



SSC CHSL 27 Jan 2017 Afternoon Shift

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Reasoning

Instructions

For the following questions answer them individually

Question 1

Select the related word/letters/number from the given alternatives.

Elephant : Amble :: Horse : ?

- A Fly
- B Swoop
- C Gallop
- D Frisk

Answer: C

Explanation:

The movement of an elephant is called amble, similarly movement of a horse is called *gallop*.

=> Ans - (C)

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Question 2

Select the related word/letters/number from the given alternatives.

GIKM: RTVX :: HJLN : ?

- A SVWZ
- B SUWY
- C RTZV
- D RTVZ

Answer: B

Explanation:

Expression = GIKM: RTVX :: HJLN : ?

The pattern followed is :

G	I	K	M
(+11)	(+11)	(+11)	(+11)
R	T	V	X

Similarly, HJLN : SUWY

H	J	L	N
(+11)	(+11)	(+11)	(+11)
S	U	W	Y

=> Ans - (B)

Question 3

Select the related word/letters/number from the given alternatives.

G/MP : K/QT :: L/UX : ?

- A P/AC

B P/YB

C P/AF

D R/XD

Answer: B

Explanation:

Expression = G/MP : K/QT :: L/UX : ?

The pattern followed is :

G	M	P
(+4)	(+4)	(+4)
K	Q	T

Similarly, L/UX : P/YB

L	U	X
(+4)	(+4)	(+4)
P	Y	B

=> Ans - (B)

Question 4

Select the related word/letters/number from the given alternatives.

5 : 30 :: 9 : ?

A 60

B 80

C 70

D 90

Answer: D

Explanation:

Expression = 5 : 30 :: 9 : ?

The pattern followed is = $x : x(x + 1)$

Eg :- $5 : 5(5 + 1) = 5 : 30$

Similarly, $9 \times (9 + 1) = 9 \times 10 = 90$

=> Ans - (D)

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Question 5

Select the odd word/letters/number/number pair from the given alternatives.

A Chirp

B Hiss

C Roar

D Nest

Answer: D

Explanation:

Chirp, Hiss and roar are sounds made by different animals, while nest is a place for birds to live, hence nest is the odd one out.

=> Ans - (D)

Question 6

Select the odd word/letters/number/number pair from the given alternatives.

A BEH

B ILO

C EGJ

D UXA

Answer: C

Explanation:

(A) : B (+3 letters) = E (+3 letters) = H

(B) : I (+3 letters) = L (+3 letters) = O

(C) : E (+2 letters) = G (+3 letters) = J

(D) : U (+3 letters) = X (+3 letters) = A

=> Ans - (C)

Question 7

Select the odd word/letters/number/number pair from the given alternatives.

A 27

B 125

C 8

D 729

Answer: C

Explanation:

27, 125 and 729 are cubes of odd numbers, while 8 is a cube of 2 (even number), hence 8 is the odd one out.

=> Ans - (C)

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Question 8

Select the odd word/letters/number/number pair from the given alternatives.

A 65

B 74

C 83

D 92

Answer: C

Explanation:

Among the given numbers, only 83 is prime, rest are composite numbers, hence 83 is the odd one out.

=> Ans - (C)

Question 9

A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.
blg, fpk, jto, n?

A xs

B sx

C qs

D xt

Answer: A

Explanation:

Expression : blg, fpk, jto, n?

The pattern followed in each letter of the terms is :

1st letter : b (+4 letters) = f (+4 letters) = j (+4 letters) = n

2nd letter : l (+4 letters) = p (+4 letters) = t (+4 letters) = x

3rd letter : g (+4 letters) = k (+4 letters) = o (+4 letters) = s

Thus, missing term = **xs**

=> Ans - (A)

Question 10

A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.
NI, PM, RQ, TU, VY, ?

A XE

B XD

C XC

D XF

Answer: C

Explanation:

Expression : NI, PM, RQ, TU, VY, ?

The pattern followed in each letter of the terms is :

1st letter : N (+2 letters) = P (+2 letters) = R (+2 letters) = T (+2 letters) = V (+2 letters) = X

2nd letter : I (+4 letters) = M (+4 letters) = Q (+4 letters) = U (+4 letters) = Y (+4 letters) = C

Thus, missing term = **XC**

=> Ans - (C)

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Question 11

A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.
28, 35, 49, ?, 98

- A 65
- B 70
- C 56
- D 74

Answer: B

Explanation:

Consecutive multiples of 7 are added.

$$28 + 7 = 35$$

$$35 + 14 = 49$$

$$49 + 21 = \mathbf{70}$$

$$70 + 28 = 98$$

=> Ans - (B)

Question 12

A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.
5, 11, 24, 51, ?

- A 119
- B 106
- C 110
- D 104

Answer: B

Explanation:

The pattern followed is :

$$5 \times 2 + 1 = 11$$

$$11 \times 2 + 2 = 24$$

$$24 \times 2 + 3 = 51$$

$$51 \times 2 + 4 = \mathbf{106}$$

=> Ans - (B)

Question 13

In the following question, two statements are given each followed by two conclusions I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements.

Statements:

(I) Management includes managing people, process, and plans.

(II) Handling people is most difficult in terms of dealing up with various diversities and opinions.

Conclusion:

(I) Diversity brings in difference of opinion because of differences in cognitive abilities.

(II) Management is a multitasking procedure keeping in view 360 degrees of a situation or problem.

