



2016 SSC CGL 01 Sep Morning Shift

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Reasoning

Instructions

For the following questions answer them individually

Question 1

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

Psychology : Human Being :: Ornithology : ?

- A Birds
- B Volcanoes
- C Insects
- D Reptiles

Answer: A

Explanation:

Psychology is the study of Human beings, similarly study of **birds** is called Ornithology.

=> Ans - (A)

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Question 2

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

EGIK : FHJL :: MOQS : ?

- A LNOQ
- B NPRT
- C KMOQ
- D NRPT

Answer: B

Explanation:

Expression = EGIK : FHJL

The pattern followed is =

E	G	I	K
(+1)	(+1)	(+1)	(+1)
F	H	J	L

Similarly, for MOQS :

M	O	Q	S
(+1)	(+1)	(+1)	(+1)
N	P	R	T

=> Ans - (B)

Question 3

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

147 : 741 :: 869 : ?

- A 896
- B 968
- C 689
- D 986

Answer: B

Explanation:

Expression : 147 : 741 :: 869 : ?

The pattern followed is that the number is written in reverse order.

Eg = 147 \equiv 741

Similarly, 869 \equiv **968**

=> Ans - (B)

Question 4

For the following questions

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

- A Herb
- B Flower
- C Tree
- D Shrub

Answer: B

Explanation:

Herb, shrub and tree all have flowers, hence flower is the odd one out.

=> Ans - (B)

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Question 5

For the following questions

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

- A JKLM
- B NOPQ
- C RSTU
- D VWXZ

Answer: D

Explanation:

All the given options but for the last one, have four consecutive alphabets according to the English alphabetical order.

JKLM, NOPQ, RSTU

=> Ans - (D)

Question 6

For the following questions

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

A (85, 136)

B (34, 85)

C (102, 153)

D (63, 162)

Answer: D

Explanation:

Difference between all numbers.

(A) : $136 - 85 = 51$

(B) : $85 - 34 = 51$

(C) : $153 - 102 = 51$

(D) : $162 - 63 = 99$

=> Ans - (D)

Question 7

Arrange the following words as per order in the dictionary

1. Organ
2. Origin
3. Orient
4. Organic
5. Organise

A 1, 5, 3, 4, 2

B 1, 5, 4, 2, 3

C 1, 4, 5, 3, 2

D 1, 4, 5, 2, 3

Answer: C

Explanation:

As per order in the dictionary,

= Organ -> Organic -> Organise -> Orient -> Origin

≡ 1, 4, 5, 3, 2

=> Ans - (C)

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Question 8

Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?

_sr_tr_srs_r_srst_

A ttssrr

- B tsrtsr
- C strtrs
- D tsttr

Answer: D

Explanation:

Expression : $_sr_tr_srs_r_srst_$

The pattern followed is that in a group of 6 letters, the term 'tsrstr' is repeated.

= tsrstr tsrstr tsrstr

=> Ans - (D)

Question 9

Find the missing number in the following series:

43, 172, 86, 344, ?

- A 172
- B 258
- C 129
- D 430

Answer: A

Explanation:

The pattern followed is that the numbers are alternatively multiplied by '4' and ' $\frac{1}{2}$ '

$$43 \times 4 = 172$$

$$172 \times \frac{1}{2} = 86$$

$$86 \times 4 = 344$$

$$344 \times \frac{1}{2} = 172$$

=> Ans - (B)

Question 10

'A' is the sister of 'B'. 'B' is married to 'D'. 'B' and 'D' have a daughter 'G'. How is 'G' related to 'A'?

- A Sister
- B Daughter
- C Niece
- D Cousin

Answer: C

Explanation:

B and D are married and have a daughter G.

Also, A is the sister of B, => A is aunt of G.

Thus, G is the niece of A.

=> Ans - (C)

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Question 11

Anil is as much younger to Vivek as he is older to Tarun. If the total of the ages of Vivek and Tarun is 48 years, how old is Anil?

- A 26
- B 33
- C 24
- D 18

Answer: C

Explanation:

Let Anil's age = x years

Let Anil is n years elder than Tarun and n years younger than Vivek.

=> Tarun's age = $(x - n)$ years

and Vivek's age = $(x + n)$ years

Sum of ages of Vivek and Tarun = $(x - n) + (x + n) = 48$

=> $2x = 48$

=> $x = \frac{48}{2} = 24$ years

=> Ans - (C)

Question 12

From the given alternative words, select the word which cannot be formed using the letters of the given word:

CHRONOLOGICAL

- A CALL
- B LOGIC
- C CALICO
- D ANALOGY

Answer: D

Explanation:

The word CHRONOLOGICAL does not contain any 'Y', and thus the word 'Analogy' cannot be formed.

=> Ans - (D)

Question 13

If **HOUSE** is written as **FQSUC**, then how can **CHAIR** be written in that code?

- A DIBJS
- B SBJID
- C SHBGD
- D AJYKP

Answer: D

Explanation:

HOUSE \equiv FQSUC

H	O	U	S	E
(-2)	(+2)	(-2)	(+2)	(-2)
F	Q	S	U	C

Similarly, for CHAIR

C	H	A	I	R
(-2)	(+2)	(-2)	(+2)	(-2)
A	J	Y	K	P

=> Ans - (D)

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Question 14

If P denotes \div , Q denotes \times , R denotes $+$ and S denotes $-$ then what is the value of 18Q12P4R5S6

- A 64
- B 53
- C 81
- D 24

Answer: B

Explanation:

Expression : 18Q12P4R5S6

$$\equiv 18 \times 12 \div 4 + 5 - 6$$

$$= 54 - 1 = 53$$

=> Ans - (B)

Question 15

If $4 + 3 = 25$, and $8 + 4 = 80$, then, $3 + 2 = ?$

- A 15
- B 10
- C 13
- D 12

Answer: C

Explanation:

The square of the numbers are added.

$$\text{Eg : } 4^2 + 3^2 = 16 + 9 = 25$$

$$\text{and } 8^2 + 4^2 = 64 + 16 = 80$$

$$\text{Similarly, } 3^2 + 2^2 = 9 + 4 = 13$$

=> Ans - (C)

Question 16

Select the missing numbers from the given alternatives

8	32	4
7	?	5
2	6	3

- A 30
- B 35
- C 20
- D 25

Answer: B

Explanation:

In the first row, the number in the middle is obtained by multiplying the other two.

