



2017 SSC CGL 08 Aug Shift-2

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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.

Goiter : Iodine :: Anemia : ?

- A Vitamin D
- B Iron
- C Vitamin E
- D Calcium

Answer: B

Explanation:

Goiter is caused due to the deficiency of Iodine as Anemia is caused by deficiency of Iron.

=> Ans - (B)

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Question 2

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

DE : O :: AF : ?

- A H
- B K
- C J
- D I

Answer: B

Explanation:

Expression = DE : O :: AF : ?

Now, D = 4, E = 5 and O = 15

The pattern followed is = $(4 + 5) \times 2 - 3 = 18 - 3 = 15$

Similarly, A = 1 and F = 6

Thus, $(1 + 6) \times 2 - 3 = 14 - 3 = 11 = K$

=> Ans - (B)

Question 3

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

56 : 41 :: 94 : ?

- A 49
- B 53
- C 60

D 89

Answer: A

Explanation:

Expression = $56 : 41 :: 94 : ?$

The pattern followed is = $(5 + 6) + (5 \times 6) = 11 + 30 = 41$

Similarly, $(9 + 4) + (9 \times 4) = 13 + 36 = 49$

=> Ans - (A)

Question 4

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

A Beneath

B top

C Huge

D Above

Answer: C

Explanation:

Beneath, top and above are prepositions while huge is an adjective.

=> Ans - (C)

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Question 5

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

A MN

B NM

C OL

D ET

Answer: D

Explanation:

ET is the odd one out, because in all the other options (MN, NM, OL), there are as many letters before the first letter, as many there are after the second letter in the English alphabetical series.

=> Ans - (D)

Question 6

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

A 253

B 473

C 143

D 633

Answer: D

Explanation:

Except 633, all other numbers are divisible by 11, hence 633 is the odd one out.

=> Ans - (D)

Question 7

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

1. Flinching
2. Flintlock
3. Flinpites
4. Flintlocks
5. Flinchers

A 15243

B 51243

C 51324

D 51342

Answer: C

Explanation:

As per the dictionary,

= Flinchers -> Flinching -> Flinpites -> Flintlock -> Flintlocks

≡ 51324

=> Ans - (C)

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Question 8

In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
_ y z a a _ y _ x y _ a a z y _

A xz z x

B x x a z a

C x z x z x

D a a z z x

Answer: C

Explanation:

The pattern is that we need to write 'xyz' followed by 'aa' and then need to write it in reverse.

=> xyz aa zyx xyz aa zyx

=> Ans - (C)

Question 9

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

19, 38, ?, 228, 684, 1368

A 108

B 113

C 114

D 138

Answer: C

Explanation:

The numbers are first multiplied by 2 and then by 3, then again by 2 and then 3 and so on.

$$19 \times 2 = 38$$

$$38 \times 3 = 114$$

$$114 \times 2 = 228$$

$$228 \times 3 = 684$$

$$684 \times 2 = 1368$$

=> Ans - (C)

Question 10

There are five students - P, Q, R, S and T having different heights in a class. P's height is more than only one student. Q's height is more than S and P but not more than R. S's height is more than P. R is not the smallest. Who is having the maximum height in the class?

A Q

B R

C S

D T

Answer: B

Explanation:

Q's height is more than S and P but not more than R and S's height is more than P,

$$\Rightarrow R > Q > S > P$$

P's height is more than only one student, => T is the shortest.

$$\therefore R > Q > S > P > T$$

Thus, R is the tallest in the class.

=> Ans - (B)

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Question 11

In a row of 74 girls, Shweta is 27th from left end. Palak is 7th to the right of Shweta. What is Palak's position from the right end of the row?

A 40

B 41

C 42

D 44

Answer: B

Explanation:

Total number of girls = 74

Shweta's position from left end = 27th

=> Palak's position from left end = 27 + 7 = 34th

Thus, Palak's position from right end = $(74+1) - 34 = 41$

=> Ans - (B)

Question 12

In the following question, from the given alternative words, select the word which can be formed using the letters of the given word.
CAPITULATE

A CAPABLE

B LUPIN

C PITY

D TALE

Answer: D

Explanation:

The word CAPITULATE does not have any 'B,N,Y' and thus the first three choices are eliminated.

Thus, only 'Tale' can be formed.

=> Ans - (D)

Question 13

In a certain code language, "BIOLOGY" is written as "YRLOLTB". How is "PHYSICS" written in that code language?

A KSXRBHH

B KSBHRXH

C XHRHBSK

D KSBHXRH

Answer: B

Explanation:

"BIOLOGY" is written as "YRLOLTB"

The pattern followed is that each letter is coded as its reverse alphabet according to the English alphabetical order.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
↓	↓	↓	
Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A

Similarly, code for PHYSICS : **KSBHRXH**

=> Ans - (B)

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Question 14

In the following question, correct the equation by interchanging two signs.

$$6 + 8 \div 4 - 4 = 8$$

A \div and =

B \div and +

C \div and -

D + and -

Answer: D

Explanation:

Expression : $6 + 8 \div 4 - 4 = 8$

By interchanging :

(A) : \div and =

$$\Rightarrow 6 + 8 = 4 - 4 \div 8$$

$$\text{L.H.S} = 14 \neq \text{R.H.S.} = 3.5$$

(B) : \div and +

$$\text{L.H.S.} = 6 \div 8 + 4 - 4$$

$$= 3 \div 4 = 0.75 \neq \text{R.H.S.}$$

(C) : \div and -

$$\text{L.H.S.} = 6 + 8 - 4 \div 4$$

$$= 14 - 1 = 13 \neq \text{R.H.S.}$$

(D) : + and -

$$\text{L.H.S.} = 6 - 8 \div 4 + 4$$

$$= 6 - 2 + 4 = 8 = \text{R.H.S.}$$

\Rightarrow Ans - (D)