- A Only conclusion II follows
- B Conclusion I and II both follow

- C Neither I nor II follow
- D Only conclusion I follows

Answer: A

Explanation:

From the statement I, Management includes managing people, process, and plans. So management is a multitasking procedure keeping in view of the situations and problems. Hence conclusion II follows the given statements.

From the statement II, it is mentioned that people have various opinions and diversities but no information regarding diversity. Hence conclusion I do not follow the given statements.

∴ Only conclusion II follows the given statements.

Hence, the correct answer is Option A

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Question 14

Rahul, Prem, Shyam, Geet and Rinku are five friends among which Shyam is the tallest. Rahul is shorter than Prem but taller than Rinku. Geet is little shorter than Prem but little taller than Rahul. Who is taller than Rinku but shorter than Geet?

- A Rahul
- B Rinku
- C Prem
- D Geet

Answer: A

Explanation:

It is given that Shyam is the tallest.

Rahul is shorter than Prem but taller than Rinku, => Prem > Rahul > Rinku

Geet is little shorter than Prem but little taller than Rahul, => Prem > Geet > Rahul

Combining above statements, we get : Shyam > Prem > Geet > Rahul > Rinku

∴ Rahul is taller than Rinku but shorter than Geet.

=> Ans - (A)

Question 15

Arrange the given words in the sequence in which they occur in the dictionary.

- i. Closing
- ii. Closure
- iii. Closer
- iv. Closable

- A ii, i, iii, iv
- B iv, iii, i, ii
- C iv, i, ii, iii
- D iv, iii, ii, i

Answer: B

Explanation:

As per the order of dictionary :

= Closable -> Closer -> Closing -> Closure

≡ iv, iii, i, ii

=> Ans - (B)

Question 16

In a certain code language, "SINGING" is written as "TJOHJOH". How is "DANCING" written in that code language?

A EBODJOH

B EBOSTEO

C EBDOJHO

D EDBOJHO

Answer: A

Explanation:

"SINGING" is written as "TJOHJOH"

The pattern followed is :

S	I	N	G	I	N	G
(+1)	(+1)	(+1)	(+1)	(+1)	(+1)	(+1)
T	J	O	H	J	O	H

Similarly, for DANCING :

D	A	N	C	I	N	G
(+1)	(+1)	(+1)	(+1)	(+1)	(+1)	(+1)
E	B	O	D	J	O	H

=> Ans - (A)

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Question 17

Find the Missing number

3	4	25
6	2	40
5	4	?

A 36

B 41

C 55

D 65

Answer: B

Explanation:

Along the rows,

$$3^2 + 4^2 = 9 + 16 = 25$$

$$6^2 + 2^2 = 36 + 4 = 40$$

The logic here is sum of the squares of first and second number is equal to the third number.

Similarly, the required number = $5^2 + 4^2 = 25 + 16 = 41$

Hence, the correct answer is Option B

Question 18

If "-" stands for "÷", "+" stands for "x", "÷" for "-" and "x" for "+", which of the following equations is correct?

- A $40 - 10 + 5 \div 4 \times 5 = 21$
- B $40 + 10 - 4 \times 5 \div 3 = 80$
- C $40 \div 10 - 4 \times 5 + 3 = 32$
- D $8 - 4 \times 40 \div 2 + 15 = 30$

Answer: A

Explanation:

(A) : $40 - 10 + 5 \div 4 \times 5 = 21$

$\equiv 40 \div 10 \times 5 - 4 + 5 = 21$

L.H.S. = $(4 \times 5) + 1 = 20 + 1 = 21 = \text{R.H.S.}$

=> Ans - (A)

Question 19

In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
ab_d_ed_baa_ _de

- A cebca
- B cecbc
- C ceobe
- D ceebc

Answer: B

Explanation:

The pattern followed is that in groups of 5, the term 'abcde' is written in correct and reverse order alternatively.

= abcde edcba abcde

=> Ans - (B)

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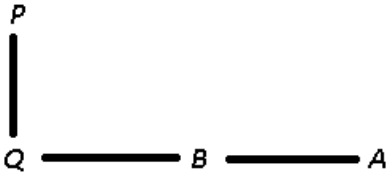
Question 20

A is in the east of B, who is in the east of Q. If Q is in the south of P, then in which direction of A, is P?

- A Northeast
- B Northwest
- C Southeast
- D Southwest

Answer: B

Explanation:



A is in the east of B, and B is in the east of Q. Also, Q is in the south of P.

Thus, P is in north-west of A.

=> Ans - (B)

Question 21

A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'N' can be represented by 21, 43, etc., and 'R' can be represented by 66, 57, etc. Similarly, you have to identify the set for the word 'BRIDE'.

MATRIX 1

	0	1	2	3	4
0	A	B	D	E	N
1	N	E	D	A	B
2	E	N	A	B	D
3	B	D	E	N	A
4	D	A	B	N	E

MATRIX 2

	5	6	7	8	9
5	O	S	R	P	I
6	S	R	O	I	P
7	R	I	P	S	O
8	P	O	I	R	S
9	I	P	S	O	R

- A 42, 75, 68, 24, 34
- B 96, 88, 68, 24, 32
- C 30, 88, 68, 24, 32
- D 30, 76, 66, 24, 32

Answer: C

Explanation:

- (A) : 42, 75, 68, 24, 34 = BRIDA
- (B) : 96, 88, 68, 24, 32 = PRIDE
- (C) : 30, 88, 68, 24, 32 = **BRIDE**
- (D) : 30, 76, 66, 24, 32 = BIRDE

=> Ans - (C)

Question 22

Pointing towards a man Soumya says, "His mother's daughter is my sister". How is Soumya related to the man?

