclusively serving C and exclusively serving S will each be 0.3x

From (4), the number of satellites serving O is same as the number of satellites serving only C and S. Let that number be y. Since the number of satellites serving C is same as the number of satellites serving S, we can say that (number of satellites serving only B and C) + 0.3x + 100 + y = (number of satellites serving only B and S) + 0.3x + 100 + y =

 \therefore Let the number of satellites serving only B and C = the number of satellites serving only B and S = z Therefore, the venn diagram will be as follows



Given that there are a total of 1600 satellites $\Rightarrow x + z + 0.3x + z + 100 + y + 0.3x + y = 1600$ 1.6x + 2y + 2z = 1500 - (1)Also K = 0.3x + z + y + 100Satellites serving B = 2K = x + 2z + 100



 \Rightarrow 2(0.3x + z + y + 100) = x + 2z + 100 0.4x = 2y + 100x = 5y + 250 -----(2) Substituting (2) in (1), we will get 1.6(5y + 250) + 2y + 2z = 150010y + 2z = 1100z = 550 – 5y ----- (3) The number of satellites serving C = z + 0.3x + 100 + y= (550 - 5y) + 0.3(5y + 250) + 100 + y= 725 - 2.5y This number will be maximum when y is minimum. Minimum value of y is 0. \therefore The maximum number of satellites serving C will be 725. From (3), z = 550 - 5ySince the number of satellites cannot be negative, $z \ge 0 550 - 5y \ge 0$ y ≤ 110. ∴ Maximum value of y is 110. When y = 110, the number of satellites serving C will be $725 - 2.5 \times 110 = 450$. This will be the minimum number of satellites serving C. The number of satellites serving C must be between 450 and 725.

QNo:- 52 ,Correct Answer:- B

Explanation:- It is given that the satellites serving either B, C or S do not serve O.

From (1), let the number of satellites serving B, C and S be 2K, K, K respectively.

Let the number of satellites exclusively serving B be x.

From (3), the number of satellites exclusively serving C and exclusively serving S will each be 0.3x

From (4), the number of satellites serving O is same as the number of satellites serving only C and S. Let that number be y. Since the number of satellites serving C is same as the number of satellites serving S, we can say that (number of satellites serving only B and C) + 0.3x + 100 + y = (number of satellites serving only B and S) + 0.3x + 100 + y

 \therefore Let the number of satellites serving only B and C = the number of satellites serving only B and S = z

Therefore, the venn diagram will be as follows



Given that there are a total of 1600 satellites $\Rightarrow x + z + 0.3x + z + 100 + y + 0.3x + y = 1600$ 1.6x + 2y + 2z = 1500 ------(1)Also K = 0.3x + z + y + 100Satellites serving B = 2K = x + 2z + 100 $\Rightarrow 2(0.3x + z + y + 100) = x + 2z + 100$ 0.4x = 2y + 100 x = 5y + 250 -----(2)Substituting (2) in (1), we will get 1.6 (5y + 250) + 2y + 2z = 1500 10y + 2z = 1100z = 550 - 5y ------(3)

From 2, the number of satellites serving B exclusively is x = 5y + 250This is minimum when y is minimum.

Minimum value of y = 0.

 \therefore The minimum number of satellites serving B exclusively = 5 × 0 + 250 = 250.

QNo:- 53 ,Correct Answer:- D

Explanation:- It is given that the satellites serving either B, C or S do not serve O.

From (1), let the number of satellites serving B, C and S be 2K, K, K respectively.

Let the number of satellites exclusively serving B be x.

From (3), the number of satellites exclusively serving C and exclusively serving S will each be 0.3x

From (4), the number of satellites serving O is same as the number of satellites serving only C and S. Let that number be y. Since the number of satellites serving C is same as the number of satellites serving S, we can say that (number of satellites serving only B and C) + 0.3x + 100 + y = (number of satellites serving only B and S) + 0.3x + 100 + y =

 \therefore Let the number of satellites serving only B and C = the number of satellites serving only B and S = z Therefore, the venn diagram will be as follows



Given that there are a total of 1600 satellites $\Rightarrow x + z + 0.3x + z + 100 + y + 0.3x + y = 1600$ 1.6x + 2y + 2z = 1500 ------(1) Also K = 0.3x + z + y + 100Satellites serving B = 2K = x + 2z + 100 $\Rightarrow 2(0.3x + z + y + 100) = x + 2z + 100$ 0.4x = 2y + 100 x = 5y + 250 ------(2) Substituting (2) in (1), we will get 1.6 (5y + 250) + 2y + 2z = 1500 10y + 2z = 1100z = 550 - 5y ------(3)

Given that at least 100 satellites serve 0; we can say in this case that $y \ge 100$. Number of satellites serving s = 0.3x + z + 100 + y. = 725 – 2.5y......(4) This is minimum when y is maximum, i.e. 110, (from (3)) Minimum number of satellites serving = 725 – 2.5 × 110 = 450. (4) is maximum when y is minimum, i.e., 100 in this case. Maximum number of satellites serving = 725 – 2.5 × 100 = 475 Therefore, the number of satellites serving S is at most 475

QNo:- 54 ,Correct Answer:- D

Explanation:- It is given that the satellites serving either B, C or S do not serve O. From (1), let the number of satellites serving B, C and S be 2K, K, K respectively. Let the number of satellites exclusively serving B be x. From (3), the number of satellites exclusively serving C and exclusively serving S will each be 0.3xFrom (4), the number of satellites serving O is same as the number of satellites serving only C and S. Let that number be y. Since the number of satellites serving C is same as the number of satellites serving S, we can say that (number of satellites serving only B and C) + 0.3x + 100 + y = (number of satellites serving only B and S) + 0.3x + 100 + y \therefore Let the number of satellites serving only B and C = the number of satellites serving only B and S = z Therefore, the venn diagram will be as follows



Given that there are a total of 1600 satellites $\Rightarrow x + z + 0.3x + z + 100 + y + 0.3x + y = 1600$ 1.6x + 2y + 2z = 1500 ------(1) Also K = 0.3x + z + y + 100Satellites serving B = 2K = x + 2z + 100 $\Rightarrow 2(0.3x + z + y + 100) = x + 2z + 100$ 0.4x = 2y + 100 x = 5y + 250 ------(2) Substituting (2) in (1), we will get 1.6 (5y + 250) + 2y + 2z = 1500 10y + 2z = 1100z = 550 - 5y ------(3)

The number of satellites serving at least two of B, C or S = number of satellites serving exactly two of B, C or S + Number of satellites serving all the three

= z + z + y + 100 = 2(550 - 5y) + y + 100 = 1200 - 9y. Given that this is equal to 1200 1200 - 9y = 1200 ⇒ y = 0 If y = 0, x = 5y + 250 = 250 z = 550 - 5y = 550 No. of satellites serving C = K = z + 0.3x + 100 + y = 550 + 0.3 × 250 + 100 + 0 = 725 No. of satellites serving B = 2k = 2 × 725 = 1450. The number of satellites serving B exclusively = x = 250 Also the value of y = 0 ⇒ All 1600 satellites serve B or C or S. As the number of satellites serving C can be found uniquely, so option (4) is false.

QNo:- 55 ,Correct Answer:- 7

Explanation:- The ATM dispenses only 500, 200 and 100 notes and since 500 rupee notes is the preference, it has to dispense more 500 rupee notes than the other two notes combined. The following ways are possible:

500 rupee notes	200 rupee notes	100 rupee notes
10	0	0
9	2	1
9	1	3
9	0	5
8	5	0
8	4	2
8	3	4

Hence, a total of seven ways are possible.

QNo:- 56 ,Correct Answer:- 6

preference, we need to minimize the number of 500 rupee notes that can be served to any customers. From the above table, minimum number of 500 rupee notes that the ATM can dispense to any person with 500 rupee notes as his/her preference is 8. Hence with fifty 500 rupee notes, a total of 6 persons can be served. Answer is 6.

QNo:- 57 ,Correct Answer:- D

Explanation: Given fifty 500 rupee notes, we can minimize the number of 500 rupee notes dispensed to each customer, so that each customer is served at most 20 notes. For this we have cases as:

i) If no 500 rupee note is dispensed then minimum number of notes that must be dispensed 25 (i.e. all 200 rupee notes). This is not possible (as we need at most 20 notes).

ii) If one 500 rupee note is dispensed, twenty two 200 rupee notes and one 100 rupee note is dispensed then the minimum number of notes dispensed is 24. Again not possible.

iii) If two 500 rupee notes and twenty 200 rupee notes are dispensed, the minimum number of notes is 22. This is not possible.

iv) If three 500 notes, seventeen 200 rupee notes and one 100 rupee note is dispensed, then minimum number of notes dispensed is 21.

v) If four 500 and fifteen 200 rupee notes dispensed, then minimum number of notes dispensed is 19. Hence the minimum number of 500 rupee notes that can be dispensed to any person is 4. Therefore, with fifty 500 rupee notes a maximum of 12 persons can be served.

Hence answer is option 4.

QNo:- 58 ,Correct Answer:- B

Explanation:- To dispense the smallest possible number of notes to a person with 500 rupee notes as his/her preference, the ATM should dispense all 500 rupee notes.

Hence, minimum number of notes required to serve any person with 500 rupee notes as his/her preference = 10 (all of 500 rupees).

Total number of 500 rupee notes required to serve 50 customers with 500 rupee notes as his/her preference = $10 \times 50 = 500$ To minimize the number of notes to be served to a person with 100 rupee notes as his/her preference, we can maximize the number of 500 rupee notes served to him, keeping the 100 rupee notes more than the sum of the other two denominations. This is possible if the machine serves eight 500 rupee notes and ten 100 rupee notes.

Hence, the total number of 500 rupee notes required to serve 50 customers with 100 rupee notes as his/her preference = $8 \times 50 = 400$

Total number of 500 rupee notes required in the given scenario = 500 + 400 = 900. Hence option 2 is the answer.

QNo:- 59 ,Correct Answer:- A

Explanation:-

	Research	Teaching	Administration
Bureaucrats	3x	3x	4x
Educationalist	m > n	Ν	0
Politicians	Y	Y	Зy

Total = 24

Bureaucrats are in the ratio 3 : 3 : 4 only value will be 3, 3, 4. So x = 1

Educationalist n < m < o m = $\frac{o+1}{2}$

Politicians are in ratio 1 : 1 : 3 only value will be 1, 1, 3. Possible value of m, n, o are 3, 2, 4 and 3, 1, 5.

	(Case	(i)			C	ase	(ii)	
	R	Т	Α			R	Т	Α	
В	3	3	4	10	В	3	3	4	10
E	3	2	4	9	Ε	3	1	5	9
Р	1	1	3	5	Р	1	1	3	5
	7	6	11	24		7	5	12	24

The Size of the research committee is less than teaching committee is false



QNo:- 60 ,Correct Answer:- 4

Explanation:-

	Research	Teaching	Administration
Bureaucrats	3x	3x	4x
Educationalist	m > n	N	0
Politicians	Y	Y	Зy

Total = 24

Bureaucrats are in the ratio 3:3:4 only value will be 3, 3, 4. So x = 1Educationalist n < m < o m = $\frac{o+n}{2}$

Politicians are in ratio 1:1:3 only value will be 1, 1, 3. Possible value of m, n, o are 3, 2, 4 and 3, 1, 5.

