



2017 SSC CGL 16 Aug Shift-3

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Reasoning

Instructions

For the following questions answer them individually

Question 1

In the following question, select the related word from the given alternatives.

Frog : Amphibian :: Lizard : ?

- A Rodent
- B Mammal
- C Reptile
- D Insect

Answer: C

Explanation:

Amphibians comprises of frogs, similarly lizard are classified as reptiles.

=> Ans - (C)

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Question 2

In the following question, select the related letters from the given alternatives.

DJLQ : WQOJ :: DMSW : ?

- A WNHD
- B WNDH
- C WHND
- D WWCC

Answer: A

Explanation:

Expression = DJLQ : WQOJ

The pattern followed is that there are as many alphabets to the left of the first letter as there are to the right of the leftmost letter in right hand side

D is 4th from left end and W is 4th from right end. J is 10th from left end and Q is 10th from right end. L is 12th from left end and O is 12th from right end. Finally, Q is 17th from left end and J is 17th from right end in English alphabetical series.

Similarly, for DMSW :

Now, D is 4th from left end, thus first letter will be 4th from right end = W

M is 13th from left end, second letter will be 13th from right end = N

Thus, missing term = **WNHD**

=> Ans - (A)

Question 3

In the following question, select the related number from the given alternatives.

7 : 56 :: 11 : ?

- A 121
- B 123
- C 132
- D 134

Answer: C

Explanation:

Expression : $7 : 56 :: 11 : ?$

The pattern followed = $n : n^2 + n$

Eg = $7 : 7^2 + 7 = 7 : 56$

Similarly, $11^2 + 11 = 121 + 11 = 132$

=> Ans - (C)

Question 4

In the following question, select the odd word from the given alternatives.

- A Music
- B Singer
- C Director
- D Actor

Answer: A

Explanation:

Singer, director and actor are people, hence music is the odd one out.

=> Ans - (A)

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Question 5

In the following question, select the odd letters from the given alternatives.

- A JGD
- B NLI
- C XUR
- D QNK

Answer: B

Explanation:

(A) : J (-3 letters) = G (-3 letters) = D

(B) : N (-2 letters) = L (-3 letters) = I

(C) : X (-3 letters) = U (-3 letters) = R

(D) : Q (-3 letters) = N (-3 letters) = K

=> Ans - (B)

Question 6

In the following question, select the odd number from the given alternatives.

- A 71
- B 83
- C 89
- D 93

Answer: D

Explanation:

Among the given numbers, only 93 is composite, rest are prime numbers.

=> Ans - (D)

Question 7

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

1. Counter
2. Crop
3. Create
4. Carnation
5. Creator

- A 41352
- B 41253
- C 43125
- D 41325

Answer: A

Explanation:

As per the dictionary, words arranged are :

Carnation -> Counter -> Create -> Creator -> Crop

=> Ans - (A)

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Question 8

A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

A, E, J, N, S, W, ?

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

Answer: C

Explanation:

The pattern followed is that 4 letters and 5 letters are alternatively missing from successive terms.

A (+4 letters) = E

E (+5 letters) = J

J (+4 letters) = N

N (+5 letters) = S

S (+4 letters) = W

W (+5 letters) = B

=> Ans - (C)

Question 9

In the following question, select the missing number from the given series.

3, 7, 16, 35, ?

A 73

B 74

C 78

D 82

Answer: B

Explanation:

The pattern followed is :

$$3 \times 2 + 1 = 7$$

$$7 \times 2 + 2 = 16$$

$$16 \times 2 + 3 = 35$$

$$35 \times 2 + 4 = 74$$

=> Ans - (B)

Question 10

The ratio of present ages of L and N is 7 : 5. If the age of N after seven years will be 32 years, then what is the present age (in years) of L?

A 49

B 35

C 28

D 42

Answer: B

Explanation:

Let present ages of L and N be $7x$ years and $5x$ years respectively.

$$\text{Thus, N's age after 7 years} = 5x + 7 = 32$$

$$\Rightarrow 5x = 32 - 7 = 25$$

$$\Rightarrow x = \frac{25}{5} = 5$$

$$\therefore \text{L's age} = 7 \times 5 = 35 \text{ years}$$

=> Ans - (B)

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Question 11

Pointing towards a girl, Chetan(male) said "She is the daughter of the only child of my grandmother". How is Chetan related to that girl?

- A Father
- B Son
- C Brother
- D Husband

Answer: C

Explanation:

Only child of Chetan's grandmother is Chetan's father/mother.

Now, that girl is Chetan's father's/mother's daughter, thus Chetan and the girl are siblings.

Thus, Chetan is her brother.

=> Ans - (C)

Question 12

In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.

Nightwalker

- A Talker
- B Tailer
- C Waller
- D Winer

Answer: C

Explanation:

The word NIGHTWALKER does not have 2 L's, and thus 'Waller' cannot be formed from it.

=> Ans - (C)

Question 13

In a certain code language, "SPICEY" is written as "ELOUAY" and "PONDER" is written as "JKLNAZ". How is "HOUSED" written in that code language?

- A QKDZAO
- B GNTRDC
- C WQJFGU
- D DKQAOZ

Answer: A

Explanation:

"SPICEY" is written as "ELOUAY"

Step I : The word is divided into 2 parts = SPI and CEY

Step II : 4 letters are subtracted from each part, => SPI (-4 letters) = OLE and CEY (-4 letters) = YAU

Step III : Each code is written in reverse order and merged at the end, => SPI -> ELO and CEY -> UAY

Similar pattern is observed in PONDER : JKLNAZ

Thus, HOU (-4 letters) = DKQ and SED (-4 letters) = OAZ

=> Reversing each part, we get HOUSED : QKDZAO

=> Ans - (A)

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Question 14

If "x" denotes "added to", "÷" denotes "subtracted from", "+" denotes "divided by" and "-" denotes "multiplied by", then

$$14 \times 12 - 16 \div 18 = ?$$

A 430

B 180

C 168

D 188

Answer: D

Explanation:

Expression : $14 \times 12 - 16 \div 18 = ?$

$$\equiv 14 + 12 \times 16 - 18$$

$$= 14 + 192 - 18 = 188$$

=> Ans - (D)

Question 15

If $18 \times 12 = 206$ and $19 \times 22 = 408$, then

$$23 \times 36 = ?$$

A 878

B 818

C 794

D 776

Answer: B

Explanation:

The pattern followed is that 10 is subtracted from the actual result.

$$\text{Eg : } (18 \times 12) - 10 = 216 - 10 = 206$$

$$\text{and } (19 \times 22) - 10 = 418 - 10 = 408$$

$$\text{Similarly, } (23 \times 36) - 10 = 828 - 10 = 818$$

=> Ans - (B)

Question 16

In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

2	4	1
5	3	5
7	2	6
39	17	?