- A Sister

- B Niece
- C Motherinlaw
- D Aunt

Answer: A

Explanation:

The man's mother's daughter = that man's sister

Now, that man's sister is also Soumya's sister, => Soumya and that man are siblings.

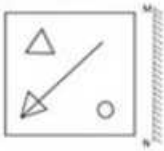
Thus, Soumya is that man's sister.

=> Ans - (A)

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Question 23

If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?



- A
- B
- C
- D

Answer: B

Explanation:

If a mirror is placed on the line MN,

The triangle on the top left will be on the top right in the mirror image

The circle on the bottom right will be on the bottom left in the mirror image

The arrow facing the bottom left faces the bottom right in the mirror image


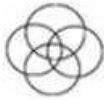


∴ The mirror image of the given figure is



Hence, the correct answer is Option B

Question 24

Identify the diagram that best represents the relationship among the given classes.
Animal, Tiger, Vehicle, Car

- A 
- B 
- C 
- D 

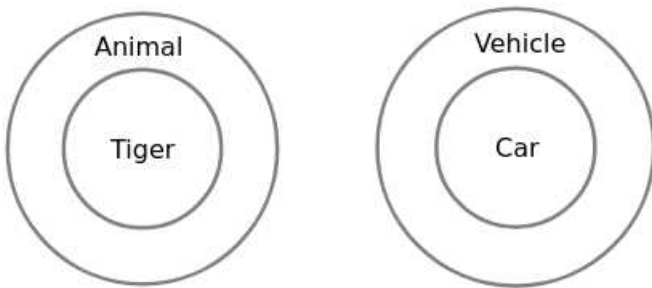
Answer: A

Explanation:

Tiger is an Animal

Car is a Vehicle

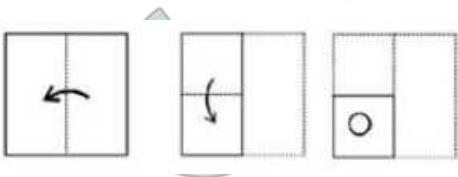
∴ The diagram that best represents the relationship is shown below

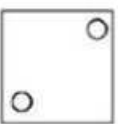
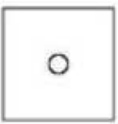
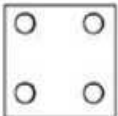


Hence, the correct answer is Option A

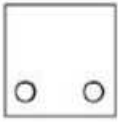
Question 25

A piece of paper is folded and punched as shown in the question figures. From the given answer figures, indicate how it will appear when opened.



- A 
- B 
- C 

D



Answer: C

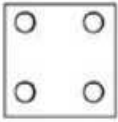
Explanation:

When the paper is opened, the pattern of cutting will be similar in the four parts of the paper.

When the paper is unfolded first to the top, a circle will appear similarly on the top part.

When the paper is unfolded again to the right, one circle each will appear similarly on the top right and bottom right part of the paper.

∴ When the paper is opened it will appear as shown below



Hence, the correct answer is Option C

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General Awareness

Instructions

For the following questions answer them individually

Question 26

Asiatic black bear and snow leopard is found in which of the following places?

- A Sundarbans National Park
- B Nanda Devi and Valley of Flowers National Parks
- C Keoladeo National Park
- D Manas Wildlife Sanctuary

Answer: B

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Question 27

Mother Teresa won Nobel Prize for?

- A Literature
- B Physics
- C Peace
- D Economic Studies

Answer: C

Question 28

BCG vaccine is given to protect from which disease ?

- A Jaundice
- B Anaemia
- C Tuberculosis
- D Polio

Answer: C

Question 29

Parallel venation is found in

- A plants which are monocots
- B plants which have a dicot stem
- C plants with leaves similar to Tulsi
- D plants with tap roots

Answer: A

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Question 30

The hardest part of the body is

- A Bones
- B Tooth Enamel
- C Skull
- D Spinal Cord

Answer: B

Question 31

The Chemical formula of Ammonium sulphate is

- A NH_4SO_4
- B $(\text{NH}_4)_2\text{SO}_3$
- C NH_4SO_3
- D c: NH_4SO_3
d: $(\text{NH}_4)_2\text{SO}_4$

Answer: C

Question 32

The common name of lead (II) sulphide is

- A borax

B epsom salt

C galena

D brimstone

Answer: C

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Question 33

SMTP in computer science stands for?

A Simple Markup Transfer Protocol

B Systems Mail Transfer Protocol

C Simple Mail Transfer Protocol

D Systems Memory Transfer Protocol

Answer: C

Question 34

Which of the following is a string based Indian musical instrument?

A Samvadini

B Jaltarang

C Surbahar

D Pakhawaj

Answer: C

Question 35

Calculate a country's GDP if for the year, consumer spending is \$900 million, government spending is \$250 million, investment by businesses is \$180 million, exports are \$85 million and imports are \$100 million.

A \$1345 million

B \$1315 million

C \$955 million

D \$815 million

Answer: B

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Question 36

Increase in the demand for a good will cause the equilibrium price of the good toand the equilibrium quantity to

A increase; increase

- B decrease; decrease
- C increase; decrease
- D decrease; increase

Answer: A

Question 37

Which type of pathogen causes the waterborne disease E. coli Infection?

