cracku

SSC CGL 12 June 2019 Shift-1

Reasoning

Question 1

In a code language, YOGHURT is written as 251578211820. How will DEVELOP be written as in that language?

A   45225121515

B   45215121516

C   45225121516

D   45225111516

   Answer: C

Explanation:

As per the given in the question,

$Y \xrightarrow{25\ letter} 25$

$O \xrightarrow{15\ letter} 15$

$G \xrightarrow{7\ letter} 7$

$H \xrightarrow{8\ letter} 8$

$U \xrightarrow{21\ letter} 21$

$R \xrightarrow{18\ letter} 18$

$T \xrightarrow{20\ letter} 20$

Similarly,

$D \xrightarrow{4\ letter} 4$

$E \xrightarrow{5\ letter} 5$

$V \xrightarrow{22\ letter} 22$

$E \xrightarrow{5\ letter} 5$

$L \xrightarrow{12\ letter} 12$

$O \xrightarrow{15\ letter} 15$

$P \xrightarrow{16\ letter} 16$

Hence, the required number will be 45225121516.

SSC CGL Free Mock Test

Question 2

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

A   Examine

B   Deliberate

C Inquire

D Explore

 Answer: B

Explanation:

As per the given option,

Apart from option B, aAll the words are starting from the vowels.

Question 3

Which number will replace the question mark (?) in the following series?
115, ?, 134, 145, 157, 170

A 122

B 124

C 127

D 125

 Answer: B

Explanation:

As per the given terms in the question,

115, ?, 134, 145, 157, 170

We can conclude that,

$$115 \xrightarrow{(+9)} 124 \xrightarrow{(+10)} 134 \xrightarrow{(+11)} 145 \xrightarrow{(+12)} 157 \xrightarrow{(+13)} 170 \xrightarrow{(+14)} 184$$

Hence the question mark will be replaced by 124.

Question 4

'A + B' means 'A is the sister of B'.
'A - B' means 'A is the brother of B'.
'A × B' means 'A is the mother of B'.
'A ÷ B' means 'A is the father of B'.
If V + S × Q - P ÷ T + R × U, then how is R related to S ?

A Daughter

B Grandson

C Maternal grandmother

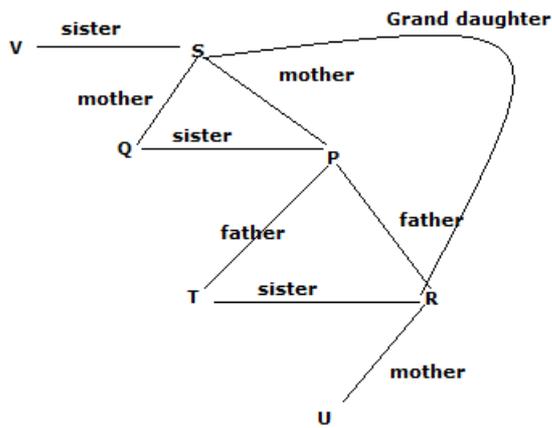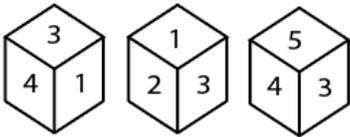**D** Grand-daughter

 Answer: D

Explanation:

As per the given tree,

We can conclude that, S is the grand-daughter of R.

Question 5

Three different positions of the same dice are shown. Which number will be on the face opposite to the one having 2 ?

A   3

B   5

C   4

D   6
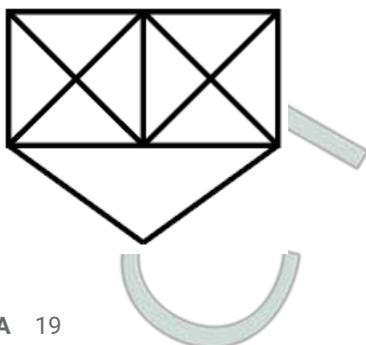
Answer: C

Explanation:

As per the given pattern,

We can see that 3 is the adjacent faces of 1 and 4 and 2 is also the adjacent faces of 1 and 3,

Hence the opposite face of 2 will be 4.

Question 6

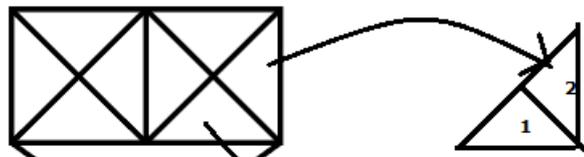How many triangles are present in the following figure ?

A   19

B   20

C   18

D   17

Answer: A

Explanation:
As per the given patterns in the question,

So number of triangle =n+1=3
There is 4 such pairs, Hence total number of triangle =3x4=12

So number of triangles=n+1=2+1=3
There is 2 such pairs are available in the given pattern, so total number of triangle in this =3x2=6

There is only one such triangle is present.

triangles=12+6+1=19

Question 7

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:
All drums are sticks.
Some drums are boxes.
Conclusions:
I Some boxes are sticks.
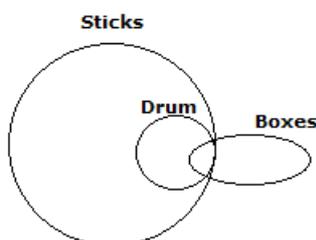II. Some sticks are drums.
III. All sticks are drums.

A   Only conclusions I and III follow.

B   All the conclusions, I, II and III follow

C   Only conclusions II and III follow

D   Only conclusions I and II follow

   Answer: D

Explanation:
As per the given statement in the question,

It is following the given sets,

Hence, Option D is the correct answer.

Question 8

Which two signs should be interchanged to make the following equation correct?

$4 \times 5 - 24 \div 12 + 8 = 14$

A $\div \ and \times$

B $\times \ and +$

C $+ \ and -$

D $+ \ and \div$

Answer: C

Explanation:
From the given pattern,

$4 \times 5 - 24 \div 12 + 8 = 14$

If we are interchanging $+ and -$

Then,

$\Rightarrow 4 \times 5 + 24 \div 12 - 8 = 14$

$\Rightarrow 4 \times 5 + 2 - 8 = 14$

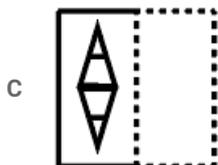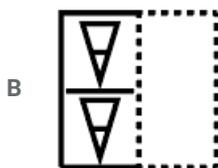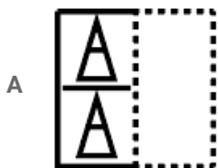$\Rightarrow 20 + 2 - 8 = 14$

$\Rightarrow 22 - 8 = 14$

$\Rightarrow 14 = 14$

Question 9

Select the option that depicts how the given transparent sheet of paper would appear if it is folded at the dotted line.

