



2016 SSC CGL 27 Aug Evening Shift

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Reasoning

Instructions

For the following questions answer them individually

Question 1

Select the related word/letters/numbers from the given alternatives:

College: Student : : Hospital: __?__

- A Doctor
- B Treatment
- C Nurse
- D Patient

Answer: D

Explanation:

As Students come to study in colleges, Patients comes for getting treatment in hospital.

=> Ans - (D)

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Question 2

Select the related word/letters/numbers from the given alternatives:

DHL : PTX :: BFJ : ?

- A NRV
- B RVY
- C CEK
- D LOS

Answer: A

Explanation:

Expression = DHL : PTX :: BFJ : ?

The pattern followed is =

D (+4 letters) = H (+4 letters) = L

P (+4 letters) = T (+4 letters) = X

B (+4 letters) = F (+4 letters) = J

Similarly, N (+4 letters) = R (+4 letters) = V

=> Ans - (A)

Question 3

Select the related word/letters/numbers from the given alternatives:

5 : 124 :: 7 : ?

- A 125
- B 248

C 342

D 343

Answer: C

Explanation:

Expression = $5 : 124 :: 7 : ?$

The pattern followed is = $n : n^3 - 1$

Eg = $5 : 5^3 - 1 = 5 : 124$

Similarly, $7^3 - 1 = 343 - 1 = 342$

=> Ans - (C)

Question 4

For the following questions

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

A Hard:Soft

B Hot:Cold

C Right:Wrong

D Come:Arrive

Answer: D

Explanation:

Hard:Soft, Hot:Cold and Right:Wrong are antonyms pairs, hence come and arrive which are synonyms is the odd one.

=> Ans - (D)

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Question 5

For the following questions

Find the odd word/letter/number from the given alternatives

A AG

B WA

C ET

D IQ

Answer: C

Explanation:

(A) : AG = Difference = 6

(B) : WA = Difference = 22

(C) : ET = Difference = 15 (odd)

(D) : IQ = Difference = 08

=> Ans - (C)

Question 6

For the following questions

Find the odd word/letter/number pair from the given alternatives

A 14, 12

B 24, 7

C 42, 4

D 37, 4

Answer: D

Explanation:

Product of both numbers :

(A) : $14 \times 12 = 168$

(B) : $24 \times 7 = 168$

(C) : $42 \times 4 = 168$

(D) : $37 \times 4 = 148$

=> Ans - (D)

Question 7

Arrange the following words as per the order in the dictionary

1. RESIGN
2. REPAIR
3. RESIDUE
4. RESEARCH
5. RESCUE

A 4 5 3 1 2

B 2 5 4 3 1

C 2 5 4 1 3

D 5 4 3 1 2

Answer: B

Explanation:

As per the dictionary,

= REPAIR -> RESCUE -> RESEARCH -> RESIDUE -> RESIGN

≡ 25431

=> Ans - (B)

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Question 8

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

JAZ, LEX, NIV, PMT, ?

A QUR

- B RQR
- C SUR
- D RUS

Answer: B

Explanation:

Expression : JAZ, LEX, NIV, PMT, ?

1st letter : J (+2 letters) = L (+2 letters) = N (+2 letters) = P (+2 letters) = R

2nd letter : A (+4 letters) = E (+4 letters) = I (+4 letters) = M (+4 letters) = Q

3rd letter : Z (-2 letters) = X (-2 letters) = V (-2 letters) = T (-2 letters) = R

Thus, missing term = **RQR**

=> Ans - (B)

Question 9

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

19, 28, 39, 52, ?, 84

- A 39
- B 52
- C 67
- D 84

Answer: C

Explanation:

Consecutive odd numbers are added.

$$19 + 9 = 28$$

$$28 + 11 = 39$$

$$39 + 13 = 52$$

$$52 + 15 = 67$$

$$67 + 17 = 84$$

=> Ans - (C)

Question 10

X and Y are brothers. R is the father of Y. T is the sister of S who is maternal uncle of X. How is T related to R?

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

Answer: B

Explanation:

X and Y are brothers and R is the father of Y,

=> R is the father of X(male) and Y(male).

T is the sister of S who is maternal uncle of X,

=> T is the mother of X.

Thus, R and T are married, and T is the wife of R.

=> Ans - (B)

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Question 11

A is taller than B. C is taller than A. D is taller than E but shorter than B. Who is the tallest?

A C

B A

C D

D B

Answer: A

Explanation:

A is taller than B and C is taller than A, => $C > A > B$

D is taller than E but shorter than B, => $B > D > E$

Combining above statements, we get : $C > A > B > D > E$

Thus, C is the tallest.

=> Ans - (A)

Question 12

From the given alternative words, select the word which can be formed using the letters of the given word.

SOMNAMBULISM

A NAMES

B BASALT

C SOUL

D BIOME

Answer: C

Explanation:

The word SOMNAMBULISM does not contain any 'E' and 'T', and thus first, second and fourth words cannot be formed.

Only 'Soul' can be formed.

=> Ans - (C)

Question 13

If D = 4, DOG = 26, then find the value of ANIMAL = ?

A 47

B 49

C 48

D 50

Answer: D

Explanation:

Given : D = 4

$$\text{DOG} = 4 + 15 + 7 = 26$$

$$\text{Similarly, ANIMAL} = 1 + 14 + 9 + 13 + 1 + 12 = 50$$

=> Ans - (D)

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Question 14

If '+' stands for '÷', '-' stands for '=', 'x' stands for '+', '÷' stands for greater than, '=' stands for less than, '>' stands for multiplication and '<' stands for subtraction, then which of the following alternatives is correct?

