

**Directions of Test**

Test Name	Actual CAT 2020 Slot II	Total Questions	76	Total Time	120 Mins
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Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	26	0:40(h:m)	3	1/3
DI & Reasoning	24	0:40(h:m)	3	1/3
Quantitative Ability	26	0:40(h:m)	3	1/3

**Section : Verbal Ability**


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**QNo:- 1 ,Correct Answer:- A**

**Explanation:-** Options B, C and D find support in paragraph 4, 3 and 1 respectively. Only option A does not find mention in the passage.

**QNo:- 2 ,Correct Answer:- B**

**Explanation:-** Indignant means showing anger or annoyance

Analytical means logical

Facetious meaning sarcasm.

The author's views in the given sentence do not support any of the above.

Rather he is giving reasons to why the people indulge in piracy, so IRONIC is appropriate.

**QNo:- 3 ,Correct Answer:- D**

**Explanation:-** Option A is rejected because he has just mentioned them as examples and not those who laid foundation of piracy.

Option B is rejected as it is opposite to what is mentioned in 2<sup>nd</sup> paragraph.

Option C is eliminated as the paragraph talks about disorganised people and not piracy.

Only option D brings in the meaning of the sentence(i.e. acquisition of wealth)

**QNo:- 4 ,Correct Answer:- C**

**Explanation:-** Everything else is rejected by the author (refer penultimate paragraph) and only option C could help to bring piracy under control in the long run

**QNo:- 5 ,Correct Answer:- A**

**Explanation:-** Refer to the line "for some climate activists----- access to energy". So option A is correct.

**QNo:- 6 ,Correct Answer:- D**

**Explanation:-** Negative impacts of renewable energy need to be studied to ensure no social or environmental harm. Hence option D is the answer.

**QNo:- 7 ,Correct Answer:- D**

**Explanation:-** The author's reservation is about different consequences of renewable energy systems on environment, profitability etc. hence option D is the answer.

**QNo:- 8 ,Correct Answer:- B**

**Explanation:-** According to the last paragraph, there are pros as well as con to look after before going ahead with the development of renewable energy, hence option B is correct.

**QNo:- 9 ,Correct Answer:- C**

**Explanation:-** Throughout the passage, the author is majorly concerned about developing renewable systems of energy to reduce carbon footprint and the disposal of toxic waste globally, hence option C is correct.

**QNo:- 10 ,Correct Answer:- C**

**Explanation:-** Options A, B and D are illogical, only C can be interpreted.

**QNo:- 11 ,Correct Answer:- D**

**Explanation:-** Options A, B and C find support in paragraph 1, 4 and last respectively. Only option D cannot be inferred because not only institutional structure, but a number of other factors need to be considered that help to study visual culture.

**QNo:- 12 ,Correct Answer:- B**

**Explanation:-** Only option B conveys the correct interpretation of the given sentence. The idea is sight or vision becomes the meaningful visual experience. Rest of the options distort the main idea by putting focus on images, meaningful convenants or images of convenants being the base of visual experience which is wrong.

**QNo:- 13 ,Correct Answer:- A**

**Explanation:-** If we scan the passage from paragraph, 2 till the end, we can find the proper order of the words. First is IMAGERY, second is VISUAL PRACTICES, third is LIFEWORLDS, fourth is STRUCTURES OF PERCEPTION. Hence option A.

**QNo:- 14 ,Correct Answer:- D**

**Explanation:-** EPIPHENOMENA means a secondary effect or by-product of some event or condition, so option D is bringing the correct meaning.

**QNo:- 15 ,Correct Answer:- D**

**Explanation:-** 2<sup>nd</sup> line of para 1 supports option A

6<sup>th</sup> line of para 2 supports option B

5<sup>th</sup> line of para 2 supports option C

Whatever is mentioned as option D is opposite to the contents of the passage, hence the answer.

**QNo:- 16 ,Correct Answer:- D**

**Explanation:-** The answer is clearly mentioned in the last lines of 1<sup>st</sup> para. Hence option D.

**QNo:- 17 ,Correct Answer:- D**

**Explanation:-** Options A, B and C find mention in 2<sup>nd</sup> paragraph. But option D states opposite to the 4<sup>th</sup> line of 2<sup>nd</sup> para, hence the answer.

**QNo:- 18 ,Correct Answer:- A**

**Explanation:-** The example is used by the author to explain a different type of aggression and not the type of torture inflicted on the enemy with the motive to extract any information as depicted in options B, C and D. The best explanation is given in option A.

**QNo:- 19 ,Correct Answer:- 2413**

**Explanation:-** Sentence 2 opens the paragraph as it introduces the topic.

Sentence 4 gives further explanation to 2 and its contrast is given in 1.

The paragraph concludes with 3.

So the sequence is **2413**

**QNo:- 20 ,Correct Answer:- 4**

**Explanation:-** The sentences 5231 seem to form a sequence.

The 'questions' that arose in 4 seem to be from the same article but a link is missing to put 4 in the above sequence because we can't identify how the 'charitable questions' came up.

Hence **sentence 4** is the misfit

**QNo:- 21 ,Correct Answer:- 2143**

**Explanation:-** Sentence 2 introduces the topic VLT.

The pronoun 'it' in 1 pairs with 2 (noun-pronoun pair)

4 describes further the functioning of VLT (key word 'these')

Finally 3 closes the paragraph.

So the sequence is **2143**

**QNo:- 22 ,Correct Answer:- 1342**

**Explanation:-** Sentence 1 opens the paragraph by introducing the topic (your brain is aware of all changes going around)

Sentence 3 comes next in sequence (keyword "it" referring to brain)

Sentence 4 further explains 3

Sentence 2 concludes the paragraph.

