



2017 SSC CGL 10 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 pair from the given alternatives.

Fire : Burn :: ? : ?

- A Water : Drink
- B Wood : Trees
- C Ice : Freeze
- D Flower : Rose

Answer: C

Explanation:

Fire has the property that it can burn you, the same way as ice can freeze you.

=> Ans - (C)

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Question 2

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

KLMN : IJKL :: TUVW : ?

- A RSUT
- B VWXY
- C STUV
- D RSTU

Answer: D

Explanation:

Expression : KLMN : IJKL

K	L	M	N
(-2)	(-2)	(-2)	(-2)
I	J	K	L

Similarly,

T	U	V	W
(-2)	(-2)	(-2)	(-2)
R	S	T	U

=> Ans - (D)

Question 3

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

3 : 27 :: 4 : ?

- A 63

B 64

C 65

D 15

Answer: B

Explanation:

The pattern is = $n : n^3$

Eg = $3 : 3^3 = 3 : 27$

Similarly, $4^3 = 64$

=> Ans - (B)

Question 4

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

A Ludo

B Chess

C Polo

D Carrom

Answer: C

Explanation:

Except 'Polo', all the other games are indoor games, thus it's the odd one out.

=> Ans - (C)

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Question 5

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

A DGJ

B KNQ

C RUX

D ILN

Answer: D

Explanation:

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

(B) : K (+3 letters) = N (+3 letters) = Q

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

(D) : I (+3 letters) = L (+2 letters) = N

=> Ans - (D)

Question 6

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

A 31

- B 37
C 43
D 49

Answer: D

Explanation:

Among the given numbers, only 49 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. Storm
2. Strap
3. Strangle
4. Stamped
5. Satire

- A 51432
B 51342
C 54132
D 53412

Answer: C

Explanation:

As per the dictionary,

= Satire -> Stamped -> Storm -> Strangle -> Strap

≡ 54132

=> Ans - (C)

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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.

BT, DR, FP, ?

- A HO
B HN
C NH
D OH

Answer: B

Explanation:

Expression : BT, DR, FP, ?

The first letter of each word is the increasing alternate alphabetical series, so the next letter will be = B,D,F, H

Similarly, the second letter is the decreasing alternate series = T,R,P, N

Thus, next word = HN

=> Ans - (B)

Question 9

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

3, 8, 5, 27, 8, 64, 12, 125, 17, ?

A 216

B 361

C 625

D 441

Answer: A

Explanation:

The given series is a combination of 2 series at alternate positions :

I : 3, 5, 8, 12, 17

II : 8, 27, 64, 125

The missing number is from the second series which is the cube of natural numbers, next number = $6^3 = 216$

=> Ans - (A)

Question 10

The ratio of present ages of P and Q is 5 : 8. Three years later their ages will be in ratio 8 : 11. What is the present age (in years) of Q?

A 5

B 11

C 14

D 8

Answer: D

Explanation:

Let present ages of P and Q be $5x$ and $8x$ years respectively.

According to ques, 3 years later

$$\Rightarrow \frac{5x+3}{8x+3} = \frac{8}{11}$$

$$\Rightarrow 55x + 33 = 64x + 24$$

$$\Rightarrow 64x - 55x = 33 - 24$$

$$\Rightarrow 9x = 9$$

$$\Rightarrow x = 1$$

\therefore Present age of Q = $8 \times 1 = 8$ years

=> Ans - (D)

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Question 11

Pointing to a lady, Diwakar said, "Her mother's only grandson is my son." How is that lady related to Diwakar?

- A Aunty
- B Sister
- C Mother
- D Wife

Answer: B

Explanation:

"Her mother's only grandson" is that lady's nephew.

Now, that nephew is Diwakar's son.

=> That lady is Diwakar's sister

=> Ans - (B)

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.

Biological

- A Logic
- B Globe
- C Bail
- D Bill

Answer: B

Explanation:

The word 'BIOLOGICAL' does not contain any 'E' and thus the word 'Globe' cannot be formed.

=> Ans - (B)

Question 13

In a certain code language, "who are you" is written as "432", "they is you" is written as "485" and "they are dangerous" is written as "295". How is "dangerous" written in that code language?

- A 2
- B 4
- C 5
- D 9

Answer: D

Explanation:

The common term in the last two statements is 'they' coded as = 5

The common term in the first and last statements is 'are' coded as = 2

Remaining term in last statement is 'dangerous' coded as = 9

=> Ans - (D)

Question 14

If "P" denotes "multiplied by", "R" denotes "subtracted from", "S" denotes "added to" and "Q" denotes "divided by", then which of the following equation is true?

A $18 R 60 Q 15 S 2 = 8$

B $15 S 16 Q 2 P 4 = 47$

C $3 P 5 R 18 Q 3 = 6$

D $15 S 28 Q 4 P 2 = 27$

Answer: B

Explanation:

(A) : $18 R 60 Q 15 S 2 = 8$

$\Rightarrow 18 - 60 \div 15 + 2 = 8$

L.H.S. = $18 - 4 + 2 = 16 \neq$ R.H.S.

(B) : $15 S 16 Q 2 P 4 = 47$

$\Rightarrow 15 + 16 \div 2 \times 4 = 47$

L.H.S. = $15 + 8 \times 4 = 47 =$ R.H.S.

\Rightarrow Ans - (B)

Question 15

If $4 * 7 * 2 = 361$ and $5 * 9 * 1 = 480$, then

$2 * 1 * 3 = ?$

A 312

B 324

C 210

D 102

Answer: D

Explanation:

The pattern followed is that 1 is subtracted from each number and the result is concatenated.

Eg : $4 * 7 * 2 = (4 - 1)(7 - 1)(2 - 1) \equiv 361$

and $5 * 9 * 1 = (5 - 1)(9 - 1)(1 - 1) \equiv 480$

Similarly, $2 * 1 * 3 = (2 - 1)(1 - 1)(3 - 1) \equiv 102$

\Rightarrow Ans - (D)

Question 16

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

3	10	6	186
9	5	3	138
5	7	1	36
3	2	5	?