A $5 \div 2 \times 1 = 3 + 4 > 1$

B $5 > 2 \times 1 - 3 > 4 < 1$

C $5 \times 2 < 1 - 3 < 4 \times 1$

D $5 < 2 \times 1 \div 3 > 4 \times 1$

Answer: B

Explanation:

(A) : $5 \div 2 \times 1 = 3 + 4 > 1$

$$\equiv 5 > 2 + 1 < 3 \div 4 \times 1$$

$$\Rightarrow 3 < \frac{3}{4} \quad [\text{FALSE}]$$

(B) : $5 > 2 \times 1 - 3 > 4 < 1$

$$\equiv 5 \times 2 + 1 = 3 \times 4 - 1$$

$$\text{L.H.S.} = 10 + 1 = 11$$

$$\text{R.H.S.} = 12 - 1 = 11$$

Thus, it is correct.

=> Ans - (B)

Question 15

In this question, some equations are solved on the basis of a certain system. On the same basis find out the correct answer from amongst the four alternatives for the unsolved equation.

$$3 \times 4 \times 5 = 435$$

$$4 \times 3 \times 2 = 342$$

$$2 \times 3 \times 4 = ?$$

A 324

B 342

C 432

D 243

Answer: A

Explanation:

The pattern followed is that concatenation operator is followed and the positions of first two letters are interchanged.

$$\text{Eg} = 3 \times 4 \times 5 = 435$$

$$4 \times 3 \times 2 = 342$$

$$2 \times 3 \times 4 = 324$$

=> Ans - (A)

Question 16

In the question, selection the missing number from the given alternatives.

6	15	20
8	4	5
3	5	20
51	65	?

A 56

B 120

C 151

D 154

Answer: B

Explanation:

In each column, the first two numbers are multiplied and the result is added to the third number to obtain the last number.

$$\text{Eg: } (6 \times 8) + 3 = 48 + 3 = 51$$

$$\text{and } (15 \times 4) + 5 = 60 + 5 = 65$$

$$\text{Similarly, } (20 \times 5) + 20 = 100 + 20 = 120$$

=> Ans - (B)

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Question 17

Ram walks 3 km towards East and takes a left turn and walks for one km before he turns left and walks 2 km to take another left turn to walk for another one km. How many km is he away from his starting point?

A 1km

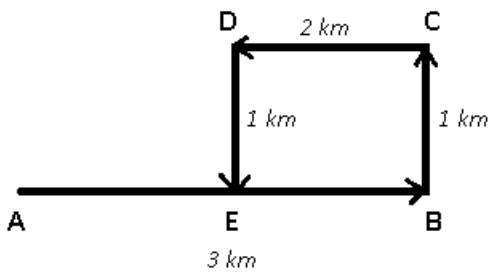
B 2kms

C 3kms

D 4kms

Answer: A

Explanation:



Let Ram starts from point A and walks 3 km east and reaches B, then he turns left and walks for 1 km towards north and reaches point C.

Then, he turns left and walks for 2 km and finally stops at point E.

Thus, $AE = 3 - 2 = 1$ km

\therefore Ram is 1 km to the east of his starting point.

\Rightarrow Ans - (A)

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.

Statements:

All fruits are leaves.

Some fruits are grapes.

Conclusion I: Some leaves are grapes.

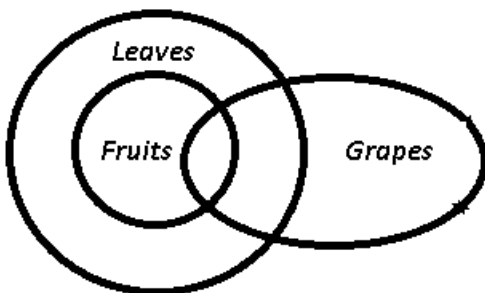
Conclusion II: All grapes are fruits.

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

Answer: A

Explanation:

The venn diagram for above statements is :



Conclusion I: Some leaves are grapes = true

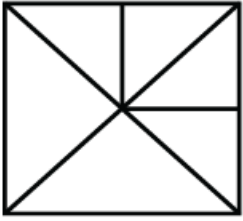
Conclusion II: All grapes are fruits = false

Thus, only conclusion I follows.

\Rightarrow Ans - (A)

Question 19

Find out the number of triangles in the figure given.



- A 6
- B 8
- C 10
- D 12

Answer: D

Explanation:

Smaller triangles = 6

Triangles formed by combining 2 triangles = 2

Larger triangles (at the diagonals) = 4

Thus, total triangles = $6 + 2 + 4 = 12$

=> Ans - (D)

General Science Notes for SSC CGL

Question 20

Which one of the following diagrams represent the correct relationship between DOCTORS, SURGEONS and NURSES

- A
- B
- C
- D

Answer: A

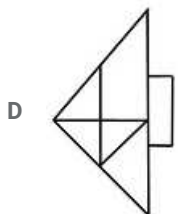
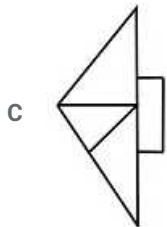
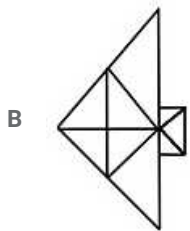
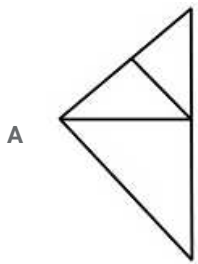
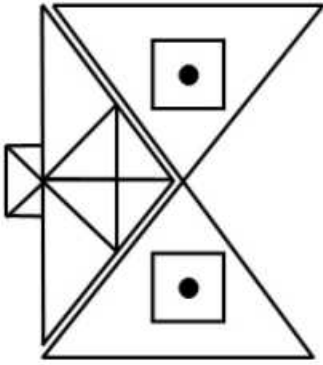
Explanation:

All surgeons comes under the category of doctors, but the nurses are different from both of them, thus the first figure best describes above relationship.