Question 15

If $4 \times 9 \times 3 = 4$ and $5 \times 3 \times 1 = 3$, then $9 \times 9 \times 7 = ?$

A 5

B 6

C 7

D 9

Answer: A

Explanation:

If we add the numbers and take the square root, we get :

$$\text{Eg : } \sqrt{4 + 9 + 3} = \sqrt{16} = 4$$

$$\text{Also, } \sqrt{5 + 3 + 1} = \sqrt{9} = 3$$

$$\text{Similarly, } \sqrt{9 + 9 + 7} = \sqrt{25} = 5$$

\Rightarrow Ans - (A)

Question 16

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

	3	
4	88	7
	5	

	5	
2	104	6
	8	

	5	
7	?	8
	3	

- A 108
- B 112
- C 118
- D 120

Answer: D

Explanation:

If we add the number at each ends and then multiply them, we get :

Eg : $(4 + 7) \times (3 + 5) = 11 \times 8 = 88$

Also, $(2 + 6) \times (5 + 8) = 8 \times 13 = 104$

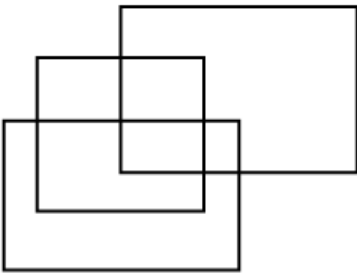
Similarly, $(7 + 8) \times (3 + 5) = 15 \times 8 = 120$

=> Ans - (D)

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Question 17

How many rectangles are there in the given figure ?



- A 9
- B 10
- C 11
- D 12

Answer: C

Question 18

In 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 plates.
- II. Some plates are glass.

Conclusions:

- I. Some glasses are cups.
- II. All glasses are cups.

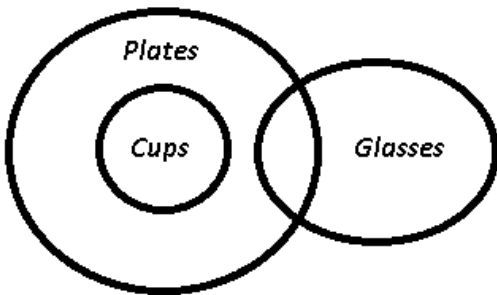
- A Only conclusion (I) follows.
- B Only conclusion (II) follows.

C Neither conclusion (I) nor conclusion (II) follows.

D Both conclusions follow.

Answer: C

Explanation:



Some glasses may or may not be cups, thus conclusion I does not follow.

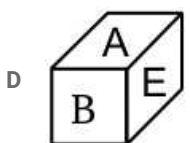
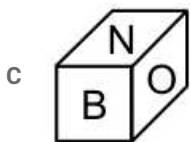
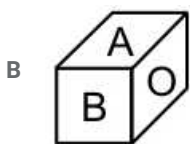
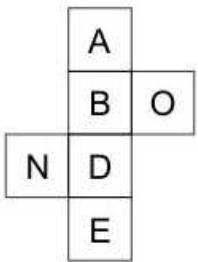
All glasses are definitely not cups, thus it also does not follow.

Thus, neither conclusion (I) nor conclusion (II) follows.

=> Ans - (C)

Question 19

From the given options, which figure can be formed by folding the figure given in the question ?



Answer: B

Explanation:

By folding the squares, B will be the base and E will become the top of the cube.

Similarly, O will face N and D will face A.

Thus, ADE and BNO cannot be the adjacent sides of the cube.

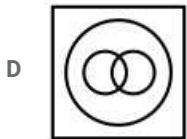
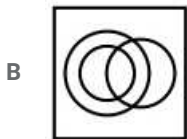
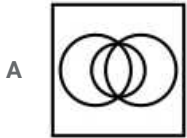
=> Ans - (B)

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Question 20

Identify the diagram that best represents the relationship among the given classes.

Complex number, Integer, Natural number



Answer: C

Explanation:

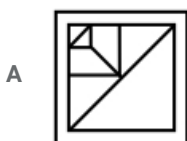
All natural numbers are integers and all integers are complex numbers.

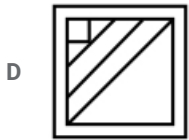
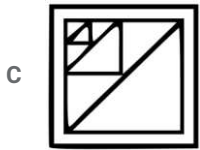
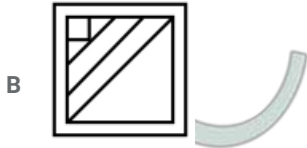
Thus, the third figure represents above relationship.

=> Ans - (C)

Question 21

Which answer figure will complete the pattern in the question figure ?





Answer: C

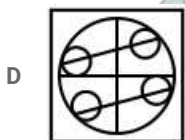
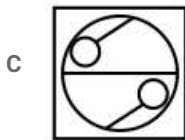
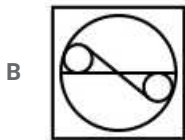
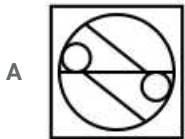
Explanation:

Clearly, in the above figure, there is a loop of rhombus within a square. Thus, in the missing part, we need one side of respective squares and rhombus towards the upper left side, which is perfectly represented in the third figure.

