Instructions
For the following questions answer them individually

Question 1
Select the Venn diagram that best illustrates the relationship between the following classes.
Snakes, Reptiles, Poisonous

A
B
C
D

Answer: D

Explanation:
In given question,
Snakes, Reptiles, Poisonous
Snakes is a kind of reptile animals, few snakes and reptiles are poisonous. Hence the correct relation is given below.

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Question 2
In a code language, COMPUTER is written as OCREPMTU. How will DAUGHTER be written in the same language?

A  ADTHREGU
B  ADERUGTH
Answer: D

Explanation:
As per the given question,
The given pattern the first two letters is exchanging their positions mutually and then same exchange process is happening with the last two terms then again next two terms then again from right two terms, as so on. Which is represented below with the help of diagram.

Question 3
Select the set in which the numbers are related in the same way as are the numbers of the following set.
(8, 12, 24)

A (6, 9, 18)
B (6, 10, 18)
C (9, 18, 27)
D (12, 20, 40)

Answer: A

Explanation:
As per the given question,
In the given pattern (8, 12, 24) - $8 \times 3 = 24$ and $12 \div 2 = 24$
Similarly,
(6,9,18) is following the pattern as per the question's statement,
$6 \times 3 = 18$ and $9 \times 2 = 18$. 

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Question 4

Select the figure that will come next in the following figure series.

A

B

C

D

Answer: B

Explanation:
From the given pattern in the question,

We can conclude that 1, 3 and 5th are following the same pattern and 2, 4 and 6 are following the same pattern.

Hence option B is the correct answer.
Question 5
Select the combination of letters that when sequentially placed in the gaps of the given letter series will complete the bac_cab_cd_a_ac_ca

A  bdabc
B  debac
C  cadbc
D  dacbd

Answer: D

Explanation:
From the given question,
We can see that the given question following a particular pattern, which bacdca
Hence filling the values in the given gap, bac_cab_cd_a_ac_ca
that is bacdca bacdca bacdca bacdca

Question 6
Which two signs should be interchanged in the following equation to make it correct?
10 + 5 ÷ 10 × 8 − 10 = 16

A  × and +
B  − and +
C  ÷ and ×
D  + and ÷

Answer: B

Explanation:
In the given question,
10 + 5 ÷ 10 × 8 − 10 = 16
If we will interchange the + to - and - to +, then
⇒ 10 − 5 ÷ 10 × 8 + 10 = 16
⇒ 10 − 2 × 8 + 10 = 16
Question 7
D is the son of C and the brother of E, who is the niece of F. C is the sister of B and the aunt of A. B's father has two children, a son and a daughter. If A is the son of F, how is F related to C?

A Sister
B Sister-in-law
C Cousin
D Aunt

Answer: B

Explanation:
Hence, from the above statement given in the question, we can conclude that C and F are sister in law.

Question 8
The sequence of folding a piece of square paper (figures X and Y) and the manner in which the folded paper has been cut (figure Z) are shown. How will the paper appear when unfolded?

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Question 8
The sequence of folding a piece of square paper (figures X and Y) and the manner in which the folded paper has been cut (figure Z) are shown. How will the paper appear when unfolded?
Explanation:
As per the given question,

We can see that, when we will open the paper folding, then it will be get the below pattern.

Answer: B

Explanation:
As per the given diagram,

We can see the total number of square can be formed in the given diagram will be 14,
Question 10

Arrange the following words in a logical and meaningful order.
1. Student
2. Job
3. Interview
4. Education
5. Retirement
6. Degree

A 1,5,3,6,4,2
B 5,3,2,1,4,6
C 3,5,4,6,1,2
D 1,4,6,3,2,5

Answer: D

Explanation:
As per the given question,
1. Student
2. Job
3. Interview
4. Education
5. Retirement
6. Degree

Hence the correct order of the given words is below

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Question 11

Two mixtures contain milk and juice in the ratio of 2 : 1 and 4 : 5. If equal volumes of the two mixtures are mixed together, what would be ratio of milk to juice in the resulting mixture?

A 5:4
B 7:5  
C 1:1  
D 5:3  

Answer: A

Explanation:
As per the question,
Container A contains 2 liter of milk and 1 liter juice
And container B contains 4 liter of milk and 5 liter of juice
Now, Let both container have equal quantity which is 9 liter.
So, in the first mixture, 6 liter of milk and 3 liter of juice should be there.
When both will be mixed then total quantity will be 18 liter
out of which 10 liter of milk and 8 liter of juice will be in container.
Hence the required ratio will be 10:8
or 5:4 will be milk and juice in the container.

Question 12
Three of the following four letter-clusters are alike in a certain way and one is different. Pick the odd one out.

A MLNO  
B CBDE  
C RQST  
D FGHJ  

Answer: D

Explanation:
As per the given option,
We can conclude that,
Option D is not following the pattern, hence it is different.

Question 13
Select the number-pair in which the two numbers are related in the same way as are the two numbers of the following number-pair.
7:32

A 3:11
**Answer:** B

**Explanation:**
As per the given pattern in the question,

7 : 32 - 7 \times 4 + 4 = 32

Similarly

13 : 98 - 13 \times 7 + 7 = 98

Hence B is the correct answer.