=> Ans - (A)

Question 21

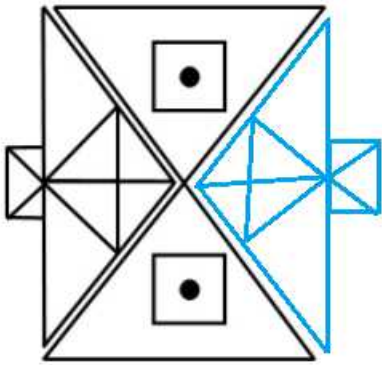
Which answer figure will complete the pattern in the question figure?



Answer: B

Explanation:

When we complete the above figure, we get :

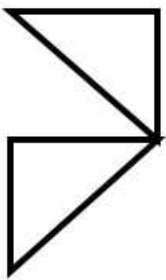


Now, the second figure resembles the above missing part in blue colour.

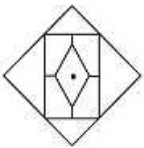
=> Ans - (B)

Question 22

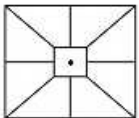
From the given answer figures, select the one in which the question figure is hidden/embedded?



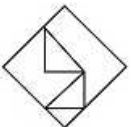
A



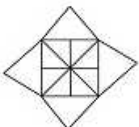
B



C



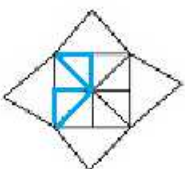
D



Answer: D

Explanation:

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

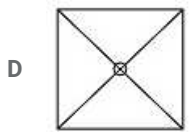
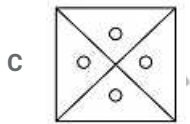
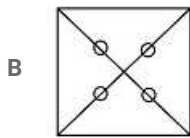
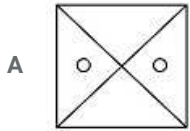
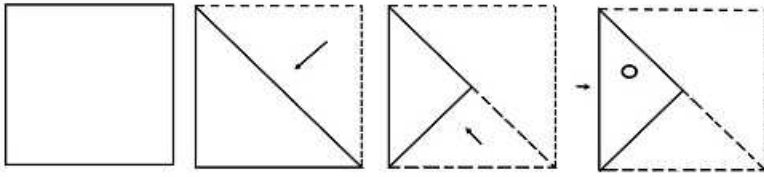


=> Ans - (D)

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Question 23

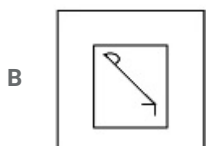
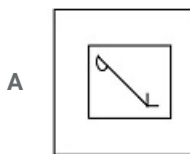
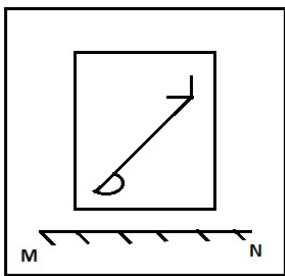
A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

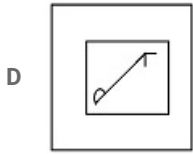
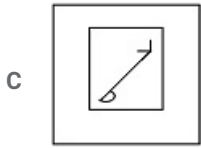


Answer: C

Question 24

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





Answer: B

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 right diagonal in the question figure will appear as left diagonal, thus the last two options are eliminated.

Also, the curve at one end of the line is facing the base, in the mirror it will face the opposite side of base, i.e. top, and thus first option is invalid.

=> Ans - (B)

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. 'A' can be represented by 22, 10 etc and 'P' can be represented by 55, 67, 79 etc. Similarly, you have to identify the set for the word "NEAT".

Matrix - I

	0	1	2	3	4
0	L	N	E	A	C
1	A	C	L	N	E
2	N	E	A	C	L
3	C	L	N	E	A
4	E	A	C	L	N

Matrix - II

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

A 44,14,34,58

B 20,33,78,75

C 13,40,67,99

D 32,21,41,68

Answer: D

Explanation:

(A) : 44,14,34,58 = NEAR

(B) : 20,33,78,75 = NEST

(C) : 13,40,67,99 = NEPT

(D) : 32,21,41,68 = **NEAT**

=> Ans - (D)

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General Awareness

Instructions

For the following questions answer them individually

Question 26

Which one of the following is not a scheme/project of the present Government?

- A AMRUT
- B Swachh Bharat
- C AYUSH
- D Jan Dhan Yojana

Answer: C

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Question 27

Which of the following was India's first interplanetary mission?

- A Chandrayaan Mission
- B Mangalyaan Mission
- C Aryabhata Mission
- D Philae Mission

Answer: B

Question 28

Why the Earth is having its own atmosphere ?

- A Winds
- B Clouds
- C Gravity
- D Rotation of the Earth

Answer: C

Question 29

Motor skills are associated with which part of the brain?

- A Frontal lobe
- B Parietal Lobe
- C Temporal lobe
- D Occipital Lobe

Answer: A

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Question 30

Which enzyme is present in all members of the animal kingdom except Protozoa?

- A Insulin
- B Pepsin
- C Renin
- D Amylase

Answer: D

Question 31

At boiling point of liquids , its

- A Temperature increases
- B Atmospheric pressure increases
- C Temperature remains constant
- D Vapour pressure decreases

Answer: C

Question 32

A level of atmosphere which is composed partly of electrons and positive ions is called

- A Troposphere
- B Ionosphere
- C Stratosphere
- D Mesosphere

Answer: B

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Question 33

In India which of the following taxes is levied by the State governments?

- A Excise duty on liquor
- B Capital gains tax
- C Customs tax
- D Corporation tax

Answer: A

Question 34

After question hour, a motion moved by a Member of Parliament to draw the attention of Executive for discussing a definite matter of public importance is

- A Privilege motion
- B Calling attention Motion
- C Adjournment motion
- D No- confidence motion

Answer: C

Question 35

The major objective of monetary policy is to

- A increase government's tax revenue
- B revamp the Public Distribution System
- C Promote economic growth with price stability
- D weed out corruption in the economy

Answer: C

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Question 36

The only Viceroy to be assassinated in India was

- A Lord Harding
- B Lord Northbrook
- C Lord Ellenborough
- D Lord Mayo

Answer: D

Question 37

Which one is not the main objective of fiscal policy in India?