- A Protozoan
- B Parasitic
- C Bacterial
- D Viral

Answer: C

Question 38

.....is a measure of the actual amount of water vapour in a particular sample of air: measured as a partial pressure.

- A Specific Humidity
- B Absolute Humidity
- C Relative Humidity
- D Dew Point

Answer: B

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Question 39

In India all of the following are sources for government revenue, except?

- A Agricultural income tax
- B Anti dumping duty
- C Perquisite tax
- D Toll tax

Answer: A

Question 40

Ranchi is the capital of which Indian State?

- A Chattisgarh
- B Goa
- C Himachal Pradesh

D Jharkhand

Answer: D

Question 41

What is the capital of Greece?

A Buenos Aires

B Stockholm

C Athens

D Bern

Answer: C

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Question 42

World War 2 was fought between two groups, the Allies and the Axis Powers? Which country did not belong to the Axis Powers?

A Denmark

B Bulgaria

C Romania

D Italy

Answer: A

Question 43

During Akbar's reign who was the Finance Minister of the Mughal empire?

A Raja Todar Mal

B Man Singh I

C Birbal

D Tansen

Answer: A

Question 44

Who Invented Lawnmower?

A Edwin Howard Armstrong

B John Barber

C Edwin Beard Budding

D Nicholas Callan

Answer: C

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Question 45

.....is defined as the force acting per unit current per unit length on a wire placed at right angles to the magnetic field.

- A Magnetic susceptibility
- B Magnetic flux density
- C Magnetic flux
- D Magnetic pulse

Answer: B

Question 46

If an object moves in a purely rotatory motion, then each constituent particle of the body moves in a circle, the centre of which is located on a line is called

- A the axis of rotation
- B the line of rotation
- C the spinning rod
- D the fixed line

Answer: A

Question 47

The second most senior office in the country is of

- A Office of the President of India
- B Office of the Prime Minister of India
- C Office of the Vice President of India
- D Office of the Chief Justice of India

Answer: C

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Question 48

Article 187 of the Indian Constitution "Secretariat of State Legislature" deals with?

- A the State Government
- B the directive principles of state policy
- C the Union Government
- D the fundamental rights of the Indian Citizen

Answer: A

Question 49

Which country won the first cricket world cup?

- A New Zealand
- B West Indies
- C England
- D Australia

Answer: B

Question 50

Who is the author of "Promise Me a Million Times"?

- A Amish Tripathi
- B Durjoy Datta
- C Keshav Aneel
- D Savi Sharma

Answer: C

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English

Instructions

For the following questions answer them individually

Question 51

Rearrange the parts of the sentence in correct order.

They are sophisticated enough
Pto know that Free Basics
Qthe things they really want to access
Rwould not offer them any of

- A RPQ
- B QRP
- C PRQ
- D QPR

Answer: C

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Question 52

In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.
to bite off more than you can chew

- A to take on a commitment one cannot fulfil

- B to grab a share more than what one rightfully deserves
- C to hog more than what one needs
- D a greedy person can easily be identified from the way one eats

Answer: A

Question 53

In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

Being in awe of them,(A)/ the young man followed(B)/their direction to a tee(C)/No error(D)

- A A
- B B
- C C
- D D

Answer: D

Question 54

In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one, which best expresses the same sentence in Passive/Active voice.

My father generously donated money to the church.

- A Money is generously being donated to the church by my father.
- B Money has been generously donated to the church by my father.
- C Money had been generously donated to the church by my father.
- D Money was generously donated to the church by my father.

Answer: D

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Question 55

In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one, which best express the same sentence in Indirect/Direct speech.

I said to Arun, "What do you want?"

- A I asked that Arun what he wanted.
- B I asked that Arun what he wants.
- C I asked that Arun what he is wanting.
- D I asked Arun what he wanted.

Answer: D

Question 56

Rearrange the parts of the sentence in correct order.

Of these,

Pmostly two have proved

Qto be bones of contention

Rbetween the two parties

A QRP

B RPQ

C PRQ

D PQR

Answer: D

Question 57

Select the synonym of
improvident

A provident

B extravagant

C miserly

D thrifty

Answer: B

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Question 58

Select the antonym of
to pilfer

A appropriate

B to bestow

C to filch

D to purloin

Answer: B

Question 59

Select the antonym of
seedy

A posh

B faded

C decrepit

D ailing

Answer: A

Question 60

In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Technological improvements did not decrease human beings'to wage war.

A routine

B propensity

C nature

D pattern

Answer: B

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Question 61

In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.

A period of time during which a person that might have a disease is kept away from other people so that the disease cannot spread

A solitude

B seclusion

C quarantine

D desolate

Answer: C

Question 62

In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase. to bite your tongue

A to cause selfinflicting harm

B to make a desperate effort to avoid saying something

C harsh words once spoken can never come back

D to be astonished

Answer: B

Question 63

Improve the bracketed part of the sentence. Do you know (to whom Raj is going to marry)?

A who is raj going to get married

B who Raj will be going to marry

C whom Raj is going to marry

D no improvement

Answer: C

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Question 64

Select the synonym of
to ebb

A to abatement

B to swell

C to ascent

D to surge

Answer: A

Question 65

Select the word with the correct spelling.

A magnisia

B shaters

C mandarine

D horrible

Answer: D

Question 66

In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.
A heavy blow, or the sound of such a blow.