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**Question 14**
Select the set in which the numbers are related in the same way as are the numbers of the following set.
(5, 13, 12)

A  (13, 17, 11)
B  (6, 10, 8)
C  (11, 15, 9)
D  (15, 19, 13)

**Answer:** B

**Explanation:**
From the given pattern,

(5, 13, 12) - \sqrt{13^2 - 5^2} = 12

Similarly,

(6, 10, 8) - \sqrt{10^2 - 6^2} = 8

**Question 15**
Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.
MNOP : LONQ :: FGHI : ?

A  GFIJ
B  DHGK
C  EHGJ
D  EGHJ

**Answer:** C

**Explanation:**
From the given question we can conclude that is is following some particular pattern.
and the pattern is following as per the given image,
Question 16
If CAB is coded as 6 and BED is coded as 40, then how will HAD be coded as?

A 46  
B 52  
C 32  
D 16

Answer: C

Explanation:
As per the question,
CAB is coded as 6,
As per the English letter sequence, C is the 3rd letter, A is the 1st letter and B is the 2nd letter so \[3 \times 1 \times 2 = 6\]
similarly
BED is coded as 40,
As per the English letter sequence, B is the 2nd letter, E is the 5th letter and D is the 4th letter so \[2 \times 5 \times 4 = 40\]
Hence
HAD will be coded as \[8 \times 1 \times 4 = 32\]

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Question 17
Which number will replace the question mark (?) in the following series?
98, 95, 86, 82, 66, ?, 36

A 63  
B 58  
C 60  
D 61

Answer: D

Explanation:
As per the question,
The given terms is following the a particular pattern.
\[
\begin{align*}
98 & \rightarrow 95 \rightarrow 3^2 \\
95 & \rightarrow 86 \rightarrow 4^2 \\
86 & \rightarrow 82 \rightarrow 6^2 \\
82 & \rightarrow 66 \rightarrow 5^2 \\
66 & \rightarrow 61 \rightarrow 5^2 \\
61 & \rightarrow 36
\end{align*}
\]
Hence the missing terms will be 61.

**Question 18**

'Cinema' is related to 'Audience' in the same way as 'Church' is related to ................

A Congregation
B Meditation
C Concentration
D Prayer

**Answer: A**

**Explanation:**
Cinema- Audience
Audience is a group of people gathered in a show or encounter a work of art, literature, theater, music, video games, or academics in any medium.

Similarly
Church-Congregation
Congregation is a group of people assembled for religious worship.

**Question 19**

Select the word-pair in which the two words are related in the same way as are the two words in the following word-pair
Apathy : Enthusiasm

A Condemnation : Reverence
B War : Attack
C Enrolment : Employment
D Treaty : Friendship

**Answer: A**

**Explanation:**
As per the question,
Apathy-lack of interest
enthusiasm-intense and eager enjoyment or interest
Means Apathy is antonyms of enthusiasm.

Similarly,
condemnation-the expression of very strong disapproval
reverence-deep respect for someone or something.
condemnation is the antonyms of reverence.

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**Question 20**

Three of the following four words are alike in a certain way and one is different. Pick the odd word out.

A Krishna
B Mahanadi
C Tapti
D Godavari

Answer: C

Explanation: Apart from the Tapti, all the rivers are ending into the Bay of Bengal but Tapti river ending into the Arab Sagar.

Question 21
Three of the following four numbers are alike in a certain way and one is different. Pick the number that is different from the rest.

A 28
B 217
C 338
D 65

Answer: C

Explanation: From the given option we can see every given number is following a pattern apart from option C,

\[3^3 + 1 = 28\]
\[6^3 + 1 = 217\]
\[4^3 + 1 = 65\]

But option (c) 338 is not following the given pattern.

Hence, It is incorrect.

Question 22
Select the correct mirror image of the given figure when the mirror is placed to the right of the figure.

A

B
Answer: C

Explanation:
As per the given image in the question,
The mirror image of the given pattern is

Hence, option C is the correct answer.

General Science Notes for SSC CGL

Question 23
Select the option in which the given figure is embedded.
Question 24

Two statements are given followed by three conclusions numbered I, II and III. Assuming the statements to be true even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:
No crow is a bird.
All birds are animals.

Conclusions:
I. Some animals are crows.
II. Some animals are birds.
III. No animal is a crow.

A. Conclusion II and either conclusion I or III follows
B. None of the conclusions follows
C. Only conclusion III follows
D. Only conclusions I and III follow

Answer: A

Explanation:
As per the question,
We can conclude from the given statement,

Statement II follow

Statement I and III are mutually exclusive so either I or II will follow.

Question 25

Two different positions of the same dice are shown. Which number will be at the top if 4 is at the bottom?

A 3
B 6
C 1
D 5

Answer: A

Explanation:

As per the given position in the dice,
The adjacent faces of 2 is 4 and 6 in the first dice and the adjacent faces of 2 is 5 and 3
So, from the above two relations, when we will overlap the face 2 then we will found that the opposite face of 4 will be 3,
It means when the bottom face of the dice will be 4, then the top face of the dice will be 3.

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General knowledge

Instructions
For the following questions answer them individually

Question 26

In February 2019, India won ______ gold medal/s and five silver medals at the Makran Cup Boxing in Chabahar, Iran.

A three
B one
C four
D two

Answer: B
Question 27

which connects Sikkim with Tibet, was closed after the Chinese aggression on India in 1962 but was reopened in 2006 as the governments of the two countries decided to enhance their trade through land routes.

A Pensi La
B Lanak La
C Nathu La
D Imis La

Answer: C

Question 28

Who founded and named the science of electromagnetism?

A James Clerk
B Michael Faraday
C HChristian Oersted
D Andre Marie Ampére

Answer: D

Question 29

Name the Indian Space Research Organisation (ISRO) chairman and Padma Bhushan awardee who created and unleashed a historical moment when Mars Orbiter became the first Indian spacecraft to enter Martian orbit in a maiden attempt.