- A To increase liquidity in the economy
- B To promote price stability
- C To minimize the inequalities of income & wealth
- D To promote employment opportunity

Answer: A

Question 38

Who was the founder of the Theosophical Society?

- A Justice Ranade
- B Madam Blavatsky

- C Annie Besant
- D Bal Gangadhar Tilak

Answer: B

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Question 39

India recently signed land boundary agreement with which country?

- A China
- B Nepal
- C Bhutan
- D Bangladesh

Answer: D

Question 40

Who among the following Indians is one who has been selected on July 27, for the Ramon Magsaysay Award, 2016?

- A Bezwada Wilson
- B Kailash Satyarthi
- C Kiran Bedi
- D Mahasweta Devi

Answer: A

Question 41

The first Field Marshall of India was

- A A. S. Vaidya
- B K.M. Cariappa
- C Sunderji
- D S.H.F.J. Manekshaw

Answer: D

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Question 42

"Earth provides enough to satisfy everyman's need but not everyman's greed". Who said this?

- A Guru Nanak Dev
- B Mahatma Gandhi
- C Pope Paul VI

D Smt. Indira Gandhi

Answer: B

Question 43

Who won the first medal for India at the Rio Olympics?

- A Babita Kumari
- B Narsingh Yadav
- C P. V. Sindhu
- D Sakshi Malik

Answer: D

Question 44

The most serious air pollutant causing health hazard is

- A Sulphur dioxide
- B Carbon monoxide
- C Ozone
- D Nitrogen oxide

Answer: A

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Question 45

Helium is added to the oxygen supply of deep sea divers because it is _____

- A less poisonous than nitrogen
- B Lighter than nitrogen
- C Readily miscible with oxygen
- D less soluble in blood than nitrogen at high pressure

Answer: D

Question 46

Terylene is a condensation polymer of ethylene glycol and which acid?

- A Benzoic Acid
- B Salicylic acid
- C Phthalic acid
- D Terephthalic acid

Answer: D

Question 47

In IT, means that the data available in the database is both accurate and consistent.

- A Data Security
- B Data Availability
- C Data Binding
- D Data Integrity

Answer: D

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Question 48

On a clean glass plate a drop of water spreads to form a thin layer whereas a drop of mercury remains almost spherical because _____

- A Mercury is a metal
- B Density of mercury is greater than that of water
- C Cohesion of mercury is greater than its adhesion with glass
- D Cohesion of water is greater than its adhesion with glass

Answer: C

Question 49

The smallest island country in the Indian Ocean is

- A Maldives
- B Sri Lanka
- C Mauritius
- D Madagascar

Answer: A

Question 50

The Chairman of the Public Accounts Committee of the Parliament is appointed by the

- A President of India
- B Prime Minister of India
- C Speaker of Lok Sabha
- D Chairman of Rajya Sabha

Answer: C

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Mathematics

Instructions

For the following questions answer them individually

Question 51

A and B can together do a piece of work in 6 days and A alone can do it in 9 days. The number of days B will take to do it alone is

- A 18 days
- B 24 days
- C 9 days
- D 12 days

Answer: A

Explanation:

Let total work to be done = 18 units

A and B can together do the work in 6 days

$$\Rightarrow (A+B)'s\ 1\ day's\ work = \frac{18}{6} = 3\ units/day$$

$$\text{Similarly, A's efficiency} = \frac{18}{9} = 2\ units/day$$

$$\Rightarrow B's\ efficiency = 3 - 2 = 1\ unit/day$$

$$\therefore \text{Time taken by B alone} = \frac{18}{1} = 18\ days$$

\Rightarrow Ans - (A)

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Question 52

The length of the two parallel sides of a trapezium are 16 m and 20 m respectively. If its height is 10 m, its area in square metres is

- A 360
- B 260
- C 240
- D 180

Answer: D

Explanation:

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

$$\text{Sum of parallel sides} = (16 + 20) = 36\ m\ \text{and height} = 10\ m$$

$$\Rightarrow \text{Area} = \frac{1}{2} \times 36 \times 10$$

$$= 18 \times 10 = 180\ m^2$$

\Rightarrow Ans - (D)

Question 53

A discount series of 15%, 20% and 25% is equal to the single discount of?

- A 48%

- B 49%
- C 50%
- D 51%

Answer: B

Explanation:

Let list price = Rs. $100x$

After first discount of 15%, price = $100x \times \frac{85}{100} = 85x$

After second discount of 20%, price = $85x \times \frac{80}{100} = 68x$

After third discount of 25%, price = $68x \times \frac{75}{100} = 51x$

=> Equivalent discount = $\frac{100x - 51x}{100x} \times 100$

= 49%

=> Ans - (B)

Question 54

Rs. 490 is divided among A, B and C such that A's share is half that of B's and thrice that of C's. What is C's share?

- A Rs.49
- B Rs.147
- C Rs.294
- D Rs.245

Answer: A

Explanation:

Let C's share = Rs. x

=> A's share = Rs. $3x$ and B's share = Rs. $6x$

Total amount = Rs. 490

=> $3x + 6x + x = 10x = 490$

=> $x = \frac{490}{10} = 49$

∴ C's share = Rs. 49

=> Ans - (A)

SSC CGL Important Questions PDF

Question 55

A dealer sold an article at 6% loss. Had he sold it for Rs. 64 more, he would have made a profit of 10%. Then the cost of the article is

- A Rs.400
- B Rs.200
- C Rs.164
- D Rs.464

Answer: A

Explanation:

Let the cost price of the article = Rs. $100x$

Loss % = 6%

$$\Rightarrow \text{Selling price} = 100x \times \frac{94}{100} = \text{Rs. } 94x$$

If SP is Rs. 64 more, \Rightarrow New SP = Rs. $(94x + 64)$

$$\Rightarrow \text{Profit \%} = \frac{(94x+64)-100x}{100x} \times 100 = 10$$

$$\Rightarrow 64 - 6x = 10x$$

$$\Rightarrow 10x + 6x = 16x = 64$$

$$\Rightarrow x = \frac{64}{16} = 4$$

\therefore Cost Price = $100 \times 4 = \text{Rs. } 400$

\Rightarrow Ans - (A)

Question 56

There are 1400 students in a school, 25% of those wear spectacles and $\frac{2}{7}$ of those wearing spectacles are boys. How many girls in the school wear spectacles?