=> Ans - (C)

Question 22

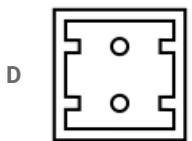
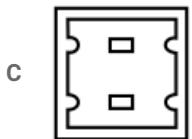
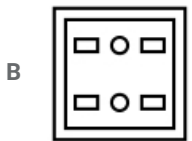
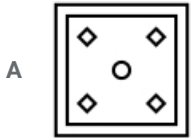
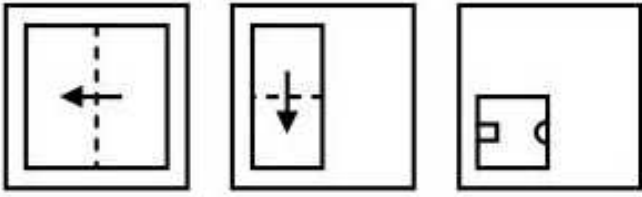
From the given answer figures, select the one in which the question figure is hidden/embedded.



Answer: B

Question 23

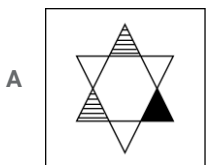
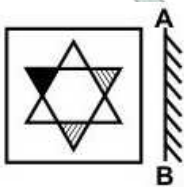
A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?



Answer: D

Question 24

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



D



Answer: D

Explanation:

Since, a vertical mirror is placed, thus the top and bottom positions will remain same, while the left and right positions will be swapped.

The black triangle at the top left will appear at top right and thus the second and third figure will be eliminated.

Now, the position of lines in the top right triangle will also change. The lines are parallel to the side of the triangle that does not contain any shaded regions. The mirror image should retain the same relationship. Therefore, option D is the right answer.

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, can be represented by 34, 41, etc., and 'V' can be represented by 59, 97, etc. Similarly, you have to identify the set for the word "STRAW".

Matrix - I

	0	1	2	3	4
0	S	R	G	H	W
1	H	W	S	R	G
2	R	G	H	W	S
3	W	S	R	G	H
4	G	H	W	S	R

Matrix - II

	5	6	7	8	9
5	A	F	L	C	T
6	C	T	A	F	L
7	F	L	C	T	A
8	T	A	F	L	C
9	L	C	T	A	F

A 00, 78, 13, 67, 23

B 12, 59, 01, 55, 10

C 24, 97, 20, 86, 31

D 43, 66, 44, 98, 43

Answer: A

Explanation:

(A) : 00, 78, 13, 67, 23 = STRAW

(B) : 12, 59, 01, 55, 10 = STRAH

(C) : 24, 97, 20, 86, 31 = STRAS

(D) : 43, 66, 44, 98, 43 = STRAS

=> Ans - (A)

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General Awareness

Instructions

For the following questions answer them individually

Question 26

'Neo-Malthusian Theory' is associated with which issue?

- A Employment
- B Poverty
- C Resource scarcity
- D Income

Answer: C

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Question 27

Match the following.

Sector	Example
1. Primary	a. Consultancy
2. Secondary	b. Apiculture
3. Tertiary	c. Shoe Factory

- A 1-b, 2-c, 3-a
- B 1-c, 2-a, 3-b
- C 1-a, 2-c, 3-b
- D 1-c, 2-b, 3-a

Answer: A

Question 28

How many Fundamental Duties are mentioned in Indian constitution?

- A Five
- B Seven
- C Nine
- D Eleven

Answer: D

Question 29

Part IV of constitution of India deals with which issue?

- A The Union
- B The States
- C Fundamental Rights
- D Directive Principles of State Policy

Answer: D

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Question 30

Who gave the slogan 'Back to the Vedas (Vedo ki aur lauto)'?

- A Guru Nanank Dev Ji
- B Dayanand Saraswati
- C Swami Vivekananda
- D Raja Ram Mohan Roy

Answer: B

Question 31

Todarmal was the famous revenue minister of which Mughal Emperor?

- A Shah Jahan
- B Bahadur Shah Jafar
- C Akbar
- D Aurangzeb

Answer: C

Question 32

Gravitational force is maximum at which of the following place?

- A At equator
- B At tropic of cancer
- C At tropic of Capricorn
- D At poles

Answer: D

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Question 33

Which of the following device is used to measure humidity?

- A Hydrometer
- B Hygrometer
- C Psycho Meter
- D Anemometer

Answer: B

Question 34

Which of the following disease is caused by female Anopheles mosquito?

- A Chicken Pox
- B Malaria
- C Black Fever
- D Cholera

Answer: B

Question 35

Which part of the plant gives us saffron?

- A Roots
- B Petals
- C Stem
- D Stigma

Answer: D

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Question 36

Which of the following transports water from the roots of the plant to its leaves?

- A Xylem
- B Phloem
- C Both xylem and phloem
- D Cortex

Answer: A

Question 37

Which of the following is not a vector quantity?

- A Momentum
- B Displacement
- C Torque
- D Speed

Answer: D

Question 38

At what temperature (in Fahrenheit) pure water freezes?

- A 32
- B 0
- C 48
- D 37

Answer: A

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Question 39

In which graphics, digital photos and scanned images are typically stored with extensions such as.bmp, .png, .jpg, .tif or.gif?

- A Bitmap
- B Pixels
- C Plane
- D Both Bitmap and Pixels

Answer: A

Question 40

Process of gaining electrons is known as ____.

- A oxidation
- B reduction
- C radiation
- D both oxidation and reduction

Answer: B

Question 41

Which of the following metal (shown by its symbol) is generally used for making filaments of bulb?

- A Fe
- B An
- C Ag
- D W

Answer: D

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Question 42

Which of the following trees shed their leaves once in a year?