A 35

- B 42
- C 45
- D 95

Answer: A

Explanation:

In the first row, element at the end is obtained by multiplying the elements in the first three columns and adding the element at the third column.

Eg : $(3 \times 10 \times 6) + 6 = 180 + 6 = 186$

Also, $(9 \times 5 \times 3) + 3 = 135 + 3 = 138$

and $(5 \times 7 \times 1) + 1 = 35 + 1 = 36$

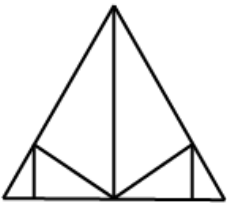
Similarly, $(3 \times 2 \times 5) + 5 = 30 + 5 = 35$

=> Ans - (A)

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Question 17

How many triangles are there in the given figure?



- A 10
- B 11
- C 12
- D 13

Answer: B

Explanation:

Smaller triangles = 6

Triangles formed with combination of 2 triangles = 2

Triangles formed with combination of 3 triangles = 2

Larger triangle = 1

Thus, total triangles = $6 + 2 + 2 + 1 = 11$

=> 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. All cups are vegetable.
- II. All vegetable are pens.

Conclusions:

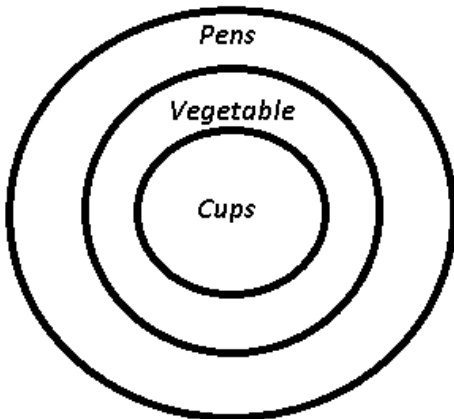
- I. Some pens are vegetable.
- II. Some pens are cups.

- A Only conclusion (I) follows.
- B Only conclusion (II) follows.
- C Both conclusion follow.
- D Neither conclusion (I) nor conclusion (II) follows.

Answer: C

Explanation:

The venn diagram from above statement is :



I. Some pens are vegetable = true

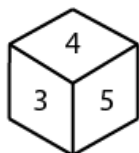
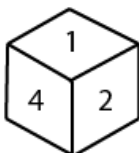
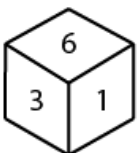
II. Some pens are cups = true

Thus, both conclusion follow.

=> Ans - (C)

Question 19

Three positions of a cube are shown below. What will come opposite to face containing '5'?



- A 6
- B 1
- C 3

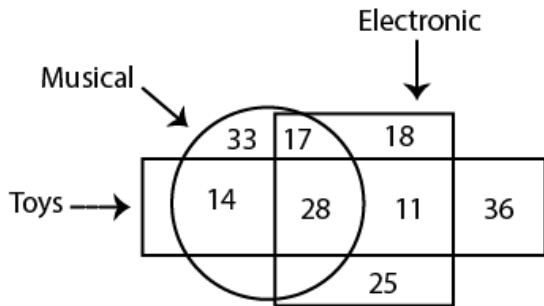
D 2

Answer: B

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Question 20

In the given figure, how many are musical toys ?



A 53

B 61

C 42

D 45

Answer: C

Explanation:

Toys are represented by = $11 + 14 + 28 + 36$

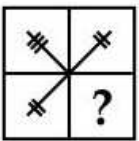
Musical = $14 + 17 + 28 + 33$

Thus, musical toys (intersection of both) = $14 + 28 = 42$

=> Ans - (C)

Question 21

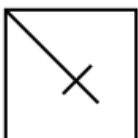
Which answer figure will complete the pattern in the question figure

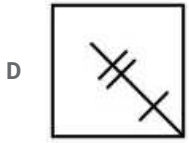
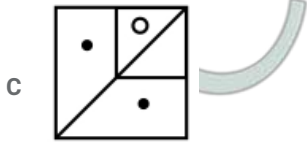


A



B





Answer: A

Explanation:

From the question figure, it is evident the missing figure will have 3 intersecting lines without much difference between them as given in the first figure.

=> Ans - (A)

Question 22

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



Answer: B

Explanation:

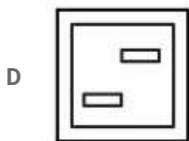
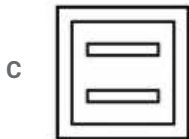
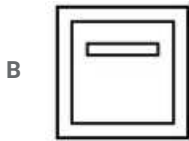
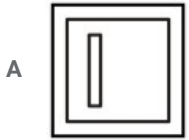
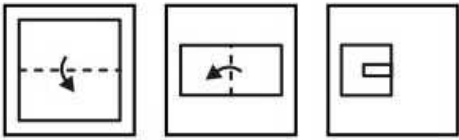
The question figure is embedded in the following figure in blue colour.



=> Ans - (B)

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: C

Explanation:

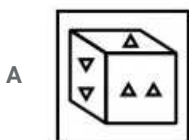
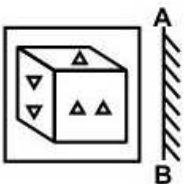
When the paper is unfolded the first time, the complete rectangle will appear at the bottom and when the paper is completely unfolded, another rectangle will appear at the top like

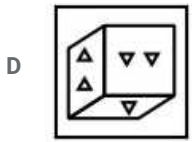
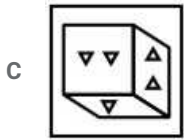
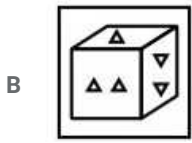


=> Ans - (C)

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: B

Explanation:

A vertical mirror is placed, so the figure will not be reversed, that is, the triangles pointing upwards will keep facing up and vice-versa, and thus the last two options are not possible.