A 250

B 100

C 200

D 300

Answer: A

Explanation:

Total students in school = 1400

$$\text{Number of students who wear spectacles} = \frac{25}{100} \times 1400 = 350$$

$$\text{Number of boys who wear spectacles} = \frac{2}{7} \times 350 = 100$$

$$\Rightarrow \text{Number of girls who wear spectacles} = 350 - 100 = 250$$

\Rightarrow Ans - (A)

Question 57

A man can row upstream at 12 km/hr and downstream at 18 km/hr. The man's rowing speed in stillwater is

A 15 km/hr

B 5 km/hr

C 3 km/hr

D 10 km/hr

Answer: A

Explanation:

Downstream speed = 18 km/hr and upstream speed = 12 km/hr

$$\text{Thus, man's rowing speed in still water} = \frac{(18+12)}{2}$$

$$= \frac{30}{2} = 15 \text{ km/hr}$$

=> Ans - (A)

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Question 58

If $ab=21$, then $\frac{(a+b)^2}{(a-b)^2} = \frac{25}{4}$ then $a^2 + b^2 + 3ab$ the value is

- A 115
- B 121
- C 125
- D 127

Answer: B

Explanation:

$$\text{Given : } \frac{(a+b)^2}{(a-b)^2} = \frac{25}{4}$$

$$\Rightarrow \frac{a^2+b^2+2ab}{a^2+b^2-2ab} = \frac{25}{4}$$

$$\text{Let } (a^2 + b^2) = x \text{ and } ab = 21$$

$$\Rightarrow \frac{x+42}{x-42} = \frac{25}{4}$$

$$\Rightarrow 4x + (42 \times 4) = 25x - (42 \times 25)$$

$$\Rightarrow 25x - 4x = (42 \times 4) + (42 \times 25)$$

$$\Rightarrow 21x = 42 \times (4 + 25)$$

$$\Rightarrow x = \frac{42 \times 29}{21}$$

$$\Rightarrow x = 2 \times 29 = 58$$

$$\therefore a^2 + b^2 + 3ab$$

$$= 58 + 3(21)$$

$$= 58 + 63 = 121$$

=> Ans - (B)

Question 59

The value of $(ds+tds) \div dt$ would be

- A $d^2(s+t)$
- B 1
- C 0
- D $ds - t$

Answer: B

Question 60

Possible measures of three angles of a triangle are

- A $33^\circ, 42^\circ, 115^\circ$

- B $40^\circ, 70^\circ, 80^\circ$
- C $30^\circ, 60^\circ, 100^\circ$
- D $50^\circ, 60^\circ, 70^\circ$

Answer: D

Explanation:

The sum of three angles of a triangle is always = 180°

(A) : $33^\circ + 42^\circ + 115^\circ = 190^\circ$

(B) : $40^\circ + 70^\circ + 80^\circ = 190^\circ$

(C) : $30^\circ + 60^\circ + 100^\circ = 190^\circ$

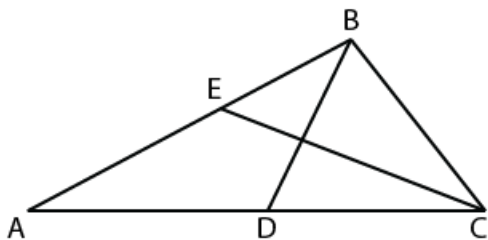
(D) : $50^\circ + 60^\circ + 70^\circ = 180^\circ$

=> Ans - (D)

General Science Notes for SSC CGL

Question 61

BD and CE are two medians of the triangle ABC which intersect at point O. If $EO = 7$ cm, then the length of CE is



- A 28 cm
- B 14 cm
- C 21 cm
- D 35 cm

Answer: C

Explanation:

The centroid of a triangle divides the median in the ratio = $2 : 1$

=> $CO : OE = 2 : 1$

Also, $OE = 7$ cm

=> $CO = 2 \times 7 = 14$ cm

$\therefore CE = CO + OE = 7 + 14 = 21$ cm

=> Ans - (C)

Question 62

If $\sec^2\theta + \tan^2\theta = \sqrt{3}$ then $\sec^4\theta - \tan^4\theta$ then the value is

- A $\frac{1}{\sqrt{3}}$
- B 1

C $\sqrt{3}$

D 0

Answer: C

Explanation:

Given : $\sec^2\theta + \tan^2\theta = \sqrt{3}$ -----(i)

To find : $\sec^4\theta - \tan^4\theta$

$= (\sec^2\theta - \tan^2\theta)(\sec^2\theta + \tan^2\theta)$

Using equation (i), we get :

$= 1 \times \sqrt{3} = \sqrt{3}$

=> Ans - (C)

Question 63

The greatest perfect square number of 6 digits is

A 999001

B 998001

C 998009

D 998101

Answer: B

Explanation:

Let x^2 be the largest 6-digit perfect square.