The final sequence is **1342**

**QNo:- 23 ,Correct Answer:- C**

**Explanation:-** We can conveniently eliminate options A and B as they focus on single aspect of the paragraph.

Option D, though specifies both aspects, is eliminated because it is not the matter of time that is considered to differentiate between both types of decision-making.

Only **option C** accurately captures the essence of the paragraph.

**QNo:- 24 ,Correct Answer:- D**

**Explanation:-** Options A and C are rejected because of the usage of 'voluntary desires' or 'voluntary surrender of rights' of people, rather it was a transactional relationship between people and sovereign state as the same is aptly presented in **option D**.

Option B is opposite to the contents of the paragraph, hence eliminated.

**QNo:- 25 ,Correct Answer:- 2**

**Explanation:-** The correct sequence is 3154

Whereas in 2, altogether a different aspect (merchant capitalism) is taken which finds reference in none of the other sentences.

Although the other sentence talk about the beginning of the end of capitalism and also discuss new ways of working and sharing economy, but merchant capitalism is misfit here.

Hence **sentence 2** is the misfit.

**QNo:- 26 ,Correct Answer:- B**

**Explanation:-** Option C is eliminated because the paragraph does not mention that current methodologies are irrelevant.

Option D is rejected as combination of criteria is also important for interpretation of city's functions.

Option A seems close but missed the aspect of human judgement, hence rejected.

**Option B** captures the summarized essence of the paragraph.

**Section : DI & Reasoning**
**QNo:- 27 ,Correct Answer:- 2,9**

**Explanation:-** If we have to use 2 colors, then those two colors have to be Blue and Green only, because if red color is used, then there has to be at least one green and one blue between any two beads. There are two possible configurations if exactly 2 colors are used. Diagrams are shown below:

**A**

BLUE	GREEN	BLUE	GREEN	BLUE
GREEN	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	BLUE
GREEN	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	BLUE

**B**

GREEN	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	BLUE
GREEN	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	BLUE
GREEN	BLUE	GREEN	BLUE	GREEN

**QNo:- 28 ,Correct Answer:- 9,6**

**Explanation:-** Maximum number of red beads can appear only when we minimize Blue and Green colored beads. The arrangement is as given below:

RED	GREEN	BLUE	RED	GREEN
GREEN	RED	GREEN	BLUE	RED
BLUE	GREEN	RED	GREEN	BLUE
RED	BLUE	GREEN	RED	GREEN
GREEN	RED	BLUE	GREEN	RED

So we can see that there are 9 Red colored beads in the above arrangement.

**QNo:- 29 ,Correct Answer:- 6**

**Explanation:-** Minimum number of blue beads can appear only when we maximize Red and Green colored beads. The arrangement is as given below:

RED	GREEN	BLUE	RED	GREEN
GREEN	RED	GREEN	BLUE	RED
BLUE	GREEN	RED	GREEN	BLUE
RED	BLUE	GREEN	RED	GREEN
GREEN	RED	BLUE	GREEN	RED

So we can see that there are 6 Blue colored beads in the above arrangement.

**QNo:- 30 ,Correct Answer:- 6**

**Explanation:-** We will make the arrangement as given in the question:

RED	RED
RED	
RED	RED
RED	RED
RED	

Now we can see that there will be maximum 6 red colored beads which satisfy the given arrangement.

**QNo:- 31 ,Correct Answer:- B**

**Explanation:-** From 1, Economics is at scheduled at each slot

From 2, Only A is scheduled at 10 so it has to be Economics and guided by R

From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.

From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

From the above information only two would be in 1<sup>st</sup> slot

**QNo:- 32 ,Correct Answer:- A**

**Explanation:-** From 1, Economics is at scheduled at each slot

From 2, Only A is scheduled at 10 so it has to be Economics and guided by R

From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.

From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

Economics are guided by R and T. So ans. is Option 1

**QNo:- 33 ,Correct Answer:- B**

**Explanation:-** From 1, Economics is at scheduled at each slot

From 2, Only A is scheduled at 10 so it has to be Economics and guided by R

From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.

From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

From the above information H is an Economics student.

**QNo:- 34 ,Correct Answer:- B**

**Explanation:-** From 1, Economics is at scheduled at each slot

From 2, Only A is scheduled at 10 so it has to be Economics and guided by R

From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.

From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

If D is scheduled later than Q then, Q will be at 9:30 and He will guide G and S will guide F. R will guide D at 10:30. E and H will be guided by T. So ans is option 2

**QNo:- 35 ,Correct Answer:- A**

**Explanation:-** From 1, Economics is at scheduled at each slot

From 2, Only A is scheduled at 10 so it has to be Economics and guided by R

From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.

From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

If E and Q are in same slot then it will be 9:30 or at 10:30

If E will be guided by R then D and H will be guided by T, and if E will be guided by T then one of D and H will be guided by T

So At least one of D and H is guided by T

So ans. will be 1<sup>st</sup> option

**QNo:- 36 ,Correct Answer:- D**

**Explanation:-** From 1, Economics is at scheduled at each slot

From 2, Only A is scheduled at 10 so it has to be Economics and guided by R

From 5, 6 and 7 B,G and C are having seminar on Sociology. B and C are guided by P and having seminar in first two slots so C will be at 9, B and G will be at 9:30 and 1 student from economics guided by T will be also be at 9:30. R cannot be at 9 because Students who are guided by the same guide must be scheduled in consecutive slots.

From 3, F is at 10:30, so at 9:30, 3 students are there and at 9 am, C and 1 more student having economics would be there, at 10 am only 1 student would be there. At 10:30 2 students one having economics and other having anthropology would be there.