A lop

B slop

C flop

D whop

Answer: D

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Question 67

Improve the bracketed part of the sentence.

You and I must understand (one another), and that too without delay.

A one other

B with one another

- C each another
- D no improvement

Answer: D

Question 68

In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

Nothing fantastic there, (A)/nor anything Riya would find(B)/either threatening nor interesting.(C)/No error(D)

- A A
- B B
- C C
- D D

Answer: C

Question 69

In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Oats are cut shortly before reaching, when they are known as oathay.

- A maturity
- B age
- C ripeness
- D readiness

Answer: A

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Question 70

Select the word with the correct spelling.

- A ultimasy
- B partime
- C cabarets
- D referes

Answer: C

Explanation:

Start Group:

Instructions

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

India is a country that loves decentralization and it covers almost every I will focusthe subject of tyranny. For example,

lookour police stations. We a Hobbesian sovereign ruling over us. In political, one has what is called the concept of sovereignty which is discussed in Hobbesian terms. country that loves decentralization and it covers almost every

Question 71

country that loves decentralisation and it covers almost every

- A area
- B volume
- C range
- D size

Answer: A

Question 72

I will focusthe subject of tyranny

- A in
- B to
- C on
- D near

Answer: C

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Question 73

For example, lookour police stations

- A into
- B upon
- C at
- D towards

Answer: C

Question 74

Wea Hobbesian sovereign ruling over us.

- A do not need
- B are not needing
- C shall not need
- D won't be needing

Answer: A

Question 75

In political, one has what is called the concept of sovereignty which is discussed in Hobbesian terms.

- A aesthetics
- B metaphysics
- C outlook
- D philosophy

Answer: D

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Mathematics

Instructions

For the following questions answer them individually

Question 76

If $2(5x - 4) - 2 < 2x - 1 < 4x - 2$; then the value of x is

- A 1
- B 0
- C -1
- D 2

Answer: A

Explanation:

Expression 1 : $2x - 1 < 4x - 2$

$$\Rightarrow 4x - 2x > 2 - 1$$

$$\Rightarrow x > \frac{1}{2} \text{ -----(i)}$$

Expression 2 : $2(5x - 4) - 2 < 2x - 1$

$$\Rightarrow 10x - 10 < 2x - 1$$

$$\Rightarrow 10x - 2x < 10 - 1$$

$$\Rightarrow x < \frac{9}{8} \text{ -----(ii)}$$

Combining inequalities (i) and (ii), we get : $\frac{1}{2} < x < \frac{9}{8}$

Thus, only value that x can take = 1

\Rightarrow Ans - (A)

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Question 77

$$(2x + 5)^2 \times (4x - 1) - (3x^3 - 16x^2 + 25x - 21)$$

- A $13x^3 + 92x^2 - 55x + 4$

B $13x^3 - 92x^2 - 55x - 4$

C $13x^3 + 92x^2 + 55x - 4$

D $13x^3 - 92x^2 + 55x + 4$

Answer: C

Explanation:

$$\begin{aligned} \text{Expression: } & (2x + 5)^2 \times (4x - 1) - (3x^3 - 16x^2 + 25x - 21) \\ & = [(4x^2 + 20x + 25) \times (4x - 1)] - (3x^3 - 16x^2 + 25x - 21) \\ & = [(16x^3 - 4x^2) + (80x^2 - 20x) + (100x - 25)] + (-3x^3 + 16x^2 - 25x + 21) \\ & = (16x^3 - 3x^3) + (80x^2 - 4x^2 + 16x^2) + (100x - 25x - 20x) + (-25 + 21) \\ & = 13x^3 + 92x^2 + 55x - 4 \end{aligned}$$

Question 78

A cylindrical vessel of radius 8 cm is partially filled with water. By how much will the water level rise if a sphere of radius 7 cm is completely immersed in this water?

A 7.15 cm

B 14.3 cm

C 21.45 cm

D 28.6 cm

Answer: A

Explanation:

Radius of sphere, $R = 7$ cm

Radius of cylinder, $r = 8$ cm and height of cylinder = h cm

The rise in water level is equal to the height of cylinder when volumes of both solids is equal.

=> Volume of cylinder = Volume of sphere

$$\Rightarrow \pi r^2 h = \frac{4}{3} \pi R^3$$

$$\Rightarrow (8)^2 \times h = \frac{4}{3} \times (7)^3$$

$$\Rightarrow h = \frac{343}{16 \times 3} = 7.15 \text{ cm}$$

Question 79

If $a - b = 6$ and $ab = 16$, then $a^3 - b^3$ is

A 504

B 702

C 728

D 511

Answer: A

Explanation:

Equation 1: $a - b = 6$

=> $a = 6 + b$

Equation 2 : $a \times b = 16$

Substituting value of 'a' in equation 2, we get :

$$\Rightarrow (6 + b)b = 16$$

$$\Rightarrow 6b + b^2 = 16$$

$$\Rightarrow b^2 + 6b - 16 = 0$$

$$\Rightarrow b^2 - 2b + 8b - 16 = 0$$

$$\Rightarrow b(b - 2) + 8(b - 2) = 0$$

$$\Rightarrow (b - 2)(b + 8) = 0$$

$$\Rightarrow b = 2, -8$$

$$\Rightarrow a = 8, -2$$

$$\therefore a^3 - b^3 = (8)^3 - (2)^3 \text{ (or) } (-2)^3 - (-8)^3$$

$$= 512 - 8 = 504$$

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Question 80

Jaikishen can do a piece of work in 15 hours. If he is joined by Jhanvi who is 50% more efficient, in what time will they together finish the work?