	(Case	(i)			C	ase	(ii)	
	R	Т	Α			R	Т	Α	
В	3	3	4	10	В	3	3	4	10
E	3	2	4	9	Ε	3	1	5	9
Р	1	1	3	5	Р	1	1	3	5
	7	6	11	24		7	5	12	24

There are 4 bureaucrats in the administration committee

QNo:- 61 ,Correct Answer:- 3

Explanation:-

	Research	Teaching	Administration
Bureaucrats	3x	3x	4x
Educationalist	m > n	N	0
Politicians	Y	Y	Зу

Total = 24

Bureaucrats are in the ratio 3:3:4 only value will be 3, 3, 4. So x = 1 Educationalist n < m < o m = $\frac{o+n}{2}$ Politicians are in ratio 1:1:3 only value will be 1, 1, 3.

Possible value of m, n, o a	are 3, 7	2, 4 and 3, 1, 5.
Case (i)		Case (ii)

		Juse	(י)				use	(11)	
	R	Т	Α			R	Т	Α	
В	3	3	4	10	В	3	3	4	10
E	3	2	4	9	Ε	3	1	5	9
Р	1	1	3	5	Р	1	1	3	5
	7	6	11	24		7	5	12	24

There are 3 educationalists in the research committee.

QNo:- 62 ,Correct Answer:- B

	Research	Teaching	Administration
Bureaucrats	3x	3x	4x
Educationalist	m > n	N	0
Politicians	Y	Y	3y



Educationalist n < m < o m = $\frac{o+n}{2}$ Politicians are in ratio 1 : 1 : 3 only value will be 1, 1, 3. Possible value of m, n, o are 3, 2, 4 and 3, 1, 5.

	(Case	(i)			C	ase	(ii)	
	R	Т	Α			R	Т	Α	
В	3	3	4	10	В	3	3	4	10
E	3	2	4	9	E	3	1	5	9
Р	1	1	3	5	Р	1	1	3	5
	7	6	11	24		7	5	12	24

Size of the teaching committee cannot be determined uniquely.

QNo:- 63 ,Correct Answer:- C

Explanation:-

Name	Gender	Institute	Major	Minor
Adriana	F			М
Bandita	F	Z		М
Chitra	F	Z		М
Daisy	F			0
Amit	М			
Barun	М	Y	0	
Chetan	М	Х	F	
Deb	М			

Daisy minors in operations (O), so other three must have minored in Marketing (M).

As Adriana and Deb are from the same institute and Daisy and Amit are from same institute, so Bandita and Chitra must be from Z as only two females are from Z.

Female student from Y majors in operations, So Daisy cannot be from Y. Hence Daisy is from X, so is Amit. So Adriana and Deb are from Y.

	Gender	Institute	Major	Minor
Adriana	F	Y	0	М
Bandita	F	Z	F/O	М
Chitra	F	Z	F/O	М
Daisy	F	Х	F/M	0
Amit	М	Х	F	O/M
Barun	М	Y	0	F
Chetan	М	Х	F	O/M
Deb	М	Y	М	F

Chitra and Bandita

QNo:- 64 ,Correct Answer:- A

Name	Gender	Institute	Major	Minor
Adriana	F			М
Bandita	F	Z		М
Chitra	F	Z		М
Daisy	F			0
Amit	М			
Barun	М	Y	0	
Chetan	М	Х	F	
Deb	М			



Daisy minors in operations (O), so other three must have minored in Marketing (M).

As Adriana and Deb are from the same institute and Daisy and Amit are from same institute, so Bandita and Chitra must be from Z as only two females are from Z.

Female student from Y majors in operations, So Daisy cannot be from Y. Hence Daisy is from X, so is Amit. So Adriana and Deb are from Y.

	Gender	Institute	Major	Minor
Adriana	F	Y	0	М
Bandita	F	Z	F/O	М
Chitra	F	Z	F/O	М
Daisy	F	Х	F/M	0
Amit	М	Х	F	O/M
Barun	М	Y	0	F
Chetan	М	X	F	O/M
Deb	М	Y	М	F

Deb minors in Finance

QNo:- 65 ,Correct Answer:- C

Exp	ana	atio	n:-

Name	Gender	Institute	Major	Minor
Adriana	F			М
Bandita	F	Z		М
Chitra	F	Z		М
Daisy	F			0
Amit	М			
Barun	М	Y	0	
Chetan	М	Х	F	
Deb	М			

Daisy minors in operations (O), so other three must have minored in Marketing (M).

As Adriana and Deb are from the same institute and Daisy and Amit are from same institute, so Bandita and Chitra must be from Z as only two females are from Z.

Female student from Y majors in operations, So Daisy cannot be from Y. Hence Daisy is from X, so is Amit. So Adriana and Deb are from Y.

	Gender	Institute	Major	Minor
Adriana	F	Y	0	М
Bandita	F	Z	F/O	М
Chitra	F	Z	F/O	М
Daisy	F	Х	F/M	0
Amit	М	Х	F	O/M
Barun	М	Y	0	F
Chetan	М	X	F	O/M
Deb	М	Y	М	F

Amit majors in Finance.

QNo:- 66 ,Correct Answer:- D

Name	Gender	Institute	Major	Minor
Adriana	F			М
Bandita	F	Z		М
Chitra	F	Z		М
Daisy	F			0

Amit	М			
Barun	М	Y	0	
Chetan	М	Х	F	
Deb	М			

Daisy minors in operations (O), so other three must have minored in Marketing (M).

As Adriana and Deb are from the same institute and Daisy and Amit are from same institute, so Bandita and Chitra must be from Z as only two females are from Z.

Female student from Y majors in operations, So Daisy cannot be from Y. Hence Daisy is from X, so is Amit. So Adriana and Deb are from Y.

	Gender	Institute	Major	Minor
Adriana	F	Y	0	М
Bandita	F	Z	F/O	М
Chitra	F	Z	F/O	М
Daisy	F	Х	F/M	0
Amit	М	Х	F	O/M
Barun	М	Y	0	F
Chetan	M	Х	F	O/M
Deb	М	Y	М	F

Given one female student majors in finance. If Chitra majors in finance, Bandita majors in Operations.

Section : Quantitative Ability

QNo:- 67 ,Correct Answer:- C

```
Explanation:- 5x, 16y, 12z are in AP

32y = 5x + 12z----(1)

x, y, z are in GP

y^2 = xz-----(2)

Squaring both sides of (1), 1024y^2 = 25x^2 + 144z^2 + 120xz

1024xz = 25x^2 + 144z^2 + 120xz

25x^2 + 144z^2 = 0

25x^2 - 900xz - 4xz + 144z^2 = 0

25x(x - 36z) - 4z(x - 36z) = 0

(25x - 4z(x - 36z) = 0

x,y and z are positive real numbers such that x = \frac{4}{25}z

Let the common ratio of the GP be r.

\frac{1}{r^2} = \frac{4}{25}

r = \frac{5}{2}
```

QNo:- 68 ,Correct Answer:- D

Explanation:- Let the rates of work of each human and each robot be H and R respectively (both in units/day).

$$15H + 5R = \frac{1}{30} - \dots - (1)$$

$$5H + 15R = \frac{1}{60} - \dots - (2)$$

$$3(1) - (2) => 40H = \frac{1}{12}$$

$$H = \frac{1}{480}$$

In a day, 15 humans can complete 15H i.e. 1/32th of the job.15 humans can complete the job in 32 days.

QNo:- 69 ,Correct Answer:- 10

Explanation:- Let the rates at which each filling pipe and each emptying pipe works be f and d respectively (both in



units/hr). 6f+5d = 1/6 and 5f + 6d = 1/60Solving, f = 1/12 and d = -1/15Part of the tank that one draining and two filling pipes can fill in a hour=d+2f = -1/15 + 1/6=1/10 One draining and two filling pipes can fill the tank in 10 hours.

QNo:- 70 ,Correct Answer:- C

Explanation:- Let the area of ABCD be 100. Side of ABCD = 10 Area of EFGH is $62.5 \Rightarrow$ Side of EFGH = $\sqrt{62.5}$ Triangles AEH, BFE, CGF and DHG are congruent by ASA. Let AE = BF = CG = DH = x; EB = FC = DG = AH = 10 - x AE²+AH²=EH² x² + (10-x)²=($\sqrt{62.5}$)² Solving, x = 2.5 or 7.5 Since it's given that CG is longer than EB, CG = 7.5 and EB = 2.5. EB : CG = 1 : 3

QNo:- 71 ,Correct Answer:- B

Explanation: Any equilateral triangle formed by joining the midpoints of the sides of another equilateral triangle will have its side equal to half the side of the second equilateral triangle.

Side of T1 = 24 cm Side of T2 = 12 cm Side of T3 = 6 cm and so on. Sum of the areas of all the triangles = $\sqrt{3}/4$ (24² + 12² + 6² + -----)

 $\frac{\sqrt{3}}{4} \left(\frac{576}{1 - \frac{1}{4}} \right) = 192\sqrt{3}cm^2.$

QNo:- 72 ,Correct Answer:- D

Explanation: $2^{x}=3^{\log_{5}2}$ Taking logarithms to base 5 on both sides, we have x (log₅2)=log₅2× log₅3 x = log₅3 = 1 + log₅3/5

QNo:- 73 ,Correct Answer:- A

Explanation: Let the quantities of the paints A and B in the mixture sold be a litres and b litres respectively. Value at which the entire mixture is sold=264 Profit percent made=10% Value at which the entire mixture is bought =264*(100/110) = 240 The price at which the entire mixture is bought=24 per litre Let the cost of B be x per litre. Cost of A=(x+8)per litre $\frac{(x+8)a+xb}{10} = 24$ The maximum cost of B will occur when A is the minimum. b<=a. So, the minimum a is 5. The corresponding b is 5. Then (x+8)(5)+x(5)=240 x=20



Explanation: Let the numbers of marbles with Raju and Lalitha be 4x and 9x respectively. Let us say Lalitha gave y marbles to Raju. 4x+y = 5

 $\frac{4x+y}{9x-y} = \frac{5}{6}$ $y = \frac{21}{11}x$ Fraction of original marbles that Lata gave to Raju = $\frac{y}{9x}$

 $=\frac{7}{33}$

QNo:- 75 ,Correct Answer:- B

Explanation: Let the time taken by A to finish the job be "a" days. Time taken by B to finish the job = 5/4 a days. Part of the job completed when A and B worked

Part of the job completed when A and B worked together for 4 days =

 $1 - \frac{1}{2} - \frac{5}{100} = \frac{9}{20}$ $4(\frac{1}{a} + \frac{1}{\frac{5a}{4}}) = \frac{9}{20} => a = 16.$

Time taken by B alone to complete the entire job = 5a/4 = 20 days.

QNo:- 76 ,Correct Answer:- D

Explanation:- Let the cost prices of A and B be Ca and Cb respectively.

Selling price of the mixture =40 per kg.

The profit made is 10% if A and B are mixed in the ratio 3:2.

 $\frac{40}{1.1} = \frac{3Ca+2Cb}{5}$ The profit made is 5% if A and B are mixed in the ratio 2:3. $\frac{40}{1.05} = \frac{2Ca+3Cb}{5}$ Dividing (1) by (2), we have $\frac{1.05}{1.1} = \frac{3Ca+2Cb}{2Ca+3Cb}$ $\frac{Ca}{Cb} = \frac{19}{24}$

QNo:- 77 ,Correct Answer:- C

Explanation:- Let the average age of people aged 51 years and above be A1 years. Let the average age of people aged below 51 years be A2 years. Let the number of people aged below 51 years be N2.

The average age of all the people in the apartment complex is 38 years.

 $38 = \frac{(A_1)(30) + (A_2)(N_2)}{30 + N_2} - \dots - \dots - (1)$

We seek the maximum value of A2. This will occur when A1 is minimum i.e. 51. from (1), 390 = N2(38-A2)When A2 is maximum, N2 is maximum i.e. 39. Then, A2 = 28 Maximum A2 = 28.