The largest six digit number is 999,999 and so $x^2 < 999,999$

We know that $(1,000)^2 = 1,000,000$ which is only 1 more than 999,999 and so x^2 must be the next smaller square which is $(1000 - 1)^2$

$= (999)^2 = 998,001$

=> Ans - (B)

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Question 64

The average height of 30 boys out of a class of 50 is 160 cm. If the average height of the remaining boys is 165 cm, the average height of the whole class (in cm) is:

A 161

B 162

C 163

D 164

Answer: B

Explanation:

Total boys in class = 50

Average height of first 30 boys = 160 cm

$$\Rightarrow \text{Total height of 30 boys} = 30 \times 160 = 4800 \text{ cm}$$

$$\text{Similarly, total height of remaining 20 boys} = 20 \times 165 = 3300 \text{ cm}$$

$$\therefore \text{Average height of the whole class} = \frac{(4800+3300)}{30+20}$$

$$= \frac{8100}{50} = 162 \text{ cm}$$

\Rightarrow Ans - (B)

Question 65

Given $a - b = 2$, $a^3 - b^3 = 26$ then $(a + b)^2$ is

A 9

B 4

C 16

D 12

Answer: C

Explanation:

$$\text{Given : } a^3 - b^3 = 26$$

$$\text{Also, } a - b = 2$$

Cubing both sides,

$$\Rightarrow (a - b)^3 = (2)^3$$

$$\Rightarrow a^3 - b^3 - 3ab(a - b) = 8$$

$$\Rightarrow 26 - 3ab(2) = 8$$

$$\Rightarrow 6ab = 26 - 8 = 18$$

$$\Rightarrow ab = \frac{18}{6} = 3 \text{ -----(i)}$$

$$\text{Also, } a^3 - b^3 = (a - b)(a^2 + b^2 + ab)$$

$$\Rightarrow 26 = 2(a^2 + b^2 + 3)$$

$$\Rightarrow a^2 + b^2 + 3 = \frac{26}{2} = 13$$

$$\Rightarrow a^2 + b^2 = 13 - 3 = 10 \text{ -----(ii)}$$

$$\therefore (a + b)^2 = a^2 + b^2 + 2ab$$

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

$$= 10 + 2(3) = 16$$

\Rightarrow Ans - (C)

Question 66

If $X + Y + Z = 9$ then $(X - 4)^3 + (Y - 2)^3 + (Z - 3)^3 - 3(X - 4)(Y - 2)(Z - 3)$ is

A 6

B 9

C 0

D 1

Answer: C

Explanation:

Given : $X + Y + Z = 9$

$$\Rightarrow (X - 4) + (Y - 2) + (Z - 3) = 0 \text{ -----(i)}$$

Let $(X - 4) = a, (Y - 2) = b, (Z - 3) = c$

$$\Rightarrow a + b + c = 0 \text{ [From (i)]}$$

To find : $(X - 4)^3 + (Y - 2)^3 + (Z - 3)^3 - 3(X - 4)(Y - 2)(Z - 3)$

$$= a^3 + b^3 + c^3 - 3abc$$

Using, $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

$$\Rightarrow a^3 + b^3 + c^3 - 3abc = 0 \times (a^2 + b^2 + c^2 - ab - bc - ca) = 0$$

\Rightarrow Ans - (C)

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Question 67

Three medians AD, BE and CF of ΔABC intersect at G; Area of ΔABC is 36 sq cm. Then the area of ΔCGE is

A 12 sq cm

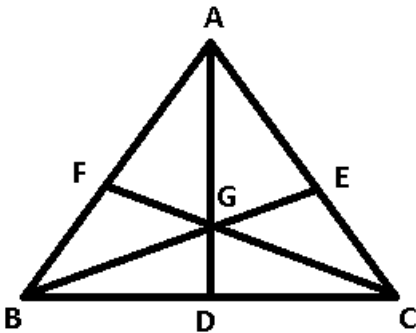
B 6 sq cm

C 9 sq cm

D 18 sq cm

Answer: B

Explanation:



The medians of a triangle divide into 6 triangles of equal areas.

$$\Rightarrow ar(\Delta AFG) = ar(\Delta BFG) = ar(\Delta BDG) = ar(\Delta CGD) = ar(\Delta CGE) = ar(\Delta AGE)$$

Thus, $ar(\Delta ABC) = 6 \times ar(\Delta CGE)$

$$\Rightarrow ar(\Delta CGE) = \frac{1}{6} \times 36 = 6 \text{ cm}^2$$

\Rightarrow Ans - (B)

Question 68

A chord of a circle is equal to its radius. A tangent is drawn to the circle at an extremity of the chord. The angle between the tangent and the chord is

A 30°

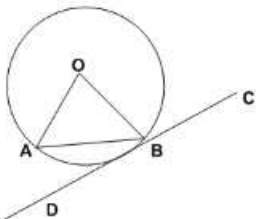
B 45°

C 60°

D 75°

Answer: A

Explanation:



$OA = OB$ (radii of circle)

$OA = OB = AB$ (radii and chord are equal)

$\therefore \triangle AOB$ is an equilateral triangle.

$\Rightarrow \angle AOB = \angle OAB = \angle OBA = 60^\circ$

Also, $\angle OBD = 90^\circ$

$\Rightarrow \angle OBA + \angle ABD = 90^\circ$

$\Rightarrow \angle ABD = 90^\circ - 60^\circ = 30^\circ$

\Rightarrow Ans - (A)

Question 69

If $\pi \sin \theta = 1, \pi \cos \theta = 1$ then $\sqrt{3} \tan\left(\frac{2}{3}\theta\right) + 1$ the value is

A 1

B $\sqrt{3}$

C 2

D $\frac{1}{\sqrt{3}}$

Answer: C

Explanation:

Given : $\pi \sin \theta = 1, \pi \cos \theta = 1$

$\Rightarrow \sin \theta = \cos \theta$

$\Rightarrow \sin \theta = \sin(90^\circ - \theta)$

$\Rightarrow \theta = 90^\circ - \theta$

$\Rightarrow \theta + \theta = 2\theta = 90^\circ$

$\Rightarrow \theta = \frac{90}{2} = 45^\circ$

To find : $\sqrt{3} \tan\left(\frac{2}{3}\theta\right) + 1$

$= \sqrt{3} \tan\left(\frac{2}{3} \times 45^\circ\right) + 1$

$= \sqrt{3} \tan(30^\circ) + 1$

$= (\sqrt{3} \times \frac{1}{\sqrt{3}}) + 1$

$= 1 + 1 = 2$

\Rightarrow Ans - (C)