A

B

C

D
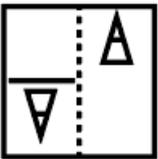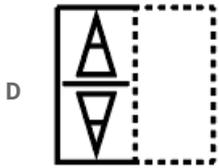
Answer: D

Explanation:
As per the given pattern,

After folding the transparent sheet, We will be able to see the given patter as per the mentioned,
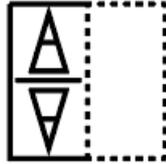
Hence option D will be the correct answer.

Question 10

Arrange the following words in a logical and meaningful order.
1. Writing
2. Book
3. Seller
4. Idea
5. Feedback
6. Reader

A   4, 1, 2, 6, 3, 5

B   4, 1, 2, 3, 6, 5

C   4, 1, 2, 6, 5, 3

D   4, 1, 3, 6, 5, 2

Answer: B

Explanation:
As per the given question,

1. Writing
2. Book
3. Seller
4. Idea
5. Feedback
6. Reader

We can arrange it in the systemic way,

4. Idea 1. Writing 2. Book 3. Seller 6.Reader 5. Feedback

Hence the correct order will be 4,1,2,3,6,5

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Question 11

Which letter will replace the question mark (?) in the following series?
X, R, ?, I, F, D, C

A   Q

B N

C M

D O

Answer: C

Explanation:

As per the given pattern in the question,

X, R, ?, I, F, D, C

$$X \xrightarrow{+6} R \xrightarrow{+5} M \xrightarrow{+4} I \xrightarrow{+3} F \xrightarrow{+2} D \xrightarrow{+1} C$$

Question 12

Select the figure in which the given figure is embedded. (Rotation is not allowed).
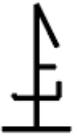
A
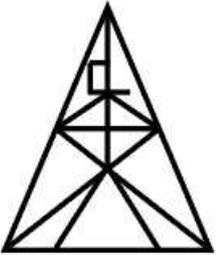
B
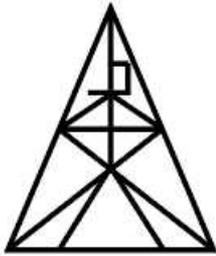
C
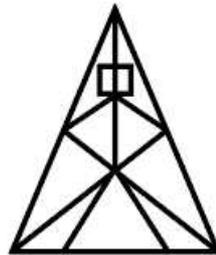
D
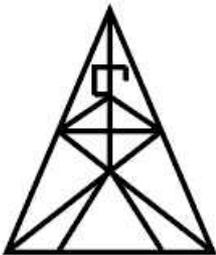
Answer: B

Explanation:

From the given pattern,

We can see it is present in the given option. Hence option B is the correct answer.
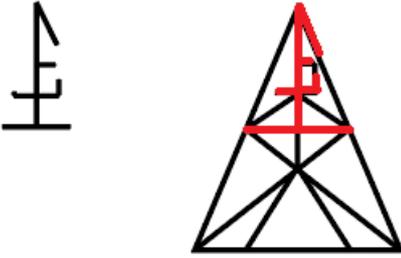
Question 13

In the given Venn diagram, the circle represents 'businessmen', the triangle represents 'landlords' and the rectangle represents 'income tax payers'. The numbers given in the diagram represent the number of persons in that particular category.
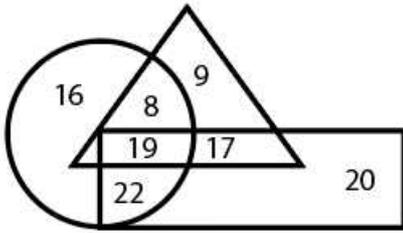
How many businessmen are tax payers but NOT landlords?

A   22

B   8

C   17

D   19

   Answer: A

Explanation:
As per the given terms in the questions,

The highlighted terms is representing the number of businessmen taxpayers but no a landlords.
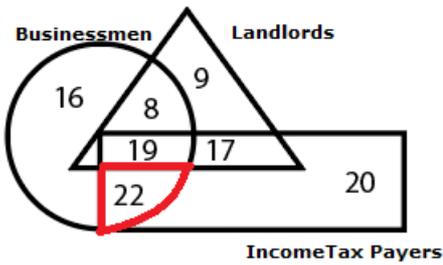
Question 14

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

A

B

C

D
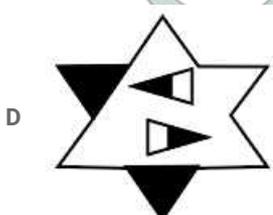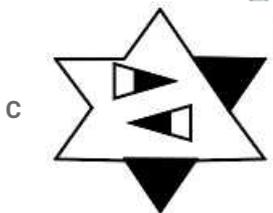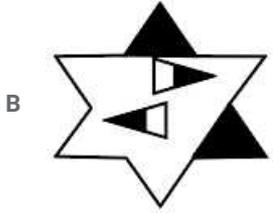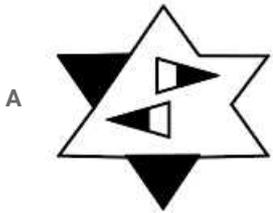
Answer: A

Explanation:

As per the given question,
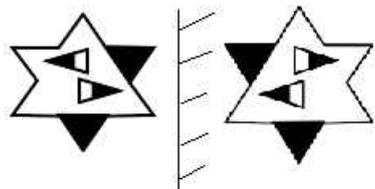
Hence, option A is the correct answer.

Question 15

Select the word-pair in which the two words are related in the same wayas are the two words in the following word pair.
Suitcase : Cloak Room

A   Salary : Credit

B   Bag : Luggage

C   Chair : Furniture

D   Money : Bank

Answer: D

Explanation:

As per the given terms,

Suitcase : Cloak Room

Cloak Room is a place where suitcase can be put.

Similarly

Bank is place where money can be put.

Question 16

In a code language, PERMANENT is written as EPMRBENTN. How will TECHNICAL be written as in that language?

A ETHCPCILA

B ETHCOCILA

C ETCHOCILA

D TEHCOCIAL

Answer: B

Explanation:
As per the given term in the question,

PERMANENT after interchanging the odd place number with the even place number and the middle number A will be written the next letter in English alphabet B, EPMRBENTN.

Similarly,

TECHNICAL after interchanging the odd place number with the even place number and the middle number N will be written the next letter in English alphabet O, ETHCOCILA.

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Question 17

Select the missing number from the below options.

9	11	8
6	8	3
45	57	?

A 55

B 53

C 54

D 52

Answer: A

Explanation:
As per the given pattern in the question,


```
9 |        11      8
   |9-6=3
6 |/ 9+6=15  8      3
   |15x3=45
45 |        57      ?
```

$9 - 6 = 3$ and $9 + 6 = 15$ so $3 \times 15 = 45$

$11 - 8 = 3$ and $11 + 8 = 19$ so $3 \times 19 = 57$

$8 - 3 = 5$ and $8 + 3 = 11$ so $5 \times 11 = 55$

Question 18

Three of the following four number-pairs are alike in a certain way and one is different. Pick the number-pair that is different from the rest.