From the information given we can draw following table

Name	Subject	Time	Guide
A	Economics	10 am	R
B	Sociology	9:30 am	P
C	Sociology	9 am	P
D	Economics		R/T
E	Economics		R/T
F	Anthropology	10:30 am	S/Q
G	Sociology	9:30 am	S/Q
H	Economics		R/T

If D is immediately before Q then Q is at 9:30 and D is at 9 that means F if guided by S at 10:30, G is guided by Q, D and E can be guided by R/T

So ans is option 4

**QNo:- 37 ,Correct Answer:- 9,11**

**Explanation:-**

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000		37500	
Second runner up	(85000)		30000	
% of votes by Third runner up			10%	

Votes got by Second runner up from A= 95000-10000= 85000

Votes got by the candidates who lost their security deposits= 500000-275000-95000-85000= 45000

$$\text{Required \%} = \frac{45000}{500000} \times 100 = 9\%$$

**QNo:- 38 ,Correct Answer:- 11**

**Explanation:-**

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000		37500	
Second runner up	(85000)		30000	
% of votes by Third runner up			10%	

$$\text{In constituency B winner got} = \frac{48750}{325000} \times 100 = 15\%$$

So all the candidates except the winner lose their security deposit because they got less than 1/6 of the total valid votes.

So ans is  $12 - 1 = 11$

**QNo:- 39 ,Correct Answer:- D**

**Explanation:-**

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000		37500	
Second runner up	(85000)		30000	
% of votes by Third runner up			10%	

All candidates should got more than 1/6<sup>th</sup> of the total valid votes which is

$$\frac{600030}{6} = 100005$$

Suppose winner got =  $x$  votes, and if we assume that each candidate got 10000 less votes than previous candidate

Then A.T.Q

$$= x + x - 10000 + x - 20000 + x - 30000 + x - 40000 = 600030$$

Then  $x = 140006$

So ans is option 4

**QNo:- 40 ,Correct Answer:- A**

**Explanation:-**

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000		37500	
Second runner up	(85000)		30000	
% of votes by Third runner up			10%	

Let the valid votes in constituency D=  $x$

1<sup>st</sup> runner up got = 37500

Winner got  $37500 + .05x$

2<sup>nd</sup> runner up got 30000 votes and the remaining candidates loose their security so

A.T.Q

$$37500 + .05x + 37500 + 30000 = 0.65x$$

So  $x = 175000$

So ans is 1<sup>st</sup> option

**QNo:- 41 ,Correct Answer:- A**

**Explanation:-**

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000		37500	
Second runner up	(85000)		30000	
% of votes by Third runner up			10%	

Winning margin in constituency D =  $.05 \times 175000 = 8750$

Winning margin of C is atleast 10000 that means margin of C is greater than D

So option 1 is wrong.

**QNo:- 42 ,Correct Answer:- A**

**Explanation:-**

	A	B	C	D
Number of candidates	10	12	5	8
Total valid votes	500000	325000	600030	
Winning candidate	275000	48750		
First runner up	95000		37500	
Second runner up	(85000)		30000	
% of votes by Third runner up			10%	

$$\text{Total votes} = 500000 + 325000 + 600030 + 175000 = 1600030$$

In A ( 500000-275000-95000-85000) = 45000 votes were polled to the candidates who lost their security

In B, All candidates except the winner lost their security which is equal to 325000- 48750= 276250

In C, no one lost the security

In D, 35% of 175000= 61250 votes are polled to the candidates who lost their security

Total votes polled to the candidates who lost their security =  $45000+276250+61250= 382500$

$$\text{Required \%} = \frac{382500}{1600030} \times 100 = 23.91\%$$

So answer is option 1

**QNo:- 43 ,Correct Answer:- B**

**Explanation:-** We have the following incomplete table which can be filled with different letters as per the condition given.

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	x	y	y	c	y	b	x	54
Electronics	78	98	82	102	90	70	80	100
Home decor		100	a	72		80	a	54

In last point it is given that  $y, 54$  and  $b$  are A. P.  $\Rightarrow bb + y = 108$  ----(1)

The total of electronics dept. In 2018 = 330cr

Total of electronics dept. in 2019 = 370cr

Incase are in sales in 2019 as compare to 2018 is 40 cr

As per the point 4, we have

$$(y + c + b + 54) - (x + y + y + x) = 40$$

$$\Rightarrow b + c + 54 - y - 2x = 40$$

$$\Rightarrow 2x + y - b - c = 14 \quad \text{---(2)}$$

$$\text{From 7, we have} \quad y - x = b - y$$

$$\Rightarrow b = 2y - x \quad \text{---(3)}$$

$$\& \quad c - y = 54 - x$$

$$\Rightarrow c = 54 + y - x \quad \text{---(4)}$$

Using (3) & (4) in (2) we get  $2x + y - 2y + x - 54 - y + x = 14$

$$\Rightarrow 4x - 2y = 68$$

$$\Rightarrow 2x - y = 34 \quad \text{---(5)}$$

Using (3) in (1), we get,  $3y - x = 108$  ---(6)

Solve (5) & 6, to get  $y = 50, x = 42$

$$\therefore (3) \Rightarrow b = 58$$

$$(4) \Rightarrow c = 62$$

Total sale of Home décor increased by Rs 70 cr. Using point 6, we can say that sale of Home décor in Delhi in 2018 is Rs 80 cr & in Bengaluru in 2018 is Rs 60 Cr.

Now  $72 - a + 54 - a = 30$

$$\Rightarrow 2a = 96 \Rightarrow a = 48$$

Hence the final table is as below

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	42	50	50	62	50	58	42	54
Electronics	78	98	82	102	90	70	80	100
Home decor	80	100	48	72	60	80	48	54

In Home décor, Delhi has maximum sales in 2018 & 2019.

**QNo:- 44 ,Correct Answer:- D**

**Explanation:-** We have the following incomplete table which can be filled with different letters as per the condition given.