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Question 70

The difference between simple and compound interest (compounded annually) on a sum of money for 3 years at 10% per annum is Rs. 93. The sum (in Rs.) is:

- A 30000
- B 30300
- C 3000
- D 3030

Answer: C

Explanation:

Let the given sum = Rs. $1000x$

Rate of interest = 10% and time period = 3 years

$$\text{Compound interest} = P\left[\left(1 + \frac{R}{100}\right)^T - 1\right]$$

$$= 1000x\left[\left(1 + \frac{10}{100}\right)^3 - 1\right]$$

$$= 1000x\left[\left(\frac{11}{10}\right)^3 - 1\right] = 1000x\left(\frac{1331-1000}{1000}\right)$$

$$= 1000x \times \frac{331}{1000} = 331x$$

$$\text{Simple interest} = \frac{P \times R \times T}{100}$$

$$= \frac{1000x \times 10 \times 3}{100} = 300x$$

$$\Rightarrow \text{Difference between simple and compound interests} = 331x - 300x = 93$$

$$\Rightarrow 31x = 93$$

$$\Rightarrow x = \frac{93}{31} = 3$$

$$\therefore \text{Value of given sum} = 1000 \times 3 = \text{Rs. } 3,000$$

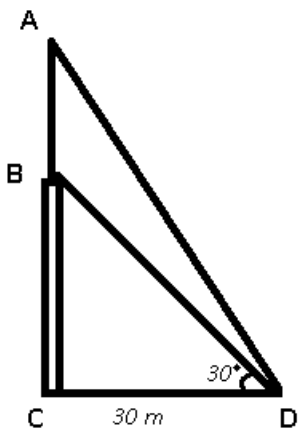
Question 71

The angles of elevation of top and bottom of a flag kept on a flagpost from 30 metres distance, are 45° and 30° respectively. Height of the flag is [taking $\sqrt{3} = 1.732$]

- A $12\sqrt{3}$ m
- B 15 m
- C 14.32 m
- D 12.68 m

Answer: D

Explanation:



Given : $CD = 30\text{ m}$ and $\angle CDB = 30^\circ$ and $\angle CDA = 45^\circ$

To find : AB is the flag = $h = ?$

Solution : In $\triangle BCD$,

$$\Rightarrow \tan(30^\circ) = \frac{BC}{CD}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{BC}{30}$$

$$\Rightarrow BC = \frac{30}{\sqrt{3}} = 10\sqrt{3}\text{ m}$$

$$\Rightarrow BC = 10 \times 1.732 = 17.32\text{ m}$$

Similarly, in $\triangle ACD$,

$$\Rightarrow \tan(45^\circ) = \frac{AC}{CD}$$

$$\Rightarrow 1 = \frac{AC}{30}$$

$$\Rightarrow AC = 30$$

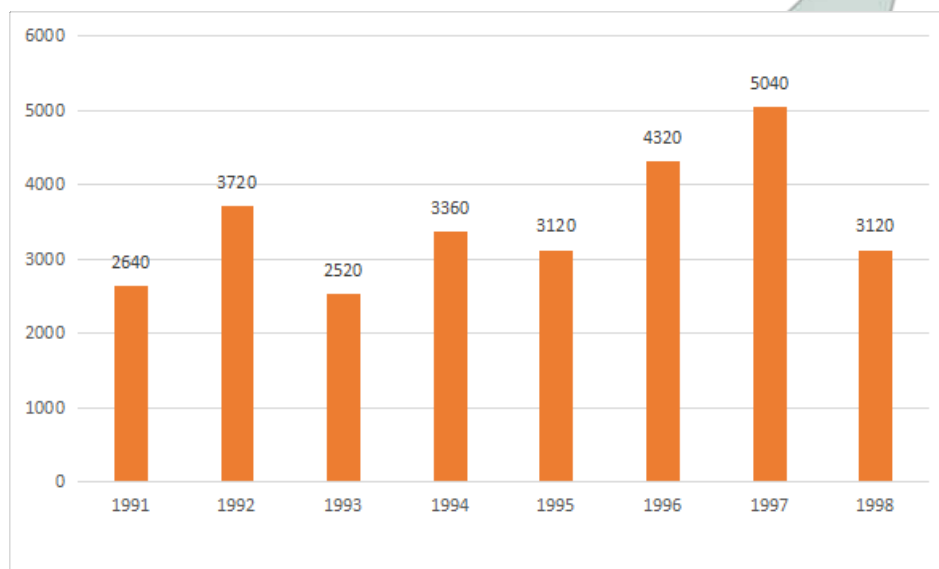
$$\Rightarrow AB + BC = 30$$

$$\Rightarrow h = 30 - 17.32 = 12.68\text{ m}$$

\Rightarrow Ans - (D)

Instructions

Study the following bar-diagram carefully and answer the questions. The bar graph given below shows the foreign exchange reserves of a country (in million US \$) from 1991 - 1992 to 1998 - 1999.



Question 72

The ratio of the number of years, in which the foreign exchange reserves are above the average reserves, to those in which the reserves are below the average reserves is

- A 2:6
- B 3:4
- C 3:5
- D 4:4

Answer: C

Explanation:

Total foreign exchange reserves over the period

$$= 2640 + 3720 + 2520 + 3360 + 3120 + 4320 + 5040 + 3120 = 27840$$

$$\Rightarrow \text{Average foreign exchange reserves} = \frac{27840}{8} = 3480$$

Number of years in which the foreign exchange reserves are above the average reserves = 3 (1992,1996,1997)

Number of years in which the foreign exchange reserves are below the average reserves = 5 (1991,1993,1994,1995,1998)

\Rightarrow Required ratio = 3 : 5

\Rightarrow Ans - (C)

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Question 73

The foreign exchange reserves in 1996-97 were approximately what percent of the average foreign exchange reserves over the period under review?