A 7 : 48

B 13 : 170

C 11 : 120

D 5 : 24

    Answer: B

Explanation:
As per the given option, we can see that,

7 is related to 48 as $7^2 - 1 = 48$

11 is related 120 as $11^2 - 1 = 120$

5 is related 24 as $5^2 - 1 = 24$

But option B is different , it is not following the pattern.

$13^2 + 1 = 170$

Question 19

Select the option that is related to the third number in the same way as the second number is related to the first number.
9 : 90 :: 12 : ?

A 156

B 152

C 160

D 150

    Answer: A

Explanation:
As per the question,

9 : 90 :: 12 :?

Here, 9 is related with the 90 as $9^2 + 9 = 90$

Similarly 12 is related with 156 as $12^2 + 12 = 156$

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Question 20

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

A

B

C

D
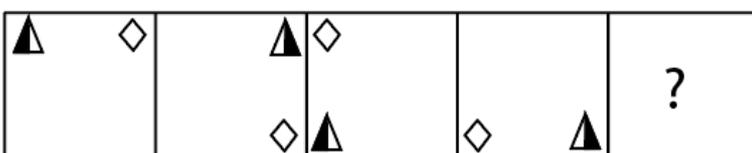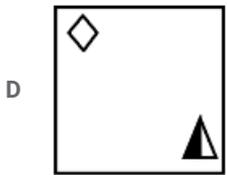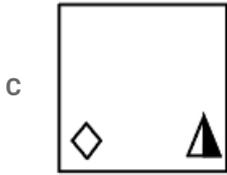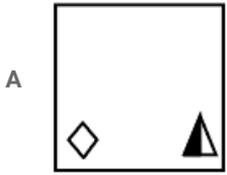
Answer: A

Explanation:

As per the given question,

We can see it is following the given pattern.
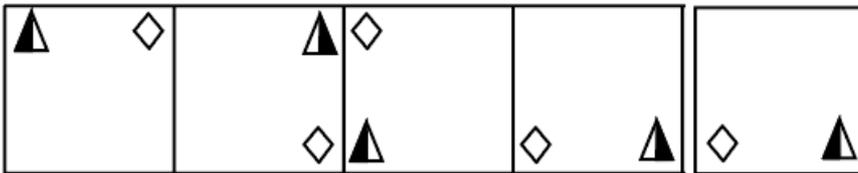
Question 21

The sum of the current ages of Vishal and Armaan is 70 years. 5 years ago, Vishal was twice as old as Armaan. What is Armaan's current age?

A   10 years

B   45 years

C   25 years

D   20 years

Answer: C

Explanation:

Let the current age of Arman=x Years and age of Vishal = Y years

As per the question,

$x + y = 70 - - - - - - (i)$

5 Years ago, age of Vishal =Y-5

5 Years ago, age of Arman= x-5

As per the condition,

$\Rightarrow 2(x - 5) = (y - 5)$

$\Rightarrow 2x - 10 = y - 5$

$\Rightarrow 2x - y = 10 - 5 = 5$

$\Rightarrow 2x - y = 5 - - - - - - - - - - - - - - - -(ii)$

From the equation (i) and (ii)

$\Rightarrow 3x = 75$

$\Rightarrow x = 25$ Years

So, $y = 45$ Years

Hence current age of Arman = 25 Years.

Question 22

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

A JKNRV

B PQTXC

C GHKOT

D UVYCH

Answer: A

Explanation:
From the given option,

$J \xrightarrow{+1} K \xrightarrow{+2} N \xrightarrow{+3} R \xrightarrow{+3} C$

Apart from the first option, rest of all are following the same pattern.

$P \xrightarrow{+1} Q \xrightarrow{+2} T \xrightarrow{+3} X \xrightarrow{+4} C$

$G \xrightarrow{+1} H \xrightarrow{+2} K \xrightarrow{+3} O \xrightarrow{+4} T$

$U \xrightarrow{+1} V \xrightarrow{+2} Y \xrightarrow{+3} C \xrightarrow{+4} H$

General Science Notes for SSC CGL

Question 23

Select the missing number from the below options.

11	17	8
16	36	4
15	23	?

A 14

B 10

C 12

D 11

Answer: B

Explanation:
As per the given pattern,

We can see the middle row is a perfect square,

11	17	8
16 =4x4	36=6x6	4= 2x2
15	23	?
=11+4		

11+4=15

17+6=23

Hence, 8+2=10

Question 24

'Political Science' is related to 'Social Science' in the same way as 'Chemistry' is related to ' ....'

A Humanities

B Elements

C Science

D Equations

   Answer: C

Explanation:
As political science is the branch of the social science, similarly chemistry is the branch of science.

Question 25

Which letter-cluster will replace the question mark (?) in the following series?
FKP, HNT, JQX, LTB, ?

A NWF

B NXF

C NWG

D MWF

   Answer: A

Explanation:
As per the question,

$F \xrightarrow{+2} H \xrightarrow{+2} J \xrightarrow{+2} L \xrightarrow{+2} N$

$K \xrightarrow{+3} N \xrightarrow{+2} Q \xrightarrow{+2} T \xrightarrow{+2} W$

$P \xrightarrow{+4} T \xrightarrow{+4} X \xrightarrow{+4} B \xrightarrow{+4} F$

Hence next term will be NWF.

General knowledge

Instructions

For the following questions answer them individually

Question 26

What is the dominant chemical present in detergent powder?

A   Calcium carbonate

B   Sodium alkyl sulphate

C   Hydrochloric acid

D   Sodium carbonate

   Answer: D

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Question 27

Rajat has hypermetropia. What type of lens will the ophthalmologist recommend to correct his vision?

A   Convex

B   Progressive

C   Bifocal

D   Concave

   Answer: A

Question 28

What effect will a decrease in demand and an increase in supply have on equilibrium price?

A   Sometimes price will rise and sometimes it will fall

B   Equilibrium price will fall

C   Equilibrium price will rise

D   Equilibrium price will be constant

   Answer: B

Question 29

Name the tissue that transports food to various parts of a plant.

A   Parenchyma

B   Sclerenchyma

C   Xylem

D   Phloem

   Answer: D

Question 30

To which of the following Indian states does the tribe of 'Nyishi' belong?

A Chhattisgarh

B Tamil Nadu

C Arunachal Pradesh

D Bihar

Answer: C

Question 31

During World War II, the Battles of Kohima and Imphal were fought in the year _____.

A 1942

B 1944

C 1945

D 1943

Answer: B

Question 32

Which article of the Constitution of India provides that each Indian state will have a governor?

A Article 151

B Article 154

C Article 152

D Article 153

Answer: D

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Question 33

Which Indian badminton player was runner-up at the 2019 Swiss Open tournament?