- A Deciduous trees
- B Coniferous trees
- C Evergreen trees
- D Both deciduous and coniferous trees

Answer: A

Question 43

The Entrepreneurship Development Scheme (EDS) has been launched under New Economy Development Policy (NEDP) on January 19, 2017 at _____.

- A New Delhi
- B Mizoram
- C Gujrat
- D Uttar Pradesh

Answer: B

Question 44

Who invented Dynamite?

- A J B Dunlop
- B Alfred Nobel
- C James Simons
- D Peter Hargreaves

Answer: B

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Question 45

'Rovers cup' is associated with which sport?

- A Football
- B Hockey
- C Golf
- D Basketball

Answer: A

Question 46

Dandia is a form of dance associated with which of the following state?

- A Haryana

- B Punjab
- C Gujarat
- D Rajasthan

Answer: C

Question 47

Who among the following was awarded with Dhronacharya Award 2016 in the field of 'Swimming (Lifetime)'?

- A Shri Raj Kumar Sharma
- B Shri Sagar Mal Dhayal
- C Shri S. Pradeep Kumar
- D Shri Nagapuri Ramesh

Answer: C

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Question 48

'Ace Against Odds' is an autobiography of which sports person?

- A Vishwanathan Anand
- B Sania Mirza
- C Abhinav Bindra
- D Anjali Bhagwat

Answer: B

Question 49

Under the framework of the new partnership with which country, Victory University will help India to Establish a National Sports University?

- A Portugal
- B Australia
- C Vietnam
- D USA

Answer: B

Question 50

With which country India exchanged its border maps?

- A China
- B Sri Lanka
- C Pakistan

D Bangladesh

Answer: D

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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'.

Hardly had I reached the (a)/ exhibition where I learnt (b)/ about the major robbery. (c)/ No Error (d)

A Hardly had I reached the

B exhibition where I learnt

C about the major robbery

D No Error

Answer: B

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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'.

No sooner did the sun rise (a)/ when we resumed the journey (b)/ after having a hasty breakfast. (c)/ No Error (d)

A No sooner did the sun rise

B when we resumed the journey

C after having a hasty breakfast

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.

He ____ to the problem of air pollution in his speech.

A averted

B adverted

C exclaimed

D mentioned

Answer: B

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.

Rohan is so magnanimous that everyone is always ____ to help him in his project.

- A eager
- B enthusiastic
- C reluctant
- D ignorant

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.

Succulent

- A Sucking
- B Soft
- C Juicy
- D Pale

Answer: C

Question 56

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

Congregation

- A Discussion
- B Attention
- C Contraction
- D Assembly

Answer: D

Question 57

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

Evanescent

- A Enticing
- B Fleeting
- C Erratic

D Elusive

Answer: A

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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.

Panegyric

A Noxious

B Criticism

C Fantasy

D Grandeur

Answer: B

Question 59

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

To put a spoke in one's wheel

A To be advantageous at the time of difficulty

B To maintain under all circumstances

C To blame the other party

D To put a difficulty in the way of progress

Answer: D

Question 60

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

At loggerheads

A To suffer

B In conflict with someone

C To face tough competition

D To be in do or die situation

Answer: B

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Question 61

Improve the bracketed part of the sentence.

She is (the best and wisest) girl in the class.

A best and wisest

- B a best and a wisest
- C the best and the wisest
- D No improvement

Answer: C

Question 62

Improve the bracketed part of the sentence.

The people of Japan are (wiser than America.)

- A wiser than that of America.
- B wiser than those of America.
- C wiser to that of America.
- 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.

One skilled in telling stories

- A Ventral
- B Fanatic
- C Raconteur
- D Tyro

Answer: C

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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.

Fear of Fire

- A Arsonphobia
- B Astraphobia
- C Astrophobia
- D Arrhenphobia

Answer: A

Question 65

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

- A Hygeine

- B Fascist
- C Career
- D Apparel

Answer: A

Question 66

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

- A Reside
- B Revise
- C Advise
- D Demice

Answer: D

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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: He raised his voice against idol-worship.

Q: People are generally very open and accept social changes with a positive attitude.

R: Swami Dayanand Saraswati is remembered with reverence and affection among the social reformers of the nineteenth century.

S: India is a country which respects spiritualism much more than materialism.

- A QRSP
- B PRSQ
- C RSPQ
- D SQRP

Answer: D

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: For that we need people who possess not only high skills but high values as well.

Q: So the need of the hour is not only skill-based education but also value-inspired and value-based education.

R: When we talk of investing in education, a question arises as to what kind of education needs to be given to the youngster.

S: Our aim is to evolve not only an affluent society, but an egalitarian, just, humane and compassionate society.

- A SPRQ
- B PRQS
- C RQSP
- D RSPQ

Answer: D

Question 69

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.

Please guide me.

- A You are requested to guide me.
- B You have been requested to guide me.
- C You were requested to guide me.
- D You are being requested to guide me.

Answer: A

General Science Notes for SSC CGL

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.

The teacher said, "The Earth revolves around the sun."

- A The teacher said that the Earth is being revolving around the sun.
- B The teacher said that the Earth revolves around the sun.
- C The teacher said that the Earth revolved around the sun.
- D The teacher said that the Earth had been revolving around the sun.

Answer: B

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.

The ___(1)___ of energy in India are met from both commercial and non commercial sources. The most ___(2)___ sources of energy today are coal and natural gas, hydro electricity and nuclear power. On the other hand, firewood, cow-dung cakes and vegetable waste etc. ___(3)___ non commercial forms of energy. While non commercial forms of energy ___(4)___ demand, coal is the ___(5)___ source of commercial energy in India.