- A 95%
- B 110%
- C 115%
- D 124%

Answer: D

Explanation:

Foreign exchange reserves in 1996-97 = 4320

Total foreign exchange reserves over the period

$$= 2640 + 3720 + 2520 + 3360 + 3120 + 4320 + 5040 + 3120 = 27840$$

$$\Rightarrow \text{Average foreign exchange reserves} = \frac{27840}{8} = 3480$$

$$\therefore \text{Required \%} = \frac{4320}{3480} \times 100$$

$$= 124.13 \approx 124\%$$

\Rightarrow Ans - (D)

Question 74

The percentage increase in the foreign exchange reserves in 1997-98 over 1993-94 is

- A 100

- B 150
- C 200
- D 120

Answer: A

Explanation:

Foreign exchange reserves in 1993-94 = 2520

Foreign exchange reserves in 1997-98 = 5040

$$\Rightarrow \text{Required \% increase} = \frac{5040 - 2520}{2520} \times 100$$

$$= \frac{2520}{2520} \times 100 = 100\%$$

\Rightarrow Ans - (A)

Question 75

Ratio of the sum of foreign exchange during the years 1991-92, 1992-93, 1993-94 to that during the years 1995-96, 1996-97, 1997-98 is

- A 31: 35
- B 35:31
- C 37:52
- D 52:37

Answer: C

Explanation:

Sum of foreign exchange during the years 1991-92, 1992-93, 1993-94

$$= 2640 + 3720 + 2520 = 8880$$

Sum of foreign exchange during the years 1995-96, 1996-97, 1997-98

$$= 3120 + 4320 + 5040 = 12480$$

$$\Rightarrow \text{Required ratio} = 8880 : 12480$$

$$= 37 : 52$$

\Rightarrow Ans - (C)

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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.

PANACEA

- A PRAISE
- B CURE-ALL
- C POISON

D AMBROSIA

Answer: B

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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.

DETEST

A DENOUNCE

B IGNORE

C ADORE

D CASTIGATE

Answer: C

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 Debilitate

B Impecable

C Inkulcate

D Harrass

Answer: A

Question 79

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.

What a ____ holiday!

A momentous

B memorable

C momentary

D immortal

Answer: B

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Question 80

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.

Many important projects have reached the final stage of ____.

- A accomplishment
- B initiation
- C resolution
- D implementation

Answer: D

Question 81

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.

_____ you live long!

- A Might
- B May
- C Shall
- D Should

Answer: B

Question 82

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.

Each of the girls (a) / have come (b) / with her books. (c) / No Error (d)

- A Each of the girls
- B have come
- C with her books
- D No Error

Answer: B

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Question 83

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.

Me and my wife (a) / were at home (b) / last night. (c) / No Error (d)

- A Me and my wife
- B were at home
- C last night
- D No Error

Answer: A

Question 84

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.

Essay writing is an art (a) / that requires many planning (b) / on the part of the writer. (c) / No Error (d)

- A Essay writing is an art
- B that requires many planning
- C on the part of the writer
- D No Error

Answer: B

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.

Caught red-handed

- A Caught by mistake
- B Caught with a red-handkerchief
- C Found wounded
- D Discovered in the act of doing

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.

Gate crasher

- A Invader
- B Thief
- C Uninvited guest
- D Children

Answer: C

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.

To angle

- A To measure the river breadth
- B To fish with a net

- C To fish
- D To sit and watch the river

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.

Favouritism shown by a person in power to his relatives

- A Formalism
- B Red-tapism
- C Nepotism
- D Bureaucracy

Answer: C

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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.

A round-about way of expression

- A Verbosity
- B Talkativeness
- C Circumlocution
- D Locquacious

Answer: C

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.

Suitable or intended for only young persons

- A Youthful
- B Puerile
- C Adolescent
- D Juvenile

Answer: D

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".

Each self is unique, and therefore cannot be compared.

- A incomparable
- B Non comparable
- C Incomparably
- D No improvement

Answer: A

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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".

Shall I sit between you at the concert?

- A beside
- B besides
- C next
- D No Improvement

Answer: A

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".

No one other reason than poverty is hampering India's progress.

- A No other
- B None other
- C No another
- 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".

The custom has took root in the society.

- A taken root
- B take root
- C takes root
- 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".

We will take care of your children when you are away at Mumbai.

- A be looking for
- B look after
- C take care after
- D No improvement

Answer: B

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.

My brother, David, was always close to our grandmother. Both of them shared a love of Mother Nature and of food that they had grown themselves. Whenever his schedule permitted, he would drop in for a short visit and a cup of coffee. One day, when he found no one home, he left a chunk of dirt on her porch. This started what was later to be known as his "calling card". Grandmother would come home occasionally and instantly know that Dave had been by when she spotted the chunk of dirt on her porch.

Although Grandmother had a poor upbringing in Italy, she managed to do well in the United States. She was always healthy and independent and enjoyed a fulfilling life. Recently she had a stroke and died. Everyone was saddened by her death. David was disconsolate. His life-long friend was now gone.

Question 96

What is the opposite of the word 'disconsolate'?

- A Devastated
- B Hilarious
- C Exuberant
- D Sombre

Answer: C

Question 97

David would drop in for a short visit and leave a _____ as a sign on grandma's porch if she was not at home.

- A schedule

- B chunk of dirt
- C calling card
- D cup of coffee

Answer: B

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Question 98

Grandmother used to be ____ .

- A rich in Italy but poor in the United States
- B in the United States but is now in Italy
- C poor earlier but became rich later on
- D rich earlier but now poor

Answer: C

Question 99

Grandmother enjoyed a ____ life.

- A healthy but sickly
- B good and healthy
- C rich but sickly
- D poor and healthy

Answer: B

Question 100

Grandmother's death made everyone

- A sad including David
- B disconsolate excluding David
- C happy and disconsolate
- D sad excluding David

Answer: D

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