A 6 hours

B 12 hours

C 3 hours

D 9 hours

Answer: A

Explanation:

Let total work to be done = 30 units

Jaikishen's efficiency = $\frac{30}{15} = 2$ units/hr

Jhanvi is 50% more efficient, \Rightarrow Jhanvi's efficiency = $\frac{150}{100} \times 2 = 3$ units/hr

Jaikishen and Jhanvi 1 hour's work = $2 + 3 = 5$ units/hr

\Rightarrow Time taken by them to finish the work together = $\frac{30}{5} = 6$ hours

Question 81

When a number is increased by 34, it becomes 117% of itself. What is the number?

A 408

B 200

C 510

D 306

Answer: B

Explanation:

Let the number be $100x$

According to ques, $\Rightarrow 100x + 34 = \frac{117}{100} \times 100x$

$$\Rightarrow 100x + 34 = 117x$$

$$\Rightarrow 117x - 100x = 34$$

$$\Rightarrow x = \frac{34}{17} = 2$$

$$\therefore \text{Number} = 100 \times 2 = 200$$

Question 82

What are the coordinates of the mid point of the segment joining points C(0,-3) and D(8,5)?

A (4, 1)

B (4, -1)

C (-4, 1)

D (-4, -1)

Answer: A

Explanation:

Coordinates of mid point of line joining points (x_1, y_1) and $(x_2, y_2) = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2} \right)$

Let coordinates of mid point (x, y)

C = (0,-3) and D = (8,5)

$$\Rightarrow x = \frac{0+8}{2}$$

$$\Rightarrow x = \frac{8}{2} = 4$$

Similarly, $y = \frac{-3+5}{2}$

$$\Rightarrow y = \frac{2}{2} = 1$$

Thus, coordinates of mid point (4,1)

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Question 83

The line passing through (1,x) and (3,0) is perpendicular to the line passing through (5,1) and (4,4). What is the value of x?

A 2

B 4

C -2/3

D -4

Answer: C

Explanation:

Slope of the line passing through (1,x) and (3,0) = $\frac{(0-x)}{(3-1)} = \frac{-x}{2}$

Slope of the line passing through (5,1) and (4,4) = $\frac{(4-1)}{(4-5)} = -3$

Product of slopes of two perpendicular lines = -1

$$\Rightarrow \left(\frac{-x}{2} \right) \times (-3) = -1$$

$$\Rightarrow x = \frac{-2}{3}$$

Question 84

An angle is smaller than its supplementary angle by 70° . What is the measure of the angle?

- A 125°
- B 55°
- C 80°
- D 10°

Answer: B

Explanation:

Let the angle = θ

Its supplementary angle = $(\theta + 70^\circ)$

Sum of an angle and its supplementary angle = 180°

$$\Rightarrow \theta + (\theta + 70^\circ) = 180^\circ$$

$$\Rightarrow 2\theta = 180^\circ - 70^\circ = 110^\circ$$

$$\Rightarrow \theta = \frac{110}{2} = 55^\circ$$

Question 85

The effective annual rate of interest corresponding to a nominal rate of 7% per annum payable half yearly is

- A 14 percent
- B 14.25 percent
- C 7 percent
- D 7.12 percent

Answer: D

Explanation:

Let sum be = Rs. $100x$

Rate of interest = 7% under compound interest half yearly

$$\text{Amount after 1 year} = P \left(1 + \frac{R}{2 \times 100}\right)^{2 \times T}$$

$$= 100x \left(1 + \frac{7}{200}\right)^{2 \times 1}$$

$$= 100x \left(\frac{207}{200}\right)^2 = \frac{207 \times 207 \times x}{400}$$

$$= \text{Rs. } 107.12x$$

$$\Rightarrow \text{Compound Interest} = \text{Rs. } (107.12x - 100x) = \text{Rs. } 7.12x$$

$$\therefore \text{Effective rate of interest} = \frac{7.12x}{100x} \times 100$$

$$= 7.12\%$$

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Question 86

Two fractions are such that their product is $9/10$ and sum is $77/40$. What are the two fractions.

A $2/5, 9/4$

B $1/5, 9/2$

C $4/5, 9/8$

D $2/5, 9/4$

Answer: C

Explanation:

Let the two numbers be x and y

$$\Rightarrow x + y = \frac{77}{40} \text{ and } x \cdot y = \frac{9}{10}$$

$$\Rightarrow x(40 - x) = \frac{9}{10}$$

$$\Rightarrow x\left(\frac{77-40x}{40}\right) = \frac{9}{10}$$

$$\Rightarrow 77x - 40x^2 = 36$$

$$\Rightarrow 40x^2 - 77x + 36 = 0$$

$$\Rightarrow 40x^2 - 32x - 45x + 36 = 0$$

$$\Rightarrow 8x(5x - 4) - 9(5x - 4) = 0$$

$$\Rightarrow (8x - 9)(5x - 4) = 0$$

$$\Rightarrow x = \frac{9}{8}, \frac{4}{5}$$

Question 87

When a discount of 50% is given on a shirt, the profit is 25%. If the discount is 10%, then the profit is