Question 71

(1)

- A requirements
- B sources
- C availability
- D lessen

Answer: A

Question 72

(2)

- A vital
- B insignificant
- C important
- D expensive

Answer: C

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Question 73

(3)

- A constitutes
- B combines
- C mixes
- D collaborates

Answer: A

Question 74

(4)

- A need
- B meet
- C shed
- D rests

Answer: B

Question 75

(5)

- A smallest
- B hardest
- C largest
- D heaviest

Answer: C

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Mathematics

Instructions

For the following questions answer them individually

Question 76

What least value which should be added to 1812 to make it divisible by 7, 11 and 14?

- A 12
- B 36
- C 72
- D 154

Answer: B

Explanation:

$$\text{L.C.M.}(7,11,14) = 154$$

Now, on dividing 1812 by 154,

$$\Rightarrow 1812 = 154 \times 11 + 118$$

Thus, the least value which should be added to 1812 to make it divisible by 7, 11 and 14 = $154 - 118 = 36$

\Rightarrow Ans - (B)

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Question 77

A is 1.5 times efficient than B therefore takes 8 days less than B to complete a work. If A and B work on alternate days and A works on first day, then in how many days the work will be completed?

- A 17
- B 19
- C 19.5
- D 21

Answer: B

Explanation:

Let B's 1 day's work = $2x$ units/day

$$\Rightarrow \text{A's 1 day's work} = 1.5 \times 2x = 3x \text{ units/day}$$

Let B takes d days, \Rightarrow A takes $(d - 8)$ days to finish the work.

$$\Rightarrow \text{Total work} = 2x \times d = 3x \times (d - 8)$$

$$\Rightarrow 2d = 3d - 24$$

$$\Rightarrow d = 24$$

$$\therefore \text{Total work} = 2x \times 24 = 48x \text{ units}$$

If A and B work on alternate days and A works on first day, \Rightarrow Work done in 2 days = $3 + 2 = 5$ units

Multiplying both sides by 9, \Rightarrow Work done in 18 days = 45 units

Now, it's A's turn to do the work, thus he will do the remaining 3 units on the 19th day.

\Rightarrow Ans - (B)

Question 78

One of the diagonal of a rhombus is 70% of the other diagonal. What is the ratio of area of rhombus to the square whose side is same as the length of the larger diagonal?

- A 3 : 10
- B 3 : 20
- C 7 : 20
- D 7 : 10

Answer: C

Explanation:

Let larger diagonal of the rhombus = side of square = $10x$

$$\Rightarrow \text{Smaller diagonal} = \frac{70}{100} \times 10x = 7x$$

\Rightarrow Ratio of area of rhombus to area of square

$$= \frac{\frac{1}{2}d_1d_2}{a^2}$$

$$= \frac{1}{2} \times \frac{10x \times 7x}{10x \times 10x}$$

$$= \frac{1}{2} \times \frac{7}{10} = \frac{7}{20}$$

\Rightarrow Ans - (C)

Question 79

A shopkeeper sells a table at a discount of 20% and earns a profit of 60%. If he sells the same table at 40% discount, then what will be his new profit percent?

- A 20
- B 30
- C 35
- D 40

Answer: A

Explanation:

Let marked price of table = Rs. $100x$

Discount % = 20%

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

Profit % = 60%

$$\Rightarrow \text{Cost price} = 80x \times \frac{100}{(100+60)} = \text{Rs. } 50x$$

$$\text{Now, selling price if discount is 40\%} = 100x \times \frac{(100-40)}{100} = \text{Rs. } 60x$$

$$\therefore \text{New profit \%} = \frac{(60x-50x)}{50x} \times 100$$

$$= 10 \times 2 = 20\%$$

\Rightarrow Ans - (A)

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Question 80

If $A/3 = B/2 = C/5$, then what is the value of ratio $(C + A)^2 : (A + B)^2 : (B + C)^2$?

- A 9 : 4 : 25
- B 25 : 4 : 9
- C 64 : 25 : 49
- D 49 : 25 : 64

Answer: C

Explanation:

$$\text{Let } \frac{A}{3} = \frac{B}{2} = \frac{C}{5} = k$$

$$\Rightarrow A = 3k, B = 2k \text{ and } C = 5k$$

$$\text{To find : } (C + A)^2 : (A + B)^2 : (B + C)^2$$

$$= (5k + 3k)^2 : (3k + 2k)^2 : (2k + 5k)^2$$

$$= 8^2k^2 : 5^2k^2 : 7^2k^2$$

$$= 64 : 25 : 49$$

\Rightarrow Ans - (C)

Question 81

5 years ago the average age of a family which includes father, mother and a son was 35 years. 3 years ago the average age of father and mother was 46 years. What is the present age (in years) of the son?

- A 20
- B 24
- C 26
- D 22

Answer: D

Explanation:

Let age of father, mother and son respectively be f, m, s years

Average age of father, mother and son 5 years ago = 35 years

$$\Rightarrow \text{Sum of present ages of father, mother and son} = (35 + 5) \times 3$$

$$\Rightarrow f + m + s = 120 \text{ -----(i)}$$

Similarly, sum of present ages of father and mother = $(46 + 3) \times 2$

$$\Rightarrow f + m = 98 \text{ -----(ii)}$$

Subtracting equation (ii) from (i), we get :

$$\Rightarrow s = 120 - 98 = 22 \text{ years}$$

\Rightarrow Ans - (D)

Question 82

The cost price of 60 articles is same as the selling price of x articles. If there is a profit of 20%, then what is the value of x ?

