



SSC CHSL 8 July 2019 Shift-1

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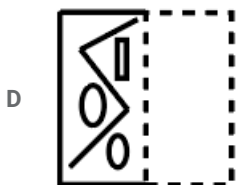
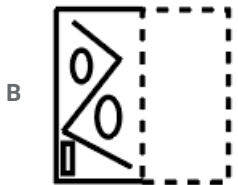
Reasoning

Instructions

For the following questions answer them individually

Question 1

A figure of transparent sheet with a pattern is given below. Select the option that shows how the pattern would appear when the transparent sheet is folded at the dotted line.



Answer: C

Explanation:

Let us assume the dotted line as a mirror. So according to the law of mirror image the nearest one to the mirror will remain the nearest one after forming the mirror image. So, here option C is the right one.

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Question 2

Select the correct mirror image of the given figure when the mirror is placed to the right of the figure.

G J 7 5 3 f g Q

A 0 9 † ε ɔ 7 1 9

B 0 1 2 3 4 5 6 7 8 9

C 0 1 2 3 4 5 6 7 8 9

D 0 1 2 3 4 5 6 7 8 9

Answer: A

Explanation:

If we keep a mirror to the right side of the letter then the letter which is nearest to the mirror will be the left most letter after forming the mirror image that means Q is nearest to the mirror and after formation of mirror image it will remain the nearest to the mirror.

Question 3

Select the number-pair in which the two numbers are related in the same way as are the two numbers of the following number-pair.

12 : 102

A 6 : 52

B 14 : 126

C 8 : 68

D 16 : 218

Answer: C

Explanation:

In the given statement the logic is-

$$12 \times 9 = 108$$

$$108 - (12/2)$$

$$= 108 - 6$$

$$= 102$$

Similarly,

$$8 \times 9 = 72$$

$$72 - (8/2)$$

$$= 72 - 4$$

$$= 68$$

Question 4

Three of the following four numbers are alike in a certain way and one is different. Pick the number that is different from the rest.

A 173

B 193

C 191

D 171

Answer: D

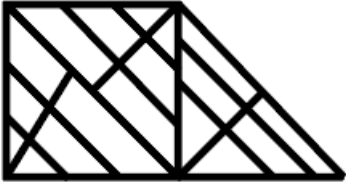
Explanation:

Except option D all are prime numbers. But option D i.e; 171 is divisible by 3.

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Question 5

How many triangles are present in the given figure ?



- A 30
- B 27
- C 28
- D 29

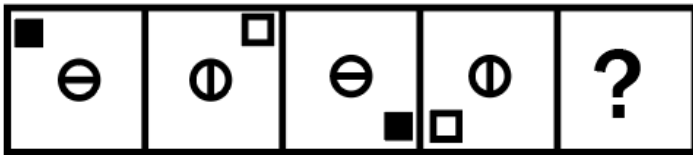
Answer: B

Explanation:

Here, if we divide the square in two triangle shaped figure then we will get three triangle shaped figure. And in each triangle there are 9 small triangles. So in total we have 27 triangle.

Question 6

Select the figure that will come next in the following figure series.



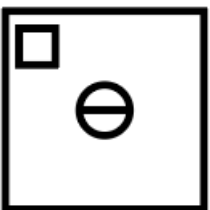
A



B



C



D



Answer: B

Explanation:

The squares are moving clockwise and getting darkened alternatively. So in the answer figure it will be darkened and placed at top left corner.

The circle is not moving but the straight line inside the circle is rotating 90 degree clockwise.

Question 7

In a code language, CARNIVAL is written as LPYAJYTG. How will DISTANCE be written as in that language?