Eg : $8 \times 4 = 32$

and $2 \times 3 = 6$

Similarly, $7 \times 5 = 35$

=> Ans - (B)

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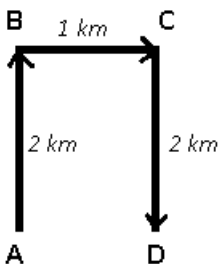
Question 17

Ramesh starts his journey by walking 2 kilometres towards North. Then he takes a right turn and walks 1 kilometre. Again takes a right turn and walks 2 kilometre. Now which direction is he facing?

- A East
- B West
- C South
- D North

Answer: C

Explanation:



Let Ramesh starts from point A and walks 2 km north and reaches B, then turns right and walks towards east for 1 km before finally reaching point D.

Thus, he is facing south direction.

=> Ans - (C)

Question 18

Consider the given statement/s to be true and decide which of the given conclusions/assumptions can definitely be drawn from the given statement.

Statement:

Irregularity is a cause for failure in exams.

Some regular students fail in the examinations.

Conclusions:

I. All failed students are regular.

II. All successful students are not regular.

- A Only conclusion I follows
- B Only conclusion II follows
- C Both conclusion I and conclusion II follow
- D Neither conclusion I nor conclusion II follows

Answer: D

Explanation:

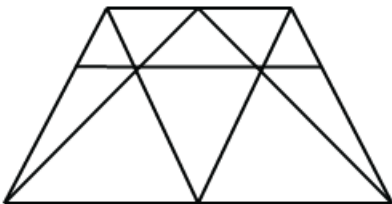
The given statement clearly implies that all irregular and some regular students fail in the examinations. This, in turn, means that all successful students are regular but not all regular students are successful.

Thus, neither I nor II follows.

=> Ans - (D)

Question 19

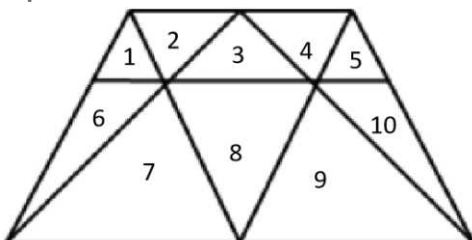
How many triangles are there in the given figure?



- A 18
- B 19
- C 20
- D 21

Answer: A

Explanation:



Dividing the given figure into 10 parts as shown above.

Single unit triangles: 1,2,3,4,5,6,7,8,9,10 (10 triangles)

Double unit triangles: 1-6 , 5-10 (Two triangles)

Three unit triangles: 1-2-6 , 4-5-10 , 1-6-7 , 5-9-10 (4 triangles)

Four unit triangles: 3-7-8-9 , 2-3-4-8 (Two triangles)

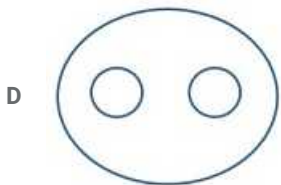
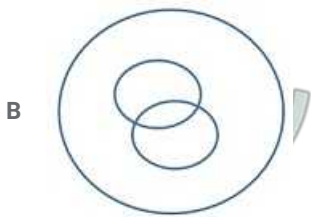
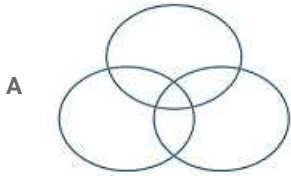
Total number of triangles are $10+2+4+2 = 18$.

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Question 20

Which one of the following figures represents the following relationship:

Birds, Parrots, Bats



Answer: C

Explanation:

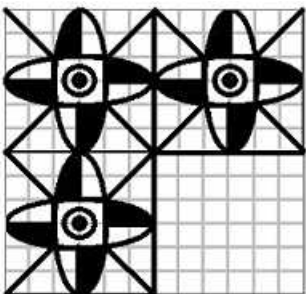
All the parrots come in the category of birds, but bats are not birds and definitely not parrots.

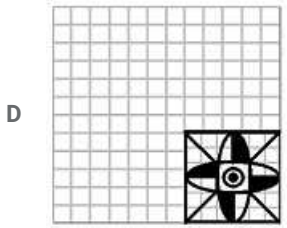
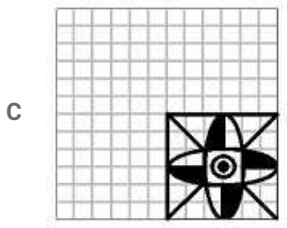
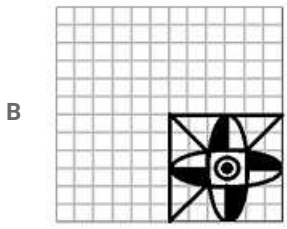
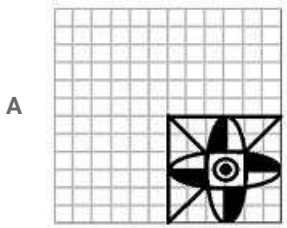
Thus, the third figure best describes above relationship.

=> Ans - (C)

Question 21

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





Answer: C

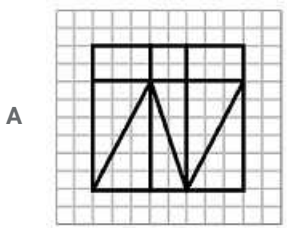
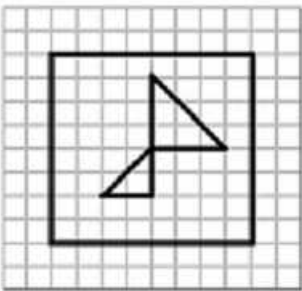
Explanation:

Clearly, the three figures are exactly alike, so the missing square in the bottom right part of square will also have two diagonals, thus first two options are eliminated, and the exact figure is given in the third option.