A Kidambi Srikanth

B Sai Praneeth

C Parupalli Kashyap

D Chetan Anand

Answer: B

Question 34

Which of the following is called the 'popular chamber'?

A   Gram Sabha

B   Rajya Sabha

C   State Assembly

D   Lok Sabha

   Answer: D

Question 35

The term 'Dolphin Kick' is associated with which sport?

A   Football

B   Rugby

C   Swimming

D   Cricket

   Answer: C

Question 36

Which Indian batsman was the first to hit six consecutive sixes in first-class cricket?

A   Ravi Shastri

B   Virat Kohli

C   Sachin Tendulkar

D   Sunil Gavaskar

   Answer: A

Question 37

_____ has been established as the annual 'International Day of Happiness'.

A 15th January

B 31st March

C 20th March

D 23rd February

   Answer: C

Question 38

Dashain' is the grandest festival of _____.

A   Nepal

B   Bangladesh

C   Bhutan

D   Sri Lanka

   Answer: A

Question 39

Which of the following is the highest mountain peak in Maharashtra?

A   Taramati

B   Anjaneri

C   Salher

D   Kalsubai Shikhar

   Answer: D

Question 40

Which of the following Indian film-makers was given the title of 'Ambassador of Interlaken' in 2011 at Switzerland?

A   Subhash Ghai

B   Yash Johar

C   Yash Chopra

D   Raj Kapoor

   Answer: C

Question 41

Who was the last ruler of the Vaghela Dynasty of Gujarat after whose defeat the kingdom was passed to Alauddin Khilji?

A   Rama

B   Arjuna Deva

C   Karandev

D   Saranga Deva

   Answer: C

Question 42

Who is the author of the book 'India Shastra: Reflections on the Nation in our Time'?

A   Manmohan Singh

B   Narendra Modi

C   A P J Abdul Kalam

D   Shashi Tharoor

    Answer: D

Question 43

Which of the following countries is the largest producer of wheat in the world?

A   India

B   Bangladesh

C   Myanmar (Burma)

D   China

    Answer: D

Question 44

What was India's rank among 156 countries in the Global Happiness Index 2019?

A 132nd

B 124th

C 137th

D 140th

    Answer: D

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Question 45

Blue litmus paper turns ____ on contact with an acidic solution.

A   green

B   red

C   yellow

D   brown

    Answer: B

Question 46

____ is well-known for the golden beautification of the Harmandir Sahib Gurdwara in Amritsar, famously known as the Golden Temple.

A   Charat Singh

B   Maha Singh

C   Ranjit Singh

D   Duleep Singh

Answer: C

Question 47

What is the distinctive characteristic of 'marsupials'?

A   They hibernate in winter

B   They lay eggs

C   They carry young ones in pouches

D   They migrate from one place to another

Answer: C

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Question 48

Which state of India has the longest mainland coastline?

A   Odisha

B   Kerala

C   Maharashtra

D   Gujarat

Answer: D

Question 49

A substantial increase in capital expenditure or revenue deficit leads to _____.

A   Budgetary Deficit

B   Fiscal Deficit

C   Primary Deficit

D   Revenue Deficit

Answer: B

Question 50

In the year _____, the Maratha Empire ceased to exist with the surrender of the Marathas to the British, ending the Third Anglo-Maratha War.

A   1818

B   1792

C   1811

D 1806

Answer: A

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Quant

Instructions

For the following questions answer them individually

Question 51

Two articles are sold for ₹ 4,956 each. On one,the seller gains 18% and on the other he loses 16%. What is his overall gain or loss percent to nearest one decimal place??

A 1.9% loss

B 1.9% gain

C 2.1% gain

D 2.1% loss

Answer: A

Explanation:

Let the cost price of the first article is x and the cost price of the second article is y.

Given that, sold price of the article=4956Rs, gain =18% and loss =16%.

$$gain = \dfrac{SP - CP}{CP}$$

$$\Rightarrow 18 = \dfrac{(4956 - x) \times 100}{x}$$

$$\Rightarrow 18x = 4956 \times 100 - 100x$$

$$\Rightarrow 18x + 100x = 4956 \times 100$$

$$\Rightarrow 118x = 4956 \times 100$$

$$\Rightarrow x = \dfrac{4956 \times 100}{118} = 4200\text{Rs.}$$

gain amount= $4956 - 4200 = 756$Rs.

Similearly,

$$loss = \dfrac{CP - SP}{CP}$$

$$\Rightarrow 16 = \dfrac{(y - 4856) \times 100}{y}$$

$$\Rightarrow 16y = 100y - 4956 \times 100$$

$$\Rightarrow 100y - 16y = 4956 \times 100$$

$$\Ritghtarrow 84y=4956\times 100$$

$$\Rightarrow y=\dfrac{4956\times 100}{84}=5900$$Rs.

Hence, net loss amount =$$5900-4956=944$$Rs

Hence the required percentage$$=\dfrac{(944-756)\times 100}{10100}=\dfrac{188 \times 100}{10100}=1.9\%$$loss

Question 52

The following table shows the percentage distribution of students in various disciplines from five different colleges.

Disciplines	Colleges				
	A	B	C	D	E
Science	25	35	45	28	35
Economics	35	40	20	42	25
Mathematics	40	25	35	30	40
Total Students	8,000	10,000	15,000	9,000	11,000

What is the average number of students from the science discipline of all the colleges taken together?

A 3748

B 3762

C 3642

D 3724

Answer: D

Explanation:
As per the give table,

Total number of student in the college A$$=\dfrac{25\times 8000}{100}=2000$$

Total number of student in the college B$$=\dfrac{35\times 10000}{100}=3500$$

Total number of student in the college C$$=\dfrac{45\times 15000}{100}=6750$$

Total number of student in the college D$$=\dfrac{28\times 9000}{100}=2520$$

Total number of student in the college A$$=\dfrac{35\times 11000}{100}=3850$$

Hence average number of students are studying in all the colleges$$=\dfrac{2000+3500+6750+2520+3850}{5}=3724$$

Question 53

Ina circle with centre O, AB is a diameter and CD is a chord such that ABCD is a trapezium. If $$\angle$$BAC = $$28^\circ$$, then $$\angle$$CAD is equal to:

A $$32^\circ$$

B $$62^\circ$$

C $$34^\circ$$

D $$28^\circ$$

Answer: C

Explanation:
As per the given question,
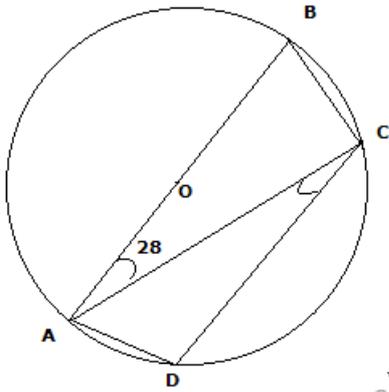
ABCD is a trapezium, So, AB and CD are a parallel lines.