- A 11
- B 31
- C 32
- D 37

Answer: B

Explanation:

In the first column, the number at the end is obtained by adding the product of first and third column and square of the second term.

$$\text{Eg : } (2 \times 7) + (5)^2 = 14 + 25 = 39$$

$$\text{and } (4 \times 2) + (3)^2 = 8 + 9 = 17$$

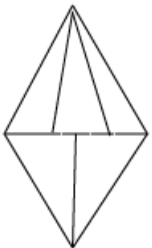
$$\text{Similarly, } (1 \times 6) + (5)^2 = 6 + 25 = 31$$

=> Ans - (B)

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Question 17

How many triangles are there in this given figure



- A 8
- B 9
- C 10
- D 12

Answer: B

Explanation:

Small triangles = 5

Triangles formed by combination of 2 triangles = 3

Triangles formed by combination of 3 triangles = 1

Thus, total triangles = 5 + 3 + 1 = 9

=> Ans - (B)

Question 18

In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements.

Statements:

- I. Some cups are plates.
- II. All spoons are blue.
- III. No plates are spoon.

Conclusions:

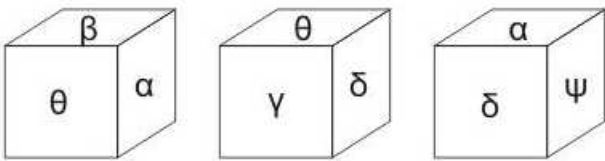
- I. Some cups are not spoon.
- II. Some plates are not blue.
- III. Some cups are not blue.
- IV. Some blue are not plates.

- A Only conclusion (I), (III) and (IV) follow.
- B Only conclusion (II) and (IV) follow.
- C Only conclusion (II), (III) and (IV) follow.
- D Only conclusion (I) and (IV) follow.

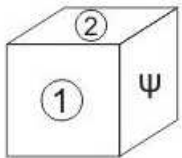
Answer: D

Question 19

Three position of a cube are shown in below



Which symbol will come on two faces marked 1 and 2 ?

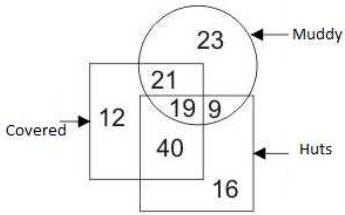


- A θ and δ
- B α and β
- C θ and β
- D θ and γ

Answer: B

Question 20

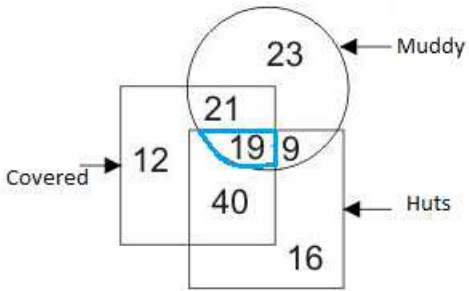
In the figure how many huts are covered and muddy ?



- A 28
- B 40
- C 33
- D 19

Answer: D

Explanation:

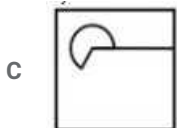
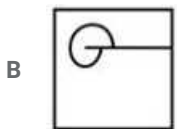
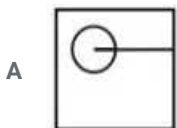
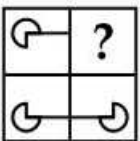


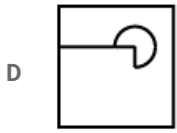
Huts which are both covered and muddy (represented by blue boundary) = 19

=> Ans - (D)

Question 21

Which answer figure will complete the pattern in the question figure

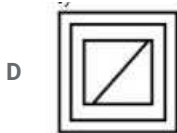
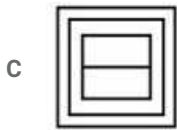
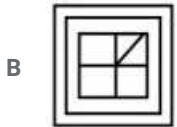
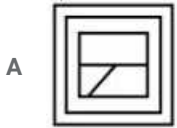
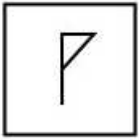




Answer: D

Question 22

From the given answer select in one in which the question figure is hidden / embedded



Answer: B

Explanation:

The question figure is embedded in the following figure in blue colour.

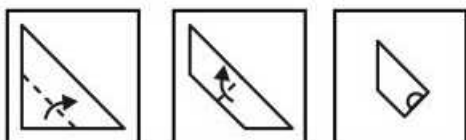


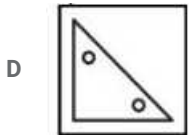
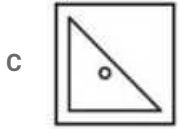
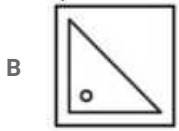
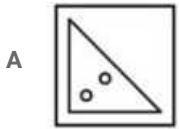
=> Ans - (B)

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Question 23

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

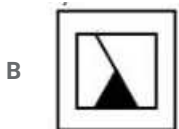
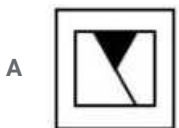
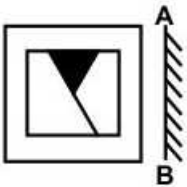




Answer: A

Question 24

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



Answer: C

Explanation:

A vertical mirror is placed, so the object on the left will appear on the right and vice-versa. The figure now resembles an inverted 'Y' figure, so in the mirror image, it will appear as normal 'Y'.

Also, the black triangle will keep pointing downwards in the mirror image.

=> Ans - (C)

Question 25

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, 'P' can be represented by 11, 23, etc., and 'K' can be represented by 65, 89, etc. Similarly, you have to identify the set for the word "TAKE".

	0	1	2	3	4
0	A	N	S	T	P
1	T	P	A	N	S
2	N	S	T	P	A
3	P	A	N	S	T
4	S	T	P	A	N

	5	6	7	8	9
5	R	E	P	K	O
6	K	O	R	E	P
7	E	P	K	O	R
8	O	R	E	P	K
9	P	K	O	R	E

- A 10, 32, 66, 56
- B 41, 00, 89, 75
- C 03, 43, 78, 99
- D 22, 13, 97, 87

Answer: B

Explanation:

- (A) : 10, 32, 66, 56 = TNOE
 - (B) : 41, 00, 89, 75 = **TAKE**
 - (C) : 03, 43, 78, 99 = TAOE
 - (D) : 22, 13, 97, 87 = TNOE
- => Ans - (B)

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English

Instructions

For the following questions answer them individually

Question 26

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'.