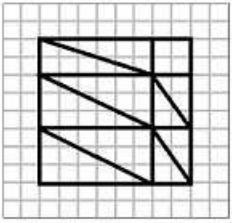
=> Ans - (C)

Question 22

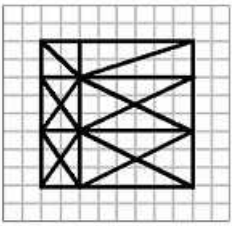
From the given answer figures, select the one in which the question figure is hidden/embedded



B



C

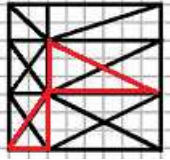


D None of these

Answer: C

Explanation:

The question figure is embedded in the following figure:

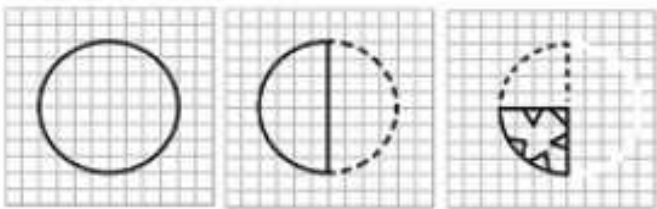


=> Ans - (C)

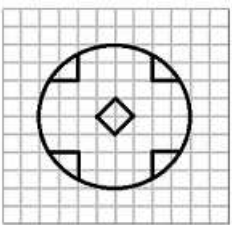
General Science Notes for SSC CGL

Question 23

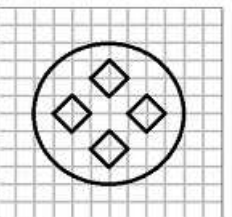
A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

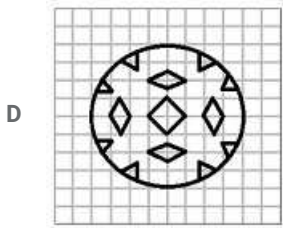
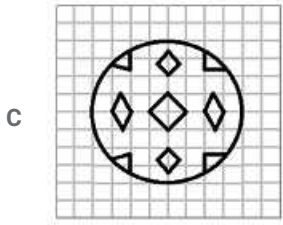


A



B

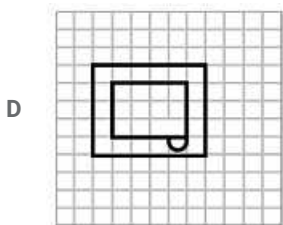
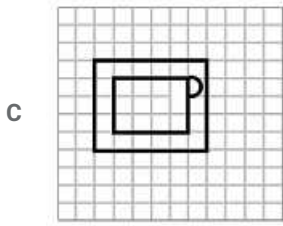
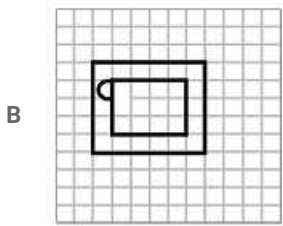
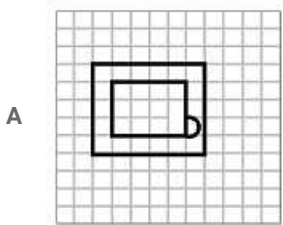
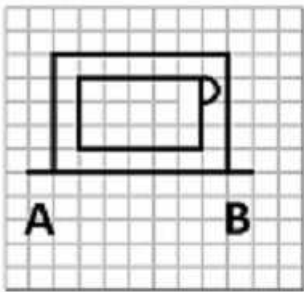




Answer: D

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: A

Explanation:

A horizontal mirror is placed, so the objects will turn upside down in the mirror image (e.g - an object at top right will appear at bottom right). So, the semi circle at the top right hand corner will appear at the bottom right corner in the mirror image, and thus the second and third options are eliminated.

Also, the semi circle will face the side, and not the base and so the last option is also not possible.

=> Ans - (A)

Question 25

In the question, 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 in two matrices given below. 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, e.g., 'B' can be represented by 00, 13 etc., and 'A' can be represented by 55, 69 etc.

Similarly you have to identify the set for the word 'GIRL'

Matrix - I

	0	1	2	3	4
0	B	N	G	L	D
1	G	L	D	B	N
2	D	B	N	G	L
3	N	G	L	D	B
4	L	D	B	N	G

Matrix - II

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

A 02, 56, 97, 24

B 31, 79, 68, 42

C 23, 97, 77, 11

D 11, 88, 95, 23

Answer: C

Explanation:

(A) : 02, 56, 97, 24 = GILL

(B) : 31, 79, 68, 42 = GIRB

(C) : 23, 97, 77, 11 = **GIRL**

(D) : 11, 88, 95, 23 = LIRG

=> Ans - (C)

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General Awareness

Instructions

For the following questions answer them individually

Question 26

The minimum short-term natural hazard is _____ .

A blizzard

B earthquake

C volcanic eruption

D bolt of lightning

Answer: D

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Question 27

DOTS is a treatment given to patients suffering from _____ .

A Polio

B AIDS

C Hepatitis

D Tuberculosis

Answer: D

Question 28

Which dynasty was ruling in Vijaynagar empire at the time of the Battle of Talikota?

A Sangam

B Aniridu

C Tuluva

D Saluva

Answer: C

Question 29

Which of the following Sultans died while playing Polo or Chaugan?

A Qutb-ud-din Aibak

B Balban

C Iltutmish

D Nasiruddin Muhammad

Answer: A

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Question 30

Molten rock below the surface of the earth is called _____ .

A Basalt

B Laccolith

C Lava

D Magma

Answer: D

Question 31

Magnesium is a constituent metal of _____ .

A Chlorophyll molecule

B DNA

C Mitochondria

D Ribosomes

Answer: A

Question 32

Which one among the following components is used as an amplifying device?

A Transformer

B Diode

C Capacitor

D Transistor

Answer: D

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Question 33

A _____ is an agreement between the communicating parties on how communication is to proceed.

A Path

B SLA

C Bond

D Protocol

Answer: D

Question 34

Name the gas used in preparation of bleaching powder

A Oxygen

B Hydrogen

C Nitrogen

D Chlorine

Answer: D

Question 35

The depletion in Ozone layer is caused by _____ .