We know that $\angle BAC=\angle ACD \ .....$(alternate angle)

$\angle ACB=90^\circ$ angled formed by diameter and chord in semi circle.

We know that ABCD is a cyclic quadrilateral, because all the vertices of the quadrilateral is on the circumference of the circle.

Hence the sum of the opposite angle=180

Let $\angle CAD=x$

So, $\angle BAD+\angle BCD=180^\circ$

$\Rightarrow 28+x+90+28=180$

$\Rightarrow x=180-90-28-28=34^\circ$

Hence, $x=34^\circ$

Question 54

In $\triangle$ABC,P is a point on BC such that BP : PC = 2 : 3 and Q is the mid point of AP. Then ar($\triangle$ABQ): ar($\triangle$ABC)is equal to:

A 1:5

B 1:4

C 2:3

D 2:5

   Answer: A

Explanation:
As per the question,

$\triangle$ABC

P is a point on BC such that BP : PC = 2 : 3

Q is the mid point of AP,
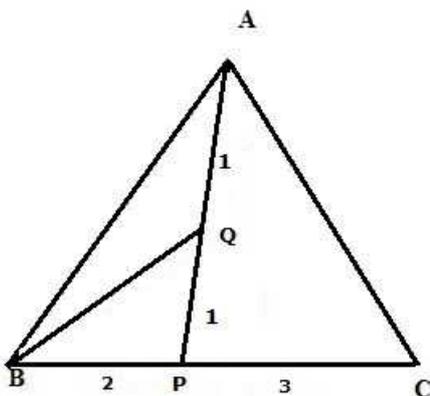
We know that, If any triangle have the same same height, then then the ratio of there area is always equal to the ratio of the there base respectively.

In triangle ABC, $$ar(\triangle ABC)=ar(\triangle APC) +ar(\triangle APB)$$

$$\dfrac{ar(\triangle APC)}{ar(\triangle APB)}=\dfrac{AP}{PB}$$

$$\dfrac{ar(\triangle APC)}{ar(\triangle APB)}=\dfrac{2}{3}=k $$(supposed)

$$ar(\triangle ABC)=\dfrac{5}{2}ar(\triangle APB)-------(i)$$

Similarly,

In $$\triangle ABP$$,

$$ar(\triangle ABP)=ar(\triangle ABQ)+ar(\triangle BPQ)$$

$$\dfrac{ar(\triangle ABQ)}{ar(\triangle QBP)}=\dfrac{1}{1}$$

$$ar(\triangle ABQ)=ar(\triangle QBP)=\dfrac{ar(\triangle ABP)}{2}-------(ii)$$

From equation (i) and (ii)

$$\dfrac{ar(\triangle ABQ)}{ar(\triangle ABC)}=\dfrac{2}{5\times 2}=\dfrac{1}{5}$$

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Question 55

The following table shows the percentage distribution of students in various disciplines from five different colleges.

Disciplines	Colleges				
	A	B	C	D	E
Science	25	35	45	28	35
Economics	35	40	20	42	25
Mathematics	40	25	35	30	40
Total Students	8,000	10,000	15,000	9,000	11,000

If the data of the total students' college wise, is represented by a pie-chart, what is the central angle of the sector representing college E (to nearest whole number)?

A $$73^\circ$$

B $$78^\circ$$

C $$79^\circ$$

D $$75^\circ$$

Answer: D

Explanation:
As per the given data in the question,

Total number of student in the college E =11000

Total number of student $$=8000+10000+15000+9000+11000=53000$$

Hence, the ratio of student in E and total student $$=\dfrac{11000}{53000}$$

Hence, the angle at the center $$=\dfrac{11\times 360}{53}=74.71^\circ \cong 75^\circ$$

Question 56

The value of: $$3.8 + (8.2 \div 4.1 \times 2) - 4 \times 3 \div 1.2$$

A 1.2

B -2.2

C 2.2

D -1.2

Answer: B

Explanation:
As per the given question,

$$3.8 + (8.2 \div 4.1 \times 2) - 4 \times 3 \div 1.2$$

$$\Rightarrow 3.8 + (2 \times 2) - 4 \times 3 \div 1.2$$

$$\Rightarrow 3.8 +4 - 4 \times 3 \div 1.2$$

$$\Rightarrow 3.8 +4 - 4 \times \dfrac{1}{0.4}$$

$$\Rightarrow 3.8 +4 - 10$$

$$\Rightarrow 7.8 - 10$$

$$\Rightarrow -2.2$$

Question 57

The price of sugar is increased by 17%. A person wants to increase his expenditure by 7% only. By what percentage, correct to one decimal place, should he reduce his consumption?

A 8.3%

B 8.1%

C 8.7%

D 8.5%

Answer: D

Explanation:
Let the initial price of 1kg sugar was =100 Rs.

And initial consumption of the person was =100 Rs.

Price of the sugar was increased by 17%,

Hence, new price of the sugar $$=117$$Rs.

Expenditure of the person was increased by 7%,

Hence new expenditure amount of the person $$=107$$Rs.

Hence, the required percentage $$=\dfrac{(117-107)\times 100}{117}=8.5\%$$

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Question 58

$$\triangle$$ABC $$\sim$$ $$\triangle$$RQP and PQ = 10 cm, QR = 12 cm and RP = 16 cm. If ar($$\triangle$$PQR): ar($$\triangle$$ABC) = $$\frac{9}{4}$$, then BC is equal to:

A 8 cm

B 6 cm

C $$\frac{20}{3}$$ cm

D $$\frac{32}{3}$$ cm

Answer: C

Explanation:

As per the question,

$$\triangle$$ABC $$\sim$$ $$\triangle$$RQP

PQ = 10 cm, QR = 12 cm and RP = 16 cm

ar($$\triangle$$PQR): ar ($$\triangle$$ABC) = $$\frac{9}{4}$$

Now, by the similar triangle theorem,
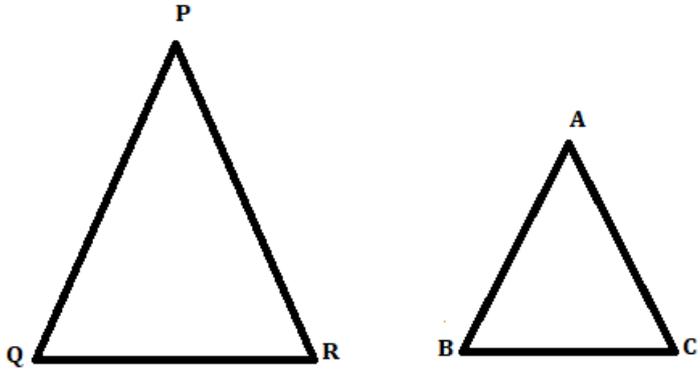
ar($$\triangle$$RQP): ar ($$\triangle$$ABC) = $$(\frac{RQ}{AB})^2=(\frac{QP}{BC})^2=(\frac{PR}{CA})^2$$