A RQGBDAMY

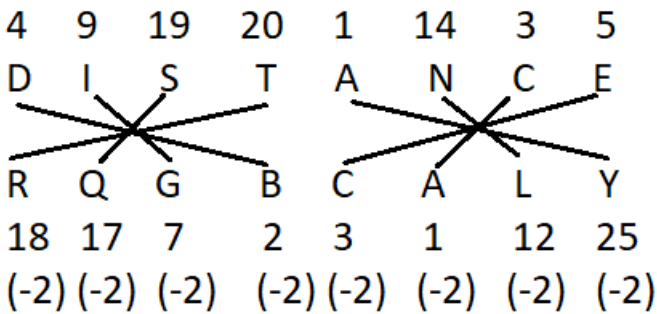
B RPGBCZLY

C RQBCALY

D SQHBCALZ

Answer: C

Explanation:



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Question 8

Select the set in which the numbers are related in the same way as are the numbers of the following set. (8, 27, 64)

A (49, 64, 81)

B (216, 343, 529)

C (343, 512, 729)

D (125, 636, 864)

Answer: C

Explanation:

The given set is the cubes of three consecutive numbers.

$$2^3 = 8$$

$$3^3 = 27$$

$$4^3 = 64$$

Similarly in option C the set is cubes of three consecutive numbers i.e;

$$7^3 = 343$$

$$8^3 = 512$$

$$9^3 = 729$$

Question 9

Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

KSOE : MQQC :: ACZN : ?

A CABL

B CABK

C DAQL

D CBBL

Answer: A

Explanation:

11	19	15	5
K	S	O	E
M	Q	Q	C
13	17	17	3
(+2)	(-2)	(+2)	(-2)

1	3	26	14
A	C	Z	N
C	A	B	L
3	1	2	12
(+2)	(-2)	(+2)	(-2)

Question 10

'Heart' is related to 'Circulation' in the same way as 'Lungs' are related to '_____'.


- A Excretion
- B Respiration
- C Oxygen
- D Ribs

Answer: B

Explanation:

Heart is responsible for blood circulation. Similarly, Lungs is responsible for respiration.

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Question 11

Which number will replace the question mark (?) in the following series?

25, 42, 67, 101, 145, ?

- A 200
- B 202
- C 199
- D 201

Answer: A

Explanation:

$$\begin{array}{cccccc}
 25 & 42 & 67 & 101 & 145 & 200 \\
 \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \\
 +17 & +25 & +34 & +44 & +55 & \\
 \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & & \\
 +8 & +9 & +10 & +11 & &
 \end{array}$$

Question 12

Three friends A, B and C have different amounts of rupees with them. If B takes ₹7 from A, then B will have equal amount as C has. B and C together have total ₹157. How many rupees does C have ?

- A 82
- B 81

C 80

D 83

Answer: A

Explanation:

In the above question $B+7=C$

$$\Rightarrow B-C = -7$$

Again, $B+C=157$

Now solving these two equations we get,

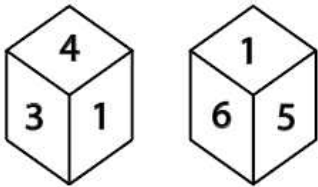
$$2B = (157-7) = 150$$

$$\Rightarrow B=75$$

Therefore, $C = 157-75 = 82$

Question 13

Two different positions of the same dice are shown below, the six faces of which are numbered 1 to 6. Find the number opposite to the face having 1.



A 2

B 4

C 3

D 5

Answer: A

Explanation:

In the above two dice 3, 4, 5, 6 are presented in the adjacent sides of 1. So these four numbers cannot be at the opposite surface of 1. Remaining number is 2. So 2 will be at the opposite surface of 1.

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Question 14

Select the set in which the numbers are related in the same way as are the numbers of the following set.

(4, 41, 5)

A (7, 81, 9)

B (6, 85, 8)

C (2, 21, 4)

D (5, 61, 6)

Answer: D

Explanation:

$$\text{Here, } 4^2 + 5^2 = 16 + 25 = 41$$

Similarly, $5^2 + 6^2 = 25 + 36 = 61$.

Question 15

If **FINANCIAL** is coded as **695153913**, then how will **LUCRATIVE** be coded as ?

- A 433922945
- B 333912955
- C 343912945
- D 333912945

Answer: D

Explanation:

Here the coding is done according to the place values of the given letters in the alphabetical series.

F=6, I=9, N=14=1+4=5, A=1, N=14=1+4=5, C=3, I=9, A=1, L=12=1+2=3.