He did not go (a:/ to the temple on foot (b:/ he went there by the car. (c:/ No Error (d:

- A 1
- B 2
- C 3
- D 4

Answer: C

Question 27

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'.

She ascended (a:/ to the throne (b:/ at the early age of seven. (c:/ No Error (d:

- A 1
- B 2
- C 3
- D 4

Answer: B

Question 28

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.

Neha's mother was annoyed with her as she could not ____ her examination.

- A Get off
- B Get on
- C Get upon
- D Get through

Answer: D

Question 29

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.

I shall ____ her if she apologises to me for her misbehavior.

- A pardon
- B forgive
- C punish
- D reprimand

Answer: B

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Question 30

In the following question, out of the four alternatives, select the word similar in meaning to the word given.

Ebullient

- A Deceitful
- B Insincerity

C Enthusiastic

D Prejudice

Answer: C

Question 31

In the following question, out of the four alternatives, select the word similar in meaning to the word given.

Truculent

A Ferocious

B Luxurious

C Luscious

D Delicious

Answer: A

Question 32

In the following question, out of the four alternatives, select the word opposite in meaning to the word given.

Niggardly

A Mingy

B Inefficient

C Generous

D Sinful

Answer: C

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Question 33

In the following question, out of the four alternatives, select the word opposite in meaning to the word given.

Dissident

A Alienated

B Iconoclast

C Divisive

D Orthodox

Answer: D

Question 34

In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/Phrase.

Bear the palm

A To face the consequences

- B To meet death
- C To be able to predict future
- D To win

Answer: D

Question 35

In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/Phrase.

To give the devil his due

- A To punish the wrong person
- B To give credit to even a notorious person
- C To let the enemy learn the lesson on his own
- D To stand in the way of the devil

Answer: B

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Question 36

Improve the bracketed part of the sentence.

(No sooner the advertisement regarding the launch of new smart phone appeared) than there was a rush on the online website for prebooking the same.

- A No sooner the advertisement regarding the launched of new smart phone appeared
- B No sooner did the advertisement regarding the launch of new smart phone appeared
- C The advertisement regarding the launch of new smart phone was no sooner having appeared
- D No improvement

Answer: B

Question 37

Improve the bracketed part of the sentence.

The equipment is (adapted to) cotton industries.

- A Adapted from
- B Adapted for
- C Adapted of
- D No improvement

Answer: B

Question 38

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

One who loads and uploads ships

- A Stevedore
- B Transgressor
- C Lapidist
- D Reticent

Answer: A

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Question 39

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

Belief or opinion contrary to what is generally accepted

- A Invocation
- B Incognito
- C Heresy
- D Mercenary

Answer: C

Question 40

In the following question, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

- A Tomorrow
- B Occurence
- C Temperature
- D Preferable

Answer: B

Question 41

In the following question, four words are given out of which one word is incorrectly spelt. Find the incorrectly spelt word.

- A Receeding
- B Cemetery
- C Parallelogram
- D Rehearsal

Answer: A

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Question 42

The question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

P: If all the requirements of the villages are satisfied there by itself, then the peasants will usefully utilize their spare time.

Q: Let us consider the village artisans.

R: This will also provide employment to all the educated people of the villages.

S: Having discussed the problems and requirements of rural life.

A SQPR

B PRQS

C QRPS

D PSQR

Answer: A

Question 43

The question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

P: Practical farming includes knowledge of fruit and vegetable farming.

Q: These schools need not necessarily have their own farms because the village itself will provide ample field work facilities.

R: Agriculture should be made compulsory in higher secondary schools; alternatively, the urban students can be taught town-planning, industrial planning etc.

S: Therefore, at this stage, only theoretical education for the village students would suffice.

A QRSP

B RPQS

C RSPQ

D QPRS

Answer: B

Question 44

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.

I saw him leaving the movie theatre.

A He was seen leaving the movie theatre by me.

B Leaving the movie theatre he was seen by me.

C He was seen to be leaving the movie theatre.

D He had been seen leaving the movie theatre.

Answer: A

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Question 45

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

The principal said, "Be quiet, girls."

- A The principal called the girls and ordered them to be quiet.
- B The principal commanded the girls that they be quiet.
- C The principal urged the girls to be quiet.
- D The principal said that the girls should be quiet.

Answer: C

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.

Modern man is imprisoned by his time-table and his routine. His life is all care and ___(1)__. He does not have ___(2)___ for anything but his duties and occupation for ___(3)___ money. Men, in all ___(4)___ may have been prone to this disease and; indeed, we in India may not have been ___(5)___ by it to the extent that people in western countries have been.

Question 46

(1)

- A wisdom
- B success
- C worry
- D anxiety

Answer: C

Question 47

(2)

- A resources
- B time
- C material
- D money

Answer: B

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Question 48

(3)

- A making
- B minting

C collecting

D spending

Answer: A

Question 49

(4)

A spheres

B streams

C areas

D ages

Answer: D

Question 50

(5)

A infected

B inflicted

C accompanied

D associate

Answer: B

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General Awareness

Instructions

For the following questions answer them individually

Question 51

In which of the following market forms a firm does not exercise control over price?

A Mixed Competition

B Monopoly

C Oligopoly

D Perfect Competition

Answer: D

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Question 52

Which of the following is represented by 'Lorenz Curve'?

- A Employment
- B Inflation
- C Deflation
- D Income Distribution

Answer: D

Question 53

Which of the following is not a fundamental duty?

- A To abide by constitution and respect the National Flag
- B To promote harmony and brotherhood
- C To uphold and protect the sovereignty
- D Abolition of titles except military and academic

Answer: D

Question 54

Which article can be used by The President of India to declare financial emergency?

- A Article 32
- B Article 349
- C Article 360
- D Article 365

Answer: C

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Question 55

The Poona Pact was signed between Mahatma Gandhi and _____.

- A Muhammad Ali Jinnah
- B Lord Irwin
- C Subhash Chandra Bose
- D B. R. Ambedkar

Answer: D

Question 56

Which Governor General abolished the 'Sati System' in India?