- A Nitrous oxide
- B Carbon dioxide
- C Chlorofluorocarbons
- D Methane

Answer: C

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Question 36

Sariska and Ranthambore are the reserves for which of the following

- A Lion
- B Deer
- C Tiger
- D Bear

Answer: C

Question 37

The prestigious 'Jawaharlal Nehru Award for International Understanding' is instituted by

- A National Centre for Art and Culture
- B Department of Youth and Sports
- C Nehru Memorial Museum
- D Indian Council for Cultural Relations

Answer: D

Question 38

Phosphorus is kept in water because

- A its ignition temperature is very high
- B its ignition temperature is very low
- C its critical temperature is high
- D its critical temperature is low

Answer: B

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Question 39

The famous Dilwara temples of Mount Abu are a sacred pilgrimage place for the

- A Buddhists
- B Jains
- C Sikhs
- D Parsis

Answer: B

Question 40

The unit of measurement of noise is

- A Decibel
- B Hertz
- C Amplifier
- D Acoustics

Answer: A

Question 41

The commonly used coolant in refrigerators is

- A Ammonia
- B Nitrogen
- C Freon
- D Oxygen

Answer: C

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Question 42

The complete form of 'IC' in electronics is

- A Internal circuit
- B Independent circuit
- C Integrated circuit
- D Inbuilt circuit

Answer: C

Question 43

Who among the following did Gandhiji regard as his political Guru?

- A Mahadev Desai
- B Dayanand Saraswati
- C Acharya Narendra Dev
- D Gopal Krishna Gokhale

Answer: D

Question 44

Which of the following constitutional Amendment Act, deals with the Elementary Education as a Fundamental Right?

- A 84th Amendment Act
- B 85th Amendment Act
- C 86th Amendment Act
- D 87th Amendment Act

Answer: C

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Question 45

The World's largest island is

- A Greenland
- B Iceland
- C New Guinea
- D Madagascar

Answer: A

Question 46

Sea water is saltier than rain water because

- A Sea animals are salt producing
- B The air around the sea is saltish
- C Rivers wash away salts from earth and pour them into the sea
- D Sea beds have salt producing mines

Answer: C

Explanation:

Seawater is saltier than rainwater because rivers wash away salts from the earth and pour them into the sea.

Question 47

Pannalal Ghosh played which of the following musical instruments?

- A Flute

- B Sitar
- C Violin
- D Santoor

Answer: A

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Question 48

Rio Summit is associated with

- A Convention on Biological Diversity
- B Green house gases
- C Ozone depletion
- D Wet lands

Answer: A

Question 49

Polyploidy arises due to change in the

- A number of chromatids
- B structure of genes
- C number of chromosomes
- D structure of chromosomes

Answer: C

Explanation:

Polyploidy occurs due to a change in the number of chromosomes.

Question 50

Which South Korean author in May 2016 won the 2016 Man Booker International Prize for her novel 'The Vegetarian'?

- A Han Kang
- B Yiyun Li
- C Tami Hoag
- D Taya Zinkin

Answer: A

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Mathematics

Instructions

For the following questions answer them individually

Question 51

A and B together can finish a work in 30 days. They worked for it for 20 days and then B left the work. The remaining work was done by A alone in 20 days more. In how many days can A alone finish the work?

- A 48 days
- B 50 days
- C 54 days
- D 60 days

Answer: D

Explanation:

Let total work to be done = 60 units

A and B together can finish the work in 30 days

$$\Rightarrow (A+B)\text{'s 1 day's work} = \frac{60}{30} = 2 \text{ units/day}$$

Work done by them in 20 days = $2 \times 20 = 40$ units

Work left = $60 - 40 = 20$ units

This work is completed by A alone in 20 days

$$\Rightarrow \text{A's efficiency} = \frac{20}{20} = 1 \text{ unit/day}$$

$$\therefore \text{Time taken by A alone to finish the work} = \frac{60}{1} = 60 \text{ days}$$

\Rightarrow Ans - (D)

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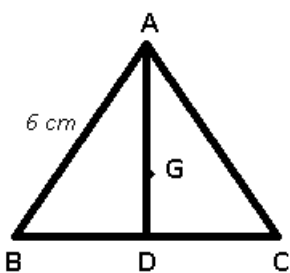
Question 52

The centroid of an equilateral triangle ABC is G. If AB is 6 cms, the length of AG is

- A $\sqrt{3}$ cm
- B $2\sqrt{3}$ cm
- C $\frac{3}{\sqrt{2}}$ cm
- D $\frac{2}{\sqrt{2}}$ cm

Answer: B

Explanation:



Side of equilateral triangle (a) = 6 cm

$$\text{Median AD of equilateral triangle} = \frac{\sqrt{3}a}{2}$$

$$\Rightarrow AD = \frac{6\sqrt{3}}{2} \text{ cm}$$

Also, a centroid divides the median in the ratio 2 : 1

$$\Rightarrow AG : GD = 2 : 1$$

$$\therefore AG = \frac{2}{3} \times AD$$

$$= \frac{2}{3} \times \frac{6\sqrt{3}}{2} = 2\sqrt{3} \text{ cm}$$

\Rightarrow Ans - (B)

Question 53

A merchant changed his trade discount from 25% to 15%. This would increase selling price by

A $3\frac{1}{3}\%$

B $6\frac{1}{6}\%$

C $13\frac{1}{3}\%$

D $16\frac{1}{3}\%$

Answer: C

Explanation:

Let marked price = Rs. $100x$

If discount % = 25%

$$\Rightarrow \text{Selling price} = 100x \times \frac{75}{100} = \text{Rs. } 75x$$

Similarly, if discount % = 15%

$$\Rightarrow \text{Selling price} = \text{Rs. } 85x$$

$$\therefore \text{Increase in selling price} = \frac{85x - 75x}{75x} \times 100$$

$$= \frac{10}{75} \times 100 = 13\frac{1}{3}\%$$

\Rightarrow Ans - (C)

Question 54

If 177 is divided into 3 parts in the ratio $1/2 : 2/3 : 4/5$, then the second part is

A 75

B 45

C 72

D 60

Answer: D

Explanation:

Let each part be = $\frac{x}{2}, \frac{2x}{3}, \frac{4x}{5}$

$$\text{Sum} = \frac{x}{2} + \frac{2x}{3} + \frac{4x}{5} = 177$$

$$\Rightarrow \frac{15x + 20x + 24x}{30} = 177$$

$$\Rightarrow 59x = 177 \times 30$$

$$\Rightarrow x = \frac{177}{59} \times 30$$

$$\Rightarrow x = 3 \times 30 = 90$$

$$\therefore \text{Second part} = \frac{2}{3} \times 90 = 60$$

\Rightarrow Ans - (D)

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Question 55

If percentage of profit made, when an article is sold for Rs.78, is twice as when it is sold for Rs.69, the cost price of the article is