A K Radhakrishnan
B Nandan Nilekani
C Fali Nariman
D Sundar Pichai

Answer: A

Question 30

Lok Adalats have been created under ............

A Legal Services Authority Act
B Administration of Justice Act
C Arbitration and Conciliation Act
D Legal Conciliation Act

Answer: A
Question 31
Which of the following destroys the ozone layer?
A Carbon
B Chlorine
C Sulphur
D Silicon
Answer: B

Question 32
.......... was the first Muslim ruler whose empire covered almost the whole of India up to its extreme south.
A Ghiyas ud din Balban
B Feroz Shah Tughlaq
C Alauddin Khilji
D Jalal-ud-din Khilji
Answer: C

Question 33
What is deposited on iron in the process of galvanisation?
A Tin
B Aluminium
C Zinc
D Copper
Answer: C

Question 34
World _____ Day 2019 was observed on 22nd March with the theme 'Leaving no one behind' to focus on marginalised groups.
A Forest
B Environment
C Water
D Petroleum
Answer: C

Question 35
In Which of the following metals is the most reactive metal?
In February 2019, Deepak Singh won a gold medal at the Makran Cup in Chabahar, Iran.

Question 37
Which of the following ministries implemented the Midday Meal scheme?

A Ministry of Social Welfare  
B Ministry of Home Affairs  
C Ministry of Social Justice and Empowerment  
D Ministry of Human Resource Development  

Answer: D

The colourful art named Nandna block print, which uses graceful yet aligned arrangements of motifs on fabric, is practised in Tarapur village of Madhya Pradesh.

Question 39
Which is the longest national highway in India?

A Maharashtra  
B Odisha  
C Uttarakhand  
D Madhya Pradesh

Answer: D
Question 40
Who was awarded the Rabindranath Tagore Literary Prize 2019 for the Novel 'Solo'?

A  Rana Dasgupta
B  Nayanjyot Mukherjee
C  Jhumpa Lahiri
D  Amitabh Ghosh
Answer: A

Question 41
Which Indian received the Nobel Peace Prize after Mother Teresa?

A  P Sathasivam
B  K Radhakrishnan
C  Kailash Satyarthi
D  Fali Nariman
Answer: C

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Question 42
International Day of Forests 2019 was observed on 21st March with the theme .......... to raise awareness on how sustainably managed forests provide a wide array of contributions.

A  Forests and Education'
B  Forests and Environment'
C  Forests Our Saviour'
D  pollution-free Forests'
Answer: A

Question 43
The popular Bagh cave paintings are found in

A  Sikkim
Question 44
Which of the following does NOT come under the Quarternary sector?

A Fisheries
B Information Technology
C Manufacturing
D Mining
Answer: B

Question 45
Right to move freely throughout the territory of India is a fundamental right under _____ of the Constitution of India.

A Article 21
B Article 14
C Article 19
D Article 24
Answer: C

Question 46
The Badami Chalukyas first had their capital at _____ before they moved it to Badami.

A Bijapur
B Aihole
C Hubli
D Pattadakal
Answer: B

Question 47
Which of the following metals is the most ductile metal?

A Copper
B Aluminium
C Tin
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Question 48
Which was the first Muslim dynasty that ruled India?

A Lodhi dynasty
B Tughlaq dynasty
C Khilji dynasty
D Slave dynasty
Answer: D

Question 49
Who among the following was a slave of Muhammad Ghori? He became the ruler after the death of his master and founded the Slave Dynasty.

A Nasir-ud-din Mahmud
B Ghiyas ud din Balban
C Qutub-ud-din Aibak
D Iltutmish
Answer: C

Question 50
Where is the Bandipur National Park located?

A Kerala
B Gujarat
C Karnataka
D Sikkim
Answer: C

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Quant

Instructions
For the following questions answer them individually

Question 51
The value of \((5 + 3 ÷ 5 \times 5) ÷ (3 ÷ 3 of 6) of (4 × 4 ÷ 4 of 4 + 4 ÷ 4)\) is:

A \(-\frac{1}{7} -\)

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Question 52
A shopkeeper marks his goods at 40% more than their cost price and allows a discount of 25% on the marked price. His gain or loss percent is:

A 10% loss
B 15% gain
C 5% gain
D 5% loss
Answer: C
Explanation:
Let the cost price of the article = 100 Rs.

Now, as per the question, marked price of the goods = 140

Now, price of the article after 25% discount = \( \frac{140 \times 75}{100} \times 3 \times 35 = 105 \)

Hence, \( \frac{SP - CP}{CP} \times 100 = \frac{105 - 100}{100} \times 5\% \)

Question 53
If \( x = a + \frac{1}{a} \) and \( y = a - \frac{1}{a} \) then \( \sqrt{x^4 + y^4 - 2x^2y^2} \) is equal to:

A \( \frac{8}{a^2} \)
B 8
C \( 16a^2 \)
D 4

Answer: D

Explanation:
As per the question,

\( x = a + \frac{1}{a} \) and \( y = a - \frac{1}{a} \)

Squaring both side,

\( x^2 = (a + \frac{1}{a})^2 = a^2 + \frac{1}{a^2} + 2 \)

Similarly

\( y^2 = (a + \frac{1}{a})^2 = a^2 + \frac{1}{a^2} - 2 \)

Now, \( \sqrt{x^4 + y^4 - 2x^2y^2} = \sqrt{(a^2 + \frac{1}{a^2} + 2 - a^2 - \frac{1}{a^2} + 2)^2} \)

Substituting the values in the equation (i)