- A Lord Canning
- B Lord Ripon

C Lord Wiliam Bentinck

D Lord Dalhousie

Answer: C

Question 57

Which of the following is NOT a primary green house gas in the earth's atmosphere?

A Methane

B Ozone

C Nitrous oxide

D Hydrogen

Answer: D

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Question 58

Which type of forest is most widespread in India?

A Tropical Evergreen Forests

B Tropical Deciduous Forests

C Montane Forests

D Mangrove Forests

Answer: B

Question 59

Which blood group is universal donor?

A O+

B O-

C AB-

D AB+

Answer: B

Question 60

In how many parts is the human brain divided?

A 2

B 3

C 4

D 5

Answer: B

General Science Notes for SSC CGL

Question 61

In which of the following class can we put Adrenaline?

- A Hormone
- B Enzyme
- C Protein
- D Fat

Answer: A

Question 62

Supercooling is cooling of liquid _____.

- A below melting point
- B below freezing point
- C at melting point
- D above melting point

Answer: B

Question 63

When light passes from one medium to another, this phenomenon of change in its direction is called _____.

- A Refraction
- B Diffraction
- C Propagation
- D No option is correct

Answer: A

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Question 64

Which among the following is not an input device?

- A Plotter
- B Magnetic Ink Character Recognition (MICR)
- C Optical Mark Recognition (OMR)
- D Barcode Reader

Answer: A

Question 65

Which chemical is also known as Carboic Acid?

- A Phenol
- B Hydroxide
- C Sulphuric Acid
- D Ethanol

Answer: A

Question 66

Who discovered electron?

- A E. Goldstien
- B J. J. Thomson
- C Ernest Rutherford
- D J. Chadwick

Answer: B

SSC Exam Free Videos (Youtube)

Question 67

Who is a major driving force behind the 'Narmada Bachao Andolan'?

- A Anna Hazare
- B Medha Patkar
- C Shantha Sinha
- D Manasi Pradhan

Answer: B

Question 68

'Udey Desh ka Aam Nagrik' (UDAN) scheme for regional air connectivity will provide travel to tier 2 and tier 3 cities at the rate of Rs ____ per hour.

- A 1500
- B 2000
- C 2500
- D 3000

Answer: C

Question 69

Who invented radar?

- A Fred Morrison
- B A. H. Taylor and Leo C. Young
- C Van Tassel
- D W. K. Roentgen

Answer: B

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Question 70

David Warner plays cricket for which country?

- A England
- B New Zealand
- C Australia
- D Sri Lanka

Answer: C

Question 71

Japanese art 'Ikebana' is related to ____.

- A paper folding
- B flower arrangement
- C tree cutting
- D sand art

Answer: B

Question 72

Who was awarded the 2017 Padma Bhushan Award in the field of Art-Music?

- A Devi Prasad Dwivedi
- B Anuradha Paudwal
- C Vishwa Mohan Bhatt
- D K. J. Yesudas

Answer: C

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Question 73

Who has recently launched his autobiography titled 'An Unsuitable Boy'?

- A Rishi Kapoor
- B MS Dhoni
- C Karan Johar
- D Vikram Seth

Answer: C

Question 74

Which of the following country is not a member of 'The Indian Ocean Rim Association (IORA)'?

- A Sri Lanka
- B Mauritius
- C Seychelles
- D China

Answer: D

Question 75

Which country has launched the longest bullet train line covering a distance of 2252 kilometers in January, 2017?

- A Japan
- B China
- C Afghanistan
- D Myanmar

Answer: B

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Mathematics

Instructions

For the following questions answer them individually

Question 76

What is the sum of all prime numbers between 60 and 80?

- A 272
- B 284
- C 351
- D 414

Answer: C

Explanation:

Sum of all prime numbers between 60 and 80

$$= 61 + 67 + 71 + 73 + 79$$

$$= 351$$

=> Ans - (C)

SSC CHSL Previous Question papers (download pdf)

Question 77

A and B have to type a book together containing 120 pages. A takes 9 hrs to type 36 pages and B takes 5 hrs to type 40 pages. A typed first 60 pages alone and the last 60 pages were typed by A and B together. How much time (in hours) will be taken to type the complete book?

A 24

B 20

C 12

D 15

Answer: B

Explanation:

A takes 9 hrs to type 36 pages

$$\Rightarrow \text{A's efficiency} = \frac{36}{9} = 4 \text{ pages/hr}$$

$$\text{Similarly, B's efficiency} = \frac{40}{5} = 8 \text{ pages/hr}$$

$$\text{A typed first 60 pages alone, } \Rightarrow \text{Time taken to print 60 pages} = \frac{60}{4} = 15 \text{ hours}$$

$$\text{Similarly, time taken to print last 60 pages by A and B together} = \frac{60}{(4+8)} = 5 \text{ hours}$$

$$\therefore \text{Total time taken to complete the book} = 15 + 5 = 20 \text{ hours}$$

=> Ans - (B)

Question 78

ABC is a right angled triangle in which $\angle B = 90^\circ$, AB = 5 cm and BC = 12 cm. What is the approximate volume (in cm³) of the double cone formed by rotating the triangle about its hypotenuse?

A 145

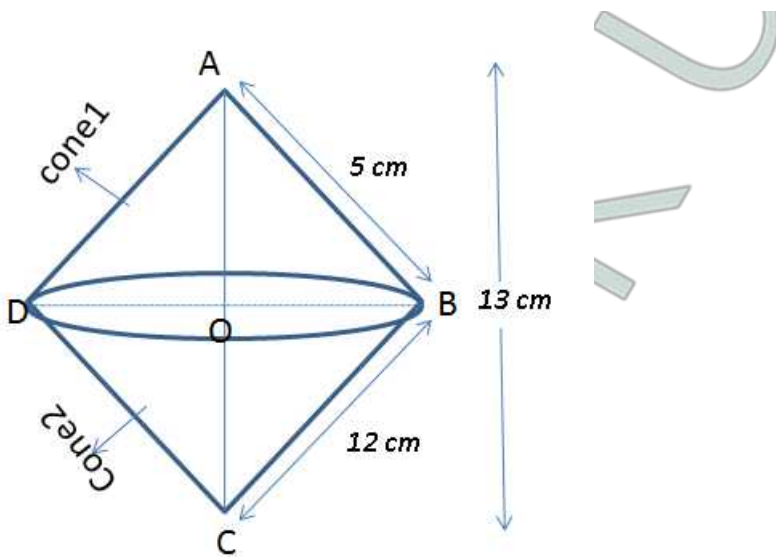
B 290

C 435

D 580

Answer: B

Explanation:



$$\text{Hypotenuse } AC = \sqrt{5^2 + 12^2} = \sqrt{25 + 144}$$

$$= \sqrt{169} = 13 \text{ cm}$$

$$\text{Area of } \triangle ABC = \frac{1}{2} \times (AB) \times (AC) = \frac{1}{2} \times (AC) \times (OB)$$

$$\Rightarrow OB \times 13 = 5 \times 12$$

$$\Rightarrow OB = \frac{60}{13} \text{ cm}$$

Volume of double cone = Volume of cone 1 + Volume of cone 2

$$= \frac{1}{3} \pi r^2 h_1 + \frac{1}{3} \pi r^2 h_2$$

$$= \frac{1}{3} \pi r^2 (h_1 + h_2)$$

$$= \frac{1}{3} \times 3.14 \times (OB)^2 \times (OA + OC)$$

$$= \frac{1}{3} \times 3.14 \times \left(\frac{60}{13}\right)^2 \times 13$$

$$= \frac{11304}{39} = 289.85 \approx 290 \text{ cm}^3$$

\Rightarrow Ans - (B)

Question 79

A trader allowed a discount of 15% on a trolley bag having list price of Rs 1360 and earns a profit of 15.6%. What is the cost price (in Rs) of the trolley bag?

- A 1000
- B 1005
- C 1050
- D 1156

Answer: A

Explanation:

List price = Rs. 1360

Discount % = 15%

$$\Rightarrow \text{Selling price} = 1360 \times \frac{(100-15)}{100} = \text{Rs. } 1156$$

Profit % = 15.6%

$$\therefore \text{Cost price} = 1156 \times \frac{100}{(100+15.6)}$$

$$= \frac{1156}{115.6} \times 100 = \text{Rs. } 1000$$

=> Ans - (A)

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Question 80

Price of a diamond is directly proportional to square of its weight. A man broke the diamond accidentally in three pieces in the ratio of 3 : 5 : 7 and thus loses Rs 42600. What was the original price (in Rs) of the diamond?

A 11786

B 60000

C 67500

D 75000

Answer: C

Explanation:

Let weight of original diamond = $15x$ and price of diamond = Rs. C

According to ques, => $C \propto (15x)^2$

$$\Rightarrow C = 225kx^2 \text{ -----(i)}$$

Let weight of each broken piece be $3x$, $5x$ and $7x$ g

Thus, cost of first piece (from equation (i)) = $k(3x)^2 = 9kx^2$

Similarly, price of each of the remaining pieces = $25kx^2$ and $49kx^2$

$$\Rightarrow \text{Total cost} = 9kx^2 + 25kx^2 + 49kx^2 = 83kx^2$$

$$\text{Amount lost} = 225kx^2 - 83kx^2 = 42600$$

$$\Rightarrow kx^2 = \frac{42600}{142} = 300$$

$$\therefore \text{Original price of diamond} = 225 \times 300 = \text{Rs. } 67,500$$

=> Ans - (C)

Question 81

The average weight of 100 students is 32 kg. The average weight of first 49 students is 30 kg and of last 50 students is 34 kg. What is the weight (in kg) of the 50th student?

A 25

B 30

C 32

D 33

Answer: B

Explanation:

Total weight of 100 students = $100 \times 32 = \text{Rs. } 3200$ kg

Total weight of first 49 students = $49 \times 30 = \text{Rs. } 1470$ kg

Total weight of last 50 students = $50 \times 34 = \text{Rs. } 1700$ kg

$$\therefore \text{Weight of the 50th student} = 3200 - (1470 + 1700) = 3200 - 3170$$

= 30 kg
=> Ans - (B)

Question 82

By selling 90 pens for Rs 80 a man loses 20%. What should be the selling price (in Rs) of 90 pens for 20% profit?

- A 90
- B 100
- C 110
- D 120

Answer: D

Explanation:

Selling price = Rs. 80

Loss % = 20%

$$\Rightarrow \text{Cost price} = 80 \times \frac{100}{(100-20)} = \text{Rs. } 100$$

Profit % = 20%

$$\therefore \text{Selling price} = 100 \times \frac{(100+20)}{100} = \text{Rs. } 120$$

=> Ans - (D)

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Question 83

Raman spends 80% of his income. If his income is increased by 25% and the expenditure increase by 10%, then what will be the percentage increase in his savings?

- A 17
- B 70
- C 77
- D 85

Answer: D

Explanation:

Let total income of Raman = Rs. $100x$

$$\text{Amount spent} = \frac{80}{100} \times 100x = \text{Rs. } 80x$$

$$\Rightarrow \text{Amount saved} = 100x - 80x = \text{Rs. } 20x$$

$$\text{If, income is increased by 25\%,} \Rightarrow \text{New income} = \frac{125}{100} \times 100x = \text{Rs. } 125x$$

$$\text{Similarly, new expenditure} = \frac{110}{100} \times 80x = \text{Rs. } 88x$$

$$\Rightarrow \text{Amount saved} = 125x - 88x = \text{Rs. } 37x$$

$$\therefore \% \text{ increase in his savings} = \frac{37x-20x}{20x} \times 100$$

$$= 17 \times 5 = 85\%$$

=> Ans - (D)

Question 84

A man makes four trips of equal distances. His speed on first trip was 60 km/hr and in each subsequent trip his speed was half of the previous trip. What is the average speed (in km/hr) of the man in these four trips?

- A 16
- B 30
- C 28.125
- D 27.5

Answer: A

Explanation:

Let distance travelled in each trip = d km

=> Total distance travelled = $4d$ km

Time taken in each trip = distance/speed

$$\begin{aligned} &= \frac{d}{60} + \frac{d}{30} + \frac{d}{15} + \frac{d}{7.5} \\ &= \frac{d}{7.5} \left(\frac{1}{8} + \frac{1}{4} + \frac{1}{2} + 1 \right) \\ &= \frac{d}{7.5} \left(\frac{1+2+4+8}{8} \right) \\ &= \frac{d}{7.5} \times \frac{15}{8} = \frac{d}{4} \end{aligned}$$

∴ Average speed = total distance / total time

$$\begin{aligned} &= 4d \div \left(\frac{d}{4} \right) \\ &= 4d \times \frac{4}{d} = 16 \end{aligned}$$

=> Ans - (A)

Question 85

Rohan borrowed a certain sum of money at simple interest. Rate of interest was 3% per annum for first 3 years, 4% per annum for next 5 years and 6% per annum for next 7 years. If he paid Rs 2059 as interest, then what is the sum borrowed (in Rs)?