Similarly, LUCRATIVE will be-

L=12=1+2=3, U=21=2+1=3, C=3, R=18=1+8=9, A=1, T=20=2+0=2, I=9, V=22=2+2=4, E=5.

Question 16

Select the word-pair in which the two words are related in the same way as are the two words in the following word-pair.

Exercise : Fitness

- A Hobby : Internet
- B Harmony : War
- C Treatment : Recovery
- D Education : Institute

Answer: C

Explanation:

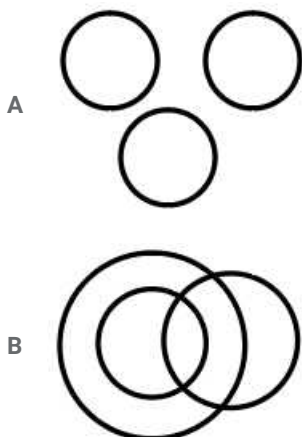
Here due to exercise we get fitness. Similarly, due to treatment we get recovery from any illness or any problem.

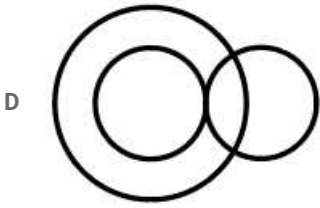
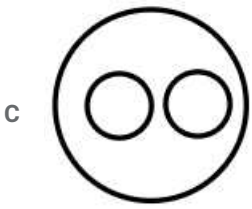
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Question 17

Select the Venn diagram that best illustrates the relationship between the following classes.

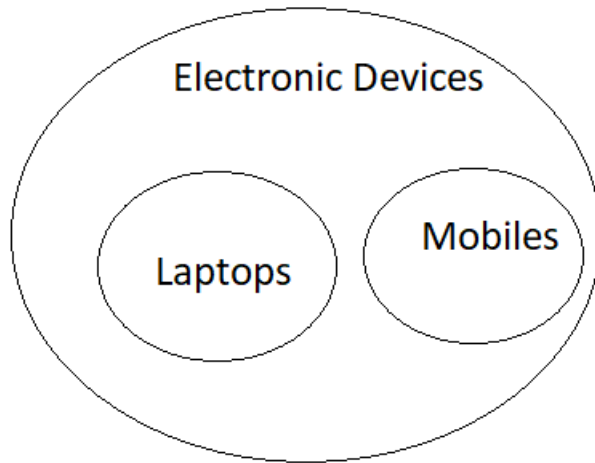
Mobile phones, Electronic devices, Laptops





Answer: C

Explanation:



Mobile and Laptops both are Electronic Devices. But mobiles and laptops are different so they cant intersect.

Question 18

Three of the following four letter-clusters are alike in a certain way and one is different. Pick the odd one out.

A DFHJ

B VXZB

C BDGJ

D JLNP

Answer: C

Explanation:

In each options except C the letters are increased by 2 place value. in option A,

D=4, F=6, H=8, J=10.

But in option C,

B=2, D=4, G=7, J=10

Here the difference between D and G is 3 and G and J is also 3. So they are not following the logic.

Question 19

Select the combination of letters that when sequentially placed in the gaps of the given letter series will complete the series.

t s m _ _ n q _ _ s m m n _ _ s t _ m m n _ q s

A mnstnqsn

B mmstmqtn

C mnstnqmn

D nmstnqns

Answer: A

Explanation:

t s m m n n q s | t s m m n n q s | t s m m n n q s

If we divide the given letter series in three parts then each part will have same letters and same sequence as represented above.

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Question 20

Which of the following sequence of signs will correctly solve the given equation by replacing the question marks ?

1105 ? 65 ? 835 ? 25 ? 5 = 727

A $\div, +, -, \times$

B $+, \div, -, \times$

C $+, -, \times, \div$

D $\times, -, +, \div$

Answer: A

Explanation:

If we put the signs given in option A then we get,

$$1105 \div 65 + 835 - 25 \times 5$$

$$= 17 + 835 - 125$$

$$= 727$$

Question 21

Three of the following four words are alike in a certain way and one is different. Pick the odd word out.