QNo:- 78 ,Correct Answer:- B

```
Area of region R = \frac{60}{360} * \pi (1)^2 = \frac{\pi}{6}
Area of OCD is half that of region R.
Area of OCD = \frac{1}{2} \left( \frac{\pi}{6} \right) = \frac{\pi}{12}.
```



This is also equal to 1/2 (OC) (OD) sin 60

$$\frac{1}{2} \text{OC}^2 \sin 60 = \frac{\pi}{12} (\text{OC} = \text{OD})$$

$$\text{OC}^2 = \frac{\frac{\pi}{6}}{\frac{\sqrt{3}}{2}} \implies \text{OC} = \sqrt{\frac{\pi}{3\sqrt{3}}}$$

QNo:- 79 ,Correct Answer:- 5

Explanation: $0.25 \le 2^x \le 200$. Possible values of x satisfying the above inequality are -2, -1.0, 1, 2, 3, 4, 5, 6, 7. When x = 0, 1, 2, 4 and 6, $2^x + 2$ is divisible by 3 or 4. The number of values of x is 5.

QNo:- 80 ,Correct Answer:- C

Explanation: Let the length and the breadth of the rectangle be I and b respectively. Diameter of the circle=Diagonal of the rectangle $26=\sqrt{l^2+b^2}$ $l^2+b^2=676$ Possible values of I and b are 24 and 10 respectively.

QNo:- 81 ,Correct Answer:- A

Explanation:- Area of the parallelogram ABCD = (base)(height) = (CD)(AP) = 72 sq.cm. (CD)(AP) = 72 9(AP) = 72 => AP = 8 DP = $\sqrt{AD^2 - AP^2} = \sqrt{16^2 - 8^2} = 8\sqrt{3}$ Area of triangle APD = $\frac{1}{2}(AP)(PD) = 32\sqrt{3}$

QNo:- 82 ,Correct Answer:- A

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Explanation:- x^{2018} y^{2017} = 1/2 and x^{2016} y^{2019} = 8

Dividing, \frac{x^2}{y^2} = \frac{1}{16}

\frac{x}{y} = \pm \frac{1}{4} \Rightarrow x = \pm \frac{1}{4} y

Now \left(\pm \frac{1}{4} y\right)^{2018} y^{2017} = \frac{1}{2}

\Rightarrow y^{4035} = 2^{2035}

\Rightarrow y = 2

So x^2 + y^3 = \frac{1}{4} + 8 = \frac{33}{4}
```

QNo:- 83 ,Correct Answer:- A

Explanation: A got 36 marks but falls short of pass marks by 68%. Maximum possible score is N. Pass mark is 45% of N. 32% of 45% of N = $36 \Rightarrow N = 250$

QNo:- 84 ,Correct Answer:- 32

Explanation: The maximum value of f(x) will occur when $2x^2 = 52 - 5x$ i.e. when $2x^2+5x-52=0$ i.e. when $2x^2+13x-8x-52=0$ $\Rightarrow (2x + 13)(x - 4)=0 \Rightarrow x = -13/2$ or 4. But x is any positive real number. So, x = 4. Maximum value of f (x) = $2(4^2) = 32$

QNo:- 85 ,Correct Answer:- 12

Explanation:- Let the time taken for car 1 to reach P from A be x hours. Speed of car 1=AP/x BP=3AP. Car 2 starts from B to A and reaches P one hour after car 1 reaches P. Speed of car $2=\frac{3AP}{x+1}$ $\frac{3AP}{x+1} = \frac{1}{2} \left(\frac{AP}{x}\right)$ $x=\frac{1}{5}$.

Time taken for car 1 to reach P from A is 12 min.

QNo:- 86 ,Correct Answer:- 121000

Explanation:- Let each instalment be Rs. x. Equating the present value of both the instalments to the money borrowed,

 $\frac{x}{1.1} + \frac{x}{1.1^2} = 210000$ x = 121000

QNo:- 87 ,Correct Answer:- 60

Explanation:- Let the average score of the aspirant in all the tests be A. Let the number of tests be N. The aspirant's average score for the first 10 tests and last 10 tests are 20 and 30 respectively. $\frac{NA-200}{N-10} = A+1 \text{ and } \frac{NA-300}{N-10} = A-1$ Solving, N = 60.

QNo:- 88 ,Correct Answer:- 15

Explanation: Let the time taken by S to reach Z be t hours. Let the speed of T be St.Distance between X and Z is 3/5 of the distance between X and Y. XZ : ZY = 3 : 2

 $\frac{(t+1) \times S_t}{\frac{3}{4} \times S_t \times t} = \frac{3}{2}$ $\Rightarrow t = 8$

S takes 8 hours to cover YZ. T would take $8 \times (3/4)$ i.e. 6 hours to cover ZY. T would take t + 1 i.e. 9 hours to cover XZ. T would take 15 hours to reach Y.

QNo:- 89 ,Correct Answer:- 198

Explanation:- The radius of the cone is 4 feet.

The tip of the cone is a cone of height 3 feet. By similarity, its radius is 1 foot. The volume of the remaining part of the cone=Volume of the cone-Volume of the tip of the cone= 64π - π = 63π = 63^{*} (22/7)=198

QNo:- 90 ,Correct Answer:- C

Explanation: $\log_{12}81 = p \Rightarrow \log_{12}3^4 = p$ $\Rightarrow 4 \log_{12} 3 = p$



QNo:- 91 ,Correct Answer:- B

Explanation:-

Let the cost price of peanuts for the wholesaler be x per kg. Cost price of walnuts for the wholesaler is 3x per kg. The wholesaler sold 8 kg of peanuts at 10% profit and 16 kg of walnuts at 20% profit to a shopkeeper. Total cost price to the shopkeeper = (8)(x)(1.1) + 16(3x)(1.2) = 66.4x

The shopkeeper lost 5 kg walnuts and 3 kg peanuts. The shopkeeper sold the mixture of 11 kg walnuts and 5 kg peanuts. His total selling price=166(16) = 2656

His total cost price = $2656(\frac{100}{125}) = 2124.8$

66.4x = 2124.8 x = 32

Price at which the wholesaler bought walnuts = 3x = 96/- per kg

QNo:- 92 ,Correct Answer:- 54

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Explanation: f(x+2) = f(x) + f(x+1)

f(11) = 91

Let f(12) = a

f(13) = 91 + a

f(14) = 91 + 2a

f(15) = 182 + 3a. This is also equal to 617.

182 + 3a = 617 = a = 145

f(10) = f(12) - f(11) = 145 - 91 = 54
```

QNo:- 93 ,Correct Answer:- 40

Explanation: Let the other two numbers be y and z. 73yz - 37yz = 720 yz=20 Minimum possible sum of the squares of the other two numbers would occur when y = z So $y^2 = 20 = z^2$ Hence $y^2 + z^2 = 40$

QNo:- 94 ,Correct Answer:- A

Explanation: Let the speeds of Partha and Narayan be Sp and Sn respectively. $\frac{60}{Sp} = \frac{60}{Sn} + 4$ $\frac{30}{Sp} = \frac{60}{Sn} - 2$ Subtracting, $\frac{30}{Sp} = 6$ Sp = 5 kmph

QNo:- 95 ,Correct Answer:- A

Explanation:- Let the 6 cm long chord be x cm away from the centre of the circle. Let the radius of the circle be r cm. The

perpendiculars from the centre of the circle to the chords bisect the chords. $r^2=x^2+3^2 = (x+1)^2 + 2^2$ Solving, x = 2 and r = $\sqrt{13}$

QNo:- 96 ,Correct Answer:- A

Explanation:- Let the number of students who like both pizza and burger be 'm' The number of students who like neither of them be n



From venn diagram 105 - m + m + 134 - m + n = 200m - n = 39

: The possible values of (m, n) are (39, 0) (40, 1)......(105, 66)

: The number of students who like only burger is lies in the range [134 - 105, 134 - 39] = [29, 95]

 \therefore From options, 93 is a possible answer.

QNo:- 97 ,Correct Answer:- 502

Explanation:- As the digits appear in ascending order in the numbers, number of ways of forming a n-digit number using the 9 digits = ${}^{9}C_{n}$

Number of possible two-digit numbers which can be formed = ${}^{9}C_{2} + {}^{9}C_{3} + {}^{9}C_{4} + {}^{9}C_{5} + {}^{9}C_{6} + {}^{9}C_{7} + {}^{9}C_{8} + {}^{9}C_{9} = 2^{9} - ({}^{9}C_{0} + {}^{9}C_{1}) = 512 - (1 + 9) = 502$

QNo:- 98 ,Correct Answer:- B

Explanation:- $u^2 + (u - 2v - 1)^2 = -4v (u + v)$ $\Rightarrow u^2 + u^2 + 4v^2 + 1 - 4uv + 4v - 2u + 4vu + 4v^2 = 0$ $\Rightarrow 2u^2 - 2u + 8v^2 + 4v + 1 = 0$ $\Rightarrow 2 (u^2 - u + \frac{1}{4}) + 2 (4v^2 + 2v + \frac{1}{4}) = 0$ $\Rightarrow 2 (u - \frac{1}{2})^2 + 2 (2v + \frac{1}{2})^2 = 0$ $\Rightarrow u - \frac{1}{2} = 0; 2v + \frac{1}{2} = 0$ $u = \frac{1}{2} \text{ and } v = -\frac{1}{4}$ $u + 3v = \frac{1}{2} - \frac{3}{4} = -\frac{1}{4}$

QNo:- 99 ,Correct Answer:- C

Explanation: $5 + \log_3 a = 2^3 = 8 \Rightarrow a = 27$ Similarly, $4a + 12 + \log_2 b = 5^3 = 125$ Since a = 27, $4(27) + 12 + \log_2 b = 125 = b = 32$. a + b = 59.

QNo:- 100 ,Correct Answer:- 52

Explanation:- Let the number of students who studying only H be h, only E be e, only H and P but not E be x, only E and P but not H be y.





Given only P = 0 All three = 10; Studying only H and E but not P = 20 Given number of students studying H = Number of students studying E = h + x + 20 + 10 = e + y + 20 + 10 h + x = e + ytotal number of students = 74 $\therefore h + x + 20 + 10 + e + y = 74$ h + x + e + y = 44 h + x + h + x = 44 h + x = 22 \therefore The number of students studying H = h + x + 20 + 10 = 22 + 20 + 10 = 52.



Section : Verbal Ability

QNo:- 1 ,Correct Answer:- C

Explanation:- By thoroughly reading 2nd and 3rd paragraph of the passage ,we can conveniently assume that Cassini has challenged the assumption of "*By and large the big things in the solar system—planets and moons—are thought of as having been around since the beginning*" and in the aforesaid paragraphs, he is giving full justification to what he has challenged by providing sufficient data.

QNo:- 2 ,Correct Answer:- C

Explanation:- Except option C, all others can be safely concluded from the passage. Option A-- Refer 4th paragraph, "they suggest-----only the rings." Option B-- Refer 3rd paragraph, "Leaving Saturn's ring system------start to discolour." Option D-- Refer last paragraph, "they discovered that------into being later." Option C--We do not find support for the same in the passage.

QNo:- 3 ,Correct Answer:- A

Explanation:- Refer 3rd paragraph "leaving Saturn's-----start to discolour." It clearly helps us to consider option A as the correct one.

QNo:- 4 ,Correct Answer:- B

Explanation:- Nowhere in the passage helium and methane find any mention. Referring to 3rd paragraph, we find that rings of Saturn have 90% water ice alongwith comet dust and celestial pollution that makes option B as the best choice.