A Rs. 49

B Rs. 51

C Rs. 57

D Rs. 60

Answer: D

Explanation:

Let cost price of watch = Rs. $100x$

When selling price = Rs. 69

$$\Rightarrow \text{Profit \%} = \frac{69-100x}{100x} \times 100 = \frac{(69-100x)}{x}$$

Similarly, Profit % when SP = Rs. 78 = $\frac{(78-100x)}{x}$

According to ques,

$$\Rightarrow \left(\frac{78-100x}{x} \right) = 2 \times \left(\frac{69-100x}{x} \right)$$

$$\Rightarrow 78 - 100x = 138 - 200x$$

$$\Rightarrow 200x - 100x = 138 - 78$$

$$\Rightarrow 100x = 60$$

$$\Rightarrow x = \frac{60}{100} = 0.6$$

$$\therefore \text{Cost Price} = 100 \times 0.6 = \text{Rs. } 60$$

\Rightarrow Ans - (D)

Question 56

The ratio between Ram's age and Rahim's age is 10:11. What is the age of Rahim in percentage of Ram's age

A $109\frac{1}{11}\%$

B 110 %

C $111\frac{1}{9}\%$

D 111 %

Answer: B

Explanation:

Let Ram's age = 10 years

\Rightarrow Rahim's age = 11 years

$$\therefore \text{Age of Rahim in percentage of Ram's age} = \frac{11}{10} \times 100$$

$$= 11 \times 10 = 110\%$$

=> Ans - (B)

Question 57

Gautam travels 160 kms at 32 kmph and returns at 40 kmph. Then average speed is

- A 72 kmph
- B 71.11 kmph
- C 36 kmph
- D 35.55 kmph

Answer: D

Explanation:

Gautam travels 160 kms at 32 kmph

$$\Rightarrow \text{Time taken} = \frac{160}{32} = 5 \text{ hours}$$

$$\text{Similarly, time taken for the return journey} = \frac{160}{40} = 4 \text{ hours}$$

Average speed = total distance / total time

$$= \frac{160+160}{5+4} = \frac{320}{9}$$

$$= 35.55 \text{ kmph}$$

=> Ans - (D)

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Question 58

If $x = \frac{3}{2}$, then the value of $27x^3 - 54x^2 + 36x - 11$ is

- A $11\frac{3}{8}$
- B $11\frac{5}{8}$
- C $12\frac{3}{8}$
- D $12\frac{5}{8}$

Answer: D

Explanation:

$$\text{Given : } x = \frac{3}{2}$$

$$\text{To find : } 27x^3 - 54x^2 + 36x - 11$$

$$= 27\left(\frac{3}{2}\right)^3 - 54\left(\frac{3}{2}\right)^2 + 36\left(\frac{3}{2}\right) - 11$$

$$= (27 \times \frac{27}{8}) - (54 \times \frac{9}{4}) + (54) - 11$$

$$= \frac{729}{8} - \frac{486}{4} + 43$$

$$= \frac{729-972+344}{8} = \frac{101}{8}$$

$$= 12\frac{5}{8}$$

=> Ans - (D)

Question 59

If $a+b+c = 6$ and $ab+bc+ca = 11$, then the value of $bc(b+c) + ca(c+a) + ab(a+b) + 3abc$ is

- A 33
- B 66
- C 55
- D 23

Answer: B

Explanation:

Given : $(a + b + c) = 6$ and $ab + bc + ca = 11$ -----(i)

$$\begin{aligned} \text{To find : } & bc(b+c) + ca(c+a) + ab(a+b) + 3abc \\ &= (b^2c + bc^2) + (ac^2 + a^2c) + (ab^2 + a^2b) + 3abc \\ &= (a^2b + a^2c + abc) + (ab^2 + b^2c + abc) + (ac^2 + bc^2 + abc) \\ &= a(ab + bc + ca) + b(ab + bc + ca) + c(ab + bc + ca) \\ &= (a + b + c)(ab + bc + ca) \end{aligned}$$

Substituting values from equation (i),

$$\Rightarrow 6 \times 11 = 66$$

\Rightarrow Ans - (B)

Question 60

If the angles of a triangle are in the ratio of 2:3:4, then the difference of the measure of greatest angle and smallest angle is

- A 20°
- B 30°
- C 40°
- D 50°

Answer: C

Explanation:

Let the angles of the triangle be $2x, 3x$ and $4x$

$$\Rightarrow \text{Sum of angles} = 2x + 3x + 4x = 180^\circ$$

$$\Rightarrow 9x = 180^\circ$$

$$\Rightarrow x = \frac{180}{9} = 20^\circ$$

$$\therefore \text{Difference between greatest and smallest angle} = 4x - 2x = 2x$$

$$= 2 \times 20 = 40^\circ$$

\Rightarrow Ans - (C)

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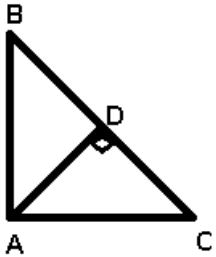
Question 61

In ΔABC , $\angle A = 90^\circ$, $AD \perp BC$ and $AD = BD = 2$ cm. The length of CD is

- A 3 cm
- B 3.5 cm
- C 3.2 cm
- D 2 cm

Answer: D

Explanation:



Given : $AD = BD = 2$ cm

Let $CD = x$ cm

Using, $(AD)^2 = (BD) \times (CD)$

$$\Rightarrow (2)^2 = 2 \times x$$

$$\Rightarrow x = \frac{4}{2} = 2 \text{ cm}$$

\Rightarrow Ans - (D)

Question 62

If $\tan 45^\circ = \cot \theta$, then the value of θ , in radians is

- A π
- B $\frac{\pi}{9}$
- C $\frac{\pi}{2}$
- D $\frac{\pi}{4}$

Answer: D

Explanation:

Expression : $\tan 45^\circ = \cot \theta$

$$\Rightarrow \cot \theta = 1$$

$$\Rightarrow \theta = \cot^{-1}(1)$$

$$\Rightarrow \theta = 45^\circ$$

Now, $180^\circ = \pi^c$

$$\Rightarrow 45^\circ = \pi \times \frac{45}{180} = \frac{\pi}{4} \text{ radians}$$

\Rightarrow Ans - (D)