A 35 percent

B 55 percent

C 215 percent

D 125 percent

Answer: D

Explanation:

Let list price = Rs. $100x$

$$\text{After 50\% discount, selling price} = \frac{50}{100} \times 100x = \text{Rs. } 50x$$

Let Cost price = Rs. y

$$\Rightarrow \text{Profit \%} = \frac{50x - y}{y} \times 100 = 25$$

$$\Rightarrow \frac{50x - y}{y} = \frac{25}{100} = \frac{1}{4}$$

$$\Rightarrow 200x - 4y = y$$

$$\Rightarrow 4y + y = 200x$$

$$\Rightarrow y = \frac{200x}{5} = 40x$$

$$\text{If discount} = 10\%, \Rightarrow \text{Selling price} = \frac{90}{100} \times 100x = \text{Rs. } 90x$$

$$\therefore \text{Profit \%} = \frac{90x - 40x}{40x} \times 100$$

$$= 5 \times 25 = 125\%$$

Question 88

In the first 36 overs of a cricket match, the run rate was 4.3 runs/over. Calculate the required run rate in the remaining 14 overs to reach the target of 271 runs?

- A 8.9
- B 9.5
- C 8.3
- D 7.7

Answer: C

Explanation:

Run rate in 36 overs = 4.3 runs/over

=> Runs scored in 36 overs = $36 \times 4.3 = 154.8$

Runs needed to score in 14 overs = $271 - 154.8 = 116.2$

=> Run rate required = $\frac{116.2}{14} = 8.3$

=> Ans - (C)

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Question 89

Profit of Rs 187200 has to be divided among three partners Amit, Brijmohan and Chiranjeev in the ratio 1:2:5. How much does Chiranjeev get?

- A Rs. 46800
- B Rs. 23400
- C Rs. 117000
- D Rs. 58500

Answer: C

Explanation:

Total profit = Rs. 1,87,200

Ratio of profit divided among Amit, Brijmohan and Chiranjeev = 1 : 2 : 5

=> Amount with Chiranjeev = $\frac{5}{(1+2+5)} \times 187200$

= $5 \times 23400 = Rs. 1,17,000$

=> Ans - (C)

Question 90

To travel 732 km, an Express train takes 6 hours more than Rajdhani. If the speed of the Express train is doubled, it takes 3 hours less than Rajdhani. The speed of Rajdhani is

- A 81.3 km/hr
- B 61 km/hr
- C 40.7 km/hr

D 101.7 km/hr

Answer: B

Explanation:

Let speed of Rajdhani train = x km/hr and Express train = y km/hr

Using, time = distance/speed

$$\text{Acc. to ques, } \Rightarrow \frac{732}{y} - \frac{732}{x} = 6$$

$$\Rightarrow \frac{1}{y} - \frac{1}{x} = \frac{6}{732} = \frac{1}{122} \text{-----(i)}$$

If speed of express train is doubled = $2y$ km/hr

$$\Rightarrow \frac{732}{x} - \frac{732}{2y} = 3$$

$$\Rightarrow \frac{1}{x} - \frac{1}{2y} = \frac{3}{732} = \frac{1}{244} \text{-----(ii)}$$

Adding equations (i) and (ii), we get :

$$\Rightarrow \frac{1}{y} - \frac{1}{2y} = \frac{1}{122} + \frac{1}{244}$$

$$\Rightarrow \frac{1}{2y} = \frac{3}{244}$$

$$\Rightarrow y = \frac{122}{3} \text{ km/hr}$$

$$\therefore \text{Speed of Rajdhani} = \frac{1}{x} = \frac{3}{122} - \frac{1}{122}$$

$$\Rightarrow \frac{1}{x} = \frac{2}{122} = \frac{1}{61}$$

$$\Rightarrow x = 61 \text{ km/hr}$$

Question 91

In a rhombus

- A Adjacent sides are not equal
- B Opposite angles are supplementary
- C Diagonals bisect opposite angles
- D Consecutive angles are equal

Answer: C

Explanation:

In a rhombus, all sides are equal and opposite sides are parallel.

Diagonals bisect opposite angles and consecutive angles are not equal.

=> Ans - (C)

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Question 92

If $\sin 240^\circ = x$, then the value of x is

- A $2/\sqrt{3}$
- B $-\sqrt{2}$
- C 2

D $-\sqrt{3}/2$

Answer: D

Explanation:

Expression : $\sin 240^\circ = x$

$$= \sin(180^\circ + 60^\circ) = -\sin 60^\circ$$

$$= -\frac{\sqrt{3}}{2}$$

=> Ans - (D)

Question 93

The simplest form of $3774/2958$ is

A $43/19$

B $37/29$

C $31/13$

D $31/23$

Answer: B

Explanation:

Expression : $\frac{3774}{2958}$

Both are multiples of 2, thus dividing numerator and denominator by 2

$$= \frac{1887}{1479}$$

Now, dividing by 51, = $\frac{37}{29}$

=> Ans - (B)

Question 94

If 1 shirt is offered free on purchase of 3 shirts priced Rs 500 each, then what is the effective discount on each shirt?