QNo:- 5 ,Correct Answer:- D

Explanation: In the whole passage, the author is trying to give evidence and different facts to support that the rings of Saturn are of recent origin as against the popular belief of their into being since the beginning of time. This makes option D as the appropriate answer to the main objective of the passage.

QNo:- 6 ,Correct Answer:- D

Explanation:- Refer first line of 5th paragraph "the answer to-----accountability" brings the crux of the whole passage making option D fit for the answer to the main purpose of the passage.

QNo:- 7 ,Correct Answer:- C

Explanation:- This is a critical reasoning based question wherein we have been asked to weaken the main argument (i.e. provide autonomy and accountability to the service providers). The whole passage is revolving around this main argument for which the author is providing us examples and evidence in support.

From the given choices, only **option C** is going against(i.e. weakening) the main argument which says that empowering service providers leads to complacency(carelessness/laziness) and rigged (conduct something fraudulently)performance results.

QNo:- 8 ,Correct Answer:- C

Explanation: Thorough reading of the last two paragraphs of the passage help us to mark option C as the one which is against the content of the passage because for all the ways of improvement, the involvement of state(government) is mandatory. But option C speaks totally opposite.



QNo:- 9 ,Correct Answer:- B

Explanation: 4th paragraph of the passage with example justifies the point arisen by author to counter the use of technology only ; also the concerned human dedication is required most to make the services successful. Therefore option B is the best choice.

QNo:- 10 ,Correct Answer:- D

Explanation:- The other options given are just focussing on the example taken (from different angles) but the real inference of the phrase used by author lies in option D as the problem was not getting proper solution.

QNo:- 11 ,Correct Answer:- C

Explanation:- Refer second paragraph of the passage that describes the example of neuroscience taken to justify the intricacies of every field of knowledge are vast to suggest optimum level. Therefore option C captures the purpose of taking example of neuroscience.

The other options are taking neuroscience as main point but it is just taken as an example to prove another point.

QNo:- 12 ,Correct Answer:- D

Explanation:- The idea here is to weaken the main argument and the answer lies in option D. The idea is not to hire best person but to create a team of people having a diverse knowledge and skills that can be optimised which gets defeated by taking in top scorers having diverse knowledge.

QNo:- 13 ,Correct Answer:- C

Explanation:- Refer line, "they also boost the forest-----accurate forests" from last paragraph which clearly says that efficacy is achieved from diversity and training trees on hardest cases and this stands weakened in option C which mentions training in easy cases.

QNo:- 14 ,Correct Answer:- D

Explanation:- Refer to the line " The multidimensional or layered character of complex problems also undermines the principle of meritocracy: the idea that the 'best person' should be hired. There is no best person", from first paragraph.

Also refer to the opening lines of second paragraph"they would build -------within the pool"

The author critiques all others except option D where building up of a team has been mentioned (which is the actual focus according to the passage.

QNo:- 15 ,Correct Answer:- B

Explanation:- From the passage, we understand that the requirement to boost up success in problems lies not in making a team of top scorers; instead the requirement is of diversity. So the answer lies in **option B** which descibes a team with members from diverse areas and performed well in their subject fields and not those (option C) who hold distinctions in their subjects.

QNo:- 16 ,Correct Answer:- B

Explanation:- Real life examples might not have added to the argument put forward by the author; though a comparitive case-study, analysis and assessment of pros and cons could have served a better purpose.

Explanation: Consequences are the shortcomings of any event or idea. Option A is talking about positive outcome and can't be considered as consequence.

QNo:- 18 ,Correct Answer:- C

Explanation:- The teacher's subjectivity cannot be the part of evaluation according to the content present in the latter half of the last paragraph of the passage. Therefore all others except option C can be a possible feature of the *No Child Left Behind Act*,2001.

QNo:- 19 ,Correct Answer:- D

Explanation:- The main focus of the author in this passage is on **metric fixation** (i.e. measuring performance in numbers and motivating people in different organizations by attaching rewards and penalties to their measured performance) which can actually backfire. Therefore option D.

QNo:- 20 ,Correct Answer:- D

Explanation:- Refer 2nd paragraph of the passage as regards **police-officer**(*If the rate of major crimes in a district becomes the metric according to which police officers are promoted, then some officers will respond by simply not recording crimes or downgrading them from major offences to misdemeanours) and surgeon(<i>When the metrics of success and failure are made public – affecting their reputation and income – some surgeons will improve their metric scores by refusing to operate on patients with more complex problems, whose surgical outcomes are more likely to be negative).So it can be understood that metric fixation as regards performance in these fields evoke unethical behavior. Therefore option D.*

QNo:- 21 ,Correct Answer:- B

Explanation:- Refer 3rd paragraph "moreover, if they'd gradually-----genes sampled." makes clear there was absence of genetic variation. Therefore option B is appropriate.

QNo:- 22 ,Correct Answer:- D

Explanation:- The opening lines of the passage "groove snails-----and Spain" clearly justify option D as the author is providing explanation and evidence why that particular variety of snails are only found in Ireland and the Pyrenees.

QNo:- 23 ,Correct Answer:- B

Explanation:- Option B is totally opposite to what is mentioned in the passage. Refer to second paragraph"previously---- rules that out"

QNo:- 24 ,Correct Answer:- B

Explanation:- The explanation lies in last paragraph. So refer the last line of 4th paragraph alongwith opening lines of last paragraph.

QNo:- 25 ,Correct Answer:- 4213

Explanation:- Statement 4 is the opening sentence that generally speaks about how new institutions recognize ways in which workers contribute and economically benefit if their jobs are automated and gets further explanation in statement 2 where families of workers cope with pressure of mechanised work. The word 'however' in statement 1 gives contrast to the idea presented in sentence 2. Statement 3 conveniently concludes the paragraph as it furthers(*growing inequality*) presented in sentence 1(*breakdown of social contract*). So the final sequence is 4213

Explanation:- The paragraph opens with sentence 3 as it mentions the subject(the dieter and the business elite). Sentence 2 furthers the idea presented in statement 3 by elaborating on social impact investing and philanthrocapitalism. Sentence4 and 1 make a mandatory pair(in that order) with the key word 'projects'(wherein 4th talks about pet projects and 1st talks about side projects). So the final arrangement comes to be 3241.

QNo:- 27 ,Correct Answer:- 2314

Explanation:- The paragraph is about self-management and we could have conveniently opened with line 1. But the word 'thus' used in line 1 makes the whole difference that it needs some background.Statement 4 also presents another definition based on self management, so 4 can follow 1. Statement 3 is actually introducing the idea of self-mangement. Statement 2 and 3 are mandatory pairs having 'control' as key-word,but contextually statement 2 leads the sequence. So the final arrangement is 2314

QNo:- 28 ,Correct Answer:- A

Explanation:- Only option A brings in the gist of the given paragraph as a whole. All other options are either irrelevant or point out a minor point . Hence option A is the best choice.

QNo:- 29 ,Correct Answer:- 3

Explanation:- The options 1,2,4 and 5 talk about negative impact of smart phones on our sleep pattern.But statement 3 is talking about state of sleep that gets disturbed by earthly worries or guilty conscience ; nothing is being talked about impact of smart phones. Therefore 3 is the odd one.

QNo:- 30 ,Correct Answer:- C

Explanation:- The paragraph speaks about the need for Bad Samaritan laws with the condition that supporters clear the legal ground.

Option 1 and 2 are ahead the state of the situation in the passage.

Option 4 is out of scope.

Option 3 is, therefore, the best choice that brings in the summary of the given paragraph appropriately.

QNo:- 31 ,Correct Answer:- 3

Explanation: All the sentences 1,2,4 and 5 are discussing about the result of research on classification and formation of song in the birds. But line 3 is drifting away from the main point as to how birds are stimulated by sounds of other birds making it the odd one.

QNo:- 32 ,Correct Answer:- D

Explanation:- The paragraph talks about regret that researchers were not able to establish relationship between playing sports and deviance from delinquency due to insufficient result of study so as to relate to deterrence theory. Therefore the negative tone of the failure has been appropriately captured in option D.

Option A is just taking the discussion one step ahead.

Option B and C do not find support(though related) of any kind of direct relation between sports & delinquency or culture.

QNo:- 33 ,Correct Answer:- 3

Explanation:- Sentence 4 is a generic statement qualifying for being the opening sentence and line 5 just furthers the intensity of the situation. Line 1 and 2 (in that order) talk about the safety measures that can be adopted to face the disaster. Statement 3 is unrelated as it is giving some general data. Therefore line 3 is the odd one.

Explanation:- The sentences given are following a pattern i.e. definition of phonexing(line3). Who all are engaged in it (line2).

Related example in the form of statistical data to prove the act of phoenixing is given(line4). Line 1 follows 4 being a **mandatory noun**(Australian Minister for Revenue&Services)**pronoun** (his)**pair**

Therefore the final sequence is 3241

Section : DI & Reasoning

QNo:- 35 ,Correct Answer:- 1200

Explanation:- The base exchange rates of currencies A, B and C with respect to L is in the ratio 100: 120: 1.

The given information can be tabulated as follows:

	Α	В	С
Base exchange rate (ratio)	100x	120x	1x
Buying rate	95x	114x	0.95x
Selling rate	110x	132x	1.10x
Net addition	800	0	3000

The outlet received 88,000 units of L by selling A and the ratio of amounts of L used to buy A and B are in the ratio 5 : 3 and amount received from the sales of A and B are in the ratio 5 : 9.

Units sold of A = $\frac{88,000}{110 \text{ x}} = \frac{800}{\text{ x}}$ As the net addition is 800, the units of A bought = (800/x + 800)Amount of L used in buying A = $(800/x + 800) \times 95x$ As the amount used to buy A and B are in the ratio 5 : 3, The amount used to buy B = $(800/x + 800) \times 95x \times 3/5$ Number of units of B = $((800/x + 800) \times 95x \times 3/5)/114x = (400/x + 400)$ As the net addition of B is zero, number of units of B sold = (400/x + 400)The amount received from selling B = $(400/x + 400) \times 132x$ The amount received from selling A = 88,000The amount received from selling B = $9/5 \times 88000 = 158400$ So $(400/x + 400) \times 132x = 158400$ x = 2, So we can write the table as

	A	В	С
Base exchange rate (ratio)	200	240	2
Buying rate	190	228	1.9
Selling rate	220	264	2.2
Net addition	800	0	3000

Units sold for A = $\frac{88000}{220}$ = 400 As net addition is 800, the units of A bought is 1200

QNo:- 36 ,Correct Answer:- D

Explanation: The base exchange rates of currencies A, B and C with respect to L is in the ratio 100 : 120 : 1.

The given information can be tabulated as follows:

	A	В	C
Base exchange rate (ratio)	100x	120x	1x

Buying rate	95x	114x	0.95x
Selling rate	110x	132x	1.10x
Net addition	800	0	3000

The outlet received 88,000 units of L by selling A and the ratio of amounts of L used to buy A and B are in the ratio 5 : 3 and amount received from the sales of A and B are in the ratio 5 : 9.