Also, the triangles on the left will appear at the right hand side in the output, so the first option is also eliminated.

Thus, second is the correct output.

=> Ans - (B)

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-B 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, 'S' can be represented by 21, 43, etc., and 'O' can be represented by 65, 88, etc. Similarly, you have to identify the set for the word "SPEAK".

Matrix - I

	0	1	2	3	4
0	I	C	E	P	S
1	S	E	P	I	C
2	E	S	I	C	P
3	C	P	S	E	I
4	P	I	C	S	E

Matrix - II

	5	6	7	8	9
5	R	O	A	K	B
6	O	A	K	B	R
7	A	K	B	R	O
8	K	B	R	O	A
9	B	R	O	A	K

A 10, 12, 11, 66, 58

B 43, 31, 33, 89, 86

C 21, 40, 44, 56, 99

D 32, 03, 20, 97, 66

Answer: A

Explanation:

(A) : 10, 12, 11, 66, 58 = **SPEAK**

(B) : 43, 31, 33, 89, 86 = **SPEAB**

(C) : 21, 40, 44, 56, 99 = **SPEOK**

(D) : 32, 03, 20, 97, 66 = **SPEOA**

=> Ans - (A)

General Awareness

Instructions

For the following questions answer them individually

Question 26

Which one of the following is not an instrument of credit control in India?

- A Rationing of credit
- B Direct Action
- C Open Market operations
- D Variable cost reserve ratios

Answer: D

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Question 27

Which among the following is an example of micro-economic variable?

- A National Income
- B Aggregate Supply
- C Employment
- D Consumer's Equilibrium

Answer: D

Question 28

Fundamental duties are mentioned in which of the following part of Indian Constitution?

- A Part II
- B Part III
- C Part V
- D Part IV A

Answer: D

Question 29

What is the minimum age for becoming a Governor of state in India?

- A 30 years
- B 25 years
- C 35 years
- D 45 years

Answer: C

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Question 30

Who amongst the following was the successor of Sikh Guru Har Krishan?

- A Guru Angad Dev
- B Guru Tegh Bahadur
- C Guru Hargobind
- D Guru Amar Das

Answer: B

Question 31

Which revenue system is introduced by the Lord Cornwallis ?

- A permanent revenue settlement of Bengal
- B attacking the caste system
- C land revenue settlement of United States
- D ryotwari settlement of Madras

Answer: A

Question 32

49th Parallel is the boundary line between which two countries?

- A USA and Canada
- B North and South Vietnam
- C Germany and France
- D Brazil and Chile

Answer: A

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Question 33

How does La-Nina affect the Pacific Ocean?

- A Decreases salinity of ocean
- B Cools downs the temperature of water
- C Maintains stable temperature of water
- D Increases salinity of ocean

Answer: B

Question 34

Cinnamon is obtained from which part of the plant?

- A Stem
- B Bark
- C Roots
- D Fruits

Answer: B

Question 35

Insulin is a kind of _____

- A hormone
- B protein
- C enzyme
- D vitamin

Answer: A

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Question 36

Which among the following carries impure blood to human heart?

- A Aorta
- B Pulmonary vein
- C Pulmonary arteries
- D Vena Cava

Answer: C

Question 37

Why does water tank appear shallower when viewed from the top?

- A Due to reflection
- B Due to refraction
- C Due to diffraction
- D Due to total internal reflection

Answer: B

Question 38

Which colour is formed when Red and Green are mixed?

- A Light blue
- B Yellow
- C White
- D Grey

Answer: B

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Question 39

What is the full form of JPEG?

- A Joint Photographic Experts Group
- B Joint Protocol Experts Graphics.
- C Joint Programming Experts Graphics
- D Joint Project Experts Group

Answer: A

Question 40

What is an endothermic reaction?

- A Reaction in which heat is released.
- B Reaction in which heat is absorbed.
- C Reaction in which neither heat is released nor absorbed.
- D None of these

Answer: B

Question 41

Which of the following is an ore of Aluminium?

- A Galena
- B Cryollite
- C Cinnabar
- D Epsom Salt

Answer: B

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Question 42

Which of the following gas was released during Bhopal gas tragedy?

- A Methyl isocyanate
- B Sodium isothiocyanate
- C Nitrogen isothiocyanate
- D Potassium isothiocyanate

Answer: A

Question 43

What is the name of the scheme for the Employees State Insurance Corporation (ESIC) beneficiaries launched in Delhi region?

- A Sakushal Humesha
- B Kahin bhi kabhi bhi
- C Jeevan Arogya
- D Shramik Kalyan

Answer: B

Question 44

Match the following.

Scientist	Discovery
1. Joseph Thomson	a. I fiberoptics
2. Alexander Fleming	b. radioactiv
3. Narinder Kapany	c. electrons
4. Marie Curie	d. Penicillin

- A 1-c, 2-d, 3-a, 4-b
- B 1-a, 2-d, 3-c, 4-b
- C 1-c, 2-a, 3-d, 4-b

D 1-a, 2-d, 3-b, 4-c

Answer: A

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Question 45

Term ' Gambit ' is associated with which sport?

- A Basketball
- B Chess
- C Boxing
- D Golf

Answer: B

Question 46

Madhuri Dixit is associated with which Indian Dance form?

- A Bharatnatyam
- B Kuchipudi
- C Kathak
- D Kathakali

Answer: C

Question 47

Who among the following is a Sanjay Chopra Award recipient for 2016?

- A Abhinash Mishra
- B Arjun Singh
- C Aromal SM
- D Srawanand Saha

Answer: B

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Question 48

'My Story' is an autobiography of which famous cricketer?

- A Kumar Sangakara
- B Kevin Peterson
- C Brendon Mccullum
- D Michael Clarke

Answer: D

Question 49

Which country has approved more than 500 new settler homes in East Jerusalem?

- A USA
- B UAE
- C Israel
- D United Kingdom

Answer: C

Question 50

Which of the following country is not a member of SAARC?