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

Question 54
G is the centroid of the triangle ABC, where AB, BC and CA are 7 cm, 24 cm and 25 cm respectively, then BG is:

A \( \frac{1}{2} \) cm
B \( \frac{1}{3} \) cm
C \( \frac{1}{5} \) cm
D \( \frac{1}{4} \) cm

Answer: B

Explanation:
As per the given question, AB=7cm, BC=24cm and CA=25cm.
We can see, from the Pythagoras theorem: $BC^2 + BA^2 = AC^2$

$\Rightarrow 7^2 + 24^2 = 25^2$

Now,

Let the point B at the origin so the co-ordinate of the point B = (0, 0)

The co-ordinate of the point C = (7, 0)

The co-ordinate of the point A = (0, 24)

Co-ordinates G

$\frac{0 + 0}{3} + \frac{24}{3} = (3, 8)$

Hence the length of BG

$\sqrt{(3) + (8)^2} = \sqrt{9 + 64} = \sqrt{73} = 3$

Or we can write it as $= 8.3$

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**Question 55**

Pipes A and B can fill a tank in one hour and two hours respectively while pipe C can empty the filled up tank in one hour and fifteen minutes. A and C are turned on together at 9 a.m. After 2 hours, only A is closed and B is turned on. When will the tank be emptied?

A 11:30 am.

B 12:10 pm.

C 12:20 pm.

D 10:30 am.

**Answer:** C

**Explanation:**

As per the question,

A can fill the tank in 1 hour

B can fill the tank in 2 hour

C can empty the tank in 1 hour 15 min or $\frac{4}{5}$ hour

If A and C opened together, then tank will be filled in 1 hour

$1 - \frac{1}{5} = \frac{4}{5}$
As per the question, both tap is opened for 2 hours, so the tank will be filled in 2 hour \( \frac{2}{4 \times 1} = \frac{5}{3} \)

Now, tap B and C are opened and A is closed, so the tap will empty in 1 hour \( 5 - 2 = 10 \)

So tank will be completely empty in \( \frac{2}{2 \times 10} = \frac{4}{10} \)

Hence, 5 will empty in \( 5 \times 3 = 3 \)

Hence tank will completely empty at \( 9:00 + 2\text{hour} + 1\text{hour}20\text{min} = 12:20\text{PM} \)

**Question 56**

A and B are travelling towards each other from the points P and Q respectively. After crossing each other, A and B take \( \frac{1}{6} \) hours and 8 hours, respectively, to reach their destinations Q and P, respectively. If the speed of B is 16.8 km/h, then the speed (in km/h) of A is:

A 20.8  
B 19.8  
C 20.4  
D 19.2  

**Answer:** D

**Explanation:**

As per the question,

Let the speed of the A is \( v \), let both meet at O after the \( t \).

Speed of B is \( 16.8 \text{Km/hour} \) given that B will reach to the point P after \( 8 \) hour from the point O and A will reach to the point Q after \( \frac{49}{6} \times 18 = 8 \) hour

So, \( d_1 = v \times t \) \( \quad \text{(i)} \)

\( \Rightarrow d_2 = 16.8 \times t \quad \text{\( \text{(ii)} \)} \)

Now as per the condition given in the question,

\( \Rightarrow d_1 = 16.8 \times 8 \text{km} \)

and \( d_2 = v \times 8 \text{ km} \)

From the equation (i) and (ii)

\( d_1 = v \times t \)

\( \Rightarrow d_2 = 16.8 \times 8 \)

Now, substituting the values of \( d_1 \) and \( d_2 \)
A circle is inscribed in \( \triangle ABC \), touching \( AB \) at \( P \), \( BC \) at \( Q \) and \( AC \) at \( R \). If \( AR \) the perimeter of \( \triangle ABC \) is:

A 36 cm  
B 32 cm  
C 37 cm  
D 40 cm

**Answer:** A

---

**Question 58**

\[ \frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = ? \]

A \( \sec \theta + \tan \theta \)  
B \( \sec \theta - \tan \theta \)  
C \( \sec \theta - \tan \theta \)  
D \( \sec \theta \sin \theta \)

**Answer:** A

**Explanation:**

As per the given question,

\[ \frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} \]

Now taking the conjugate of the given equation,

\[ \Rightarrow \frac{(\sin \theta - \cos \theta + 1)(\sin \theta + \cos \theta + 1)}{(\sin \theta + \cos \theta - 1)(\sin \theta + \cos \theta + 1)} \]

\[ \Rightarrow \frac{\sin^2 \theta + \sin \theta \cos \theta + \sin \theta - \sin \theta \cos \theta - \cos^2 \theta - \cos \theta + \sin \theta + \cos \theta + 1}{\sin^2 \theta + \sin \theta \cos \theta + \sin \theta + \sin \theta \cos \theta + \cos^2 \theta + \cos \theta - \sin \theta + \cos \theta - 1} \]

Here few terms are in equal and opposite sign so they will cancel out to each other

\[ \Rightarrow \frac{\sin^2 \theta + 2 \sin \theta}{2 \sin \theta \cos \theta} \]

\[ \Rightarrow \frac{\sin \theta}{\cos \theta} - 1 \]

\[ \Rightarrow \cos \theta + \cos \theta \]
Question 59

The table shows the production of different types of cars by a company (in thousands) in 5 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>52</td>
<td>54</td>
<td>48</td>
<td>46</td>
<td>64</td>
</tr>
<tr>
<td>2015</td>
<td>47</td>
<td>45</td>
<td>53</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>2016</td>
<td>48</td>
<td>47</td>
<td>56</td>
<td>54</td>
<td>65</td>
</tr>
<tr>
<td>2017</td>
<td>43</td>
<td>50</td>
<td>57</td>
<td>67</td>
<td>63</td>
</tr>
<tr>
<td>2018</td>
<td>38</td>
<td>40</td>
<td>54</td>
<td>68</td>
<td>70</td>
</tr>
</tbody>
</table>