- A 15
- B 30
- C 50

D 80

Answer: C

Explanation:

Let cost price of 1 article = Rs. 10

=> Cost price of 60 articles = Rs. 600

Profit % = 20%

=> Selling price of x articles = $x \times 10 \times \frac{120}{100} = Rs. 12x$

According to ques,

=> $12x = 600$

=> $x = \frac{600}{12} = 50$

=> Ans - (C)

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Question 83

A person scores 45% of the total marks in the exam and still fails by 40 marks. The passing percentage of the exam is 55%. What is the maximum marks of the exam?

A 300

B 350

C 400

D 500

Answer: C

Explanation:

Let maximum marks = $100x$

=> Passing marks = $\frac{55}{100} \times 100x = 55x$

Marks scored = $\frac{45}{100} \times 100x = 45x$

According to ques,

=> $55x - 45x = 40$

=> $x = \frac{40}{10} = 4$

∴ Maximum marks = $100 \times 4 = 400$

=> Ans - (C)

Question 84

A man starts running from point P at 11:00 a.m. with a speed of 10 km/hr. He runs for 2 hours and then takes a 1 hour rest. He continues this process till he is caught by another man who starts at 2:00 p.m. from point P and runs non-stop at a speed of 15 km/hr towards the first man. At what time (in p.m.) will the first man be caught?

A 6:20

B 4:40

C 6:00

D 5:30

Answer: B

Explanation:

Speed of first man = 10 km/hr

The man runs for 2 hours and then takes a 1 hour rest, => Distance covered by him in 3 hours = $2 \times 10 = 20$ km

Speed of second man = 15 km/hr

Now, at 2:00 pm, the second man starts running and the first man is at a distance of 20 km

After 2 hours, at 4:00 pm, distance covered by first man = 20 km and he will not move for another hour

and distance covered by second man = $2 \times 15 = 30$ km

=> Distance between them at 4:00 pm = $30 - 20 = 10$ km

Now, time taken to cover 10 km by second man = $\frac{10}{15} = \frac{2}{3}$ hours

= $(\frac{2}{3} \times 60)$ minutes = 40 minutes

∴ Total time taken to catch first man from 2:00 pm = 2 hr and 40 minutes

=> At 4:40 pm the first man will be caught.

=> Ans - (B)

Question 85

The difference of compound interest and simple interest for 3 years and for 2 years are in ratio 23 : 7 respectively. What is rate of interest per annum (in %)?

A 200/7

B 100/7

C 300/7

D 400/7

Answer: A

Explanation:

Let rate of interest = $r\%$

Difference between compound interest and simple interest on Rs. P for 2 years = $P(\frac{r}{100})^2$

Difference for 3 years = $P(\frac{r}{100})^2(\frac{r}{100} + 3)$

According to ques,

=> $P(\frac{r}{100})^2(\frac{r}{100} + 3) : P(\frac{r}{100})^2 = 23 : 7$

=> $\frac{(\frac{r}{100} + 3)}{1} = \frac{23}{7}$

=> $7(\frac{r}{100} + 3) = 23$

=> $\frac{7r}{100} + 21 = 23$

=> $\frac{7r}{100} = 23 - 21 = 2$

=> $r = \frac{100}{7} \times 2 = \frac{200}{7} \%$

=> Ans - (A)

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Question 86

$x^2 + y^2 + z^2$
If $yz + zx + xy = 3$, then what is the value of $(x + y + z)^3$?

- A 0
- B 1
- C 2
- D 3

Answer: A

Explanation:

$x^2 + y^2 + z^2$
Given : $yz + zx + xy = 3$

$$\Rightarrow x^3 + y^3 + z^3 - 3xyz = 3$$

$$\Rightarrow x^3 + y^3 + z^3 - 3xyz = 3$$

$$\Rightarrow x^3 + y^3 + z^3 - 3xyz = 0$$

$$\Rightarrow (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx) = 0$$

$$\Rightarrow x + y + z = 0$$

Cubing both sides, we get :

$$\Rightarrow (x + y + z)^3 = 0$$

\Rightarrow Ans - (A)

Question 87

$x^{\frac{1}{4}}$
If $x^{-\frac{1}{4}} = 2$, then what is the value of $x^{81} + \frac{1}{x^{81}}$?

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

Answer: D

Question 88

If $a(a + b + c) = 45$, $b(a + b + c) = 75$ and $c(a + b + c) = 105$, then what is the value of $(a^2 + b^2 + c^2)$?

- A 75
- B 83
- C 217
- D 225

Answer: B

Explanation:

Given : $a(a + b + c) = 45$

$\Rightarrow a^2 + ab + ac = 45$ -----(i)

Similarly, $ab + b^2 + bc = 75$ -----(ii)

and $ac + bc + c^2 = 105$ -----(iii)

Adding equations (i),(ii) and (iii),

$\Rightarrow a^2 + b^2 + c^2 + 2ab + 2bc + 2ac = 45 + 75 + 105$

$\Rightarrow (a + b + c)^2 = (15)^2$

$\Rightarrow a + b + c = 15$

Substituting above value in equation (i), $\Rightarrow a = \frac{45}{15} = 3$

Similarly, $b = 5$ and $c = 7$

$\therefore (a^2 + b^2 + c^2)$

$= (3)^2 + (5)^2 + (7)^2$

$= 9 + 25 + 49 = 83$

\Rightarrow Ans - (B)

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Question 89

If $x^2 + \frac{1}{x^2} = 1$, then what is the value of $x^{48} + x^{42} + x^{36} + x^{30} + x^{24} + x^{18} + x^{12} + x^6 + 1$?