- A Nepal
- B Maldives
- C China
- D Afghanistan

Answer: C

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English

Instructions

For the following questions answer them individually

Question 51

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'.

Little knowledge of playing volleyball (a)/ that she possessed proved to be (b)/helpful at the time of inaugural match. (c)/ No Error (d)

- A Little knowledge of playing volleyball
- B that she possessed proved to be
- C helpful at the time of inaugural match
- D No Error

Answer: A

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Question 52

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'.

I had not completed my English homework (a)/ so I thought I was done with when the (b)/ teacher asked me to hand it in. (c)/ No Error (d)

- A I had not completed my English homework
- B so I thought I was done with when the
- C teacher asked me to hand it in
- D No Error

Answer: B

Question 53

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.

Keith has ____ with a failure in English examination thrice.

- A caught
- B gone
- C got
- D met

Answer: D

Question 54

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.

The manager was ____ an explanation of his conduct.

- A called for
- B called off
- C called to
- D called up

Answer: A

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Question 55

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

Eloquent

- A Fluent
- B Ignorant
- C Rude
- D Significant

Answer: A

Question 56

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

Nefarious

- A Iniquitous
- B Purposeful
- C Suspicious
- D Virtuous

Answer: A

Question 57

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

Ensnore

- A Establish
- B Impudence
- C Request
- D Unveil

Answer: D

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Question 58

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

Lugubrious

- A Clumsy
- B Lucid
- C Optimistic
- D Sinister

Answer: C

Question 59

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

Ended in a fiasco

- A A complete failure
- B A successful event
- C Changed one completely
- D Twisted around

Answer: A

Question 60

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

Sow wild oats

- A To make someone fool
- B To make space to red
- C To take revenge
- D To waste time by doing foolish things

Answer: D

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Question 61

Improve the bracketed part of the sentence.

He has painted that picture so often that he can do it with his (eyes closed).

- A arms full
- B eyes opened
- C mind blank
- D No improvement

Answer: D

Question 62

Improve the bracketed part of the sentence.

If you talk to her nicely, she will probably (allow you) her notes.

- A allow that you have
- B let you have
- C let you to have
- D No improvement

Answer: B

Question 63

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

Easily duped or fooled

- A Bigot
- B Gullible
- C Ridicule
- D Venerable

Answer: B

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Question 64

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

Atonement for one's sins

- A Elite
- B Ignoramus
- C Incendiary
- D Repentance

Answer: D

Question 65

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

- A Usable
- B Defense
- C Inventor
- D Annaul

Answer: D

Question 66

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

- A Changeable
- B Inedible
- C Tracable
- D Valuable

Answer: C

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Question 67

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- It would be better to speak of uniformities of nature.

Q- Law of nature are not commands but statements of facts.

R- This would do away with elementary fallacy that a law implies a law given.

S- The use of the word law in this context is rather unfortunate.

- A QSRP
- B SQRP

C QSPR

D SQPR

Answer: C

Question 68

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- When the game of life is finally over there is no second chance to correct our errors.

Q- Time is the greater equalizer of all mankind.

R- Time offers opportunity but demands a sense of regard.

S- It has taken away the best and the worst of us without regard of either.

A QSRP

B RSQP

C PQRS

D RSPQ

Answer: A

Question 69

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

He saw him conducting the seminar on personality development.

A He was seen by me to conduct the seminar on personality development.

B He was seen conducting the seminar on personality development.

C He saw the seminar on personality development being conducted by him.

D He saw the seminar on personality development to be conducted by him.

Answer: C

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Question 70

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.

Rashmi said to me, "Where is the telephone exchange?"

A Rashmi asked me that where the telephone exchange was.

B Rashmi asked me where the telephone exchange was.

C Rashmi asked me where was the telephone exchange.

D Rashmi wanted to know where the telephone exchange was.

Answer: B

Instructions

In the following questions, 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.

Corruption is a __ (1) __ which has been spread in the mind of wrong people of the society, community and __ (2) __. It is the mistreatment of public resources just for getting some __ (3) __ advantage to fulfil little wish. It is concerned with the unnecessary and wrong use of both power and __ (4) __ by anyone whether the government or non government organisation. It affects the growth and development of the nation in all aspects like socially, __ (5) __ and politically.

Question 71

(1)

- A havoc
- B poison
- C pollutant
- D grassroot

Answer: B

Question 72

(2)

- A country
- B world
- C universe
- D company

Answer: A

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Question 73

(3)

- A fruitful
- B wishful
- C favourite
- D unfair

Answer: D

Question 74

(4)

- A position
- B growth
- C status
- D symbol

Answer: A

Question 75

(5)

- A emotionally
- B scientifically
- C manually
- D economically

Answer: D

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Mathematics

Instructions

For the following questions answer them individually

Question 76

By which least number should 5000 be divided so that it becomes a perfect square?

- A 2
- B 5
- C 10
- D 25

Answer: A

Explanation:

Prime factorization of 5000 = $2^3 \times 5^4$

Now, to make it a perfect square, all the powers should be even, but clearly power of 2 is 3, which is odd.

Thus, least number that should be divided by 5000 so that it becomes a perfect square = 2

$$\Rightarrow \frac{5000}{2} = 2500 = (50)^2$$

=> Ans - (A)

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Question 77

A can do a work in 8 days, B can do the same work in 10 days and C can do the same work in 12 days. If all three of them do the same work together and they are paid Rs 7400, then what is the share (in Rs) of B?

- A 2600
- B 3000
- C 2400
- D 2000

Answer: C

Explanation:

Let total work to be done = L.C.M.(8,10,12) = 120 units

A can do the work in 8 days, => A's efficiency = $\frac{120}{8} = 15$ units/day

Similarly, B's efficiency = $\frac{120}{10} = 12$ units/day

and C's efficiency = $\frac{120}{12} = 10$ units/day

=> Ratio of efficiencies of A : B : C = 15 : 12 : 10

Total amount to be paid = Rs. 7400

∴ B's share = $\frac{12}{(15+12+10)} \times 7400$

= $12 \times 200 = \text{Rs. } 2400$

=> Ans - (C)

Question 78

If the radius of the cylinder is increased by 25%, then by how much percent the height must be reduced, so that the volume of the cylinder remains same?