Question 63

$(2^{51} + 2^{52} + 2^{53} + 2^{54} + 2^{55})$ is divisible by

- A 23

- B 58
- C 124
- D 127

Answer: C

Explanation:

$$\text{Expression : } (2^{51} + 2^{52} + 2^{53} + 2^{54} + 2^{55})$$

$$= 2^{51}(1 + 2 + 2^2 + 2^3 + 2^4)$$

$$= 2^{51}(1 + 2 + 4 + 8 + 16)$$

$$= 2^{51} \times 31$$

Thus, the above expression is divisible by $31k$ and the only option that is divisible by 31 = 124

=> Ans - (C)

SSC CGL Important Questions PDF

Question 64

The average of 12 numbers is 9. If each number is multiplied by 2 and added to 3, the average of the new set of numbers is

- A 9
- B 18
- C 21
- D 27

Answer: C

Explanation:

Average of 12 numbers = 9

If each number is multiplied by 2 and added to 3, then the average will also change accordingly

$$\Rightarrow \text{New average} = 9 \times 2 + 3 = 21$$

=> Ans - (C)

Question 65

If $(a + \frac{1}{a})^2 = 3$, then the value of $a^6 - \frac{1}{a^6}$ will be

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

Answer: C

Explanation:

$$\text{Expression : } (a + \frac{1}{a})^2 = 3$$

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

$$\Rightarrow a^2 + \frac{1}{a^2} = 3 - 2 = 1$$

Squaring both sides, we get :

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

$$\Rightarrow a^4 + \frac{1}{a^4} + 2(a^2)(\frac{1}{a^2}) = 1$$

$$\Rightarrow a^4 + \frac{1}{a^4} = 1 - 2 = -1 \text{ -----(i)}$$

$$\therefore a^6 - \frac{1}{a^6} = (a^2)^3 - (\frac{1}{a^2})^3$$

Using, $x^3 - y^3 = (x - y)(x^2 + y^2 + xy)$

$$= (a^2 - \frac{1}{a^2}) \times [a^4 + \frac{1}{a^4} + (a^2)(\frac{1}{a^2})]$$

Substituting value from equation (i),

$$= (a^2 - \frac{1}{a^2}) \times (-1 + 1) = 0$$

\Rightarrow Ans - (C)

Question 66

If $\frac{\sqrt{2+x} + \sqrt{2-x}}{\sqrt{2+x} - \sqrt{2-x}} = 2$, the value of x is

A 4/5

B 3/5

C 8/5

D 1/5

Answer: C

Explanation:

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

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

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

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

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

$$\Rightarrow 2 + \sqrt{4-x^2} = 2x$$

$$\Rightarrow \sqrt{4-x^2} = 2x - 2$$

Squaring both sides, we get :

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

$$\Rightarrow 4 - x^2 = 4x^2 + 4 - 8x$$

$$\Rightarrow 5x^2 - 8x = 0$$

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

$$\Rightarrow x = \frac{8}{5}$$

\Rightarrow Ans - (C)

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Question 67

The perimeter of two similar triangles ABC and PQR are 36 cms and 24 cms respectively. If PQ = 10 cm then the length of AB is

- A 18 cm
- B 12 cm
- C 15 cm
- D 30 cm

Answer: C

Explanation:

It is given that $\triangle ABC \sim \triangle PQR$

Also, perimeter of $\triangle ABC$ and $\triangle PQR$ are 36 cm and 24 cm

\Rightarrow Ratio of Perimeter of $\triangle ABC$: Perimeter of $\triangle PQR$ = Ratio of corresponding sides = AB : PQ

$$\frac{36}{24} = \frac{AB}{10}$$

$$\Rightarrow AB = \frac{3}{2} \times 10 = 15 \text{ cm}$$

\Rightarrow Ans - (C)

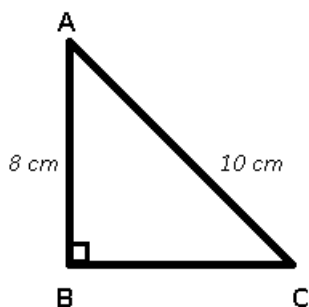
Question 68

In a triangle ABC, AB = 8 cm, AC = 10 cm and $\angle B = 90^\circ$, then the area of $\triangle ABC$ is

- A 49 sq.cm
- B 36 sq.cm
- C 25 sq.cm
- D 24 sq.cm

Answer: D

Explanation:



In $\triangle ABC$,

$$\Rightarrow (BC)^2 = (AC)^2 - (AB)^2$$

$$\Rightarrow (BC)^2 = (10)^2 - (8)^2$$

$$\Rightarrow (BC)^2 = 100 - 64 = 36$$

$$\Rightarrow BC = \sqrt{36} = 6 \text{ cm}$$

$$\therefore \text{Area of } \triangle ABC = \frac{1}{2} \times AB \times BC$$

$$= \frac{1}{2} \times 8 \times 6 = 24 \text{ cm}^2$$

=> Ans - (D)

Question 69

ABC is a triangle If $\sin\left(\frac{A+B}{2}\right) = \frac{\sqrt{3}}{2}$, then the value of $\sin\frac{C}{2}$ is

A $\frac{1}{\sqrt{2}}$

B 0

C $\frac{1}{2}$

D $\frac{\sqrt{3}}{2}$

Answer: C

Explanation:

In $\triangle ABC$, $\angle A + \angle B + \angle C = 180^\circ$

$$\Rightarrow \angle A + \angle B = 180^\circ - \angle C$$

Dividing both sides by '2',

$$\Rightarrow \frac{A+B}{2} = 90^\circ - \frac{C}{2} \text{ -----(i)}$$

Given : $\sin\left(\frac{A+B}{2}\right) = \frac{\sqrt{3}}{2}$

Substituting value from equation (i), we get :

$$\Rightarrow \sin\left(90^\circ - \frac{C}{2}\right) = \frac{\sqrt{3}}{2}$$

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

$$\Rightarrow \cos\left(\frac{C}{2}\right) = \frac{\sqrt{3}}{2}$$

$$\Rightarrow \frac{C}{2} = \cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$$

$$\Rightarrow \frac{C}{2} = 30^\circ$$

$$\Rightarrow \angle C = 30 \times 2 = 60^\circ$$

$$\therefore \sin\frac{C}{2} = \sin\left(\frac{60}{2}\right)$$

$$= \sin(30^\circ) = \frac{1}{2}$$

=> Ans - (C)