If the data related to the production of cars in 2018 is represented by pie chart, then the central angle of the sector representing the production of type C cars will be:

A $72^\circ$
B $91^\circ$
C $59^\circ$
D $93^\circ$

Answer: A

Explanation:
As per the given data in the question,

Total production of the cars in 2018 $= 38 + 40 + 54 + 70 + 68 = 270$

Total production of the car of type C $= 54$

Hence the required central angle $= \frac{54 \times 360}{270} = 18 \times 4 = 72^\circ$

Question 60

ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect at P. If $AP = (3x-1)$ cm, $PC = (5x-3)$ cm, $BP = (2x+1)$ cm and $PD = (6x-5)$ cm, then the length of DB is:

A 14 cm
B 12 cm
C 16 cm
D 10 cm

Answer: B

Explanation:
Given that,

ABCD is a trapezium, in which $AB \parallel DC$ and its diagonals intersect at P.

$AP = (3x-1)$ cm, $PC = (5x-3)$ cm, $BP = (2x+1)$ cm and $PD = (6x-5)$ cm
We know that the diagonals of the trapezium is always intersect in the same ratio.

\[
\frac{AP}{PB} = \frac{PC}{PD}
\]

So, \( PC = PD \)

Now, substituting the values,
\[
3x - 1
5x - 3 = 2x + 16x - 5
\]

\[
(3x - 1)(6x - 5) = (2x + 1)(5x - 3)
\]

\[
18x^2 - 15x - 6x + 5 = 10x^2 - 6x + 5x - 3
\]

\[
18x^2 - 21x + 5 = 10x^2 - x - 3
\]

\[
18x^2 - 10x^2 - 21x + x + 5 + 3
\]

\[
8x^2 - 20x + 8 = 0
\]

\[
2x^2 - 5x + 2 = 0
\]

\[
2x^2 - 4x - x + 2 = 0
\]

\[
2x(x - 2) - 1(x - 2) = 0
\]

\[
(x - 2)(x - 1) = 0
\]

\[x=1\text{ or }x=2\]

So, length of DB= BP+PD=2x+1+6x-5=8x-4

Hence DB=4 cm or 12 cm

---

**Question 61**

If the 8-digit number 2074x4y2 is divisible by 88, then the value of (4x + 3y) is:

**A** 36

**B** 42

**C** 45

**D** 49

**Answer:** C

**Explanation:**

Given that 2074x4y2 is divisible by 88,

This will be divisible by 88 if, it is individually divisible by 11 and 8.
Divisibility by - Any number is divisible by 8, if the last 3 digit of that number is divisible by 8.

4y2, it will be divisible by 8 if, y=3 or y=7

Divisibility by 11 - Any number is divisible by 11 if the difference between the sum of odd place digit and sum of even place digit is divisible by 11.

Now y=3 then x=9
If y=7 then x=5

Now, substituting the values in the equation,
if x=9 and y=3 then
if x=5 and y=7 then

Question 62
If \[12 \cot^2 \theta - 31 \cosec \theta + 32 = 0\], \[0^\circ < \theta < 90^\circ\], then the value of \[\tan \theta\] will be:

A \[\frac{4}{5}, \frac{3}{5}\]
B \[\frac{4}{3}, \frac{3\sqrt{7}}{7}\]
C \[\frac{5}{4}, \frac{4}{3}\]
D \[\frac{4}{5}, \frac{5\sqrt{7}}{7}\]

Answer: B

Explanation:
As per the given question,
\[12 \cot^2 \theta - 31 \cosec \theta + 32 = 0\], \[0^\circ < \theta < 90^\circ\]
\[12(\cosec^2 \theta - 1) - 31 \cosec \theta + 32 = 0\]
\[12 \cosec^2 \theta - 31 \cosec \theta + 20 = 0\]
Let cosec \( \theta \) = \( x \)
\[12x^2 - 31x + 20 = 0\]
\[12x^2 - 15x - 16x + 20 = 0\]
\[3x(4x - 5) - 4(4x - 5) = 0\]
\[(4x - 5)(3x - 4) = 0\]
\[5 \quad 4\]
So, \( x = 4 \) or \( x = 3 \)
\[4 \quad 3\]
So, \( \sin \theta = 5 \) or \( \sin \theta = 4 \)

Hence, \( \tan \theta = 3 \) or \( \tan \theta = \sqrt{7} \)

\[\tan \theta = 3 \] or \( \tan \theta = \frac{3\sqrt{7}}{7} \)

Question 63
The income of A is 50% more than that of B. If the income of A is increased by 40% and the income of B is increased by 90%, then the percentage increase in their combined income will be:
A  64
B  60
C  55
D  70

Answer: B

Explanation:
As per the condition given in the question,
Let the income of B is = x
150 \times x
So, the income of A = 100 = 1.5x

A’s income increased by 40%, so new income = 140 \times (1.5x)
190x

B’s income increased by 90%, so new income = 100 = 1.9x

So, combined income after increase = 1.9x + 2.1x = 4x

And combined income before increase = x + 1.5x = 2.5x

(4x - 2.5x) \times 100 \quad 1.5x \times 100
2.5x = 2.5x = 60%

SSC CGL Important Questions PDF

Instructions
The table shows the production of different types of cars by a company (in thousands) in 5 years.