Units sold of A = $\frac{88,000}{110 \text{ x}} = \frac{800}{\text{ x}}$

As the net addition is 800, the units of A bought = (800/x + 800)Amount of L used in buying A = $(800/x + 800) \times 95x$ As the amount used to buy A and B are in the ratio 5 : 3, The amount used to buy B = $(800/x + 800) \times 95x \times 3/5$ Number of units of B = $((800/x + 800) \times 95x \times 3/5)/114x = (400/x + 400)$ As the net addition of B is zero, number of units of B sold = (400/x + 400)The amount received from selling B = $(400/x + 400) \times 132x$ The amount received from selling A = 88,000The amount received from selling B = $9/5 \times 88000 = 158400$ So $(400/x + 400) \times 132x = 158400$ x = 2, So we can write the table as

	A	В	С		
Base exchange rate (ratio)	200	240	2		
Buying rate	190	228	1.9		
Selling rate	220	264	2.2		
Net addition	800	0	3000		

As the net addition in the number of units of C is 3,000 and the buying and selling rates are in the ratio 1.9 and 2.2, assuming n units are sold

1.9 (n + 3000) = 2.2 (n) 0.3 n = 5700 n = 19000

QNo:- 37 ,Correct Answer:- 240

Explanation:- The base exchange rates of currencies A, B and C with respect to L is in the ratio 100 : 120 : 1.

The given information can be tabulated as follows:

	Α	В	c
Base exchange rate (ratio)	100x	120x	1x
Buying rate	95x	114x	0.95x
Selling rate	110x	132x	1.10x
Net addition	800	0	3000

The outlet received 88,000 units of L by selling A and the ratio of amounts of L used to buy A and B are in the ratio 5 : 3 and amount received from the sales of A and B are in the ratio 5 : 9.

Units sold of $A = \frac{88,000}{110 \text{ x}} = \frac{800}{\text{ x}}$ As the net addition is 800, the units of A bought = (800/x + 800)Amount of L used in buying A = $(800/x + 800) \times 95x$ As the amount used to buy A and B are in the ratio 5 : 3, The amount used to buy B = $(800/x + 800) \times 95x \times 3/5$ Number of units of B = $((800/x + 800) \times 95x \times 3/5)/114x = (400/x + 400)$ As the net addition of B is zero, number of units of B sold = (400/x + 400)The amount received from selling B = $(400/x + 400) \times 132x$ The amount received from selling B = $9/5 \times 88000 = 158400$ So $(400/x + 400) \times 132x = 158400$ x = 2, So we can write the table as



	A	В	C
Base exchange rate (ratio)	200	240	2
Buying rate	190	228	1.9
Selling rate	220	264	2.2
Net addition	800	0	3000

The base exchange rate of currency B with respect to L is 240.

QNo:- 38 ,Correct Answer:- A

Explanation: The base exchange rates of currencies A, B and C with respect to L is in the ratio 100 : 120 : 1.

The given information can be tabulated as follows:

	Α	В	C
Base exchange rate (ratio)	100x	120x	1x
Buying rate	95x	114x	0.95x
Selling rate	110x	132x	1.10x
Net addition	800	0	3000

The outlet received 88,000 units of L by selling A and the ratio of amounts of L used to buy A and B are in the ratio 5 : 3 and amount received from the sales of A and B are in the ratio 5 : 9.

Units sold of A = $\frac{88,000}{110 \text{ x}} = \frac{800}{\text{ x}}$

As the net addition is 800, the units of A bought = (800/x + 800)Amount of L used in buying A = $(800/x + 800) \times 95x$ As the amount used to buy A and B are in the ratio 5 : 3, The amount used to buy B = $(800/x + 800) \times 95x \times 3/5$ Number of units of B = $((800/x + 800) \times 95x \times 3/5)/114x = (400/x + 400)$ As the net addition of B is zero, number of units of B sold = (400/x + 400)The amount received from selling B = $(400/x + 400) \times 132x$ The amount received from selling A = 88,000The amount received from selling B = $9/5 \times 88000 = 158400$ So $(400/x + 400) \times 132x = 158400$ x = 2, So we can write the table as

	A	В	С
Base exchange rate (ratio)	200	240	2
Buying rate	190	228	1.9
Selling rate	220	264	2.2
Net addition	800	0	3000

The buying exchange rate of currency C with respect to L on that day was 1.9.

QNo:- 39 ,Correct Answer:- B

Explanation: Given 'peacock is designated as the national bird of India' is coded as ' 5688999 35 1135556678 56 458 13666689 1334 79 13366'

9 is the code for o and c from the words peacock and of.

F is coded as 7 from the word of.

I is coded as either 3 or 6 from the word India, but from the word 'is' and 'designated' code for 'I' is 3.

S is coded as 5 from the word is. A is coded as 6 from the word 'as'.

N is coded as 6 from the word national. Thus D is coded as 1 from the word India.

E is coded as 5 from the word designated. T is coded as 8 from the word 'the' and 'National'. Thus H is coded as 4 from the word 'the'. G is coded as 7. L is coded as 1 from the word 'National'. P and K are coded as 8 from the word 'peacock'. B and R are coded as 3 and 4 many order from the word 'bird'.

We get the codes as follows.



Code	Letter
1	D, L
2	
3	I
4	Н
5	S, E
6	A, N
7	F, G
8	T, P, K
9	O, C

B and R is coded as 3 or 4.

L is coded as '1'.

QNo:- 40 ,Correct Answer:- C

Explanation:-

Given 'peacock is designated as the national bird of India' is coded as ' 5688999 35 1135556678 56 458 13666689 1334 79 13366'

9 is the code for o and c from the words peacock and of.

F is coded as 7 from the word of.

I is coded as either 3 or 6 from the word India, but from the word 'is' and 'designated' code for 'I' is 3.

S is coded as 5 from the word is. A is coded as 6 from the word 'as'.

N is coded as 6 from the word national. Thus D is coded as 1 from the word India.

E is coded as 5 from the word designated. T is coded as 8 from the word 'the' and 'National'. Thus H is coded as 4 from the word 'the'. G is coded as 7. L is coded as 1 from the word 'National'. P and K are coded as 8 from the word 'peacock'. B and R are coded as 3 and 4 many order from the word 'bird'.

We get the codes as follows.

Code	Letter	
1	D, L	
2		
3	I	
4	Н	
5	S, E	
6	A, N	
7	F, G	
8	T, P, K	
9	0. C	

B and R is coded as 3 or 4.

Either 3 or 4 is the code for B.

QNo:- 41 ,Correct Answer:- A

Explanation:-

Given 'peacock is designated as the national bird of India' is coded as ' 5688999 35 1135556678 56 458 13666689 1334 79 13366'

9 is the code for o and c from the words peacock and of.

F is coded as 7 from the word of.

I is coded as either 3 or 6 from the word India, but from the word 'is' and 'designated' code for 'I' is 3.

S is coded as 5 from the word is. A is coded as 6 from the word 'as'.

N is coded as 6 from the word national. Thus D is coded as 1 from the word India.

E is coded as 5 from the word designated. T is coded as 8 from the word 'the' and 'National'. Thus H is coded as 4 from the word 'the'. G is coded as 7. L is coded as 1 from the word 'National'. P and K are coded as 8 from the word 'peacock'. B and R are coded as 3 and 4 many order from the word 'bird'.

We get the codes as follows.

Code Letter



1	D, L
2	
3	I
4	Н
5	S, E
6	A, N
7	F, G
8	T, P, K
9	O, C

B and R is coded as 3 or 4.

The code for 8 and 9 is identified.

QNo:- 42 ,Correct Answer:- B

Explanation:- Given 'peacock is designated as the national bird of India' is coded as ' 5688999 35 1135556678 56 458 13666689 1334 79 13366'

9 is the code for o and c from the words peacock and of.

F is coded as 7 from the word of.

I is coded as either 3 or 6 from the word India, but from the word 'is' and 'designated' code for 'I' is 3.

S is coded as 5 from the word is. A is coded as 6 from the word 'as'.

N is coded as 6 from the word national. Thus D is coded as 1 from the word India.

E is coded as 5 from the word designated. T is coded as 8 from the word 'the' and 'National'. Thus H is coded as 4 from the word 'the'. G is coded as 7. L is coded as 1 from the word 'National'. P and K are coded as 8 from the word 'peacock'. B and R are coded as 3 and 4 many order from the word 'bird'.

We get the codes as follows.

Code	Letter
1	D, L
2	
3	I
4	Н
5	S, E
6	A, N
7	F, G
8	Т, Р, К
9	O, C

B and R is coded as 3 or 4.

S, U, V cannot be coded with same digit.

QNo:- 43 ,Correct Answer:- A

Explanation:- Let the total market size be 100 units. The sales of Azra, Bysi, Cxqi and dipq would be 40, 25, 15 and 20 units respectively.

The revenue would be as follows Azra = 40 x 15,000 = 6.0 lac Bysi = 25 x 20,000 = 5.0 lac Cxgi = 15 x 30,000 = 4.5 lac $Dipq = 20 \times 25,000 = 5.0 lac$ The brand with the highest revenue is Azra.

QNo:- 44 ,Correct Answer:- D

Explanation:- Let the total market size be 100 units. The sales of Azra, Bysi, Cxqi and dipq would be 40, 25, 15 and 20 units respectively.

The revenue would be as follows



Azra = $40 \times 15,000 = 6.0$ lac Bysi = $25 \times 20,000 = 5.0$ lac Cxgi = $15 \times 30,000 = 4.5$ lac Dipq = $20 \times 25,000 = 5.0$ lac The profits for the different brands are: Azra - 6.0 lac $\times 10 / 100 = 60,000$ Bysi - 5.0 lac $\times 30 / 100 = 1,50,000$ Cxgi - 4.5 lac $\times 40 / 100 = 1,80,000$ Dipq - 5.0 lac $\times 30 / 100 = 1,50,000$ The profit is the highest for Cxqi

QNo:- 45 ,Correct Answer:- B

Explanation:- The new market share, selling prices and profitability for the different brands are

Brand	Market share	Selling price	Profitability
Azra	35	15,000	10
Bysi	20	20,000	30
Cxqi	30	18,000	20
Dipq	15	25,000	30

Now the total sales is 140 units.(Increase of 40%) The profits are as follows Azra - 49 x 15,000 \times 10 / 100 = 73,500 Bysi - 28 \times 20,000 \times 30 / 100 = 1,68,000 Cxgi - 42 \times 18,000 \times 20 / 100 = 1,51,200 Dipq - 21 \times 25,000 \times 30 / 100 = 1,57,500 The profit is the highest for Bysi



QNo:- 46 ,Correct Answer:- B

Explanation:- Let the total market size be 100 units. The sales of Azra, Bysi, Cxqi and dipq would be 40, 25, 15 and 20 units respectively.

The revenue would be as follows Azra = $40 \times 15,000 = 6.0$ lac Bysi = $25 \times 20,000 = 5.0$ lac Cxgi = $15 \times 30,000 = 4.5$ lac Dipq = $20 \times 25,000 = 5.0$ lac The profits for the different brands are: Azra - 6.0 lac $\times 10 / 100 = 60,000$ Bysi - 5.0 lac $\times 30 / 100 = 1,50,000$ Cxgi - 4.5 lac $\times 40 / 100 = 1,80,000$ Dipq - 5.0 lac $\times 30 / 100 = 1,50,000$

The new market share, selling prices and profitability for the different brands are

Brand	Market share	Selling price	Profitability
Azra	35	15,000	10
Bysi	20	20,000	30
Cxqi	30	18,000	20
Dipq	15	25,000	30

Now the total sales is 140 units.(Increase of 40%) The profits are as follows Azra - 49 x 15,000 × 10 / 100 = 73,500 Bysi - 28 x 20,000 × 30 / 100 = 1,68,000 Cxgi - 42 x 18,000 × 20 / 100 = 1,51,200 Dipq - 21 x 25,000 × 30 / 100 = 1,57,500

The profits increased for Azra (60,000 - 73,500) for Bysi (1,50,000 - 1, 68,000) and Dipq (1,50,000 - 1,57,500)

QNo:- 47 ,Correct Answer:- A

Explanation:- Erina was the only person in the room she was allotted to which means that one of the rooms had only one person in it. Ganeshan was one among the two candidates allotted to room 102, which means Room 102 had two people in it. As it is given that Balaram was the third person to enter room 101, so we can figure out that remaining four people have to be in Room 101. So Erina will be the only one in Room 103.