A Energy

B Vitamins

C Carbohydrates

D Protein

Answer: A

Explanation:

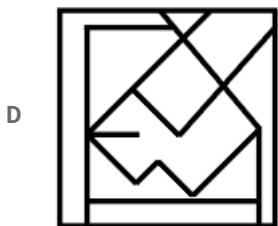
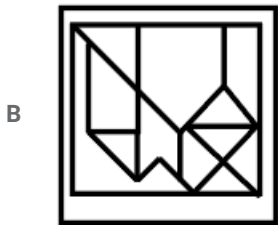
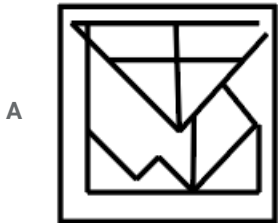
We get Vitamin, Protein and Carbohydrate in our food which give us the energy. So energy is different from the other options.

Question 22

Select the option in which Figure-X is embedded. (Rotation is not allowed)



Figure-X



Answer: B

Explanation:

The given figure X is embedded in the figure given in option B.

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Question 23

Arrange the following activities in a logical and meaningful order.

1. Marriage hall booking
2. Deciding marriage day
3. Inviting guests
4. Marriage ceremony
5. Invitation cards printing

A 2, 1, 3, 5, 4

B 2, 1, 3, 4, 5

C 2, 1, 5, 3, 4

D 1, 2, 3, 5, 4

Answer: C

Explanation:

If we arrange the given events logically then at first we have to Decide the marriage day. Then we will book the Marriage hall. After that we should print the Invitation cards . Then we will invite the guests. Then finally the Marriage ceremony will take place.

Question 24

$A + B$ means 'A is mother of B'

$A - B$ means 'A is husband of B'

$A \times B$ means 'A is son of B'

$A \div B$ means 'A is brother of B'

If $Q \div U \times K \times H - D + J$, then how is K related to J ?

A Brother

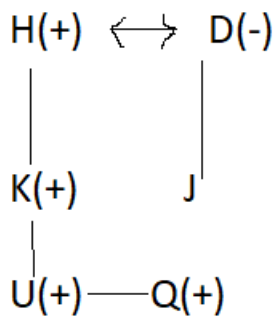
B Paternal uncle

C Father

D Sister

Answer: A

Explanation:



Here, males are represented by (+) and females are (-). And double direction arrow represents couples.

Here, K and J are siblings and H is their father and D is mother. So K is the brother of J.

Question 25

Two statements are given, followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:

All equipment are screw-drivers.

All machines are equipment.

Conclusions:

I. Some screw-drivers are equipment.

II. Some screw-drivers are machines.

III. All equipment are machines.

A Only conclusions I and III follow.

B Only conclusions I and II follow.

C Only conclusions II and III follow.

D All conclusions follow.

Answer: B

Explanation:



Here conclusion 1 and 2 i.e; some screw-drivers are equipment and machines are true. but all equipment can't be machine. So only 1 and 2 follows.

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General knowledge

Instructions

For the following questions answer them individually

Question 26

The border between India and Bhutan adjoins _____ Indian states.

A Five

B Three

C Four

D Two

Answer: C

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Question 27

From which Indian state did 'Warli Art' originate?

A Kerala

B Rajasthan

C Maharashtra

D Madhya Pradesh

Answer: C

Question 28

Who decides the admissibility of Questions in Lok Sabha?

A Deputy Speaker

B Prime Minister

C Speaker

D Vice President

Answer: C

Question 29

Which of the following rivers originates in Amarkantak Hill in Madhya Pradesh ?

A Periyar

B Ravi

C Gomti

D Narmada

Answer: D

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Question 30

_____ gas gives an orange glow when electricity is passed through it. It is generally used in fluorescent lighting.

A Hydrogen

B Oxygen

C Nitrogen

D Neon

Answer: D

Question 31

Rusting of iron is an example of _____.