<table>
<thead>
<tr>
<th>Car →</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year ↓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>52</td>
<td>54</td>
<td>48</td>
<td>46</td>
<td>64</td>
</tr>
<tr>
<td>2015</td>
<td>47</td>
<td>45</td>
<td>53</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>2016</td>
<td>48</td>
<td>47</td>
<td>56</td>
<td>54</td>
<td>65</td>
</tr>
<tr>
<td>2017</td>
<td>43</td>
<td>50</td>
<td>57</td>
<td>67</td>
<td>63</td>
</tr>
<tr>
<td>2018</td>
<td>38</td>
<td>40</td>
<td>54</td>
<td>68</td>
<td>70</td>
</tr>
</tbody>
</table>

Question 64
The average production of type D cars in 5 years is what percent less than the production of type E cars in 2018? (Correct to one decimal place)

A  17.4
B  15.9
C  18.6
D  16.8

Answer: C

Explanation:
As per the given data in the question,
The average production of type D car = 57 thousand

Production of type E car in 2018 = 70

Hence the required percentage = \( \frac{(70 - 57) \times 100}{70} = 18.6\% \)

**Question 65**

What is the ratio of the total production of type C cars in 2015 and type D cars in 2017 taken together to the total production of type B cars in 2016 and type A cars in 2017 taken together?

A 4:3

B 13:10

C 11:9

D 12:11

**Answer:** A

**Explanation:**
As per the given data in the question,

Total production of type C car in 2015 = 53

Total production of type D car in 2017 = 67

Hence total production of the car of type C and D in the required year = 53 + 67 = 120

Total production of type B car in 2016 = 47

Total production of type A car in 2017 = 43

Hence total production of the car of type A and B in the required year = 47 + 43 = 90

120 4

Hence, the required ratio = 90 = 3

**Instructions**
For the following questions answer them individually

**Question 66**

When x is subtracted from each of 21, 22, 60 and 64, the numbers so obtained, in this order, are in proportion. What is the mean proportional between \((x + 1)\) and \((7x + 8)\)?

A 24

B 18

C 21

D 27

**Answer:** A

**Explanation:**
As per the question,

\[
21 - x = 60 - x
\]

\[
\Rightarrow 22 - x = 64 - x
\]

\[
\Rightarrow (21 - x)(64 - x) = (22 - x)(60 - x)
\]

\[
\Rightarrow 21 \times 64 - 64x - 21x + x^2 = 22 \times 60 - 22x - 60x + x^2
\]
So,
Now, substituting the values,
Hence, the required mean

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Question 67
The value of \( \sqrt{\sec^2 \theta + \cosec^2 \theta} \times \sqrt{\tan^2 \theta - \sin^2 \theta} \) is equal to:

A \( \sin \theta \sec^2 \theta \)
B \( \cosec \theta \sec^2 \theta \)
C \( \cosec \theta \cos^2 \theta \)
D \( \sin \theta \cos^2 \theta \)

Answer: A

Explanation:
As per the question,
\[
\sqrt{\sec^2 \theta + \cosec^2 \theta} \times \sqrt{\tan^2 \theta - \sin^2 \theta} = \sqrt{\frac{1}{\cos^2 \theta + \sin^2 \theta}} \times \sqrt{\frac{\tan^2 \theta}{\cos^2 \theta - \sin^2 \theta}}
\]
We know that, \( \sin^2 \theta + \cos^2 \theta = 1 \)
\[
= \sqrt{\frac{1}{\cos^2 \theta}} \times \sqrt{\frac{\sec^2 \theta}{\sec^2 \theta - \tan^2 \theta}}
\]
\[
= \frac{\sin^2 \theta}{\cos^2 \theta}
\]
\[
= \sin \theta \sec^2 \theta
\]

Question 68
If \( (8x^3 - 27y^3) \div (2x - 3y) = (Ax^2 + Bxy + Cy^2) \), then the value of \((2A + B - C)\) is:
Answer: B

Explanation:
Given that,
\[ (8x^3 - 27y^3) + (2x - 3y) = (Ax^2 + Bxy + Cy^2) \]
But we know that,
\[ a^3 - b^3 = (a - b)(a^2 + b^2 + ab) \]
So, \( (8x^3 - 27y^3) \times (2x - 3y) = 2x - 3y \)
\[ (2x)^3 - (3y)^3 = (2 - y)(2y^2 + 2xy + 3y^2) \]
Now substituting the values in the equation,
\[ (2x)^3 - (3y)^3 = (2x - 3y)(2x^2 + 2xy + 3y^2) \]
Now, \( 4x^2 + 9y^2 + 6xy = Ax^2 + Cy^2 + Bxy \)
Now, comparing both side,
\( A = 4, B = 6 \) and \( C = 9 \)
Now, substituting the values in the equation,
\[ (2A + B - C) = (2 \times 4 + 6 - 9) = 5 \]

Question 69
If \( ab + bc + ca = 8 \) and \( a^2 + b^2 + c^2 = 20 \), then possible value of \( \frac{1}{2}(a + b + c)[(a - b)^2 + (b - c)^2 + (c - a)^2] \) is:

A 80
B 72
C 56
D 84

Answer: B

Explanation:
As per the given question,
\( ab + bc + ca = 8 \) and \( a^2 + b^2 + c^2 = 20 \)
We know that \( (a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca \)
Now substituting the values
\( (a + b + c)^2 = 20 + 2 \times 8 = 36 \)
\( (a + b + c) = \sqrt{36} = 6 \)
Now, \( \frac{1}{2}(a + b + c)[(a - b)^2 + (b - c)^2 + (c - a)^2] \)
\[ \Rightarrow \frac{1}{2}(a + b + c)[a^2 + b^2 - 2ab + b^2 + c^2 - 2bc + c^2 + a^2 - 2ac] \]
\[ \Rightarrow \frac{1}{2}(a + b + c)[2(a^2 + b^2 + c^2) - 2(ab + bc + ac)] \]
Now substituting the values
\[ \Rightarrow (a + b + c)[(a^2 + b^2 + c^2) - (ab + bc + ac)] \]
General Science Notes for SSC CGL

Question 70
The volume of a metallic cylindrical pipe is 7480 cm$^3$. If its length is 1.4 m and its external radius is 9 cm, then its thickness (given $\pi = \frac{22}{7}$) is:

A 0.8 cm
B 1 cm
C 0.9 cm
D 1.2 cm

Answer: B

Explanation:
As per the question,
The volume of the cylindrical pipe = $\pi (R^2 - r^2)h$
R is the external radius of the pipe and r is the internal radius of the pipe.

So, $7480 = \pi (9^2 - r^2) \times 140$

$7480 \Rightarrow 140 \times \pi r^2 = 9^2 - r^2$

$\Rightarrow r^2 = 9^2 - 17 = 64$ cm

$\Rightarrow r = 8$ cm

Hence the thickness of the pipe = 9 - 8 = 1 cm

Question 71
The table shows the production of different types of cars by a company (in thousands) in 5 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>52</td>
<td>54</td>
<td>48</td>
<td>46</td>
<td>64</td>
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<tr>
<td>2015</td>
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<td>2016</td>
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<tr>
<td>2017</td>
<td>43</td>
<td>50</td>
<td>57</td>
<td>67</td>
<td>63</td>
</tr>
<tr>
<td>2018</td>
<td>38</td>
<td>40</td>
<td>54</td>
<td>68</td>
<td>70</td>
</tr>
</tbody>
</table>

The total production of type B cars in all the five years is what percent more than the total production of type A, B and D cars in 2017?

A 32.2
B 57.3
C 47.5
D 49.5

Answer: C
**Question 72**

A sum of ₹15,000 is lent at 16% p.a. compound interest. What is the difference between the compound interest for the second year and the third year?

A  ₹445.44  
B  ₹544  
C  ₹454.88  
D  ₹548  

**Answer:** A

**Explanation:**
As per given question

\[
A = P(1 + \frac{R}{100})^2
\]

\[
A_1 = 15000(1 + \frac{16}{100})^2
\]

Compound interest in the first year = \[15000(1 + \frac{16}{100})\] = 116 \times 150 = 17400

So, compound interest in 2nd year = \[A_1 - P = 15000(1 + \frac{16}{100})^2 - 17400 = 20184 - 17400 = 2784\] ---(i)

Similarly

\[
A_2 = 15000(1 + \frac{16}{100})^3
\]

So, compound interest in 3rd year = \[A_2 - P = 15000(1 + \frac{16}{100})^3 - 20184 = 23413.44 - 20184 = 32.29.44\] ---(ii)

From the equation (i) and (ii), the required difference

\[
CI_2 - CI_1 = 3229.44 - 2784 = 445.44\] Rs.

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**Question 73**

The average of thirteen numbers is 80. The average of the first five numbers is 74.5 and that of the next five numbers is 82.5. The \[11^{th}\] number is 6 more than the \[12^{th}\] number and the \[12^{th}\] number is 6 less than the \[13^{th}\] number. What is the average of the \[11^{th}\] and the \[13^{th}\] numbers?

A  86.5  
B  87.5  
C  87
Answer: C

Explanation:
As per the question,
\[
\frac{x_1 + x_2 + x_3 + \ldots + x_{13}}{13} = 80
\]
\[
x_1 + x_2 + x_3 + \ldots + x_{13} = 80 \times 13 \quad \text{———(i)}
\]
As per the condition given in the question, average of first 5 number
\[
\frac{x_1 + x_2 + x_3 + x_4 + x_5}{5} = 74.5
\]
\[
\text{(ii)}
\]
Given that, average of next six number
\[
\text{(iii)}
\]
Let the 12th number is x,
As per the condition given in the question,
So 11th number will be x+6 and 13th number will be x+6,
Now substitute in the equation (i)
\[
\text{(i)}
\]
\[
\text{(ii)}
\]
\[
\text{(iii)}
\]
So, 11th and 13th numbers will be x+6 = 81+6 = 87
Hence the average of 11th and 13th number
\[\text{(A)}\]

Question 74
A person sold an article at a loss of Had he sold it at a gain of 10.5%. he would have received ₹92.50 more. To gain 12%, he should have sold it for:

A ₹540.50
B ₹537.40
C ₹560
D ₹580
Answer: A

Question 75
ABCD is a cyclic quadrilateral whose diagonals intersect at P. If AB = BC, \(\angle DBC = 70^\circ\) and \(\angle BAC = 30^\circ\), then the measure of \(\angle PCD\) is:

A \(55^\circ\)
B \(50^\circ\)
C \(30^\circ\)
Answer: B

Explanation:
As per the given question,

From the given diagram we can see that in triangle $\triangle BAC$ and $\triangle BDC$ both are on the same base and in the same circle,

So, $\angle BAC = \angle BDC = 30^\circ$

Now, in $\triangle BAC$, BA = BC (given in the question)
So, $\angle BAC = \angle BCA = 30^\circ$

Now, in $\triangle BDC$

$\angle DBC + \angle BDC + \angle BCD = 180^\circ$

So, $\angle BCD = 180 - 70 - 30 = 80^\circ$

Now, $\angle BCD = 80^\circ$
So, $\angle PCD = 80 - \angle PCB = 80 - 30 = 50^\circ$

Question 76
Select the antonym of the given word.
AGONY

A anxiety
B misery
C distress
D comfort

Answer: D
Question 77
In the sentence identify the segment which contains the grammatical error.
Cyclone Idai is regarded as one of the worst tropical cyclone on record to affect Africa and the Southern Hemisphere as a whole.