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	x	y	y	c	y	b	x	54
Electronics	78	98	82	102	90	70	80	100
Home decor		100	a	72		80	a	54

In last point it is given that  $y$ , 54 and  $b$  are A. P.  $\Rightarrow bb + y = 108$  ----(1)

The total of electronics dept. In 2018 = 330cr

Total of electronics dept. in 2019 = 370cr

Incase are in sales in 2019 as compare to 2018 is 40 cr

As per the point 4, we have

$$(y + c + b + 54) - (x + y + y + x) = 40$$

$$\Rightarrow b + c + 54 - y - 2x = 40$$

$$\Rightarrow 2x + y - b - c = 14 \quad \text{---(2)}$$

$$\text{From 7, we have} \quad y - x = b - y$$

$$\Rightarrow b = 2y - x \quad \text{---(3)}$$

$$\& \quad c - y = 54 - x$$

$$\Rightarrow c = 54 + y - x \quad \text{---(4)}$$

Using (3) & (4) in (2) we get  $2x + y - 2y + x - 54 - y + x = 14$

$$\Rightarrow 4x - 2y = 68$$

$$\Rightarrow 2x - y = 34 \quad \text{---(5)}$$

Using (3) in (1), we get,  $3y - x = 108$  ---(6)

Solve (5) & 6, to get  $y = 50$ ,  $x = 42$

$$\therefore (3) \Rightarrow b = 58$$

$$(4) \Rightarrow c = 62$$

Total sale of Home décor increased by Rs 70 cr. Using point 6, we can say that sale of Home décor in Delhi in 2018 is Rs 80 cr & in Bengaluru in 2018 is Rs 60 Cr.

Now  $72 - a + 54 - a = 30$

$$\Rightarrow 2a = 96 \Rightarrow a = 48$$

Hence the final table is as below

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	42	50	50	62	50	58	42	54
Electronics	78	98	82	102	90	70	80	100
Home decor	80	100	48	72	60	80	48	54

In Mumbai, the sales of Apparel dept. Increased by Rs. 12 cr.

**QNo:- 45 ,Correct Answer:- B**

**Explanation:-** We have the following incomplete table which can be filled with different letters as per the condition given.

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	x	y	y	c	y	b	x	54
Electronics	78	98	82	102	90	70	80	100
Home decor		100	a	72		80	a	54

In last point it is given that  $y, 54$  and  $b$  are A. P.  $\Rightarrow bb + y = 108$  ----(1)

The total of electronics dept. In 2018 = 330cr

Total of electronics dept. in 2019 = 370cr

Incase are in sales in 2019 as compare to 2018 is 40 cr

As per the point 4, we have

$$(y + c + b + 54) - (x + y + y + x) = 40$$

$$\Rightarrow b + c + 54 - y - 2x = 40$$

$$\Rightarrow 2x + y - b - c = 14 \quad \text{---(2)}$$

$$\text{From 7, we have} \quad y - x = b - y$$

$$\Rightarrow b = 2y - x \quad \text{---(3)}$$

$$\& \quad c - y = 54 - x$$

$$\Rightarrow c = 54 + y - x \quad \text{---(4)}$$

Using (3) & (4) in (2) we get  $2x + y - 2y + x - 54 - y + x = 14$

$$\Rightarrow 4x - 2y = 68$$

$$\Rightarrow 2x - y = 34 \quad \text{---(5)}$$

Using (3) in (1), we get,  $3y - x = 108$  ---(6)

Solve (5) & 6, to get  $y = 50, x = 42$

$$\therefore (3) \Rightarrow b = 58$$

$$(4) \Rightarrow c = 62$$

Total sale of Home décor increased by Rs 70 cr. Using point 6, we can say that sale of Home décor in Delhi in 2018 is Rs 80 cr & in Bengaluru in 2018 is Rs 60 Cr.

Now  $72 - a + 54 - a = 30$

$$\Rightarrow 2a = 96 \Rightarrow a = 48$$

Hence the final table is as below

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Apparels	42	50	50	62	50	58	42	54
Electronics	78	98	82	102	90	70	80	100
Home decor	80	100	48	72	60	80	48	54

The max % increase is 50% for Mumbai in Home décor dept.

**QNo:- 46 ,Correct Answer:- D**

**Explanation:-** We have the following incomplete table which can be filled with different letters as per the condition given.

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	x	y	y	c	y	b	x	54
Electronics	78	98	82	102	90	70	80	100
Home decor		100	a	72		80	a	54

In last point it is given that  $y$ , 54 and  $b$  are A. P.  $\Rightarrow bb + y = 108$  ----(1)

The total of electronics dept. In 2018 = 330cr

Total of electronics dept. in 2019 = 370cr

Incase are in sales in 2019 as compare to 2018 is 40 cr

As per the point 4, we have

$$(y + c + b + 54) - (x + y + y + x) = 40$$

$$\Rightarrow b + c + 54 - y - 2x = 40$$

$$\Rightarrow 2x + y - b - c = 14 \quad \text{---(2)}$$

$$\text{From 7, we have} \quad y - x = b - y$$

$$\Rightarrow b = 2y - x \quad \text{---(3)}$$

$$\& \quad c - y = 54 - x$$

$$\Rightarrow c = 54 + y - x \quad \text{---(4)}$$

Using (3) & (4) in (2) we get  $2x + y - 2y + x - 54 - y + x = 14$

$$\Rightarrow 4x - 2y = 68$$

$$\Rightarrow 2x - y = 34 \quad \text{---(5)}$$

Using (3) in (1), we get,  $3y - x = 108$  ---(6)

Solve (5) & 6, to get  $y = 50$ ,  $x = 42$

$$\therefore (3) \Rightarrow b = 58$$

$$(4) \Rightarrow c = 62$$

Total sale of Home décor increased by Rs 70 cr. Using point 6, we can say that sale of Home décor in Delhi in 2018 is Rs 80 cr & in Bengaluru in 2018 is Rs 60 Cr.