A corrosion

B combustion

C evaporation

D condensation

Answer: A

Question 32

India won a total of _____ medals at the Special Olympics World Summer Games held in Abu Dhabi from 14 to 21 March 2019.

A 441

B 368

C 312

D 252

Answer: B

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Question 33

With which of the following sports is the term 'Cox' associated?

A Boat Racing

B Boxing

C Long Jump

D Javelin Throw

Answer: A

Question 34

In August 2018, _____ became the first Indian to win the 'Best Actor' award at the Norwegian national awards held in Haugesund, Norway.

A Nawazuddin Siddique

B Irrfan Khan

C Adil Hussain

D Nasiruddin Shah

Answer: C

Question 35

The first session of the first Lok Sabha commenced on _____.

- A 15th August 1947
- B 26th January 1950
- C 13th May 1952
- D 15th August 1951

Answer: C

Explanation:

The First Lok Sabha was constituted on 17 April 1952 after India's first general election. The 1st Lok Sabha lasted its full tenure of five years and was dissolved on 4 April 1957. First Session of this Lok Sabha commenced on 13 May 1952.

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Question 36

The present day city of Bhopal was built by which of the following Pratihara rulers ?

- A Mahendra Bhoja
- B Mihir Bhoja
- C Rajyapala
- D Vijayasena

Answer: B

Question 37

In which city has India's first HIV treatment centre and clinic for the lesbian, gay, bisexual, transgender and queer (LGBTQ) community been inaugurated ?

- A Bengaluru
- B Kolkata
- C Bhopal
- D Mumbai

Answer: D

Question 38

The 'i-help' initiative to promote digital electoral literacy has been launched in which of the following states?

- A Assam
- B Bihar
- C Arunachal Pradesh
- D Chhattisgarh

Answer: A

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Question 39

The 'Pattachitra' style of painting is one of the oldest and most popular art forms of _____.

- A Rajasthan
- B West Bengal
- C Assam
- D Odisha

Answer: D

Question 40

Which of the following is the capital of the Union Territory Dadra and Nagar Haveli?

- A Silvassa
- B Daman
- C Kavaratti
- D Port Blair

Answer: A

Question 41

The Vikramashila University was founded by _____.

- A Chandragupta-I
- B Bimbisara
- C Ashoka
- D Dharmapala

Answer: D

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Question 42

The hill station of Chail is located in _____.

- A Himachal Pradesh
- B Arunachal Pradesh
- C Madhya Pradesh
- D Uttar Pradesh

Answer: A

Question 43

With which of the following sports was Narender Hirwani associated ?

- A Boxing
- B Cricket
- C Football
- D Hockey

Answer: B

Question 44

Which one of the following is the joint Army exercises between France and India?

- A Sampriiti
- B Garuda Shakti
- C Shakti
- D Khanjar

Answer: C

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Question 45

Which one of the following is an Audio Tool ?

- A Avidemus
- B Ardour
- C Dscaler
- D Blender

Answer: B

Question 46

The currency of Japan is _____.

- A Yen
- B Dollar
- C Renminbi
- D Euro

Answer: A

Question 47

_____ was the network that became the basis for the Internet.

- A Clusters
- B ARPANET
- C HTTP
- D SSID

Answer: B

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Question 48

_____ is the final value of all the finished goods and services produced within a country's borders in a specific time period.

- A Government revenue
- B Gross Domestic Product
- C Net National Product
- D Gross National Product

Answer: B

Question 49

Who among the following wrote the book 'The Namesake'?

- A Siddhartha Mukherjee
- B Arundhati Roy
- C Amitav Ghosh
- D Jhumpa Lahiri

Answer: D

Question 50

_____ are stable, negatively charged particles found in all atoms.

- A Neutrons
- B Photons
- C Electrons
- D Protons

Answer: C

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Quant

Instructions

For the following questions answer them individually

Question 51

A dealer buys an article marked at ₹20000 with two successive discounts of 20% and 5%. He spends ₹1000 for its repair and sells it for ₹20000. What is his profit /loss percent (correct to two decimal places)?