A the worst tropical cyclone  
B Cyclone Idai is regarded  
C to affect Africa  
D as a whole  
Answer: A

Question 78
Select the word which matches the same as the group of words given.
An inscription on a tombstone written in memory of the deceased

A epitaph  
B pillar  
C basilica  
D slab  
Answer: A

Question 79
Select the correct passive form of the given sentence.
At night, lock the outer gate.

A Let the outer gate be locked at night.  
B The outer gate is requested to be locked at night.  
C The outer gate be locked at night.  
D The outer gate is locked at night.  
Answer: A

Question 80
Select the synonym of the given word.
TRIUMPH

A victory  
B attack  
C fight  
D peace  
Answer: A
Question 81
Select the most appropriate word to fill in the blank.
The burning of the effigy of Ravana on Dussehra _____ the burning of all evils.

A symbolizes  
B intensifies  
C epitomizes  
D personifies  
Answer: A

Instructions
In the following passage some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

Comprehension:
Pigeon racing has become increasingly popular in parts of China (1) _____ the country's elite and its middle class. Sun Yan, the deputy general-secretary of Beijing Racing Pigeons Association, (2) _____ that at least 100,000 pigeon breeders live in Beijing, and (3)_____ 90,000 of them are registered with Racing Pigeons Associations at (4)_____ levels, to qualify for the games held in the spring and autumn. Competitions can be lucrative for (5)_____ owners, with some prizes amounting to tens of thousands of dollars. Liu said in recent years, pigeon racing has been surging in popularity across China.

Question 82
Select the most appropriate option for blank No. 1

A about  
B along  
C against  
D among  
Answer: D

Question 83
Select the most appropriate option for blank No. 2

A told  
B said  
C advised  
D clarified  
Answer: B

Question 84
Select the most appropriate option for blank No. 3

A exact  

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Question 85
Select the most appropriate option for blank No. 4

A different
B differ
C differential
D differed
Answer: A

Question 86
Select the most appropriate option for blank No. 5

A birds
B animal
C bird
D pigeons
Answer: C

Instructions
For the following questions answer them individually

Question 87
Given below are four jumbled sentences. Select the option that gives their correct order.
A. Mango, the so-called “king of fruits”, is something of a national obsession in India.
B. There was a bumper crop of mangoes in different states.
C. It resulted in prices coming down and sales going up — much to the delight of buyers and sellers alike.
D. 2017 proved to be a very good year for mango lovers.

A ADBC
B CADB
C CDAB
D ADCB
Answer: A

Question 88
Select the antonym of the given word.
EMINENT
A  Impressive  
B  exalted  
C  inconspicuous  
D  distinguished  
Answer: C

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Question 89
In the sentence identify the segment which contains the grammatical error.
Every employee of the company were given a two bedroom flat as Diwali bonus.
A  a two bedroom flat  
B  were given  
C  Every employee  
D  as Diwali bonus  
Answer: B

Question 90
Select the most appropriate meaning of the given idiom.
pull yourself together
A  go to sleep  
B  try to understand  
C  calm down  
D  do a good job  
Answer: C

Question 91
Select the most appropriate word to fill in the blank.
There is hope that better forestry management will help in the _____ of the wild life that is constantly facing threat because of increasing human activities.
A  conservation  
B  guarding  
C  salvation  
D  supervision  
Answer: A

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Question 92
Given below are four jumbled sentences. Select the option that gives their correct order.
A. Around 600 million of them live in areas of high to extreme water stress.
B. India is suffering from the worst water crisis, with one billion people living in water scarcity.
C. This is even more than that of China and US combined.
D. The reason is that at 24 per cent, India uses the most groundwater drawn out globally.

A  BDAC  
B  BADC  
C  ADCB  
D  ACBD  
Answer: B

Question 93
Select the most appropriate meaning of the given idiom.
give someone the cold shoulder

A  ignore someone  
B  pamper someone  
C  do something pointless  
D  give away a secret  
Answer: A

Question 94
Select the word which methe same as the group of words given.
an enclosure to keep the birds in

A  sanctuary  
B  stable  
C  apiary  
D  aviary  
Answer: D

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Question 95
Select the correct active form of the given sentence.
Their children were brought up with great care.

A  They had brought up their children with great care.  
B  They have been bringing up their children with great care.  
C  They brought up their children with great care.  

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Their children brought them up with great care.

Answer: C

Question 96
Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution is required, select No improvement.

I try to solve this problem at least for two hours.

A tried to be solving
B am try to solve
C No improvement
D have been trying to solve

Answer: D

Question 97
Select the wrongly spelt word.

A controversial
B conquer
C contamporary
D cooperation

Answer: C

Question 98
Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution is required, select No improvement.

If you listen to the English news, it improve your English.

A it improved
B it will improve
C No improvement
D it is improving

Answer: B

Question 99
Select the wrongly spelt word.

A except
B expire
C expereince

Answer: C
Question 100
Select the synonym of the given word.
INDELIBLE

A illegible
B inerasable
C ineffective
D illegal

Answer: A
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