- A 2400
- B 2500
- C 2900
- D 3100

Answer: C

Explanation:

Let sum borrowed = Rs. $100x$

Rate of interest for first 3 years = 3%, for next 5 years = 4% and for next 7 years = 6%

$$\begin{aligned} \Rightarrow \text{Simple interest} &= \frac{P \times r \times t}{100} \\ \Rightarrow \frac{100x \times 3 \times 3}{100} + \frac{100x \times 4 \times 5}{100} + \frac{100x \times 6 \times 7}{100} &= 2059 \\ \Rightarrow 9x + 20x + 42x &= 2059 \\ \Rightarrow x = \frac{2059}{71} &= 29 \end{aligned}$$

∴ Sum = $100 \times 29 = \text{Rs. } 2900$

=> Ans - (C)

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Question 86

If $x + y = 5$, $x^3 + y^3 = 35$, then what is the positive difference between x and y ?

- A 0
- B 1
- C 5
- D 6

Answer: B

Explanation:

Given : $x^3 + y^3 = 35$ -----(i)

and $x + y = 5$ -----(ii)

Cubing both sides,

$$\Rightarrow (x + y)^3 = (5)^3$$

$$\Rightarrow x^3 + y^3 + 3xy(x + y) = 125$$

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

$$\Rightarrow 35 + 3xy(5) = 125$$

$$\Rightarrow 15xy = 125 - 35 = 90$$

$$\Rightarrow xy = \frac{90}{15} = 6$$
 -----(iii)

Using, $(x - y)^2 = (x + y)^2 - 4xy$

Using equations (ii) and (iii), we get :

$$\Rightarrow (x - y)^2 = (5)^2 - 4(6)$$

$$\Rightarrow (x - y)^2 = 25 - 24 = 1$$

$$\Rightarrow x - y = \sqrt{1} = 1$$

=> Ans - (B)

Question 87

$x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$ then what is the value of $x^2 + x - 9$

- A 0
- B $95-60\sqrt{3}$
- C $60+95\sqrt{3}$
- D $95+60\sqrt{3}$

Answer: D

Explanation:

Expression : $x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$

Rationalizing the denominator,

$$\Rightarrow x = \frac{2+\sqrt{3}}{2-\sqrt{3}} \times \frac{(2+\sqrt{3})}{(2+\sqrt{3})}$$

$$\Rightarrow x = \frac{(2+\sqrt{3})^2}{4-3} = (2+\sqrt{3})^2$$

$$\Rightarrow x = 4 + 3 + 4\sqrt{3} = 7 + 4\sqrt{3} \text{-----(i)}$$

Squaring both sides, we get :

$$\Rightarrow x^2 = (7 + 4\sqrt{3})^2$$

$$\Rightarrow x^2 = 49 + 48 + 56\sqrt{3} = 97 + 56\sqrt{3} \text{-----(ii)}$$

To find : $x^2 + x - 9$

Substituting values from equations (i) and (ii),

$$= (97 + 56\sqrt{3}) + (7 + 4\sqrt{3}) - 9$$

$$= 95 + 60\sqrt{3}$$

\Rightarrow Ans - (D)

Question 88

If $x+y+z=0$ then what is the value of $\frac{x^2}{3z} + \frac{y^3}{3xz} + \frac{z^2}{3x}$?

A 0

B xz

C y

D 3y

Answer: C

Explanation:

Given : $x + y + z = 0$ -----(i)

We know that : $x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 + xy + yz + xz)$

Using equation (i), $\Rightarrow x^3 + y^3 + z^3 - 3xyz = 0$

$$\Rightarrow x^3 + y^3 + z^3 = 3xyz \text{-----(ii)}$$

$$\therefore \frac{x^2}{3z} + \frac{y^3}{3xz} + \frac{z^2}{3x}$$

$$= \frac{x^3}{3xz} + \frac{y^3}{3xz} + \frac{z^3}{3xz} = \frac{x^3+y^3+z^3}{3xz}$$

Multiplying both numerator and denominator by 'y'

$$= \frac{y(x^3+y^3+z^3)}{3xyz}$$

$$\text{Using equation (ii), } \Rightarrow \frac{y(3xyz)}{3xyz} = y$$

\Rightarrow Ans - (C)

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Question 89

If $x - \frac{1}{x} = 1$ then what is the value of $\frac{1}{x} \left(\frac{1}{x-1} - \frac{1}{x+1} + \frac{1}{x^2+1} - \frac{1}{x^2-1} \right)$

A $\pm\sqrt{5}$

B $2/5$

C $4/(5\pm\sqrt{5})$

D $(5\pm\sqrt{5})/4$

Answer: C

Explanation:

Given : $x - \frac{1}{x} = 1$

$\Rightarrow \frac{x^2-1}{x} = 1$

$\Rightarrow x^2 - 1 = x$ -----(i)

$\Rightarrow x^2 - x - 1 = 0$

$\Rightarrow x = \frac{1\pm\sqrt{5}}{2}$ -----(ii)

To find : $\frac{1}{x} \left(\frac{1}{x-1} - \frac{1}{x+1} + \frac{1}{x^2+1} - \frac{1}{x^2-1} \right)$

$= \frac{1}{x} \left[\frac{(x+1)-(x-1)}{(x+1)(x-1)} + \frac{(x^2-1)-(x^2+1)}{(x^2-1)(x^2+1)} \right]$

$= \frac{1}{x} \left[\frac{2}{x^2-1} + \frac{-2}{(x^2-1)(x^2+1)} \right]$

$= \frac{1}{x} \left[\frac{2}{x} - \frac{2}{x(x^2+1)} \right]$ [Using equation (i)]

$= \frac{2}{x^2} \left(1 - \frac{1}{x^2+1} \right)$

$= \frac{2}{x^2} \left(\frac{x^2+1-1}{x^2+1} \right)$

$= \frac{2}{x^2} \times \frac{x^2}{x^2+1} = \frac{2}{x^2+1}$

Adding '2' on both sides in equation (i), we get $x^2 + 1 = x + 2$

$= \frac{2}{x+2}$

Now substituting value from equation (ii) in above equation,

$= \frac{4}{5\pm\sqrt{5}}$

\Rightarrow Ans - (C)

Question 90

PQ is a diameter of a circle with centre O. RS is a chord parallel to PQ subtends an angle of 40° at the centre of the circle. If PR and QS are produced to meet at T, then what will be the measure (in degrees) of $\angle PTQ$?