Now  $72 - a + 54 - a = 30$

$$\Rightarrow 2a = 96 \Rightarrow a = 48$$

Hence the final table is as below

	Delhi		Mumbai		Bengaluru		Kolkata	
	2018	2019	2018	2019	2018	2019	2018	2019
Apparels	42	50	50	62	50	58	42	54
Electronics	78	98	82	102	90	70	80	100
Home decor	80	100	48	72	60	80	48	54

The total sales of all dept. In 2019 is Rs. 900 crore

**QNo:- 47 ,Correct Answer:- C**

**Explanation:-** The initial cars are 1, 2, 3, 4, when car 1 leaves, we have the arrangement

V V 2 3 4

Now car 5 (a compact car) and car 6 (an SUV) came. So arrangement is

5 V 2 3 4 6

Now car 4 left, we have the arrangement

5 V 2 3 V V 6

Now car 7 (an SUV) and car 8 (a compact car) arrived, so final arrangement is 5, 8, 2, 3, 7, 6. Hence car number 7 is parked next to car 3.

**QNo:- 48 ,Correct Answer:- A**

**Explanation:-** As per the options, car 1 & car 4 left as Car 8 is the last car to arrive, so it should be either at 1<sup>st</sup> position or the last position. So option 3 is wrong.

In option 2, the position of car 4 is vacant. If car 5 arrived after car 4 left, then it should have been next to car 3. If car 4 left after the car 5 arrived, then car 5 should be next to V. in any case, car 5 cannot be after car 6. Hence option 2 is wrong.

In option 4, it is clear that car 4 left after car 5 arrived. So car next to car 5 should be car 6. Hence it is wrong.  
Only option 1 is true where car 4 left after car 5 arrived.

**QNo:- 49 ,Correct Answer:- A**

**Explanation:-** Total cars arrived here are 6 and car 3 is placed in the end. It is possible if cars 1 & 2 are SUV, then we have the arrangement 1 2 3

Now cars 1 & 2 left, then the arrangement is V V V V 3

After that the cars 4, 5, 6 arrived in order so that the final arrangement is. 4 5 6 V 3

Hence cars 4 & 5 are compact & car 1 is an SUV. but we cannot say about car 3, whether it is an SUV or a compact car.

**QNo:- 50 ,Correct Answer:- C**

**Explanation:-** The original order is 1 2 3 4 5. Now car 6 is at the place of car 4 and car 4 is not the first one to leave. So either car 1 & car 2 will leave first.

If we assume that the first car left is car 1, then as car 2 is also leaving, so car 7 will take the first position. So first position cannot be empty.

Hence car 2 is the one which left at the first place and after it car 4 left.

So we have following possibilities.

1 V 3 V 5 or 1 V 3 V V 5

Car 2 is not an SUV because in that case, car 6 will be next to car 1.

Also car 6 is not compact otherwise, it will be again next to car 1. So car 6 is an SUV and we have the order 1 V 3 6 5

Now car 7 came which is compact and order is 1 7 3 6 5. After that the car 1 left to give the final order as V 7 3 6 5

**Section : Quantitative Ability**

**QNo:- 51 ,Correct Answer:- 800**

**Explanation:-** Given that Amal : Sunil = 3 : 2.

Also, Sunil : Mita = 4 : 5

On combining the ratio we get Amal : Sunil : Mita = 6 : 4 : 5

So, let their shares be  $6x$ ,  $4x$  and  $5x$

According to the question  $6x - 4x = 400$

$$2x = 400$$

$$x = 200$$

$$\text{So, Sunil's share} = 4x = 4 \times 200 = 800$$

**QNo:- 52 ,Correct Answer:- 17,17**

**Explanation:-**  $2x + 5y = 99$  also it is given that  $x \geq y \geq -20$

So, possible cases are

x	y	x	y
47	1	52	-1
42	3	57	-3
37	5	62	-5
32	7	67	-7
27	9	72	-9
22	11	77	-11
17	13	82	-13
		87	-15
		92	-17
		97	-19

So, total 17 cases are there

**QNo:- 53 ,Correct Answer:- C**

**Explanation:-**  $(x^2 - 5x + 7)^{x+1} = 1$

For R.H.S to be 1, we must have  $x^2 - 5x = -6$

$$x^2 - 5x + 6 = 0$$

On solving, we get  $x = 2, 3$  (2 values)

Also, we must have  $a^0 = 1$

So,  $x + 1 = 0$  i.e.  $x = -1$  (1 value) also satisfies.

Hence answer is 3.

**QNo:- 54 ,Correct Answer:- 90000**

**Explanation:-** Let the principal = 8000

So, simple interest for 3 years @ 3% per annum = Rs.720

Compound interest for 2 years @ 5% per annum = Rs.820

Difference = Rs.100

So, using unitary method

When difference is 100 principal is 8000

When difference is 1125 principal is 90000

**QNo:- 55 ,Correct Answer:- B**

**Explanation:-** Let the cost of pencil is Rs.  $x$  and of sharpener is Rs.  $(x+2)$

Let Aron bought ' $a$ ' pencils & ' $b$ ' sharpeners.