When Fatima entered, three people including Akil were already in the room, which means Fatima was the last one to enter room 101. From here we can also figure out that Chitra was the last person to enter room 102. Akil was the first person to reach the venue. Using this information, the table below shows the order in which they entered.

101	102	103
Akil	Ganeshan	Erina
Divya	Chitra	
Balaram		
Fatima		

Divya entered room 101.

QNo:- 48 ,Correct Answer:- B

Explanation:- Erina was the only person in the room she was allotted to which means that one of the rooms had only one person in it. Ganeshan was one among the two candidates allotted to room 102, which means Room 102 had two people in it. As it is given that Balaram was the third person to enter room 101, so we can figure out that remaining four people have to be in Room 101. So Erina will be the only one in Room 103.

When Fatima entered, three people including Akil were already in the room, which means Fatima was the last one to enter



room 101. From here we can also figure out that Chitra was the last person to enter room 102. Akil was the first person to reach the venue. Using this information, the table below shows the order in which they entered.

101	102	103
Akil	Ganeshan	Erina
Divya	Chitra	
Balaram		
Fatima		

No one entered into the room 102 before Ganeshan.

QNo:- 49 ,Correct Answer:- A

Explanation:-

Erina was the only person in the room she was allotted to which means that one of the rooms had only one person in it. Ganeshan was one among the two candidates allotted to room 102, which means Room 102 had two people in it. As it is given that Balaram was the third person to enter room 101, so we can figure out that remaining four people have to be in Room 101. So Erina will be the only one in Room 103.

When Fatima entered, three people including Akil were already in the room, which means Fatima was the last one to enter room 101. From here we can also figure out that Chitra was the last person to enter room 102. Akil was the first person to reach the venue. Using this information, the table below shows the order in which they entered.

101	102	103
Akil	Ganeshan	Erina
Divya	Chitra	
Balaram		
Fatima		

Fatima at 7: 40 and Chitra at 7:30 were the last person to enter their respective room number 101 and 102. So Erina entered at 7:45.

QNo:- 50 ,Correct Answer:- B

Explanation:- Erina was the only person in the room she was allotted to which means that one of the rooms had only one person in it. Ganeshan was one among the two candidates allotted to room 102, which means Room 102 had two people in it. As it is given that Balaram was the third person to enter room 101, so we can figure out that remaining four people have to be in Room 101. So Erina will be the only one in Room 103.

When Fatima entered, three people including Akil were already in the room, which means Fatima was the last one to enter room 101. From here we can also figure out that Chitra was the last person to enter room 102. Akil was the first person to reach the venue. Using this information, the table below shows the order in which they entered.

101	102	103
Akil	Ganeshan	Erina
Divya	Chitra	
Balaram		
Fatima		

From the information, Ganeshan entered room at 7:10 am, Divya entered room at 7:15 am and Balaram entered room at 7:25 am.

QNo:- 51 ,Correct Answer:- B

Explanation:- Let a, b, c and d be the weights of parameters F, R, P and I respectively. Given,



(i) 30a + 20b + 20c + 40d > 40a + 30b + 20c + 20d(ii) 40a + 30b + 20c + 20d > 40a + 20b + 20c + 30d(iii) 50a + 50b + 40c + 50d > 50a + 50b + 50c + 40dFrom (i), 2d > a + bFrom (ii), b > dFrom (iii), d > c $\Rightarrow b > d > c$ a, b, c and d are 0.1, 0.2, 0.3 and 0.4 in any order. d cannot be 0.1 or 0.2. (\because 2d cannot be greater than a + b) d can be 0.3 or 0.4, but given b > d. $\Rightarrow b = 0.4$, d = 0.32(0.3) > 0.4 + a a < 0.2a = 0.1, c = 0.2

	F(0.1)	R(0.4)	P(0.2)	I(0.3)	Total
A - One	5	20	10	12	47
Best Ed	4	12	4	6	26
Cosmopolitan	4	8	4	9	25
Dominance	2	8	8	9	27
Education Aid	5	20	8	15	48
Fancy	5	20	8	12	45
Global	3	0	4	6	13
High Q	3	8	4	12	27

Weight of faculty parameter is 0.1.

QNo:- 52 ,Correct Answer:- 3

Explanation:- Let a, b, c and d be the weights of parameters F, R, P and I respectively. Given,

(i) 30a + 20b + 20c + 40d > 40a + 30b + 20c + 20d(ii) 40a + 30b + 20c + 20d > 40a + 20b + 20c + 30d(iii) 50a + 50b + 40c + 50d > 50a + 50b + 50c + 40dFrom (i), 2d > a + bFrom (ii), b > dFrom (iii), d > c $\Rightarrow b > d > c$ a, b, c and d are 0.1, 0.2, 0.3 and 0.4 in any order. d cannot be 0.1 or 0.2. (\because 2d cannot be greater than a + b) d can be 0.3 or 0.4, but given b > d. $\Rightarrow b = 0.4$, d = 0.3 2(0.3) > 0.4 + a a < 0.2a = 0.1, c = 0.2

	F(0.1)	R(0.4)	P(0.2)	I(0.3)	Total
A - One	5	20	10	12	47
Best Ed	4	12	4	6	26
Cosmopolitan	4	8	4	9	25
Dominance	2	8	8	9	27
Education Aid	5	20	8	15	48
Fancy	5	20	8	12	45
Global	3	0	4	6	13
High Q	3	8	4	12	27

Three colleges received AAA rating.



Explanation:- Let a, b, c and d be the weights of parameters F, R, P and I respectively. Given,

(i) 30a + 20b + 20c + 40d > 40a + 30b + 20c + 20d(ii) 40a + 30b + 20c + 20d > 40a + 20b + 20c + 30d(iii) 50a + 50b + 40c + 50d > 50a + 50b + 50c + 40dFrom (i), 2d > a + bFrom (ii), b > dFrom (iii), d > c $\Rightarrow b > d > c$ a, b, c and d are 0.1, 0.2, 0.3 and 0.4 in any order. d cannot be 0.1 or 0.2. (\cdot 2d cannot be greater than a + b) d can be 0.3 or 0.4, but given b > d. $\Rightarrow b = 0.4$, d = 0.3 2(0.3) > 0.4 + a a < 0.2a = 0.1, c = 0.2

	F(0.1)	R(0.4)	P(0.2)	I(0.3)	Total
A - One	5	20	10	12	47
Best Ed	4	12	4	6	26
Cosmopolitan	4	8	4	9	25
Dominance	2	8	8	9	27
Education Aid	5	20	8	15	48
Fancy	5	20	8	12	45
Global	3	0	4	6	13
High Q	3	8	4	12	27

Heighest overall score among the eight colleges is 48.



QNo:- 54 ,Correct Answer:- D

Explanation:- Let a, b, c and d be the weights of parameters F, R, P and I respectively. Given, (i) 30a + 20b + 20c + 40d > 40a + 30b + 20c + 20d (ii) 40a + 30b + 20c + 20d > 40a + 20b + 20c + 30d (iii) 50a + 50b + 40c + 50d > 50a + 50b + 50c + 40d From (i), 2d > a + bFrom (ii), b > dFrom (iii), d > c \Rightarrow b > d > c a, b, c and d are 0.1, 0.2, 0.3 and 0.4 in any order. d cannot be 0.1 or 0.2. (: 2d cannot be greater than a + b) d can be 0.3 or 0.4, but given b > d. \Rightarrow b = 0.4, d = 0.3 2(0.3) > 0.4 + aa < 0.2 a = 0.1, c = 0.2

	F(0.1)	R(0.4)	P(0.2)	I(0.3)	Total
A - One	5	20	10	12	47
Best Ed	4	12	4	6	26
Cosmopolitan	4	8	4	9	25
Dominance	2	8	8	9	27
Education Aid	5	20	8	15	48
Fancy	5	20	8	12	45
Global	3	0	4	6	13
High Q	3	8	4	12	27

No college has score between 31 and 40 (both inclusive).

QNo:- 55 ,Correct Answer:- A



Explanation:-

From the given information we can find which product belong to which company. In the given figure the products (number) would belong to the following companies





2, 3, 4, 7/8 1, 6, 10 5, 8/7, 9, 11

So also the entire graph can be divided into four equal parts with the bottom left part having products in the No-hope category, the bottom right part with products in the Blockbuster category, the top left part with products in the Doubtful category and the top right part with products in the promising category.

The areas of all the products in the different categories are

No-hope -4 + 4 + 3 + 2 + 1 + 1 = 15Blockbuster -2 + 4 + 3 + 6 + 6 + 6 + 9 = 36Doubtful -2 + 1 + 6 + 6 + 1 + 9 + 4 = 29Promising -2 + 9 + 3 = 14

As the areas is proportional to the revenue the corresponding product, products under Blockbuster category had the highest revenue.

QNo:- 56 ,Correct Answer:- D



Explanation:-

From the given information we can find which product belong to which company. In the given figure the products (number) would belong to the following companies

Alfa	Bravo	Charlie
2, 3, 4, 7/8	1, 6, 10	5, 8/7, 9, 11

So also the entire graph can be divided into four equal parts with the bottom left part having products in the No-hope category, the bottom right part with products in the Blockbuster category, the top left part with products in the Doubtful category and the top right part with products in the promising category.

The number of products of Bravo in the different categories are No-hope (bottom left) – 1 Doubtful (top left) – 3 Promising (top right) – 1 Blockbuster (bottom right) – 2 The correct sequence is 1, 3, 1, 2

QNo:- 57 ,Correct Answer:- C



Explanation:-

From the given information we can find which product belong to which company. In the given figure the products (number) would belong to the following companies

Alfa	Bravo	Charlie
2, 3, 4, 7/8	1, 6, 10	5, 8/7, 9, 11

So also the entire graph can be divided into four equal parts with the bottom left part having products in the No-hope category, the bottom right part with products in the Blockbuster category, the top left part with products in the Doubtful category and the top right part with products in the promising category.

Alfa's revenue from Blockbuster products – 9 Charlie revenue from Promising products – 9 This statement is true

Total revenue from No-hope products – 15 Total revenue from Doubtful products – 29 This statement is true

Bravo's revenue from Blockbuster products -6 + 4 = 10Alfa's revenue from Doubtful products -6 + 4 + 1 + 1 = 12The statement is not true

Revenue of Bravo from No-hope products – 4 Revenue of Charlie from No-hope products – 4 The statement is true.

Hence 3rd statement is not true.

QNo:- 58 ,Correct Answer:- D



Explanation:-

From the given information we can find which product belong to which company. In the given figure the products (number) would belong to the following companies

Alfa	Bravo	Charlie
2, 3, 4, 7/8	1, 6, 10	5, 8/7, 9, 11

So also the entire graph can be divided into four equal parts with the bottom left part having products in the No-hope category, the bottom right part with products in the Blockbuster category, the top left part with products in the Doubtful category and the top right part with products in the promising category.

The total revenue of Bravo is 4 (No. hope) + 10 (Blockbuster) + 17 (Doubtful) + 3 (Promising) = 34 crore.

QNo:- 59 ,Correct Answer:- D

Explanation:- Number of young visitors = 2 × number of middle age visitors
 Number of middle age visitors = 2 × number of old visitors
 Total number of tickets sold = total number of visitors = 140
 Hence, the number of young visitors = 80, the number of middle age visitors = 40 and the number of old visitors = 20

	Old = 20	Middle Age = 40	Young = 80	Total = 140
Platinum			Platinum / 2	
Gold	х			
Economy	х		38	55
Total				

Half of the platinum tickets were purchased by young visitors, the remaining half was purchased by old and middle age visitors. Since these two are equal, half of total number of platinum tickets should be an even number. Among the given values, this is possible only for 32 and 36.