Hence, substituting the values,

ar($$\triangle$$RQP): ar ($$\triangle$$ABC) = (\frac{QP}{BC})^2$$

$$\Rightarrow (\frac{10}{BC})^2=\dfrac{9}{4}$$

$$\Rightarrow \frac{100}{BC^2}=\dfrac{9}{4}$$

$$\Rightarrow BC=\sqrt{\dfrac{4}{9}\times100}=\dfrac{2\times 10}{3}=\dfrac{20}{3}$$cm

Question 59

If a + b + c = 6 and ab + bc + ca = 5, then $$a^3 + b^3 + c^3 - 3abc$$ is equal to:

A   108

B   126

C   98

D   116

   Answer: B

Explanation:

Given that,

a + b + c = 6

ab + bc + ca = 5

Now, we know that $$(a+b+c)^2=a^2+b^2+c^2+2ab+2bc+2ca$$

$$\Rightarrow (6)^2=a^2+b^2+c^2+2\times(5)$$

$$\Rightarrow 36=a^2+b^2+c^2+10$$

$$\Rightarrow a^2+b^2+c^2=26$$

Hence, $$a^3 + b^3 + c^3 - 3abc=(a+b+c)(a^2+b^2+c^2-ab-bc-ca)$$

Now, substituting the values,

$$\Rightarrow a^3 + b^3 + c^3 - 3abc=(6)(26-5)$$

$$\Rightarrow a^3 + b^3 + c^3 - 3abc=6\times21$$

$$\Rightarrow a^3 + b^3 + c^3 - 3abc=126$$

Question 60

If a : b = 2 : 3, then (5a - 2b) : (5a+ 2b) is equal to:

A   2:7

B   3:7

C   1:3

D   1:4

   Answer: D

Explanation:
Given that,

$$ \dfrac{a}{b} =\dfrac{2}{3}=k$$

So, a=2k and b=3k

Now substituting the values,

$$\Rightarrow \dfrac{(5a - 2b)}{(5a+ 2b)}=\dfrac{5\times 2k -2\times 3k}{5\times 2k +2\times 3k}$$

$$\Rightarrow \dfrac{5\times 2k -2\times 3k}{5\times 2k +2\times 3k}=\dfrac{4k}{16k}=\dfrac{1}{4}$$

Question 61

If $$\tan 4\theta = \cot(40^\circ - 2\theta), then \theta$$ is equal to:

A $$25^\circ$$

B $$30^\circ$$

C $$20^\circ$$

D $$35^\circ$$

   Answer: A

Explanation:
As per the question,

$$\tan 4\theta = \cot(40^\circ - 2\theta)$$

We know that $$\cot \theta=\tan(90^\circ- \theta)$$

So, $$\tan 4\theta = \tan(90^\circ -40^\circ + 2\theta)$$

$$\tan 4\theta = \tan(50^\circ + 2\theta)$$

Hence, $$4\theta =50^\circ +2 \theta$$

$$\Rightarrow 2\theta =50^\circ $$

$$\Rightarrow \theta =25^\circ $$

Question 62

A is 50% more efficient than B and C is 40% less efficient than B. Working together, they can complete a task in 20 days. In how many days will C alone complete 30% of that task ?

A   31

B   29

C 33

D 35

    Answer: A

Explanation:

Let B can finish the work in x days,

So, B can finish the work in 1 day $=\dfrac{1}{x}$days

As per the question,

If they are working together, then they can finish the work in 20 days.

So, working together, they can finish the work in $=\dfrac{1}{20}$ days

A is 50% more efficient than B, so A will finish the work in $=\dfrac{50x}{100}=\dfrac{x}{2}$ days

A can finish the work in one day $=\dfrac{2}{x}$

C is 40% less efficient than B, so C will finish the work in $=\dfrac{140x}{100}=1.4x$ days

C can finish the work $=\dfrac{1}{1.4x}$

If they are working together, then they can finish the work in one day $=\dfrac{1}{x}+\dfrac{2}{x}+\dfrac{10}{14x}=\dfrac{1}{20}$

$\Rightarrow \dfrac{14+28+10}{14x}=\dfrac{1}{20}$

$\Rightarrow \dfrac{52}{14x}=\dfrac{1}{20}$

$\Rightarrow x=\dfrac{52\times 20}{14}=\dfrac{520}{7}$

Hence, C will finish the work in $1.4\times \dfrac{520}{7}=104$ days

Hence, C will be able to finish the work in $=\dfrac{30 \times 104}{100}=31.2 days \cong 31days$

Question 63

A train without stoppage travels with an average speed of 80 km/h and with stoppage,it travels with an average speed of 64 km/h. For how many minutes does the train stop on an average per hour?

A 8

B 14

C 12

D 10

    Answer: C

Explanation:

As per the question,
When train is not stopping at any place, then it was reaching 80km in one hour
When it was stopping at the stopping, then it was reaching =64 km in hour,
Hence, the time taken by the train to getting stop on the stoppage $=\dfrac{80-64}{80}\times 60 min$
$=\dfrac{16}{80}\times 60 min=12min$

Question 64

The following table shows the percentage distribution of students in various disciplines from five different colleges.

Disciplines	Colleges				
	A	B	C	D	E
Science	25	35	45	28	35
Economics	35	40	20	42	25
Mathematics	40	25	35	30	40
Total Students	8,000	10,000	15,000	9,000	11,000

The number of students from the discipline of Economics from college B is approximately what percentage of the number of students from the discipline of Science from the college C?

A   56

B   59

C   58

D   61

Answer: B

Explanation:

As per the given table,

Total number of student from the college B from economics section $$=40\% of 10000=\dfrac{40\times 10000}{100}=4000$$

Total number of student from the college C from science section $$=45\% of 15000=\dfrac{45\times 15000}{100}=6750$$

Hence, the required percentage $$=\dfrac{4000\times 100}{6750}=59.2 \% \cong 59$$

Question 65

The value of: $$\frac{\sin 44^\circ}{\cos 46^\circ} + \sin^2 60^\circ - \cos^2 45^\circ + \sec 60^\circ$$ is equal to:

A $$\frac{13}{4}$$

B $$\frac{11}{3}$$

C $$\frac{11}{4}$$

D $$\frac{7}{4}$$

Answer: A

Explanation:

Given that,

$$\frac{\sin 44^\circ}{\cos 46^\circ} + \sin^2 60^\circ - \cos^2 45^\circ + \sec 60^\circ$$

$$\sin(90^\circ-\theta)=\cos(\theta)$$

$$\Rightarrow \frac{\cos (90-46)^\circ}{\cos 46^\circ} + \sin^2 60^\circ - \cos^2 45^\circ + \sec 60^\circ$$

$$\Rightarrow \frac{\cos 46^\circ}{\cos 46^\circ} + \sin^2 60^\circ - \cos^2 45^\circ + \sec 60^\circ$$

$$\Rightarrow 1 + \sin^2 60^\circ - \cos^2 45^\circ + \sec 60^\circ$$

$$\Rightarrow 1 +\dfrac{3}{4} - \dfrac{1}{2} +2$$

$$\Rightarrow \dfrac{4+3-2+8}{4}=\dfrac{13}{4}$$

Question 66

If $$\cos \theta = \frac{4}{5}, then \sin^2 \theta \cos \theta + \cos^2 \theta \sin \theta$$ is equal to:

A $$\frac{16}{25}$$

B $$\frac{84}{125}$$

C $$\frac{14}{25}$$

D $$\frac{82}{125}$$

   Answer: B

Explanation:
Given that,

$$\cos \theta = \frac{4}{5}$$

So, $$\sin \theta=\sqrt{1-\cos^2 \theta}=\sqrt{1-(\dfrac{4}{5})^2}=\dfrac{3}{5}$$

Now, substituting the values in $$\sin^2 \theta \cos \theta + \cos^2 \theta \sin \theta$$

$$\Rightarrow (\dfrac{3}{5})^2\times \dfrac{4}{5} +(\dfrac{4}{5})^2\times \dfrac{3}{5}$$

$$\Rightarrow \dfrac{36}{125}+\dfrac{48}{125}$$

$$\Rightarrow \dfrac{84}{125}$$

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Question 67

If (a + b) = 6 and ab = 8, then $$(a^3 + b^3)$$ is equal to:

A 216

B 72

C 144

D 108

   Answer: B

Explanation:
Given that,

$$a+b=6 $$ and $$ ab=8$$

We know that,

$$(a+b)^3=a^3+b^3+3ab(a+b)$$

$$\Rightarrow (6)^3=a^3+b^3+3\times8\times(6)$$

$$\Rightarrow 216=a^3+b^3+144$$

$$\Rightarrow a^3+b^3=216-144=72$$

Question 68

Chords AB and CD of a circle intersect at a point P inside the circle. If AB = 10 cm, AP = 4 cm and PC = cm, then CD is equal to:

A 4.8 cm

B 9.8 cm

C 7.8 cm

D 6.8 cm

Answer: B

Question 69

The radii of the two circular faces of the frustum of a cone of height 21 cm are 5 cm and 3 cm. What is its volume in cm^{3}($$\pi = \frac{22}{7}$$)

A 1020

B 1058

C 1078

D 1025

Answer: C

Explanation:

As per the question,

It is given that, height (h) =21cm, radius (R)=5cm and (r)=3cm

$$\pi = \frac{22}{7}$$

We know that the volume of the frustum of the cone $$V=\dfrac{\pi h(R^2+r^2+R\times r)}{3}$$

$$\Rightarrow V=\dfrac{22 \times 21(5^2+3^2+5\times 3)}{3 \times 7}$$

$$\Rightarrow V=\dfrac{22 \times 21(25+9+15)}{21}$$

$$\Rightarrow V=1078 cm^3$$

General Science Notes for SSC CGL

Question 70

What is the value of x so that the seven digit number 91876x2 is divisible by 72?

A 7

B 3

C 2

D 5

Answer: B

Explanation:

As per the question,

Number 91876x2 is divisible by 72,

It means that it is individually divisible by 9 and 8 because $$72=8\times 9$$

Divisible by 8-

Any number is divisible by 8, if the last 3 digit of that particular number is divisible by 8.

So here, 6x2 will be divisible by 8 if, x=3 and 7.

Divisible by 9-

Any number is divisible by 9, if the sum of the digit of the number is divisible by 9.

So, here $$\Rightarrow 9+1+8+6+x+2=33+x$$

By taking x=3, the number will be divisible by 9.

Hence, x=3 will be the correct answer.

Question 71

The following table shows the percentage distribution of students in various disciplines from five different colleges.

Disciplines	Colleges				
	A	B	C	D	E
Science	25	35	45	28	35
Economics	35	40	20	42	25
Mathematics	40	25	35	30	40
Total Students	8,000	10,000	15,000	9,000	11,000

What is the percentage of students from the discipline of Mathematics for colleges A and C taken together, (nearest to one decimal place)?

A 37.2

B 36.9

C 37.5

D 36.7

Answer: D

Explanation:
As per the given table,

Total number of mathematics student in the class A $$=8000\times \dfrac{40}{100}=3200$$

Total number mathematics student in the class C $$=15000\times\dfrac{35}{100}=5250$$

Hence, total number of student in mathematics in the A and C$$=3200+5250 =8450$$

Total number of available student in the class A and C $$=8000+15000=23000$$

Hence, the required percentage $$=\dfrac{8450\times 100}{23000}=36.7\%$$

Question 72

The difference between the compound interest and simple interest on ₹x at 12% per annum for 2 years is ₹43.20. What is the value of x?

A 3,000

B 2,500

C 2,800

D 2,400

Answer: A

Explanation:
As per the question,

Simple Interest $$\dfrac{x\times R \times T}{100}=\dfrac{x\times12\times 2}{100}=0.24x$$

Compound Interest $$x(1+\dfrac{R}{100})^T-x=x (1+\dfrac{12}{100})^2-x=x\times1.12\times 1.12-x=0.2544x$$

Hence the difference between Simple interest and compound interest $$\Rightarrow 0.2544x-0.24x=0.01x$$

$$\Rightarrow 0.0144x=43.2$$

Hence $$x=\dfrac{43.2 \times 10000}{144}=3000$$Rs.

Question 73

An article is sold for ₹ 547.40 after successive discounts of 30% and 15%. What is the market price of the article?

A   ₹940

B   ₹900

C   ₹920

D   ₹960

Answer: C

Explanation:

Let the marked price of the article =x Rs.

As per the question, there is the 30% and 15% discounts are given at the marked price,

$$\Rightarrow (\dfrac{x \times 70}{100})\times (\dfrac{85}{100})=547.40$$

$$\Rightarrow x=547.40\times \dfrac{10\times 100}{7\times 85}$$

$$\Rightarrow x=920$$Rs.

Question 74

In a class of 60 students, 40% are girls. The average weight of the boys is 62kg and that of the girls is 55kg. What is the average weight of the whole class?