Aditya bought ' $2a$ ' pencils & ' $b - 10$ ' sharpeners.

$$\text{Now, } ax + b(x+2) = 2ax + (b-10)(x+2)$$

$$ax + bx + 2b = 2ax + bx + 2b - 10x - 20$$

$$ax - 10x = 20$$

$$a - 10 = 20/x$$

$$a = 20/x + 10$$

Now ' $a$ ' is minimum when ' $x$ ' is maximum i.e.  $x = 20$

$$\text{Minimum } a = 20/20 + 10 = 11$$

$$\text{Total pencils} = 3a = 3 \times 11 = 33$$

**QNo:- 56 ,Correct Answer:- A**

**Explanation:-** Given that John had spent Rs.450 in April and it is being given that in May price of rice is increased by 20%. So, price of rice is increased by 90 (20% of 450). And it is given that in May he had Rs.150 more out of which 90 is for rice. So, for wheat he had spend Rs.60 more ( $150 - 90$ ).

12% of original price in April = 60

100% of original price in April = 500.

So, he spend on wheat in may =  $500 + 12\% \text{ of } 500 = 560$

**QNo:- 57 ,Correct Answer:- 315,2704**

**Explanation:-** Case I: When 7 is at first place then 3 can be any of the three places

$$= 1 \times 1 \times 8 \times 7 + 1 \times 8 \times 1 \times 7 + 1 \times 8 \times 7 \times 1 = 168$$

Case II: When 3 is at the last place

$$= 7 \times 1 \times 7 \times 1 + 7 \times 7 \times 1 \times 1 = 98$$

Case III: When both 7 and 3 are in middle places

$$= 7 \times 1 \times 1 \times 7 = 49$$

$$\text{So, total cases} = 168 + 98 + 49 = 315$$

**QNo:- 58 ,Correct Answer:- 2704**

**Explanation:-** Since we need to find the minimum value and as we know that minimum value will occur when we have symmetry. So, as  $x + y = 102$ . We have  $x = 51$  and  $y = 51$ .

$$\text{So, the minimum possible value of } 2601(1 + 1/x)(1 + 1/y) = 2704$$

**QNo:- 59 ,Correct Answer:- C**

**Explanation:-**  $x^2 - 2|x| + |a-2| = 0 \quad \dots(1)$

Case I:  $x \geq 0 \text{ & } a \geq 2$

$$x^2 - 2x + a - 2 = 0$$

For  $D \geq 0 \Rightarrow 4 - 4(a-2) \geq 0 \Rightarrow 1 - (a-2) \geq 0$

$$\Rightarrow 1 - a + 2 \geq 0 \Rightarrow a \leq 3$$

Therefore  $a = 2, 3$

If  $a = 2$ , eq"(1) becomes

$$x^2 - 2x = 0 \Rightarrow x = 0, 2$$

Therefore,  $(0, 2), (2, 0)$  are possible pairs.

If  $a = 3$ , eq"(1) becomes  $x^2 - 2x + 1 = 0 \Rightarrow x = 1$

So  $(1, 3)$  is possible pair.

Case II:  $x \geq 0, a < 2$

$$x^2 - 2x - (a-2) = 0$$

For  $D \geq 0 \Rightarrow 4 + 4(a-2) \geq 0$

$$\Rightarrow 1 + a - 2 \geq 0$$

$$\Rightarrow a - 1 \geq 0 \Rightarrow a \geq 1$$

$$\Rightarrow a = 1$$

When  $a = 1$ , eq"(1) becomes  $x^2 - 2x + 1 = 0 \Rightarrow x = 1$

Therefore  $(1, 1)$  is possible pair.

Case III: If  $x < 0, a \geq 2$

$$x^2 + 2x + a - 2 = 0$$

For  $D \geq 0 \Rightarrow 4 - 4(a-2) \geq 0$

$$1 - a + 2 \geq 0 \Rightarrow a \leq 3$$

$$\Rightarrow a = 2, 3$$

If  $a = 2$ , eq"(1) becomes  $x^2 + 2x = 0 \Rightarrow x = 0, -2$

Therefore  $(0, 2)$  and  $(-2, 2)$  is pair

If  $a = 3$ , eq"(1) becomes  $x^2 + 2x + 1 = 0 \Rightarrow (x+1)^2 = 0 \Rightarrow x = -1$

Therefore  $(-1, 3)$  is possible pair.

Case IV: If  $x < 0, a < 2$

$$x^2 + 2x - (a-2) = 0$$

For  $D \geq 0 \Rightarrow 4 + 4(a-2) \geq 0$

$$1 + a - 2 \geq 0 \Rightarrow a \geq 1$$

Therefore,  $a = 1$

Eq"(1) becomes  $x^2 + 2x + 1 = 0 \Rightarrow x = -1$

Therefore  $(-1, 1)$  is possible pair.

There are 7 such pairs of integers as follows

(0, 2)

(2, 2)

(1, 3)

(1, 1)

(-2, 2)

(-1, 3)

(-1, 1)

**QNo:- 60 ,Correct Answer:- C**

**Explanation:-** Ratio of time taken by Ram and Rahim is

$$= 2\pi \times 100 \times 18/15 \times 5 : 2\pi \times 20 \times 18/5 \times 5 \\ = 5:3$$

So, ratio of distance = 3:5

So, answer is 3.