In case of 36, Old visitors having Platinum tickets = 9. In that case 2x = 11. But this is not possible. Hence, the total number of platinum tickets sold can only be 32.

QNo:- 60 ,Correct Answer:- 3



Number of young visitors = $2 \times$ number of middle age visitors Number of middle age visitors = $2 \times \text{number of old visitors}$ Total number of tickets sold = total number of visitors = 140 Hence, the number of young visitors = 80, the number of middle age visitors = 40 and the number of old visitors = 20

Let the old visitors buying Platinum tickets = y

So the Middle-aged visitors buying Economy tickets = y

	Old = 20	Middle Age = 40	Young = 80	Total = 140
Platinum	у		Platinum / 2	
Gold	х			
Economy	х	у	38	55
Total				

Now x + y + 38 = 55

 \Rightarrow x + y = 17(i)

2x + y = 20(ii) (Total number of old visitors)

Solving, we get x = 3.

QNo:- 61 ,Correct Answer:- 0

Explanation: Number of young visitors = 2 × number of middle age visitors Number of middle age visitors = $2 \times \text{number of old visitors}$ Total number of tickets sold = total number of visitors = 140 Hence, the number of young visitors = 80, the number of middle age visitors = 40 and the number of old visitors = 20

Let the number of old visitors buying gold tickets is x, then the number of young visitors buying gold tickets can be at most x - 1. Let the number of middle aged visitors buying Platinum, Gold and economy tickets are b, c and d respectively and the number of old visitors buying platinum tickets is 'a'.

	Old = 20	Middle Age = 40	Young = 80	Total = 140
Platinum	а	b	43 – x	
Gold	х	с	x - 1	
Economy	х	d	38	55
Total				

The total number of platinum tickets with young visitors = 80 - (38 + x - 1) = 43 - x. Since the young visitors have half the platinum tickets so a + b = 43 - x(i) Also $x + d + 38 = 55 \Rightarrow x + d = 17$ (ii) The total number of old age and middle age visitors is 60 \Rightarrow (a + b) + (x + c) + (x + d) = 60 \Rightarrow 43 - x + x + c + 17 = 60 \Rightarrow c = 0

Therefore the number of Middle-aged visitors buying Gold tickets was 0.

QNo:- 62 ,Correct Answer:- C

Explanation:- Number of young visitors = 2 × number of middle age visitors Number of middle age visitors = $2 \times \text{number of old visitors}$ Total number of tickets sold = total number of visitors = 140 Hence, the number of young visitors = 80, the number of middle age visitors = 40 and the number of old visitors = 20

Since the total number of economy tickets with old and middle aged group visitors is 17, so they cannot have the equal number of economy tickets. Hence option (3) is false.

QNo:- 63 ,Correct Answer:- 4

Explanation:- Number of enrolled students=39 The given data can be represented as follows:



As given 10 students enrolled in G are also enrolled in at least one more sport. Therefore, d + x + c = 10, as G = 17, so we have $p = 2x-1 = 7 \Rightarrow x = 4$. As x=4, r = 8Since $d + x + c = 10 \Rightarrow d + c = 6$ Now total of all areas, 2x-1+c + a + x + x + d + a + 2x = 39From above, we have 2a + c + d = 39-23 $\Rightarrow 2a + 6 = 16$; a = 5Now from above we have values, x = 4, q = 9, p=7, r = 8Since L is maximum, we have the following three cases: Case(i) : If c = 2, d = 4 then G = 17, K = 20, L = 21Case(iii): c = 0, d = 6 then G = 17, K = 19, L = 22Case (iii): c = 0, d = 6 then G = 17, K = 18, L = 23From above, The minimum number of students enrolled in both G and L but not in K = d = 4. So answer is 4.

QNo:- 64 ,Correct Answer:- D

Explanation: Number of enrolled students=39 The given data can be represented as follows:



As given 10 students enrolled in G are also enrolled in at least one more sport. Therefore, d + x + c = 10, as G = 17, so we have $p = 2x-1 = 7 \Rightarrow x= 4$. As x=4, r = 8Since $d + x + c = 10 \Rightarrow d + c = 6$ Now total of all areas, 2x-1+c + a + x + x + d + a + 2x = 39From above, we have 2a + c + d = 39-23 $\Rightarrow 2a + 6 = 16$; a = 5Now from above we have values, x = 4, q = 9, p=7, r = 8

Since L is maximum, we have the following three cases: Case(i) : If c = 2, d = 4 then G = 17, K = 20, L = 21Case(ii): If c = 1, d = 5 then G = 17, K = 19, L = 22Case (iii): c = 0, d = 6 then G = 17, K = 18, L = 23As numbers of students enrolled in K and L are in the ratio 19: 22, the given condition is possible in case (ii) where K = 19 and L = 22. Therefore L = 22.

QNo:- 65 ,Correct Answer:- 2

Explanation: Number of enrolled students=39 The given data can be represented as follows:



As given 10 students enrolled in G are also enrolled in at least one more sport. Therefore, d + x + c = 10, as G = 17, so we have $p = 2x-1 = 7 \Rightarrow x = 4$. As x=4, r = 8Since $d + x + c = 10 \Rightarrow d + c = 6$ Now total of all areas, 2x-1+c + a + x + x + d + a + 2x = 39From above, we have 2a + c + d = 39-23 $\Rightarrow 2a + 6 = 16$; a = 5Now from above we have values, x = 4, q = 9, p=7, r = 8Since L is maximum, we have the following three cases: Case(i) : If c = 2, d = 4 then G = 17, K = 20, L = 21 Case(ii): If c = 1, d = 5 then G = 17, K = 19, L = 22 Case (iii): c = 0, d = 6 then G = 17, K = 18, L = 23 Since x = 4. One person moves to 'd', one person moves to 'c' and 2 persons move to 'a', then the number of students enrolled in both G and K = c + x = 2. Hence answer is 2.

QNo:- 66 ,Correct Answer:- B

Explanation: Number of enrolled students=39 The given data can be represented as follows:



As given 10 students enrolled in G are also enrolled in at least one more sport. Therefore, d + x + c = 10, as G = 17, so we have p = $2x-1 = 7 \Rightarrow x= 4$. As x=4, r = 8 hitbullseye

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Since d + x + c = 10 \Rightarrow d + c = 6 Now total of all areas, 2x-1+ c + a + x + x + d + a + 2x = 39 From above, we have 2a + c + d = 39-23 \Rightarrow 2a + 6 = 16; a = 5 Now from above we have values, x= 4, q = 9, p=7, r =8 Since L is maximum, we have the following three cases: Case(i) : If c = 2, d = 4 then G = 17, K = 20, L = 21 Case(ii): If c = 1, d = 5 then G = 17, K = 19, L = 22 Case (iii): c = 0, d = 6 then G = 17, K = 18, L = 23 From above, the number of students enrolled in both G and L = d = 6

Section : Quantitative Ability

QNo:- 67 ,Correct Answer:- C

Explanation:- Since speed is directly proportional to distance at constant time. So, when Car1 moves for 200km then Car3 moves 100km Therefore, ratio of their speed Car1:Car3 is 2:1 Similarly, when car 3 moves 200km then car 2 moves 100km Ratio of their speeds Car2:Car3 is 1:2 Therefore, by combining these 2 ratios we get ratio of Car2 to that of Car1 is 1:4.

QNo:- 68 ,Correct Answer:- 48

Explanation: Let the rate at which each inlet of type A brings water be 'x' and from B be 'y' Then, work done can be equated

 $\begin{array}{l} 1/2 \times (10x + 45y) = 1(8x + 18y) \\ 6x = 9y \\ \Rightarrow x : y = 3:2; \\ \hline \text{Total capacity of tank } = 8x + 18y = 8 \times 3 + 18 \times 2 = 60 \text{ litre} \\ \hline \text{Now 7 inlets of type A and 27 inlets of type B will fill } 7x + 27y = 7 \times 3 + 27 \times 2 = 75 \text{ litre in one hour} \\ \hline \text{Time taken to fill 60 litre } = 60/75 \text{ hrs} \\ = 60/75 \times 60 = 48 \text{ minutes} \end{array}$

QNo:- 69 ,Correct Answer:- C

Explanation: 10a + b > 3(10b + a)7a > 29b b = 1 \Rightarrow a = 5, 6, 7, 8, 9 b = 2 \Rightarrow a = 9 Total possibilities = 6

QNo:- 70 ,Correct Answer:- B

Explanation:-

Since A alone can fill the tank at 8 pm and B alone can fill the tank at 6 pm. So B takes two hours less than A. Now on Wednesday, A worked till 5 pm and B worked from 5 pm to 7 pm. So the work which was to be done by A in 3 hours is done by B in 2 hours. The ratio of the time taken by A and B to fill the tank is 3: 2 and since the difference in the time taken by A and B is 2 hours, so A takes 6 hours and B takes 4 hours to fill the tank and the tank gets empty at 2 pm.

Water filled by A and B in one hour = $\frac{1}{6} + \frac{1}{4} = \frac{5}{12}$ Hence A and B will together fill the tank in 12/5 = 2.4 hours or 2 hours 24 minutes. So the tank will be full by 4: 24pm

QNo:- 71 ,Correct Answer:- A

Explanation:- Going with the options, Option 1: Let the sides be 1 and 4



Area = 1 × 4 = 4 Perimeter = 2 × (1+4) = 10 Therefore, Area/(Perimeter)² = 4:(10)² = 1:25

QNo:- 72 ,Correct Answer:- A

Explanation: Let a and b be the two numbers. We know that for any two numbers $AM \ge GM$ $\Rightarrow a^2 + b^2/2 \ge ab$ $ab \le 97/2$ $ab \le 48.5$ Among the options, only 64 is greater than 48.5

QNo:- 73 ,Correct Answer:- 36

Explanation: $2x^2 - ax + 2 > 0$

Since the value of the expression is positive so its discriminant is negative.

 $b^{2}-4ac < 0$ $a^{2}-4 \times 2 \times 2 < 0$ $a^{2} < 16$ -4 < a < 4 — (1) $x^{2}-bx + 8 \ge 0$ $b^{2}-4(8) \le 0$ $-4\sqrt{2} \le b \le 4\sqrt{2}$ \therefore b is integer $-5 \le b \le 5$ maximum possible value of 2a - 6b is 2(3) - 6(-5) = 36

QNo:- 74 ,Correct Answer:- C

Explanation: The series is of the form $(4n + 3) (4n + 7) = 16n^2 + 40n + 21$ Let $t_n = 16n^2 + 40n + 21$

$$\sum t_n = 16 \sum n^2 + 40 \sum n + 21 \sum 1$$

= $16 \times \frac{n(n+1)(2n+1)}{6} + 40 \times \frac{n(n+1)}{2} + 21n$

Here n = 23 (7, 11, 15,......,95 is an AP with common difference 4 with 23 terms)

$$\sum t_n = \frac{16 \times 23 \times 24 \times 47}{6} + \frac{40 \times 23 \times 24}{2} + 21 \times 23 = 80707$$

QNo:- 75 ,Correct Answer:- B

Explanation:- B = $35(n-1) \Rightarrow$ B will contain all the multiples of 35 including 0. A = $6^{2n} - 35n - 1$; 35n will always be a multiple of 35, $\Rightarrow 6^{2n} - 1 = (6^n + 1)(6^n - 1)$ On putting value 1, 2, 3, 4... Each term of A comes out to be a multiple of 35. Hence every member of A is in B and at least one member of B is not in A.