A 30 percent

B 33 percent

C 20 percent

D 25 percent

Answer: D

Explanation:

Cost price of 1 shirt = Rs. 500

Cost price of 4 shirts = $4 \times 500 = \text{Rs.}2,000$

If 1 shirt is offered free on purchase of 3 shirts, => Cost of 3 shirts = $3 \times 500 = \text{Rs.}1,500$

$$\Rightarrow \text{Effective discount} = \frac{2000-1500}{2000} \times 100$$

$$= \frac{500}{2000} \times 100 = 25\%$$

=> Ans - (D)

Question 95

If $\sqrt{\frac{1}{1 + \tan^2 A}} = x$, then the value of x is

- A $\sin A$
- B $\operatorname{cosec} A$
- C $\sec A$
- D $\cos A$

Answer: D

Explanation:

Expression : $\frac{1}{\sqrt{1 + \tan^2 A}}$

Using $(\sec^2 A - \tan^2 A = 1)$

$$= \frac{1}{\sqrt{\sec^2 A}} = \frac{1}{\sec A}$$

$$= \cos A$$

=> Ans - (D)

Question 96

What is the value of $2\sec^2 A$?

- A $\sec A / (\operatorname{cosec} A - 1) + \sec A / (\operatorname{cosec} A + 1)$
- B $\operatorname{cosec} A / (\sec A - 1) + \operatorname{cosec} A / (\sec A + 1)$
- C $\operatorname{cosec} A / (\operatorname{cosec} A - 1) + \operatorname{cosec} A / (\operatorname{cosec} A + 1)$
- D $\sec A / (\sec A - 1) + \sec A / (\sec A + 1)$

Answer: C

Explanation:

$$2\sec^2 A = \frac{2}{\cos^2 A}$$

$$= \frac{2}{\cos^2 A} \times \frac{\sin^2 A}{\sin^2 A}$$

$$= \frac{2\operatorname{cosec}^2 A}{\cot^2 A}$$

$$= \frac{\operatorname{cosec}^2 A + \operatorname{cosec} A + \operatorname{cosec}^2 A - \operatorname{cosec} A}{\operatorname{cosec}^2 A - 1}$$

$$= \frac{\operatorname{cosec} A(\operatorname{cosec} A + 1) + \operatorname{cosec} A(\operatorname{cosec} A - 1)}{(\operatorname{cosec} A + 1)(\operatorname{cosec} A - 1)}$$

$$= \frac{\operatorname{cosec} A}{\operatorname{cosec} A - 1} + \frac{\operatorname{cosec} A}{\operatorname{cosec} A + 1}$$

Hence, option C is the correct answer

Question 97

Read the table and answer the given questions

	Quantity of cost	Average cost
MOBILES	30	11000
CAMERAS	54	12000
TVs	65	58000
REFRIGERATOR	61	22000
AC	65	26000

What is the total value of the cost in lakhs ?

- A 778
- B 129
- C 275
- D 77.8

Answer: D

Explanation:

Total value of cost (in 000's)

$$= (30 \times 11) + (54 \times 12) + (65 \times 58) + (61 \times 22) + (65 \times 26)$$

$$= 330 + 648 + 3770 + 1342 + 1690 = 7780 \text{ thousand}$$

=> Total value of the cost in lakhs = 77.8 lakhs

=> Ans - (D)

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Question 98

Read the data and answer the given Questions

Years	Ratio of Impot to export
2011	1.2
2012	0.7
2013	1.2
2014	1.1
2015	0.9

If the imports In 2012 was Rs. 1100 crores and the total exports In the years 2012 and 2013 together was Rs. 6000 crores, then the imports in 2013 was?

- A 1571
- B 4429
- C 5314
- D 3690

Answer: C

Explanation:

Let Exports in 2012 = Rs. x crore and exports in 2013 = Rs. $(6000 - x)$ crore

$$\text{Ratio of imports to exports in 2012} = \frac{1100}{x} = 0.7$$

$$\Rightarrow x = \frac{1100}{0.7} = \text{Rs. } \frac{11000}{7} \text{ crore}$$

$$\Rightarrow \text{Exports in 2013} = 6000 - \frac{11000}{7} = \text{Rs. } \frac{31000}{7} \text{ crore}$$

Let imports in 2013 = Rs. y crore

$$\text{Ratio of imports and exports in 2013} = \frac{31000}{7} = 1.2$$

$$\Rightarrow y = \frac{31000}{7} \times 1.2 \approx \text{Rs. } 5314 \text{ crore}$$

Question 99

Read the data and answer the given questions

Measured On Birthday	Hieght of Children in CMs
4	100
5	105
6	115
7	125
8	135
9	140
10	145
11	150
12	155
13	165
14	175
15	180
16	185

What is the increase in height of child from 6th birthday to 15th birthday in cms ?

- A 70 cms
- B 65 cms
- C 60 cms
- D 75 cms

Answer: B

Explanation:

Height on 6th birthday = 115 cm

Height on 15th birthday = 180 cm

Increase in height = $180 - 115 = 65$ cm

\Rightarrow Ans - (B)

Question 100

Read the data and answer the given questions

Deep Sleep	10
Dreaming	15
Light Sleep	5
Exreamly Sleep	5
Awake	65

Between 10pm to 6am, a fitness band records the following data. How long was the user Dreaming or was Awake?

- A 4.9 hours
- B 5.9 hours
- C 6.4 hours

D 6.9 hours

Answer: C

Explanation:

Total time between 10 pm to 6 am = 8 hours

% time spent on dreaming and on awake = $15 + 65 = 80\%$

=> Time spent on dreaming or on awake = $\frac{80}{100} \times 8$

$= \frac{640}{100} = 6.4$ hours

=> Ans - (C)

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