**QNo:- 61 ,Correct Answer:- A**

**Explanation:-**  $f(x) = x^2 + ax + b$  and  $g(x) = f(x+1) - f(x-1)$

$$g(x) = (x+1)^2 + a(x+1) + b - [(x-1)^2 + a(x-1) + b]$$

$$g(x) = x^2 + 2x + 1 + ax + a + b - [x^2 - 2x + 1 + ax - a + b]$$

$$g(x) = x^2 + 2x + 1 + ax + a + b - x^2 + 2x - 1 - ax + a - b$$

$$g(x) = 4x + 2a$$

$$\text{Now, } g(20) = 72 \Rightarrow 4(20) + 2a = 72$$

$$\Rightarrow 2a = -8$$

$$\Rightarrow a = -4$$

$$\therefore f(x) = x^2 - 4x + b$$

$$\text{As } f(x) \geq 0 \Rightarrow D \leq 0$$

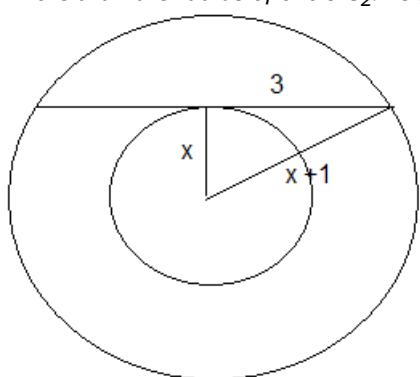
$$16 - 4b \leq 0$$

$$\Rightarrow b \geq 4$$

Therefore smallest value of b is 4.

**QNo:- 62 ,Correct Answer:- 10**

**Explanation:-** If the diameter of circle  $C_1$  is 2 more than the diameter of circle  $C_2$  so we can say that radius of  $C_1$  is 1 more than the radius of circle  $C_2$ . As shown below in the figure,



Now, we can say that it must satisfy Pythagoras property

So,  $x$  will be 4 and  $x+1$  will be 5 i.e. radius of circle  $C_1$  is 5 cm.

So, diameter of circle  $C_1$  is 10 cm.

**QNo:- 63 ,Correct Answer:- D**

**Explanation:-** Let the ratio be  $x$ . So, the dimensions of rectangle is  $x$  and  $3x$  and let the side of equilateral triangle be ' $a$ '

$$\text{Perimeter of rectangle} = 2(x + 3x) = 8x$$

$$\text{Perimeter of equilateral triangle} = 3a$$

According to the question:

$$3a + 8x = 90 \quad (1)$$

Also, given that relation  $R = T^2$ , where  $R$  is area of rectangle and  $T$  is area of equilateral triangle

So, we have

$$3x^2 = (\sqrt{3}/4 a^2)^2$$

$$x = a^2/4$$

Substituting  $x$  in eq"(1), we have

$$2a^2 + 3a - 90 = 0$$

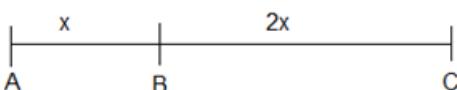
On solving, we get  $a = 6$

Hence,  $x = 9$

So, longer side of rectangle =  $3x = 3 \times 9 = 27$

**QNo:- 64 ,Correct Answer:- C**

**Explanation:-** Let the distance between  $AB = x$  and  $BC = 2x$



Let speed of train 1 be ' $y$ ' and speed of train 2 be ' $2y$ '

As we know, Time = Distance/Speed

For A to B:

For Train 1 time =  $x/y$  and For Train 2 time =  $3x/2y$

For B to C:

For Train 1 time =  $x/2y$  and For Train 2 time =  $3x/y$

So, total time =  $[x/y + 3x/2y]/[x/2y + 3x/y] = 5x/7x$

So, time taken by train1 to that taken by train 2 in travelling from A to C is 5:7

**QNo:- 65 ,Correct Answer:- C**

**Explanation:-** Difference between highest number – Lowest number =  $9 \times 47 - 9 \times 42 = 45$

Maximum possible value of highest number =  $42 + 45 = 87$

Minimum possible value of lowest number =  $47 - 45 = 2$

So, Maximum possible mean =  $[42 \times 9 + 87]/10 = 46.5$

Minimum possible mean =  $[47 \times 9 + 2]/10 = 42.5$

Required difference =  $46.5 - 42.5 = 4$

**QNo:- 66 ,Correct Answer:- A**

**Explanation:-** Let 'a', 'r' be the first term and common ratio respectively.

Given that  $m^{\text{th}}$  term =  $\frac{3}{4}$

$$a r^{m-1} = \frac{3}{4} \quad (1)$$

Also,  $n^{\text{th}}$  term = 12

$$a r^{n-1} = 12 \quad (2)$$

Dividing (2) by (1), we have

$$a r^{n-1} / a r^{m-1} = 12 / (3/4)$$

$$r^{n-m} = 16$$

Now, for minimum value of  $r + n - m$ , we have

$$r = -4 \text{ and } n - m = 2$$

$$\text{Smallest possible value of } r + n - m = -4 + 2 = -2$$

**QNo:- 67 ,Correct Answer:- B**

**Explanation:-** As we know that if two objects P and Q start at the same time in opposite direction from point A and B respectively. After passing each other, P reaches B in  $x$  seconds and Q reaches A in  $y$  seconds then,

Speed of P: Speed of Q =  $\sqrt{b} : \sqrt{a}$

So, Ram's speed : Rahim's speed =  $\sqrt{4} : \sqrt{1} = 2 : 1$

**QNo:- 68 ,Correct Answer:- D**

**Explanation:-** Let A travels =  $x$

B travels =  $x - 45$

C travels =  $x - 90$

So, when B covers  $(x - 45)$  then C covers  $(x - 90)$

When B covers  $x = (x - 90)/(x - 45) \times x = (x - 50)$

On solving, we get  $x = 450$

**QNo:- 69 ,Correct Answer:- D**

**Explanation:-** Let the side of equilateral triangle = 'a'

As we know area of equilateral triangle  $\Delta ABC$

$$= \sqrt{3}/4 (\text{Side})^2 = \sqrt{3}/4 (a)^2 \quad (1)$$

Also, we have  $PO + OQ + OR = s$  (Given)

$$\text{Area of } \Delta OAB = \frac{1}{2} \times AB \times OP = \frac{1}{2} \times a \times OP$$

$$\text{Area of } \Delta OBC = \frac{1}{2} \times BC \times OQ = \frac{1}{2} \times a \times OQ$$