A 36

B 56

C 64

D 46

Answer: A

Explanation:

Let radius of cylinder = 10 cm and height = 10 cm

=> Volume = $\pi r^2 h$

= $\pi(10)^2 \times 10 = 1000\pi$

If radius is increased by 25%, => new radius = $\frac{125}{100} \times 10 = 12.5$ cm

=> $\pi r^2 h = 1000\pi$

=> $(12.5)^2 h = 1000$

=> $h = \frac{1000}{156.25} = 6.4$

∴ Decrease in height = $\frac{(10-6.4)}{10} \times 100$

= $3.6 \times 10 = 36\%$

=> Ans - (A)

Question 79

The marked price of an article is 20% more than its cost price. If 5% discount is given on the marked price, then what is the profit percentage?

A 5

B 14

C 15

D 25

Answer: B

Explanation:

Let cost price = Rs. $100x$

$$\Rightarrow \text{Marked price} = 100x + \left(\frac{20}{100} \times 100x\right) = \text{Rs. } 120x$$

Discount % = 5%

$$\Rightarrow \text{Selling price} = \frac{(100-5)}{100} \times 120x = \text{Rs. } 114x$$

$$\therefore \text{Profit \%} = \frac{(114x-100x)}{100x} \times 100$$

$$= 14\%$$

\Rightarrow Ans - (B)

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Question 80

If $A : B = 2 : 5$, $B : C = 4 : 3$ and $C : D = 2 : 1$, then what is value of $A : C : D$?

A 6 : 5 : 2

B 7 : 20 : 10

C 8 : 30 : 15

D 16 : 30 : 15

Answer: D

Explanation:

$$\text{Given : } \frac{A}{B} = \frac{2}{5} \text{ -----(i)}$$

$$\frac{B}{C} = \frac{4}{3} \text{ -----(ii)}$$

$$\text{and } \frac{C}{D} = \frac{2}{1} \text{ -----(iii)}$$

Multiplying equation (ii) by 10 and (iii) by 15 to make 'C' equal in both

$$\Rightarrow \frac{B}{C} = \frac{40}{30} \text{ and } \frac{C}{D} = \frac{30}{15}$$

Now, multiplying equation (i) by 8 to make 'B' equal in both

$$\Rightarrow \frac{A}{B} = \frac{16}{40}$$

Thus, we get = $A : B : C : D = 16 : 40 : 30 : 15$

$\therefore A : C : D = 16 : 30 : 15$

\Rightarrow Ans - (D)

Question 81

The average runs conceded by a bowler in 5 matches is 45 and 15.75 in other 4 matches. What is the average runs conceded by the bowler in 9 matches?

A 15

B 32

C 35

D 53.5

Answer: B

Explanation:

Average runs conceded by the bowler in 5 matches = 45

=> Total runs conceded in 5 matches = $45 \times 5 = 225$

Similarly, runs conceded in other 4 matches = $15.75 \times 4 = 63$

=> Total runs conceded in 9 matches = $225 + 63 = 288$

∴ Average runs conceded by the bowler in 9 matches = $\frac{288}{9} = 32$

=> Ans - (B)

Question 82

A person bought pens at 25 for a rupee and sold at 15 for a rupee. What is his profit percentage?

A $16\frac{2}{3}$

B $33\frac{1}{3}$

C $66\frac{2}{3}$

D 40

Answer: C

Explanation:

Cost price of 25 pens = Re. 1

=> Cost price of 1 pen = Rs. $\frac{1}{25}$

Similarly, selling price of 1 pen = Rs. $\frac{1}{15}$

=> Profit % = $\frac{(\frac{1}{15} - \frac{1}{25})}{\frac{1}{25}} \times 100$

= $\frac{2}{75} \times 25 \times 100$

= $\frac{200}{3} = 66\frac{2}{3}\%$

=> Ans - (C)

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Question 83

80 litre mixture of milk and water contains 10% milk. How much milk (in litres) must be added to make water percentage in the mixture as 80%?

A 8

B 9

C 10

D 12

Answer: C

Explanation:

Quantity of mixture = 80 litres

Quantity of milk = $\frac{10}{100} \times 80 = 8$ litres

=> Quantity of water = $80 - 8 = 72$ litres

Let x litres of water is added

According to ques,

$$\Rightarrow \frac{80}{100}(x + 80) = 72$$

$$\Rightarrow x + 80 = 72 \times \frac{5}{4} = 90$$

$$\Rightarrow x = 90 - 80 = 10 \text{ litres}$$

\Rightarrow Ans - (C)

Question 84

A bus starts running with the initial speed of 21 km/hr and its speed increases every hour by 3 km/hr. How many hours will it take to cover a distance of 252 km?

A 3

B 5

C 8

D 10

Answer: C

Explanation:

Initial speed of bus = 21 km/hr

Speed of bus after each hour = 21, 24, 27, 30, ... km/hr

This is clearly an AP with sum = $\frac{n}{2}[2a + (n - 1)d]$

Let time taken = n hours

$$\Rightarrow \frac{n}{2}[2(21) + (n - 1)3] = 252$$

$$\Rightarrow n(39 + 3n) = 504$$

$$\Rightarrow 3n^2 + 39n - 504 = 0$$

$$\Rightarrow n^2 + 13n - 168 = 0$$

$$\Rightarrow n^2 + 21n - 8n - 168 = 0$$

$$\Rightarrow n(n + 21) - 8(n + 21) = 0$$

$$\Rightarrow (n - 8)(n + 21) = 0$$

$$\Rightarrow n = 8, -21$$

$\therefore n$ can't be negative, \Rightarrow Time taken = 8 hours

\Rightarrow Ans - (C)

Question 85

A sum of Rs 400 becomes Rs 448 at simple interest in 2 years. In how many years will the sum of Rs 550 amounts to Rs 682 at the same rate?