A -9

B 0

C 1

D 9

Answer: C

Explanation:

Given : $x^2 + \frac{1}{x^2} = 1$

Adding '2' on both sides,

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

$\Rightarrow (x + \frac{1}{x})^2 = 3$

$\Rightarrow x + \frac{1}{x} = \sqrt{3}$ -----(i)

Now, cubing both sides, we get :

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

$\Rightarrow x^3 + \frac{1}{x^3} + 3\sqrt{3} = 3\sqrt{3}$ [Using equation (i)]

$\Rightarrow \frac{x^6 + 1}{x^3} = 0$

$\Rightarrow x^6 = -1$ -----(ii)

To find : $x^{48} + x^{42} + x^{36} + x^{30} + x^{24} + x^{18} + x^{12} + x^6 + 1$

$= (x^6)^8 + (x^6)^7 + (x^6)^6 + (x^6)^5 + (x^6)^4 + (x^6)^3 + (x^6)^2 + (x^6) + 1$

$= (-1)^8(-1)^7 + (-1)^6 + (-1)^5 + (-1)^4 + (-1)^3 + (-1)^2 + (-1) + 1$

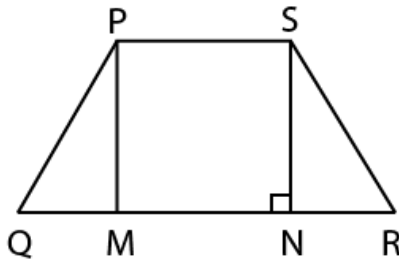
$$= (1) + (-1) + (1) + (-1) + (1) + (-1) + (1) + (-1) + (1)$$

$$= 1$$

=> Ans - (C)

Question 90

In the given figure, PQRS is a trapezium in which PM ⊥ SN, NR = 9 cm, PS = 12 cm, QM = NR and NR = SN. What is the area (in cm^2) of trapezium?



A 170

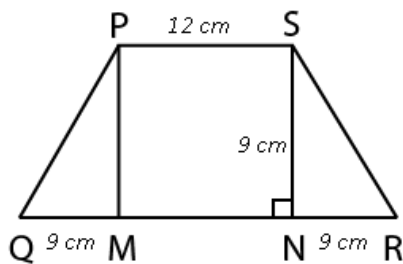
B 182

C 189

D 191

Answer: C

Explanation:



$$QR = 9 + 12 + 9 = 30 \text{ cm}$$

$$\text{Area of trapezium} = \frac{1}{2} \times h \times (\text{sum of parallel sides})$$

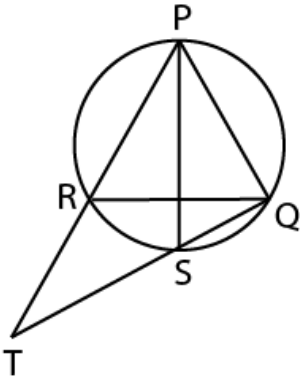
$$= \frac{1}{2} \times 9 \times (12 + 30)$$

$$= 21 \times 9 = 189 \text{ cm}^2$$

=> Ans - (C)

Question 91

In the given figure. PQR is an equilateral triangle and PS is the angle bisector of $\angle P$. What is the value of RT: RQ?



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

Answer: B

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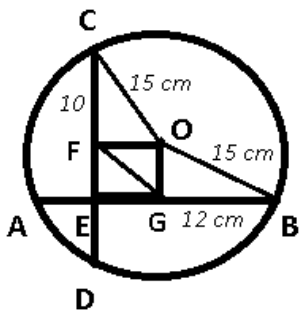
Question 92

Two chords of length 20 cm and 24 cm are drawn perpendicular to each other in a circle of radius is 15 cm. What is the distance between the Points of intersection of these chords (in cm) from the center of the circle?

- A $\sqrt{114}$
- B $\sqrt{182}$
- C $\sqrt{206}$
- D $\sqrt{218}$

Answer: C

Explanation:



Given : Radius = 15 cm, AB = 24 cm and CD = 20 cm

To find : FG = ?

Solution : In $\triangle BOG$,

$$\Rightarrow (OG)^2 = (OB)^2 - (BG)^2$$

$$\Rightarrow (OG)^2 = (15)^2 - (12)^2$$

$$\Rightarrow (OG)^2 = 225 - 144 = 81 \text{ -----(i)}$$

Similarly, in $\triangle COF$,

$$\Rightarrow (OF)^2 = (OC)^2 - (CF)^2$$

$$\Rightarrow (OF)^2 = (15)^2 - (10)^2$$

$$\Rightarrow (OF)^2 = 225 - 100 = 125 \text{ -----(ii)}$$

Again, in $\triangle GOF$,

$$\Rightarrow (FG)^2 = (OF)^2 + (OG)^2$$

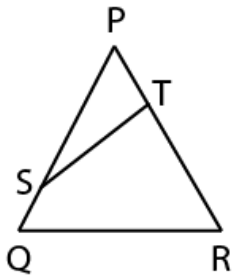
$$\Rightarrow (FG)^2 = 125 + 81 = 206$$

$$\Rightarrow FG = \sqrt{206} \text{ cm}$$

\Rightarrow Ans - (C)

Question 93

In the given figure. QRTS is a cyclic quadrilateral. If $PT = 5$ cm. $SQ = 4$ cm. $PS = 6$ cm and $\angle PQR = 63^\circ$. then what is the value (in cm) of TR?