A 55

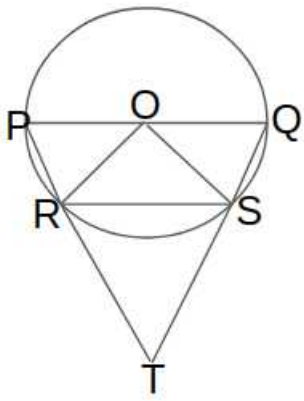
B 60

C 70

D 90

Answer: C

Explanation:



$$\angle POR + \angle ROS + \angle SOQ = 180$$

$$\angle POR = \angle SOQ$$

$$2\angle POR = 180 - 40 = 140$$

$$\angle POR = \angle SOQ = 70$$

In triangle PRO,

$$\angle OPR = \angle ORP$$

$$\angle OPR + \angle ORP + \angle POR = 180$$

$$2\angle OPR = 180 - 70 = 110$$

$$\angle OPR = 55$$

In triangle OQS,

$$\angle OQS = \angle OSQ$$

$$\angle OQS + \angle OSQ + \angle SOQ = 180$$

$$2\angle OQS = 180 - 70 = 110$$

$$\angle OQS = 55$$

$$\angle OPR = \angle TPQ \text{ and } \angle OQS = \angle TQP$$

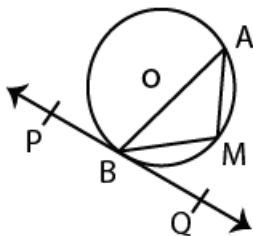
In triangle PQT,

$$\angle TPQ + \angle TQP + \angle PTQ = 180$$

$$\angle PTQ = 180 - 55 - 55 = 70$$

Question 91

In the given figure, $\angle AMB = 130^\circ$, then what is the value (in degrees) of $\angle ABQ$?



A 40

B 50

C 60

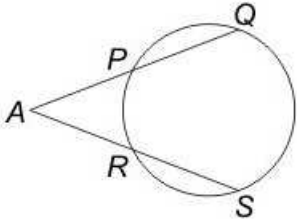
D 90

Answer: B

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Question 92

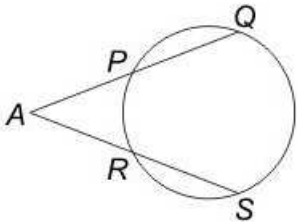
In the given figure, $AP = 3$ cm, $AR = 6$ cm and $RS = 9$ cm, then what is the value (in cm) of PQ ?



- A 9
- B 12
- C 18
- D 27

Answer: D

Explanation:



In the above figure, $(AP) \times (AQ) = (AR) \times (AS)$

Let $PQ = x$ cm

$$\Rightarrow (3) \times (3 + x) = (6) \times (6 + 9)$$

$$\Rightarrow x + 3 = \frac{6}{3} \times 15$$

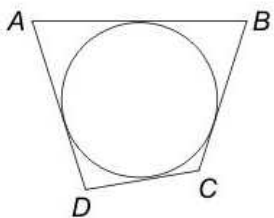
$$\Rightarrow x + 3 = 2 \times 15 = 30$$

$$\Rightarrow x = 30 - 3 = 27$$

\Rightarrow Ans - (D)

Question 93

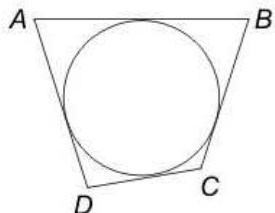
In the given figure, a circle touches quadrilateral ABCD. If $AB = 2x + 3$, $BC = 3x - 1$, $CD = x + 6$ and $DA = x + 4$, then what is the value of x ?



- A 3
- B 4.5
- C 6
- D 6.5

Answer: C

Explanation:



In the above figure, $AB + CD = AD + BC$

$$\Rightarrow (2x + 3) + (x + 6) = (x + 4) + (3x - 1)$$

$$\Rightarrow 3x + 9 = 4x + 3$$

$$\Rightarrow 4x - 3x = 9 - 3$$

$$\Rightarrow x = 6$$

\Rightarrow Ans - (C)

Question 94

If $\operatorname{cosec}^2 \theta = 625/576$, then what is the value of $[(\sin \theta - \cos \theta)/(\sin \theta + \cos \theta)]$?

- A 1
- B 31/17
- C 17/31
- D 14/25

Answer: C

Explanation:

Given : $\operatorname{cosec}^2 \theta = \frac{625}{576}$

$$\Rightarrow \operatorname{cosec} \theta = \sqrt{\frac{625}{576}} = \frac{25}{24}$$

$$\Rightarrow \sin \theta = \frac{24}{25}$$

Using, $\sin^2 \theta + \cos^2 \theta = 1$

$$\Rightarrow \cos^2 \theta = 1 - \left(\frac{24}{25}\right)^2$$

$$\Rightarrow \cos^2 \theta = 1 - \frac{576}{625} = \frac{(625-576)}{625} = \frac{49}{625}$$

$$\Rightarrow \cos \theta = \sqrt{\frac{49}{625}} = \frac{7}{25}$$

$$\therefore (\sin \theta - \cos \theta) = \frac{24}{25} - \frac{7}{25} = \frac{17}{25}$$

Similarly, $(\sin \theta + \cos \theta) = \frac{24}{25} + \frac{7}{25} = \frac{31}{25}$

To find : $\frac{(\sin \theta - \cos \theta)}{(\sin \theta + \cos \theta)}$

$$= \frac{17}{25} \div \frac{31}{25}$$

$$= \frac{17}{25} \times \frac{25}{31} = \frac{17}{31}$$

=> Ans - (C)

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Question 95

What is the value of $2 \left(\frac{\cos 39}{\sin 51} \right) - \sqrt{\sin^2 39 + \sin^2 51} = ?$

- A 1/2
- B 5/2
- C 0
- D Both 1/2 and 5/2

Answer: A

Explanation:

Expression : $2 \left(\frac{\cos 39}{\sin 51} \right) - \sqrt{\sin^2 39 + \sin^2 51} = ?$

$$= 2 \left(\frac{\cos(90-51)}{\sin 51} \right) - \sqrt{\sin^2(90-51) + \sin^2 51}$$

$$= 2 \left(\frac{\sin 51}{\sin 51} \right) - \sqrt{\cos^2 51 + \sin^2 51}$$

$$= 2 - \sqrt{1}$$

$$= 2 - 1 = 1$$

=> Ans - (A)

Question 96

If $\cot A = \left[\frac{\sin B}{1 - \cos B} \right]$, then what is the value of $\cot 2A$?