A 2

B 3

C 3.5

D 4

Answer: D

Explanation:

Let rate of interest = $r\%$

Simple interest for 2 years = $(448 - 400) = \text{Rs. } 48$

$$\Rightarrow \frac{P \times r \times t}{100} = 48$$

$$\Rightarrow \frac{400 \times r \times 2}{100} = 48$$

$$\Rightarrow 8r = 48$$

$$\Rightarrow r = \frac{48}{8} = 6\%$$

Let time taken when Rs 550 amounts to Rs 682 = t years

$$\Rightarrow \frac{550 \times 6 \times t}{100} = (682 - 550)$$

$$\Rightarrow 33t = 132$$

$$\Rightarrow t = \frac{132}{33} = 4 \text{ years}$$

\Rightarrow Ans - (D)

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Question 86

What is the value of $\frac{1+x}{1-x^4} \div \frac{x^2}{1+x^2} \times x(1-x)$?

A $\frac{1}{x}$

B $x^2 - 1$

C $x + 1$

D x

Answer: A

Explanation:

$$\text{Expression: } \frac{1+x}{1-x^4} \div \frac{x^2}{1+x^2} \times x(1-x)$$

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

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

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

\Rightarrow Ans - (A)

Question 87

If $x + \frac{1}{x} = 17$, then what is the value of $\frac{x^4 + x^2}{x^2 - 3x + 1}$?

A 2431/7

B 3375/7

C 3375/14

D 3985/9

Answer: A

Explanation:

$$\text{Given: } x + \frac{1}{x} = 17 \text{ -----(i)}$$

$$\Rightarrow \frac{x^2 + 1}{x} = 17$$

$$\Rightarrow x^2 + 1 = 17x \text{ -----(ii)}$$

Cubing equation (i), we get :

$$\Rightarrow \left(x + \frac{1}{x}\right)^3 = (17)^3$$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3\left(x\right)\left(\frac{1}{x}\right)\left(x + \frac{1}{x}\right) = 4913$$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3(17) = 4913$$

$$\Rightarrow x^3 + \frac{1}{x^3} = 4913 - 51 = 4862 \text{ -----(iii)}$$

To find : $x^2 - 3x + 1$

Substituting value from equation (ii),

$$\frac{x^4 + \frac{1}{x^2}}{x^4 + \frac{1}{x^2}} = \frac{17x - 3x}{14x}$$

$$= \frac{1}{14} \left(x^3 + \frac{1}{x^3}\right)$$

Substituting value from equation (iii),

$$= \frac{4862}{14} = \frac{2431}{7}$$

\Rightarrow Ans - (A)

Question 88

What is the value of x in the equation $\sqrt{\frac{1+x}{x}} - \sqrt{\frac{x}{1+x}} = \frac{1}{\sqrt{6}}$?

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

Answer: C

Explanation:

$$\text{Expression : } \sqrt{\frac{1+x}{x}} - \sqrt{\frac{x}{1+x}} = \frac{1}{\sqrt{6}}$$

Squaring both sides, we get :

$$\Rightarrow \left(\sqrt{\frac{1+x}{x}} - \sqrt{\frac{x}{1+x}}\right)^2 = \left(\frac{1}{\sqrt{6}}\right)^2$$

$$\Rightarrow \left(\frac{1+x}{x}\right) - (1+x) - 2\left(\sqrt{\frac{1+x}{x}}\right)\left(\sqrt{\frac{x}{1+x}}\right) = \frac{1}{6}$$

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

$$\Rightarrow \frac{x^2 + 2x + 1 + x^2}{x^2 + x} = \frac{13}{6}$$

$$\Rightarrow \frac{2x^2 + 2x + 1}{x^2 + x} = \frac{13}{6}$$

$$\Rightarrow 13x^2 + 13x = 12x^2 + 12x + 6$$

$$\Rightarrow x^2 + x - 6 = 0$$

$$\Rightarrow x^2 + 3x - 2x - 6 = 0$$

$$\Rightarrow x(x + 3) - 2(x + 3) = 0$$

$$\Rightarrow (x + 3)(x - 2) = 0$$

$$\Rightarrow x = 2, -3$$

=> Ans - (C)

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Question 89

If $2\left[x^2 + \frac{1}{x^2}\right] - 2\left[x - \frac{1}{x}\right] - 8 = 0$, then what are the two values of $x - \frac{1}{x}$?

A -1 or 2

B 1 or -2

C -1 or -2

D 1 or 2

Answer: A

Explanation:

Given : $2\left[x^2 + \frac{1}{x^2}\right] - 2\left[x - \frac{1}{x}\right] - 8 = 0$ -----(i)

Let $x - \frac{1}{x} = y$

Squaring both sides,

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

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

$$\Rightarrow x^2 + \frac{1}{x^2} = y^2 + 2$$

Substituting it in equation (i), we get :

$$\Rightarrow 2(y^2 + 2) - 2(y) - 8 = 0$$

$$\Rightarrow 2y^2 - 2y - 4 = 0$$

$$\Rightarrow y^2 - y - 2 = 0$$

$$\Rightarrow y^2 + y - 2y - 2 = 0$$

$$\Rightarrow y(y + 1) - 2(y + 1) = 0$$

$$\Rightarrow (y + 1)(y - 2) = 0$$

$$\Rightarrow y = -1, 2$$

=> Ans - (A)

Question 90

In $\triangle ABC$, $\angle BAC = 90^\circ$ and AD is drawn perpendicular to BC. If $BD = 7$ cm and $CD = 28$ cm, then what is the length (in cm) of AD?