A 3

B 7

C 9

D 15

Answer: B

Explanation:

In cyclic quadrilateral QRTS,

$$\angle PQR + \angle STR = 180^\circ$$

$$\Rightarrow 63^\circ + \angle STR = 180^\circ$$

$$\Rightarrow \angle STR = 127^\circ$$

$$\Rightarrow \angle STR + \angle STP = 180^\circ$$

$$\Rightarrow \angle STP = 180^\circ - 127^\circ = 63^\circ$$

Triangle PST \sim triangle PQR,

$$PQ/PT = PR/PS$$

$$\Rightarrow (PS + SQ)/PT = PR/PS$$

$$\Rightarrow 10/5 = PR/6$$

$$PR = 12$$

$$TR = PR - PT = 12 - 5 = 7$$

Question 94

What is the simplified value of $\sin^2(90 - \theta) - \left[\frac{\sin(90 - \theta)\sin \theta}{\tan \theta}\right]$?

- A 1
- B cosec θ
- C 0
- D cos θ

Answer: C

Explanation:

Expression : $\sin^2(90^\circ - \theta) - \left[\frac{\sin(90^\circ - \theta)\sin \theta}{\tan \theta}\right]$

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

$$= \cos^2 \theta - \left(\frac{\cos \theta \sin \theta}{\tan \theta}\right)$$

$$= \cos^2 \theta - \left(\frac{\cos \theta \sin \theta}{\frac{\sin \theta}{\cos \theta}}\right)$$

$$= \cos^2 \theta - \cos^2 \theta = 0$$

=> Ans - (C)

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Question 95

What is the simple value of $\left[\frac{\cos^2 \theta}{1 + \sin \theta} - \frac{\sin^2 \theta}{1 + \cos \theta}\right]^2$?

- A $\sin \theta$
- B $1 - \sin 2\theta$
- C $1 + \sin 2\theta$
- D $1 - \sin \theta$

Answer: B

Explanation:

Expression : $\left[\frac{\cos^2 \theta}{1 + \sin \theta} - \frac{\sin^2 \theta}{1 + \cos \theta}\right]^2$

$$= \left[\frac{1 - \sin^2 \theta}{1 + \sin \theta} - \frac{1 - \cos^2 \theta}{1 + \cos \theta}\right]^2$$

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

$$= [(1 - \sin \theta) - (1 - \cos \theta)]^2$$

$$= (\cos \theta - \sin \theta)^2$$

$$= \cos^2 \theta + \sin^2 \theta - 2\sin \theta \cos \theta$$

$$= 1 - \sin 2\theta$$

=> Ans - (B)

Question 96

If $5 \sec \theta - 3 \tan \theta = 5$, then what is the value of $5 \tan \theta - 3 \sec \theta$?

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

Answer: C

Explanation:

Given : $5\sec\theta - 3\tan\theta = 5$

Squaring both sides, we get :

$$\Rightarrow (5\sec\theta - 3\tan\theta)^2 = (5)^2$$

$$\Rightarrow 25\sec^2\theta + 9\tan^2\theta - 2(5\sec\theta)(3\tan\theta) = 25$$

Using, $\sec^2\theta - \tan^2\theta = 1$

$$\Rightarrow 25(1 + \tan^2\theta) + 9(\sec^2\theta - 1) - 30(\tan\theta)(\sec\theta) = 25$$

$$\Rightarrow 25 + 25\tan^2\theta + 9\sec^2\theta - 9 - 2(5\tan\theta)(3\sec\theta) = 25$$

$$\Rightarrow (5\tan\theta)^2 + (3\sec\theta)^2 - 2(5\tan\theta)(3\sec\theta) = 9$$

$$\Rightarrow (5\tan\theta - 3\sec\theta)^2 = (3)^2$$

$$\Rightarrow 5\tan\theta - 3\sec\theta = 3$$

\Rightarrow Ans - (C)

Instructions

The table below shows the distribution of number of people living in 8 different countries and the per capita income of each of the countries. The total population of these countries taken together is 200 crores.

Per capita income = total GDP of country/population of the country

Country	Distribution of number of people	Per capita income (in crore dollars)
Country 1	12%	11850
Country 2	24%	5350
Country 3	15%	9900
Country 4	17%	4840
Country 5	7%	2260
Country 6	6%	6920
Country 7	11%	3190
Country 8	8%	10410

Question 97

What is the difference (in crores) in population of the most and the least populated country?

- A 18
- B 32
- C 34
- D 36

Answer: D

Explanation:

Most populated country = Country 2 (24%)

Least populated country = Country 6 (6%)

Difference in population (in crores) = $\frac{(24-6)}{100} \times 200$

$$= 18 \times 2 = 36$$

=> Ans - (D)

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Question 98

What is the total GDP (in crore dollars) of country 5?

A 27120

B 31640

C 38280

D 44660

Answer: B

Explanation:

Per capita income (in crore dollars) of country 5 = 2260

Total GDP (in crore dollars) of country 5 = $\frac{7}{100} \times 200 \times 2260$

$$= 14 \times 2260 = 31640$$

=> Ans - (B)

Question 99

What is the total GDP (in crore dollars) for the country with the third lowest per capita income?

A 181900

B 108460

C 145200

D 164560

Answer: D

Explanation:

Country with the third lowest per capita income = Country 4

Total GDP (in crore dollars) of country 4 = $\frac{17}{100} \times 200 \times 4840$

$$= 34 \times 4840 = 164,560$$

=> Ans - (A)

Question 100

Which country has the highest total GDP?

A Country 1

B Country 2

C Country 3

D Country 8

Answer: C

Explanation:

GDP = % population x per capita income

Country 1 : $12 \times 11850 = 142,200$

Country 2 : $24 \times 5350 = 128,400$

Country 3 : $15 \times 9900 = 148,500$ [MAX]

Country 8 : $8 \times 10410 = 83,280$

=> Ans - (C)

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