QNo:- 76 ,Correct Answer:- 1098

Explanation:- Let the number of girls in junior section be a, then ${}^{a}C_{2} = 153$ a(a-1)/2 = 153 \Rightarrow a(a-1) = 306; a=18 Junior section has 25 boys and 18 girls. Similarly, let number of boys in the senior section be b, b (b-1) = 276 × 2; b = 24

Senior section has 24 boys and 27 girls. Number of matches boys play against girls = $25 \times 18 + 27 \times 24 = 1098$

QNo:- 77 ,Correct Answer:- A

Explanation:- Since the chord extends an angle of 60 at the center, it'll form an equilateral triangle with the other two sides being the radius and all angles = 60 Then radius = 5 The chord that extends 120 will be, $a^2 = 5^2 + 5^2 - 2 \times 5 \times 5 \times cos120$ (by cosine rule)

QNo:- 78 ,Correct Answer:- B

 $\Rightarrow a = \sqrt{75} = 5\sqrt{3}cm$

Explanation: Area of Semicircle is $\pi r^2/2$ which is given as $72\pi \Rightarrow r = 12$

Now, Since radius is 12, therefore diameter is 24 which is equal to length of the rectangle i.e. AB = 24And Area of rectangle is 768 sq. cm and length i.e. AB is 24 therefore, BC = 32Perimeter of the leftover portion = half of circumference of the circle + perimeter of the leftover 3 sides Perimeter = $32+32+24+12\pi = 88 + 12\pi$

QNo:- 79 ,Correct Answer:- 4000

Explanation: Interest to be repaid to Ankit at the end of the year = 0.08X Interest that Gopal would receive from Ishan in two cases are as given. Case I: if he lends X + Y Interest received = $(X + Y) \times 0.1 = 0.1X + 0.1Y$ Interest retained by Gopal after paying to Ankit = (0.1X + 0.1Y) - (0.08X) = 0.02X + 0.1YGiven that Interest retained by Gopal is same as that accrued by Ankit $\Rightarrow (0.02X + 0.1Y) = 0.08X$ $\Rightarrow Y = 0.6X$ Case II: if he lends X + 2Y Interest received = $(X + 2Y) \times 0.1 = 0.1X + 0.2Y$ Interest retained by Gopal after paying to Ankit = (0.1X + 0.2Y) - (0.08X) = 0.02X + 0.2YGiven that interest retained by Gopal would increase by 150 $\Rightarrow (0.02X + 0.2Y) - (0.02X + 0.1Y) = 150$ 0.1Y = 150 $\Rightarrow Y = 1500$ and X = 1500/0.6= 2500 Hence X + Y = 2500 + 1500 = 4000

QNo:- 80 ,Correct Answer:- A

Explanation:- $4^{n} > 17^{19}$ $(4^{2})^{n} > (17)^{38}$ $(16)^{n} > (17)^{38}$ Now, on substituting we get n = 39

QNo:- 81 ,Correct Answer:- C

Explanation:- As, Area = 32 sq units $1/2 \times 8 \times H = 32 \Rightarrow H = 8$ A will be at the shortest distance from the origin when it lies at a perpendicular distance of 8 from BC along the X-axis.

So, A will be at 4 units from origin,



QNo:- 82 ,Correct Answer:- A

Explanation: $P\Delta Q = \{1, 4, 5, 6\}$ and $R\Delta S = \{1, 2, 3, 4, 7, 8, 10\}$ (P ΔQ) Δ (R ΔS) = {2, 3, 5, 6, 7, 8, 10} Number of elements = 7

QNo:- 83 ,Correct Answer:- D

Explanation: $p^3 = q^4 = r^5 = s^6 = k;$ $p = k^{1/3}; q = k^{1/4}; r = k^{1/5}; s = k^{1/6}$ $Log_s(pqr) = log_{k^{1/6}} (k^{1/3+1/4+1/5})$ $= (47/60) \times (6) log_k k$ (As we know that $log_a^2 a^1 = 1/2$) Answer = 47/10

QNo:- 84 ,Correct Answer:- A



The amount of A in drum 1 is 18/25 and in the final mixture is 13/20. Let the amount of A in drum 2 is k.

Using rule of alligation, we have



Explanation:- Hence the ratio of A and B is 239: 161

QNo:- 85 ,Correct Answer:- D

Explanation: Let the new marks be 47 and 56 respectively. Now, we need to calculate the old marks. We know that the old marks are in the ratio of 11:14, and their difference is 9. So, the old marks will be 33 and 42. Bimal's ratio \Rightarrow 56:42 = 4:3

QNo:- 86 ,Correct Answer:- 105

Explanation:- If arithmetic mean of x, y and z is 80 Then, x+y+z = 240, Similarly, x+y+z+u+v = 375, Therefore, u+v = 135, $\Rightarrow (x+y)/2 + (y+z)/2 = 135$ On Expanding, we get x+2y+z = 270. Since x+y+z = 240, y = 30Therefore, x+z = 210. Since $x \ge z$, minimum value of x is 105.

QNo:- 87 ,Correct Answer:- C

Explanation: Let the strength of A, B and C be a, b, c =a + 2b + 3c / 6 = 20% \Rightarrow a + 2b + 3c = 120 -- (1) Similarly, 3a + 2b + c = 180 -- (2) (1) - (2) \Rightarrow c = a -30 --(3) $3 \times (2) - (1)$ \Rightarrow b = 105 - 2a --(4) Now D = 2b + 7c / 9



⇒ (210 - 4a + 7a - 210) / 9 D = a/3 \Rightarrow D/A = 1 : 3

QNo:- 88 ,Correct Answer:- 5

Explanation:- Both the cars 1 and 2 travel first 50 km at 100 kmph, next 50 km at 50 kmph, last 50 km at 25 kmph. By the time car 2 started, car 1 travelled 20 km. Hence car 1 started 12 minutes before car 2. The speeds with which car 1 and car 2 travelled certain distances are same. So the time difference between car 1 and car 2 will also be same. When car 1 reached B, $\frac{12}{12} \times 25 = 5 \, km.$

car 2 will be 12 minutes behind A. Therefore the distance between car 2 and B when car 1 reached at B = $\frac{1}{60}$

QNo:- 89 ,Correct Answer:- 20

Explanation: f(x) will be minimized when $5x = 52 - 2x^2$. This will happen when x=4. Therefore, minimum value of f(x) = 20.

QNo:- 90 ,Correct Answer:- D

As we know that $\log_b a = \frac{\log a}{\log b}$ **Explanation:-**Applying the same we can easily take out log 100 as a common in denominator $=\frac{1}{\log_100}(\log_2 - \log_4 + \log_5 - \log_10 + \log_20 - \log_25 + \log_50)$

Applying log (ab)= log a+ log b and \log_{b}^{a} =log a- log b

 $=\frac{1}{log100}(\log (\{2*5*20*50\} / \{4*10*25\})) = \frac{log10}{log100} = \frac{1}{2}$

QNo:- 91 ,Correct Answer:- 24

Explanation:- For n=2 we get, $t_1 + t_2 = 39.....(1)$ For n=3 $t_1 + t_2 + t_3 = 58.....(2)$ Using (1) we get $t_3 = 19$ For n=4 $t_1 + t_2 + t_3 + t_4 = 81.....(3)$ Using (2) we get $t_4 = 23$ For n=5 $t_1 + t_2 + t_3 + t_4 + t_5 = 108......(4)$ Using (3) we get $t_5 = 27$ Proceeding in the same manner, we get t_n are in an AP with common difference of 4. Therefore, $t_{24} = 103$ Therefore k=24

QNo:- 92 ,Correct Answer:- D

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Actual CAT 2018 Slot II (Answer Keys)

Let the two solutions have volumes 100 litre and 300 litre. The ethanol in the first is 20 litre and in the second is say x litre. Now 400 litre having 80 litre ethanol is mixed with these two solutions.

Total solution = 800 litre

Total ethanol = 100 + x

Now $\frac{100 + x}{800} \times 100 = 31.25 \Rightarrow x = 150$

The concentration of ethanol in S = $\frac{150}{300} \times 100 = 50\%$.

QNo:- 93 ,Correct Answer:- 24

Explanation:- Since BC is the diameter the circle, PC \perp AB and BQ \perp AC (angle in a semicircle) Area of ABC = $\frac{1}{2} \times AB \times PC = \frac{1}{2} \times AC \times BQ$ = $\frac{1}{2} \times 30 \times 20 = \frac{1}{2} \times 25 \times BQ$; BQ = 24 cm

QNo:- 94 ,Correct Answer:- 8

Explanation: Here n = 2 is a factor of $n^3 - 11n^2 + 32n - 28 > 0$

So (n –	- 2)² (n – 7	7) > 0			
	- ve		- ve	+ ve	
		2		7	

The solution of the above inequality is $(7, \infty)$. So the least value of n is 8.

QNo:- 95 ,Correct Answer:- B

Explanation:- We want to maximize the value of a_1 , subject to the condition that a_1 is the least of the 52 numbers and that the average of 51 numbers (excluding a_1) is 1 less than the average of all the 52 numbers. Since a_{52} is 100 and all the numbers are positive integers, maximizing a_1 entails maximizing a_2 , a_3 , ... a_{51} .

The only way to do this is to assume that a_2 , a_3 a_{52} are in an AP with a common difference of 1. Let the average of a_2 , a_3 , ..., a_{52} i.e. a_{27} be A. (Note: The average of an odd number of terms in an Arithmetic Progression is equal to the value of the middle-most term)

Since $a_{52} = a_{27} + 25$ and $a_{52} = 100$ $\Rightarrow A = 100 - 25 = 75$ $a_2 + a_3 + ... + a_{52} = 75 \times 51 = 3825$ Given $a_1 + a_2 + ... + a_{52} = 52(A - 1) = 3848$ Hence $a_1 = 3848 - 3825 = 23$

QNo:- 96 ,Correct Answer:- D

Explanation:- Solution: Area of parallelogram = Base * Height Considering CD as base, If we drop a perpendicular AX to CD 48 = 8 * AX AX=6 Now in the triangle AXD, AD will be the hypotenuse, so it has to be more than 6. So option D is the answer.

QNo:- 97 ,Correct Answer:- 10

Explanation: $N^N = 2^{160} = 2^5 \times 3^2 = (2^5)^{32}$ $N^N = 32^{32}$;



N = 32; N² + 2^N = 32² + 2³²; $(2^{5})^{2} + 2^{32}$ $2^{10} + 2^{32} = 2^{10}(1 + 2^{22});$ x is 10

QNo:- 98 ,Correct Answer:- A

Explanation:- Let the total efficiencies be R and G Total Work = 16(R + G) = 7(R+G) + (0.7R+G)*109(R+G) = 7R+10G2R = GR/G = 1/2Let R can do 1 unit/day and G can do 2 units/day. Remaining 9 day's work when Ramesh got sick = $9 \times 3 = 27$ units If these 27 units are done by Ganesh with efficiency of 2units/day then he will take 27/2 = 13.5 days.

QNo:- 99 ,Correct Answer:- 50

Explanation: Let the speeds of A and B be s_1 and s_2 respectively. The initial distance between them is 350 km. When they travel in the same direction, the time taken to meet = $350/s_2$ - $s_1 = 7 \Rightarrow s_2$ - $s_1 = 350/7 = 50$ km/hr

QNo:- 100 ,Correct Answer:- D

Explanation: Amount of Alcohol in the mixture = 700 / 875 = 4/5After dilution, the amount of alcohol becomes = 4/5 * 9/10 * 9/10 = 0.648 or 64.8 % hence the percentage of water = 35.2 %