A 3.5

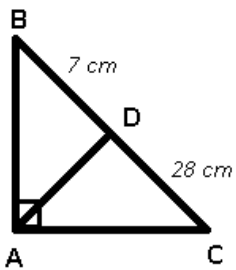
B 7

C 10.5

D 14

Answer: D

Explanation:



Given : $BD = 7 \text{ cm}$ and $DC = 28 \text{ cm}$

To find : $AD = ?$

Solution : In $\triangle ABC$

$$\Rightarrow (AD)^2 = (BD) \times (DC)$$

$$\Rightarrow (AD)^2 = 7 \times 28 = 196$$

$$\Rightarrow AD = \sqrt{196} = 14 \text{ cm}$$

\Rightarrow Ans - (D)

Question 91

A chord of length 60 cm is at a distance of 16 cm from the centre of a circle. What is the radius (in cm) of the circle?

A 17

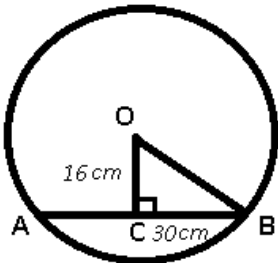
B 34

C 51

D 68

Answer: B

Explanation:



Given : $AB = 60 \text{ cm}$ and $OC = 16 \text{ cm}$

To find : $OB = r = ?$

Solution : The line from the centre of the circle to the chord bisects it at right angle.

$$\Rightarrow AC = BC = \frac{1}{2} AB$$

$$\Rightarrow BC = \frac{60}{2} = 30 \text{ cm}$$

In $\triangle OBC$,

$$\Rightarrow (OB)^2 = (BC)^2 + (OC)^2$$

$$\Rightarrow (OB)^2 = (30)^2 + (16)^2$$

$$\Rightarrow (OB)^2 = 900 + 256 = 1156$$

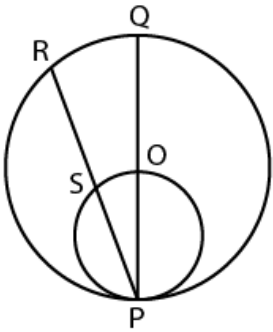
$$\Rightarrow OB = \sqrt{1156} = 34 \text{ cm}$$

\Rightarrow Ans - (B)

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Question 92

In the given figure, a smaller circle touches a larger circle at P and passes through its centre O. PR is a chord of length 34 cm. then what is the length (in cm) of PS?



- A 9
- B 17
- C 21
- D 25

Answer: B

Explanation:

In the given figure, in $\triangle PSO$ and $\triangle PRQ$

$\Rightarrow \angle PSO = \angle PRQ$ (angles of the semi circle)

and $\angle SPO = \angle RPQ$ (common angle)

$\Rightarrow \triangle PSO \sim \triangle PRQ$

Thus, $\frac{PS}{PR} = \frac{OP}{QP}$

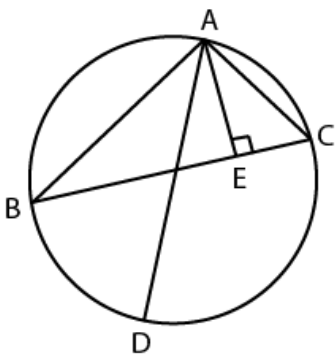
$\Rightarrow \frac{PS}{34} = \frac{1}{2}$

$\Rightarrow PS = \frac{34}{2} = 17 \text{ cm}$

\Rightarrow Ans - (B)

Question 93

In the given figure, ABC is a triangle in which, AB = 10 cm, AC = 6 cm and altitude AE = 4 cm. If AD is the diameter of the circum-circle, then what is the length (in cm) of circum-radius?



- A 3

- B 7.5
C 12
D 15

Answer: B

Explanation:

Given : $AB = 10$ cm. $AC = 6$ cm and altitude $AE = 4$ cm

To find : Circumradius = $R = ?$

Solution : In $\triangle ACE$,

$$\Rightarrow (CE)^2 = (AC)^2 - (AE)^2$$

$$\Rightarrow (CE)^2 = (6)^2 - (4)^2$$

$$\Rightarrow (CE)^2 = 36 - 16 = 20$$

$$\Rightarrow CE = \sqrt{20} \text{ cm}$$

$$\text{Similarly, } BE = \sqrt{100 - 16} = \sqrt{84} \text{ cm}$$

$$\text{Now, } BC = BE + CE = (\sqrt{20} + \sqrt{84}) \text{ cm}$$

$$\text{Area of } \triangle ABC = \frac{1}{2} \times (AE) \times (BC)$$

$$\Rightarrow \Delta = \frac{1}{2} \times 4 \times (\sqrt{20} + \sqrt{84})$$

$$\Rightarrow \Delta = 2(\sqrt{20} + \sqrt{84}) \text{ cm}^2$$

$$\therefore \text{Circumradius, } R = \frac{abc}{4\Delta}$$

$$= \frac{10 \times 6 \times (\sqrt{20} + \sqrt{84})}{4 \times 2(\sqrt{20} + \sqrt{84})}$$

$$= \frac{60}{8} = 7.5 \text{ cm}$$

\Rightarrow Ans - (B)

Question 94

What is the simplified value of $\operatorname{cosec}^6 A - \cot^6 A - 3\operatorname{cosec}^2 A \cot^2 A$?

- A -2
B -1
C 0
D 1

Answer: D

Explanation:

$$\text{Expression : } \operatorname{cosec}^6 A - \cot^6 A - 3\operatorname{cosec}^2 A \cot^2 A$$

$$= (\operatorname{cosec}^2 A)^3 - (\cot^2 A)^3 - 3(\operatorname{cosec}^2 A)(\cot^2 A)(1)$$

$$\text{Using, } (\operatorname{cosec}^2 A - \cot^2 A = 1)$$

$$= (\operatorname{cosec}^2 A)^3 - (\cot^2 A)^3 - 3(\operatorname{cosec}^2 A)(\cot^2 A)(\operatorname{cosec}^2 A - \cot^2 A)$$

$$\text{Using, } x^3 - y^3 - 3xy(x - y) = (x - y)^3$$

$$= (\operatorname{cosec}^2 A - \cot^2 A)^3$$

$$= (1)^3 = 1$$

\Rightarrow Ans - (D)

Question 95

What is the simplified value of $\sqrt{\frac{\sec A - 1}{\sec A + 1}}$?