$$\text{Area of } \Delta OAC = \frac{1}{2} \times AC \times OR = \frac{1}{2} \times a \times OR$$

$$\text{Area of } \Delta ABC = \text{Area of } \Delta OAB + \text{Area of } \Delta OBC + \text{Area of } \Delta OAC$$

$$= \frac{1}{2} \times a \times OP + \frac{1}{2} \times a \times OQ + \frac{1}{2} \times a \times OR$$

$$= \frac{1}{2} \times a \times (OP + OQ + OR)$$

$$= \frac{1}{2} \times a \times s \quad (2)$$

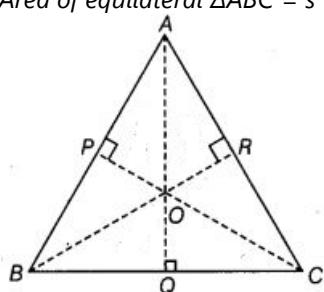
Equating (1) and (2), we have

$$\sqrt{3}/4 a^2 = \frac{1}{2} \times a \times s$$

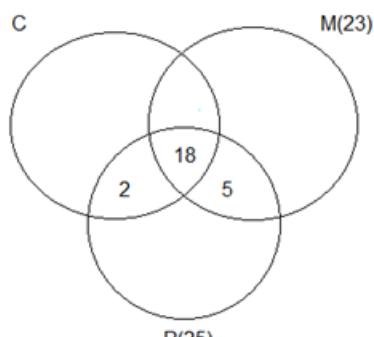
$$a = 2s/\sqrt{3}$$

Substituting, value of 'a' in equation (1), we have

$$\text{Area of equilateral } \Delta ABC = s^2/\sqrt{3}$$



**QNo:- 70 ,Correct Answer:- C**



**Explanation:-**

As the no. of students who have chemistry is minimum, so let 5 students have both Maths and Physics only. So, 2 students with physics will have chemistry also.

$$\text{Therefore, minimum students with chemistry} = 18 + 2 = 20$$

**QNo:- 71 ,Correct Answer:- D**

**Explanation:-** Let  $x$  be the total purchase price of all articles and  $y$  be the marked price of one article.

So, according to the question:

$$8 \times 0.8 \times y + 4 \times 0.75 \times 0.8 \times y = 2112$$

On solving, we get  $y = 240$

Given,  $2112 = 1.10x$

$$x = 1920$$

If no discount is given, then  $12 \times 240 = 2880$

$$\text{Required \%} = 2880 - 1920 / 1920 = 50\%$$

**QNo:- 72 ,Correct Answer:- A**

**Explanation:-** As we know the minimum value of  $x + 1/x = 2$ . So, the answer will be  $1/\sqrt{2}$ .

**QNo:- 73 ,Correct Answer:- 4**

**Explanation:-** Since John takes twice as much as Jack to finish a job. So, efficiency of John and Jack is 1:2. Also, Jack and Jim together take one-third of the time to finish the job than John. So, efficiency of Jack + Jim and John is 3:1.

So, efficiency of John, Jack and Jim is 1:2:1 respectively.

Now, let all of them together took 'x' days so John alone take  $x + 3$  days.

$$\text{So, } x(1 + 2 + 1) = x + 3$$

On solving, we get  $x = 1$

So, John takes = 4 days, Jack =  $4/2 = 2$  days and Jim = 4 days

**QNo:- 74 ,Correct Answer:- B**

**Explanation:-** Let  $A = \log_a(a/b) + \log_b(b/a)$

$$A = \log_a a - \log_a b + \log_b b - \log_b a$$

$$A = 2 - [\log_a b + \log_b a]$$

$$A = 2 - [\log_a b + 1/\log_a b]$$

Now,  $[\log_a b + 1/\log_a b]$  has minimum value 2.

Therefore, maximum value of  $A = 2 - 2 = 0$

$\Rightarrow A$  cannot take value as 1.

**QNo:- 75 ,Correct Answer:- 23**

**Explanation:-**  $x + 9 = z \quad (1)$

$$y + 1 = z \quad (2)$$

Adding (1) and (2), we get

$$x + y + 10 = 2z$$

$$\Rightarrow x + y = 2z - 10$$

Now,  $x + y < z + 5$

$$2z - 10 < z + 5$$

$$z < 15$$

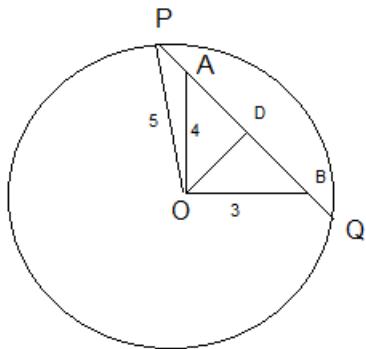
Therefore, Maximum  $z = 14$

From eq"(1), Maximum  $x = z - 9 = 5$

From eq"(2), Maximum  $y = z - 1 = 13$

$$\text{Max.}(2x + y) = 2 \times 5 + 13 = 23$$

QNo:- 76 ,Correct Answer:- A



**Explanation:-**

Here  $OD$  perpendicular to  $PQ$

$$OA = 4, OB = 3$$

$$\Rightarrow AB = 5$$

Now in  $\Delta OAB$

$$1/3 \times 3 \times 4 = 1/2 \times OD \times 5$$

$$OD = 12/5 = 2.4$$

Now, join  $OP$ ,  $\Delta ODP$  is right angled triangle &  $OP = 5$

$$PD = \sqrt{(OP)^2 - (OD)^2} = \sqrt{25 - (2.4)^2} = \sqrt{19.24} = 4.4$$

$$PD = 4.4$$

$$PB = 4.4 \times 2 = 8.8 \text{ m}$$