- A $\cot(B/2)$
- B $\cot 2B$
- C $\cot B$
- D $\tan B$

Answer: C

Explanation:

Given : $\cot A = \frac{\sin B}{1 - \cos B}$ -----(i)

To find : $\cot 2A = \frac{\cot^2 A - 1}{2 \cot A}$

Substituting value from equation (i),

$$= \left[\left(\frac{\sin B}{1 - \cos B} \right)^2 - 1 \right] \div \left[2 \left(\frac{\sin B}{1 - \cos B} \right) \right]$$

$$= \left(\frac{\sin^2 B - (1 - \cos B)^2}{(1 - \cos B)^2} \right) \times \left(\frac{1 - \cos B}{2 \sin B} \right)$$

$$= \frac{\sin^2 B - (1 - \cos B)^2}{2 \sin B (1 - \cos B)}$$

$$= \frac{\sin^2 B - (1 + \cos^2 B - 2 \cos B)}{2 \sin B (1 - \cos B)}$$

$$= \frac{\sin^2 B - 1 - \cos^2 B + 2 \cos B}{2 \sin B (1 - \cos B)}$$

Using, $\sin^2 \theta - 1 = -\cos^2 \theta$

$$= \frac{-\cos^2 B + 2 \cos B}{2 \sin B (1 - \cos B)}$$

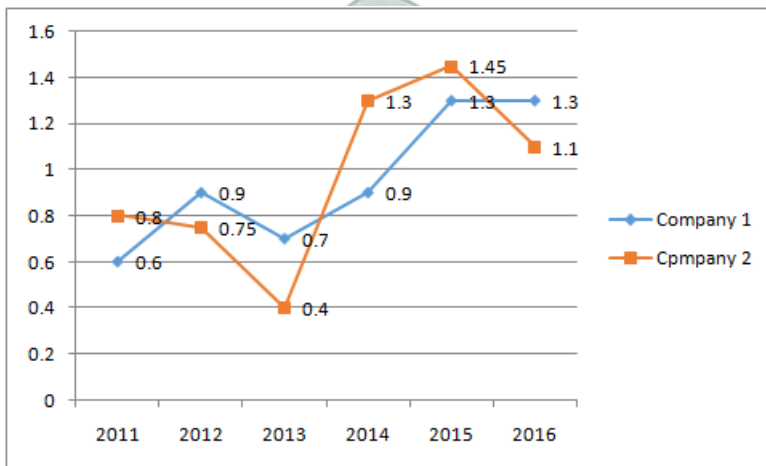
$$= \frac{2 \cos B (1 - \cos B)}{2 \sin B (1 - \cos B)}$$

$$= \frac{\cos B}{\sin B} = \cot B$$

=> Ans - (C)

Instructions

The line chart given below shows the ratio of production to sales of two bike-manufacturing firms over the period of 6 years.



Assume if in any year sales is more than production then both the companies has sufficient stock to meet such instances.

Question 97

If the sales of company 1 in year 2015 was 50000 units, then what was its production (in units) in year 2015?

- A 38460
- B 45000
- C 52000
- D 65000

Answer: D

Explanation:

Sales of company 1 in year 2015 = 50000 units

Ratio of production to sales = $\frac{p}{50000} = 1.3$

=> Production of company 1 in year 2015 = $1.3 \times 50000 = 65,000$ units

=> Ans - (D)

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Question 98

The production of company 2 in year 2012 is 30000. If sales of company 2 in year 2012 and 2013 is same, then what was its production (in units) in year 2013?

- A 100000
- B 16000
- C 30000
- D 20000

Answer: B

Explanation:

Production of company 2 in year 2012 = 30000

$$\text{Ratio of production to sales} = \frac{30000}{s} = 0.75$$

$$\Rightarrow \text{Sales of company 2 in year 2012} = \frac{30000}{0.75} = 40000$$

According to ques, sales of company 2 in 2013 = 40000

$$\text{Ratio of production to sales} = \frac{p}{40000} = 0.4$$

$$\Rightarrow \text{Production of company 2 in year 2013} = 0.4 \times 40000 = 16000$$

\Rightarrow Ans - (B)

Question 99

The production of company 1 in year 2014 is 18000 and sales of company 2 in year 2012 is 15000. What is the ratio of difference in sales and production of company 1 in year 2014 and company 2 in year 2012 ?

- A 8 : 15
- B 7 : 16
- C 9 : 11
- D 3 : 8

Answer: A

Explanation:

Production of company 1 in year 2014 = 18000

$$\text{Ratio of production to sales} = \frac{18000}{s} = 0.9$$

$$\Rightarrow \text{Sales of company 1 in year 2014} = \frac{18000}{0.9} = 20000$$

$$\text{Difference in sales and production} = 20000 - 18000 = 2000$$

Similarly, sales of company 2 in year 2012 = 15000

$$\text{Ratio of production to sales} = \frac{p}{15000} = 0.75$$

$$\Rightarrow \text{Production of company 2 in year 2012} = 0.75 \times 15000 = 11250$$

$$\text{Difference in sales and production} = 15000 - 11250 = 3750$$

$$\therefore \text{Required ratio} = \frac{2000}{3750} = \frac{8}{15}$$

\Rightarrow Ans - (A)

Question 100

Company 1 sold 20000 bikes each year from 2011 to 2016 and company 2 sold 10000 bikes each year from 2011 to 2016. What is the difference (in units) in average yearly production of company 1 and 2?

- A 6733.33

- B 7500
- C 8666.66
- D 9333.33

Answer: D

Explanation:

For Company 1, bikes sold in each year = 20,000

Total production from 2011 to 2016

$$= (0.6 + 0.9 + 0.7 + 0.9 + 1.3 + 1.3) \times 20,000$$

$$= 5.7 \times 20,000 = 114,000$$

Similarly, production from 2011 to 2016 for company 2

$$= (0.8 + 0.75 + 0.4 + 1.3 + 1.45 + 1.1) \times 10,000 = 58,000$$

$$\Rightarrow \text{Required difference} = 114,000 - 58,000 = 56,000$$

$$\therefore \text{Difference (in units) in average yearly production of company 1 and 2} = \frac{56000}{6} = 9333.33$$

\Rightarrow Ans - (D)

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