- A $\operatorname{cosec} A - \cot A$
- B $\sec A - \tan A$
- C $\sec^2 A$
- D $\sec A + \operatorname{cosec} A$

Answer: A

Explanation:

Expression : $\sqrt{\frac{\sec A - 1}{\sec A + 1}}$

$$= \sqrt{\frac{\frac{1}{\cos A} - 1}{\frac{1}{\cos A} + 1}}$$

$$= \sqrt{\frac{\frac{1 - \cos A}{\cos A}}{\frac{1 + \cos A}{\cos A}}} = \sqrt{\frac{1 - \cos A}{1 + \cos A}}$$

$$= \sqrt{\frac{1 - \cos A}{1 + \cos A} \times \frac{(1 - \cos A)}{(1 - \cos A)}}$$

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

$$= \frac{1 - \cos A}{\sin A} = \left(\frac{1}{\sin A}\right) - \left(\frac{\cos A}{\sin A}\right)$$

$$= \operatorname{cosec} A - \cot A$$

=> Ans - (A)

Question 96

If $\tan A = 1/2$ and $\tan B = 1/3$, then what is the value of $\tan (2A + B)$?

- A 1
- B 3
- C 5
- D 9

Answer: B

Explanation:

Given : $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$

Now, $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$

$$\Rightarrow \tan 2A = \left(2 \times \frac{1}{2}\right) \div \left(1 - \frac{1}{4}\right)$$

$$\Rightarrow \tan 2A = 1 \div \frac{3}{4}$$

$$\Rightarrow \tan 2A = \frac{4}{3}$$

To find : $\tan(2A + B)$

$$\frac{\tan 2A + \tan B}{1 - \tan 2A \cdot \tan B}$$

$$= \left(\frac{4}{3} + \frac{1}{3}\right) \div \left(1 - \left(\frac{4}{3}\right)\left(\frac{1}{3}\right)\right)$$

$$= \left(\frac{5}{3}\right) \div \left(1 - \frac{4}{9}\right)$$

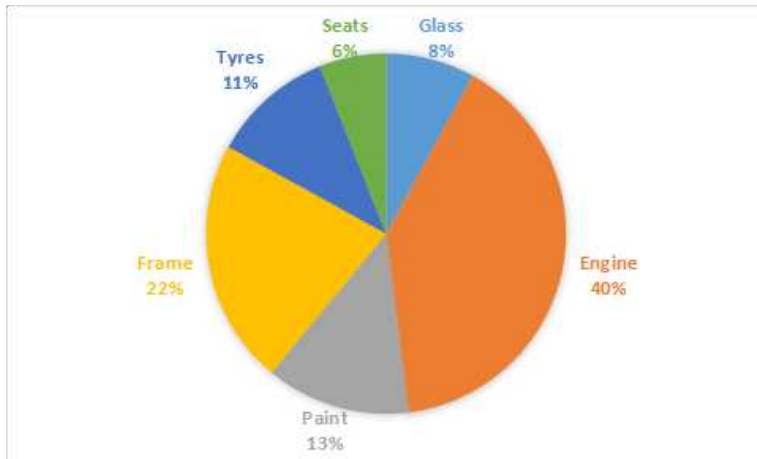
$$= \left(\frac{5}{3}\right) \div \left(\frac{9-4}{9}\right)$$

$$= \frac{5}{3} \times \frac{9}{5} = 3$$

=> Ans - (B)

Instructions

The pie chart given below shows the percentage of time taken by different processes in making a car.



Question 97

If total time taken to make a car is 300 hours, then what is the total time (in hours) taken in paint and frame?

- A 99
- B 72
- C 105
- D 66

Answer: C

Explanation:

Total time to make the car = 300 hours

Time taken (in %) in paint and frame = $13 + 22 = 35\%$

$$\Rightarrow \text{Total time (in hours) taken in paint and frame} = \frac{35}{100} \times 300$$

$$= 35 \times 3 = 105 \text{ hours}$$

=> Ans - (C)

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Question 98

If time taken in seats is 192 hours, then what is the time taken (in hours) in glass?

- A 256

- B 352
- C 416
- D 278

Answer: A

Explanation:

Time taken in seats (in %) = 6%

Time taken in glass (in %) = 8%

According to ques, 6% \equiv 192

$$\Rightarrow 8\% \equiv \frac{192}{6} \times 8$$

$$= 32 \times 8 = 256 \text{ hours}$$

\Rightarrow Ans - (A)

Question 99

If total time taken in engine and tyres is 127.5 hours, then what is the difference (in hours) in time taken by frame and glass respectively?

- A 27.5
- B 12.5
- C 40
- D 35

Answer: D

Explanation:

Total time taken in engine and tyres (in %) = 40+11 = 51%

Now, difference in time taken by frame and glass (in %) = 22-8 = 14%

According to ques, 51% \equiv 127.5

$$\Rightarrow 14\% \equiv \frac{127.5}{51} \times 14$$

$$= 2.5 \times 14 = 35 \text{ hours}$$

\Rightarrow Ans - (D)

Question 100

15% of total time is spent on quality check and this time is equally taken from all other processes. So What will be the new sectorial angle (in degrees) made by total time of seats and glass?

- A 28.6
- B 32.4
- C 35.8
- D 31.6

Answer: B

Explanation:

Time spent on quality check = 15%

As this time is taken equally from the 6 processes, thus time in each process will be reduced by = $\frac{15}{6} = 2.5\%$

Initial time taken by seats and glass = 6+8 = 14%

New time taken by seats and glass = $(6 - 2.5) + (8 - 2.5) = 9\%$

=> Sectorial angle = $\frac{9}{100} \times 360$

= $9 \times 3.6 = 32.4^\circ$

=> Ans - (B)

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