General Science Notes for SSC CGL

Question 70

The compound interest on Rs. 64,000 for 3 years, compounded annually at 7.5% p.a. is

A Rs. 14,400

B Rs. 15,705

C Rs. 15,507

D Rs. 15,075

Answer: C

Explanation:

Principal (P) = Rs. 64,000

Time (t) = 3 years and rate of interest under compound interest (r) = 7.5%

$$\Rightarrow C.I. = P[(1 + \frac{r}{100})^t - 1]$$

$$= 64000[(1 + \frac{7.5}{100})^3 - 1]$$

$$= 64000[(1 + \frac{15}{200})^3 - 1]$$

$$= 64000[(\frac{43}{40})^3 - 1]$$

$$= 64000 \times \frac{(43)^3 - (40)^3}{64000}$$

$$= 79507 - 64000 = Rs. 15,507$$

\Rightarrow Ans - (C)

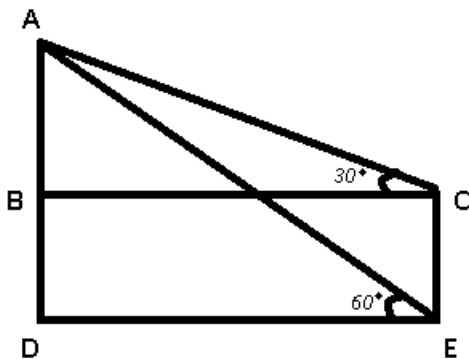
Question 71

The angles of elevation of the top of a temple, from the foot and the top of a building 30 m high, are 60° and 30° respectively. Then height of the temple is

- A 50 m
- B 43 m
- C 40 m
- D 45 m

Answer: D

Explanation:



CE is the building = 30 m and AD is the temple

By symmetry, $BD = CE = 30$ m and $DE = BC = y$ m

Let $AB = x$ m

Also, $\angle AED = 60^\circ$ and $\angle ACB = 30^\circ$

$$\text{In } \triangle ADE, \Rightarrow \tan(\angle AED) = \frac{AD}{DE}$$

$$\Rightarrow \tan(60) = \sqrt{3} = \frac{x+30}{y}$$

$$\Rightarrow x + 30 = y\sqrt{3} \text{-----(i)}$$

$$\text{In } \triangle ABC, \Rightarrow \tan(\angle ACB) = \frac{AB}{BC}$$

$$\Rightarrow \tan(30) = \frac{1}{\sqrt{3}} = \frac{x}{y}$$

$$\Rightarrow y = x\sqrt{3}$$

Substituting it in equation (i), we get :

$$\Rightarrow x + 30 = (x\sqrt{3}) \times \sqrt{3} = 3x$$

$$\Rightarrow 3x - x = 2x = 30$$

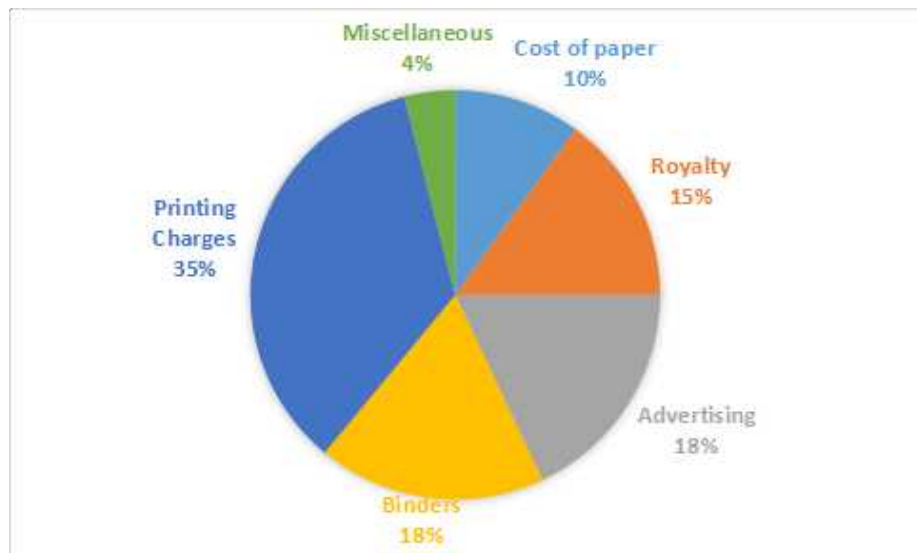
$$\Rightarrow x = \frac{30}{2} = 15 \text{ m}$$

$$\therefore AD = AB + BD = 15 + 30 = 45 \text{ meters}$$

\Rightarrow Ans - (D)

Instructions

Study the pie-chart given and answer the following questions.



Question 72

If the miscellaneous charges are Rs. 6000, then the advertisement charges are

- A Rs.12000
- B Rs.27000
- C Rs.90000
- D Rs.25000

Answer: B

Explanation:

Let the total cost = Rs. $100x$

$$\Rightarrow \text{Miscellaneous charges} = \frac{4}{100} \times 100x = \text{Rs. } 4x$$

$$\text{Also, } 4x = 6000$$

$$\Rightarrow x = \frac{6000}{4} = 1500$$

$$\therefore \text{Advertisement charges} = 18x = 18 \times 1500$$

$$= \text{Rs. } 27,000$$

\Rightarrow Ans - (B)

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Question 73

The central angle of printing charge is x more than that of advertisement charge. Then the value of x is

- A 72°

- B 61.2°
- C 60°
- D 54.8°

Answer: B

Explanation:

% use in printing charges = 35%

% use in advertising = 18%

=> Difference = 35 - 18 = 17%

Thus, difference in central angle = $x = \frac{17}{100} \times 360^\circ$

$$= \frac{612}{10} = 61.2^\circ$$

=> Ans - (B)

Question 74

What should be the central angle of the sector 'cost of paper'?

- A 22.5°
- B 54.8°
- C 36°
- D 16°

Answer: C

Explanation:

% use in cost of paper = 10%

=> Central angle = $\frac{10}{100} \times 360^\circ$

$$= \frac{360}{10} = 36^\circ$$

=> Ans - (C)

Question 75

The ratio between royalty and binder's charges is

- A 5:6
- B 5:8
- C 6:5
- D 8:13

Answer: A

Explanation:

% use in royalty = 15%

% use in binders = 18%

=> Required ratio = $\frac{15}{18} = \frac{5}{6}$

∴ Ratio between royalty and binder's charges = 5 : 6

=> Ans - (A)

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English

Instructions

For the following questions answer them individually

Question 76

In the following question, out of the four alternatives, choose the word which best expresses the meaning of the given word and click the button corresponding to it.