A   59.2kg

B   58.6kg

C   58.8kg

D   59kg

Answer: A

Explanation:

Let the Weight of n girls=x and weight of m boys =y

As per the question, $$n=60\times \dfrac{40}{100}=24$$

Given that $$m+n=60$$

$$m=60-24=36$$

Average weight of boys $$\dfrac{y}{36}=62$$Kg

$$\Rightarrow y=62\times 36$$

Average weight of girls $$\dfrac{x}{24}=55$$Kg

$$\Rightarrow x=55\times 24$$

So, average weight of whole classes $$=\dfrac{x+y}{m+n}=\dfrac{62\times 36 +55\times 24}{24+36} $$

$$\Rightarrow \dfrac{2232+1320}{24+36}=\dfrac{3553}{60}=59.2$$Kg

Question 75

If $$\sqrt x + \frac{1}{\sqrt x} = 2\sqrt2, then x^2 + \frac{1}{x^2}$$ is equal to:

A   36

B   34

C   32

D 64

    Answer: B

Explanation:
Given that,

$$\sqrt x + \frac{1}{\sqrt x} = 2\sqrt2$$

Taking the square of the both side,

$$\Rightarrow (\sqrt x + \frac{1}{\sqrt x})^2 = (2\sqrt2)^2$$

$$\Rightarrow (\sqrt x)^2 +(\frac{1}{\sqrt x})^2+2 = (2\sqrt2)^2$$

$$\Rightarrow x +\dfrac{1}{x}+2 = 8$$

$$\Rightarrow x +\dfrac{1}{x} = 6$$----------------(i)

Again taking square of the equation (i)

$$\Rightarrow (x +\dfrac{1}{x})^2 = 6^2$$

$$\Rightarrow x^2+\dfrac{1}{x^2}+2=36$$

$$\Rightarrow x^2+\dfrac{1}{x^2}=36-2=34$$

$$\Rightarrow x^2+\dfrac{1}{x^2}=34$$

English

Instructions
For the following questions answer them individually

Question 76

Given below are four jumbled sentences. Select the option that gives their correct order.
A. So, I had thoughts of setting up an Indian restaurant there with my wife's support.
B. It took us two months to redesign the place to suit our needs.
C. One of the things I really missed when I set up home in Maryla nd, was a restaurant that served authentic Indian food.
D.I decided to pursue this idea seriously and bought an old building in the downtown.

A CBAD

B CADB

C DACB

D BCDA

    Answer: B

Question 77

Select the word which means the same as the group of words given.
A state of perfect balance

A equilibrium

B equinox

C equilateral

D equivalent

Answer: A

Question 78

In the sentence identify the segment which contains the grammatical error.
Not complying by any of the laws can land you into serious trouble.

A can land you

B into serious trouble

C any of the laws

D Not complying by

Answer: D

Question 79

Given below are four jumbled sentences. Select the option that gives their correct order.
A. Lyrics help in creating a distictive narrative, some conventions of which have been carried over from the talkies era.
B. Thus, songs have outli ved films in people's memories.
C. However, songs seem to have acquired a musical gram mar of their own, establishing an emotional chord with the listeners.
D. In popular Indian cinema, lyrics a re to music what the heart is to the body.

A ADBC

B ABCD

C DCBA

D DACB

Answer: D

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Question 80

Select the most appropriate synonym of the given word.
DEVOUT

A revered

B pious

C respectable

D loyal

Answer: B

Question 81

Select the correctly spelt word.

A exilerate

B exilarate

C exhilarate

D exhilerate

    Answer: C

Question 82

Select the most appropriate option to fill in the blank.
I sat _____ my life as nothing seemed to be working for me.

A invoking

B cursing

C tormenting

D blessing

    Answer: B

Question 83

In the sentence identify the segment which contains the grammatical error.
Raja Ravi Varma was one of the first artist who tried to create a style that was both modern and traditional.

A to create a style that was

B Raja Ravi Varma was

C one of the first artist

D both modern and traditional

    Answer: C

Question 84

Select the most appropriate synonym of the given word.
RENOWN

A wisdom

B conceit

C fame

D obscurity

    Answer: C

Question 85

Select the most appropriate antonym of the given word.
FOREIGN

A rustic

B rural

C   native

D   Indian

   Answer: C

Question 86

Select the word which means the same as the group of words given.
One who walks in sleep

A   pedestrian

B   philanthropist

C   somnambulist

D   omnipotent

   Answer: C

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:
English is not a language that (1)_____ in India. But it is used extensively in (2)_____country. India comes second on the list of countries (3)_____most English speakers,albeit not as the first language. English is more (4)_____than any single Indian language! It has managed to (5)_____the entire world.

Question 87

Select the most appropriate option to fill in blank No.(1)

A   originated

B   developed

C   created

D   derived

   Answer: A

Question 88

Select the most appropriate option to fill in blank No.(2)

A   one

B   an

C   a

D   the

   Answer: D

Question 89

Select the most appropriate option to fill in blank No.(3)

A   by

B   with

C   from

D   among

   Answer: B

Question 90

Select the most appropriate option to fill in blank No.(4)

A   prevalent

B   frequented

C   extended

D   comprehensive

   Answer: A

Question 91

Select the most appropriate option to fill in blank No.(5)

A   saturate

B   invade

C   pervade

D   persuade

   Answer: C

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Instructions
For the following questions answer them individually

Question 92

Select the most appropriate meaning of the underlined idiom in the given sentence.
Many people join politics <u>to feather their own nest.</u>

A   make others' life comfortable

B   serve their country

C   utilize black money

D   promote their own interest

   Answer: D

Question 93

Select the correct passive form of the given sentence.
Credit cards are replacing cash transactions.

A   Cash transactions are being replaced by credit cards.

B   Cash transactions had been replaced by credit cards.

C   Cash transactions are replaced by credit cards.

D   Cash transactions have been replaced by credit cards.

  Answer: A

Question 94

Select the correctly spelt word.

A   preportion

B   propotion

C   proportion

D   proporsion

  Answer: C

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Question 95

Select the most appropriate meaning of the underlined idiom in the given sentence.
The man heaved a sigh of relief when he was sure he was <u>out of the woods.</u>

A   out of danger

B   released from prison

C   out of the forest

D   discharged from hospital

  Answer: A

Question 96

Select the most appropriate option to fill in the blank.
The roads at 15000 feet are not easily navigable and the air is _____ and freezing.

A   exalted

B   rarefied

C   intensified

D   elevated

  Answer: B

Question 97

Select the most appropriate antonym of the given word.
ASCENT

A   distant

B   depression

C   descent

D   decent

   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.
I have not <u>saw him since I last leave</u> the town.

A   see him since I last left

B   seen him for I last left

C   seen him since I last left

D   No improvement

   Answer: C

Question 99

Select the correct active form of the given sentence.
We were given very little time to prepare the presentation.

A   They give us very little time to prepare the presentation

B   They will give us very little time to prepare the presentation.

C   They have given us very little time to prepare the presentation.

D   They gave us very little time to prepare the presentation.

   Answer: D

Question 100

Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution is required, select No improvement.
Ishwarchand Vidyasagar <u>use the ancient text to suggestion</u> that widows could remarry.

A   used the ancient texts suggests

B   used the ancient texts to suggest

C   use the ancient texts for suggestion

D   No improvement

Answer: B

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