RECEPTACLE

- A COMPARTMENT
- B HOLE
- C CONTAINER
- D FUNNEL

Answer: C

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Question 77

In the following question, out of the four alternatives, choose the word which is opposite in meaning to the given word and click the button corresponding to it.

VANITY

- A PRIDE
- B LOVE
- C COURAGE
- D HUMILITY

Answer: D

Question 78

Four words are given, out of which only one word is spelt correctly. Choose the correctly spelt word and click the button corresponding to it.

- A Acquisition
- B Acqiusition
- C Acquisition
- D Acquisetion

Answer: C

Question 79

In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and click the button corresponding to it. If the sentence is free from error, click the "No error" option.

If you permit me to speak the truth (a) / I shall state without hesitation (b) / that you have done a mistake (c) / No Error (d)

- A If you permit me to speak the truth
- B I shall state without hesitation
- C that you have done a mistake
- D No Error

Answer: C

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Question 80

In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and click the button corresponding to it. If the sentence is free from error, click the "No error" option.

I succeeded persuading him (a) / to come with me (b) / only after hours of argument (c) / No Error (d)

- A I succeeded persuading him
- B to come with me
- C only after hours of argument
- D No Error

Answer: A

Question 81

In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and click the button corresponding to it. If the sentence is free from error, click the "No error" option.

Vermin (a) / does much harm (b) / to crops (c) / No Error (d)

- A Vermin
- B does much harm
- C to crops
- D No Error

Answer: B

Question 82

The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative and click the button corresponding to it.

Light is ____ than sound.

- A faster
- B more faster

- C sounder
- D lighter

Answer: A

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Question 83

The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative and click the button corresponding to it.

The man ____ for the purpose never did what was expected of him.

- A supplied
- B favoured
- C employed
- D cited

Answer: C

Question 84

The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative and click the button corresponding to it.

There was a serious ____ between the two brothers.

- A altercation
- B alteration
- C aberration
- D altieration

Answer: A

Question 85

In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase and click the button corresponding to it.

To give oneself airs

- A Space to breathe
- B Time
- C Acting strange
- D Behaving arrogantly

Answer: D

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Question 86

In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase and click the button corresponding to it.

At a stone's throw

- A At a short distance
- B At a place where quarrels take place
- C At a great distance
- D A quarry

Answer: A

Question 87

In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase and click the button corresponding to it.

Bone of contention

- A A delicious non-vegetarian item
- B An item which made them content
- C Cause for quarrel
- D A link between them

Answer: C

Question 88

Out of the four alternatives, choose the one which can be substituted for the given words/sentences and click the button corresponding to it.

A person who has lost the protection of the law

- A Outlaw
- B Immigrant
- C Outcast
- D Orphan

Answer: A

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Question 89

Out of the four alternatives, choose the one which can be substituted for the given words/sentences and click the button corresponding to it.

Falsification of documents etc.

- A Xeroxing
- B Forgery

C Laminating

D Copying

Answer: B

Question 90

Out of the four alternatives, choose the one which can be substituted for the given words/sentences and click the button corresponding to it.

To make atonement for one's sins

A Expiate

B Renounce

C Remonstrate

D Recant

Answer: A

Question 91

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

The boys absented themselves for two days.

A were absented

B absented

C had absented

D No improvement

Answer: D

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Question 92

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

My mother insists on setting up something everyday for charity.

A on

B in

C aside

D No improvement

Answer: C

Question 93

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

He began on a new business venture.

- A embarked
- B begun
- C opened
- D No improvement

Answer: A

Question 94

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

I have to say them the truth.

- A tell
- B state
- C speak
- D No improvement

Answer: A

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Question 95

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

The SSB will interview the candidate between 11 a.m. and 3.00 p.m.

- A 11.00 am to 3 pm
- B 11.00 from 3 pm
- C 11.am by 3.00 pm
- D No improvement

Answer: D

Explanation:

Since 'between' is there in the sentence, it should be followed by 'and'. Hence, 'between 11 am and 3 pm' is the correct form.

Instructions

A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives and click the button corresponding to it.

Settled life and cultivation gave man leisure; he had no longer to always think of getting food. During spare time he could make stone

tools, hoes or pots and weave cloth. Some people spared from producing their own food could even devote themselves to other activities all the time. This resulted in a division of labour. The division of labour made it possible for various groups to specialize, that is, to acquire greater skill and learn better techniques in doing one kind of work.

The settled community life needed rules to regulate the behaviour of the members of the community. It is not possible to know exactly how regulations were established. It appears that the decisions regarding the community were taken by the people as a whole, or by a council of elders, as is in the practice in tribal societies. There were perhaps no kings or any organized government. Most likely, there were chiefs elected by the community for their qualities of leadership. But, these chiefs could not pass their positions on to their sons and they enjoyed few special privileges. Archaeological excavations have not revealed anything which would indicate the prevalence of a higher status for some members of the community. This is also supported by the study of life in many tribes in modern times. Thus, social inequalities do not seem to have emerged even in Neolithic times.

Question 96

What did man do in his spare time?

- A Made stone tools
- B Made hoes or pots
- C Weave cloth
- D All of the above

Answer: D

Question 97

In the passage, "division of labour" means?

- A Specialization to acquire greater skills
- B Learning arithmetic
- C Working in groups
- D Working from home

Answer: A

Explanation:

The first paragraph says 'The division of labour made it possible for various groups to specialize, that is, to acquire greater skill and learn better techniques in doing one kind of work.'. Hence, Option A is the right answer.

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Question 98

To which period do the Neolithic times refer:

- A Later part of the Stone Age
- B Early part of the Stone Age
- C Later part of the Ice Age
- D Medieval times

Answer: A

Question 99

Chiefs were elected by the community for their

- A age
- B qualities of leadership
- C responsibility and courage
- D trust and loyalty

Answer: B

Question 100

The meaning of 'privilege' is

- A allowance
- B favour
- C benefit
- D interest

Answer: C

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