- A 25.64% loss
- B 25.64% profit
- C 23.46% profit
- D 23.64% loss

Answer: C

Explanation:

Given, Marked Price = ₹20000

$$\text{Price after 20\% discount} = \frac{80}{100} \times 20000 = ₹16000$$

$$\text{Price after 5\% discount} = \frac{95}{100} \times 16000 = ₹15200$$

He spent ₹1000 for its repair

$$\therefore \text{Cost price} = 15200 + 1000 = ₹16200$$

Selling Price = ₹20000

$$\text{Profit Percentage} = \frac{\text{Selling Price} - \text{Cost Price}}{\text{Cost Price}} \times 100 = \frac{20000 - 16200}{16200} \times 100 = \frac{3800}{16200} \times 100 = 23.46\%$$

Hence, the correct answer is Option C

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Question 52

A and B can complete a piece of work in 15 days and 10 days respectively. They got a contract to complete the work for ₹35000. The share of A (in ₹) in the contracted money will be:

- A 7000
- B 21000
- C 14000
- D 15000

Answer: C

Explanation:

Let the total work be T

$$\text{Work done by A in 1 day} = \frac{T}{15}$$

$$\text{Work done by B in 1 day} = \frac{T}{10}$$

$$\text{Ratio of their shares} = \frac{T}{15} : \frac{T}{10} = 10 : 15 = 2 : 3$$

$$\text{Share of A} = \frac{2}{5} \times 35000 = 14000$$

Question 53

The sum of salaries of A and B is ₹43000. A spends 95% of his salary and B spends 80% of his salary. If their savings are the same, what is A's salary (in ₹)?

- A 8000
- B 34400
- C 10600
- D 35000

Answer: B

Explanation:

given that sum of salaries of A and B is 43000

let the salary of A be $100a$ and B be $100b$

A spent 95% of his salary i.e; his savings are 5%

i.e; $0.05a$

B spent 80% of his salary i.e; 20% is his savings

i.e; $0.2b$

given that savings of both A and B are same

so, $0.05a = 0.2b$

$b = a/4$

given that $a + b = 43000$

$a + a/4 = 43000$

$5a = 43000 * 4/5$

$a = 34400$

Hence answer is option b

Question 54

The chord of the contact of tangents drawn from point on the circle $x^2 + y^2 = a^2$ to the circle $x^2 + y^2 = b^2$ touches the circle $x^2 + y^2 = c^2$ such that $b^p = a^m c^n$ where $m, n, p \in \mathbb{N}$, and m, n, p are prime to each other, then the value of $2m + n + 2p - 3$ is:

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

Answer: B

Explanation:

The chord of the contact of tangents drawn from point on the circle $x^2 + y^2 = a^2$ to the circle $x^2 + y^2 = b^2$ touches the circle $x^2 + y^2 = c^2$ then a, b, c are in G.P

$\Rightarrow b^2 = ac \dots\dots\dots(1)$

Given, $b^p = a^m c^n \dots\dots\dots(2)$

Comparing equation (1) and equation (2)

$p = 2, m = 1, n = 1$

$\therefore 2m + n + 2p - 3 = 2(1) + 1 + 2(2) - 3 = 2 + 1 + 4 - 3 = 4$

Hence, the correct answer is Option B

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Question 55

If $2(\operatorname{cosec}^2 39^\circ - \tan^2 51^\circ) - \frac{2}{3} \sin 90^\circ - \tan^2 56^\circ y \tan^2 34^\circ = \frac{y}{3}$, then the value of y is:

- A $-\frac{2}{3}$
- B -1
- C 1
- D $\frac{2}{3}$

Answer: C

Explanation:

$$\begin{aligned}2(\operatorname{cosec}^2 39^\circ - \tan^2 51^\circ) - \frac{2}{3} \sin 90^\circ - \tan^2 56^\circ y \tan^2 34^\circ &= \frac{y}{3} \\ \Rightarrow 2(\operatorname{cosec}^2 39^\circ - \tan^2 (90 - 39)^\circ) - \frac{2}{3} (1) - \tan^2 56^\circ y \tan^2 (90 - 56)^\circ &= \frac{y}{3} \\ \Rightarrow 2(\operatorname{cosec}^2 39^\circ - \cot^2 39^\circ) - \frac{2}{3} - \tan^2 56^\circ y \cot^2 56^\circ &= \frac{y}{3} \\ \Rightarrow 2(1) - \frac{2}{3} - y &= \frac{y}{3} \\ \Rightarrow \frac{y}{3} + y &= \frac{4}{3} \\ \Rightarrow \frac{4y}{3} &= \frac{4}{3} \\ \Rightarrow y &= 1\end{aligned}$$

Hence, the correct answer is Option C

Question 56

In triangle ABC, the length of BC is less than twice the length of AB by 3 cm. The length of the AC exceeds the length of AB by 1 cm. The perimeter of the triangle is 34 cm. The length (in cm) of the smallest side of the triangle is:

- A 10
- B 7
- C 9
- D 8

Answer: C

Explanation:

Given,

In triangle ABC, the length of BC is less than twice the length of AB by 3 cm

$$\Rightarrow BC = 2AB - 3 \dots\dots\dots(1)$$

The length of the AC exceeds the length of AB by 1 cm

$$\Rightarrow AC = AB + 1 \dots\dots\dots(2)$$

Perimeter of triangle = 34 cm

$$\Rightarrow AB + BC + AC = 34$$

$$\Rightarrow AB + 2AB - 3 + AB + 1 = 34$$

$$\Rightarrow 4AB - 2 = 34$$

$$\Rightarrow 4AB = 36$$

$$\Rightarrow AB = 9 \text{ cm}$$

$$\text{From (1), } BC = 2AB - 3 = 2(9) - 3 = 15 \text{ cm}$$

$$\text{From (2), } AC = AB + 1 = 9 + 1 = 10 \text{ cm}$$

\therefore The length of the smaller side of the triangle = $AB = 9 \text{ cm}$

Hence, the correct answer is Option C

Question 57

Two students, A and B, appeared for an examination. A secured 8 marks more than B and the marks of the former was 55% of the sum of their marks. The sum of the marks obtained by A and B is:

- A 75
- B 100
- C 90
- D 80

Answer: D

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Question 58

The simplified value of $1\frac{1}{7} \div \left\{ 7 + \left(\frac{1}{7} \div 3 \right) \right\}$ is:

- A $\frac{19}{7}$
- B $\frac{19}{16}$
- C $\frac{19}{8}$
- D $\frac{19}{64}$

Answer: C

Explanation:

$$1\frac{1}{7} \div \left\{ 7 + \left(\frac{1}{7} \div 3 \right) \right\} = \frac{\left(3\frac{1}{5} + \frac{3}{5} \right) \div 5}{\left(\frac{16}{5} + \frac{3}{5} \right) \div 5}$$

$$= \frac{\frac{19}{5} \div 5}{\frac{19}{5} \div 5}$$

$$= \frac{19}{5} \div \frac{19}{5}$$

$$= 8$$

Hence, the correct answer is Option C

Question 59

The ratio between the speeds of two trains is 2 : 5. If the first train covers 350 km in 5 hours, then the speed (in km/h) of the second train is:

- A 180

- B 175
- C 165
- D 150

Answer: B

Explanation:

Let the speed of two trains be $2p$ and $5p$ respectively

$$\text{Speed of first train} = \frac{350}{5} = 70 \text{ km/hr}$$

$$\Rightarrow 2p = 70$$

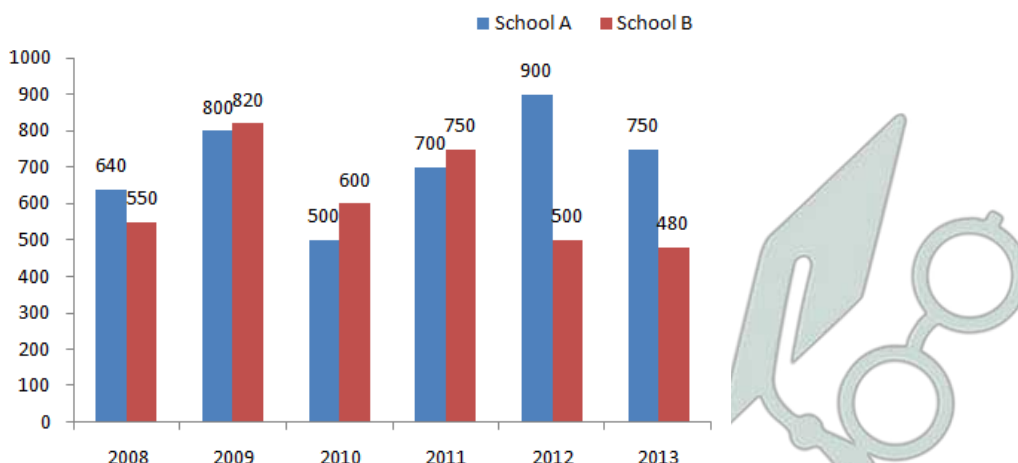
$$\Rightarrow p = 35$$

\therefore The speed of second train = $5p = 5(35) = 175 \text{ km/hr}$

Hence, the correct answer is Option B

Instructions

The given Bar Graph presents the number of students of two schools for six years.



Question 60

In which year, the absolute difference between the numbers of students in two schools is the highest ?

- A 2012
- B 2011
- C 2013
- D 2010

Answer: A

Explanation:

$$\text{The absolute difference between the number of students in two schools in 2010} = |500 - 600| = 100$$

$$\text{The absolute difference between the number of students in two schools in 2011} = |700 - 750| = 50$$

$$\text{The absolute difference between the number of students in two schools in 2012} = |900 - 500| = 400$$

$$\text{The absolute difference between the number of students in two schools in 2013} = |750 - 480| = 270$$

\therefore The absolute difference between the number of students in two schools is highest in 2012.

Hence, the correct answer is Option A

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Question 61

What is the average number of students from school B during the six year period (correct to two decimalplaces) ?

- A 656.17
- B 664.37
- C 616.67
- D 660.17

Answer: C

Explanation:

The average number of students from school B during the six year period = $\frac{550+820+600+750+500+480}{6} = 616.67$

Hence, the correct answer is Option C

Instructions

For the following questions answer them individually

Question 62

If $3^{\sqrt[4]{x}} + 4^{\sqrt[4]{x}} = 5^{\sqrt[4]{x}}$, then the value of x is:

- A 2
- B 4
- C 16
- D 8

Answer: C

Explanation:

$$3^{\sqrt[4]{x}} + 4^{\sqrt[4]{x}} = 5^{\sqrt[4]{x}}$$

It is a pythagoras triplet in the form of $3^2 + 4^2 = 5^2$

$$\Rightarrow \sqrt[4]{x} = 2$$

$$x = 2^4$$

$$x = 16$$

Question 63

If $(x - 8)^3 + (2x + 16)^3 + (2x - 13)^3 = 3(x - 8)(2x + 16)(2x - 13)$, then what is the value of x ?

- A 1
- B -1
- C 0
- D 0.7

Answer: A

Explanation:

$$\text{Given, } (x - 8)^3 + (2x + 16)^3 + (2x - 13)^3 = 3(x - 8)(2x + 16)(2x - 13)$$

$$\Rightarrow (x - 8)^3 + (2x + 16)^3 + (2x - 13)^3 - 3(x - 8)(2x + 16)(2x - 13) = 0$$

We know that if $a^3 + b^3 + c^3 - 3abc = 0$ then $a + b + c = 0$

$$\Rightarrow (x - 8) + (2x + 16) + (2x - 13) = 0$$

$$\Rightarrow 5x - 5 = 0$$

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

$$\Rightarrow x = 1$$

Hence, the correct option is Option A

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Question 64

If an 8-digit number $30x558y2$ is divisible by 88, then the value of $(6x + 6y)$ is:

- A 30
- B 35
- C 42
- D 66

Answer: C

Explanation:

Given, 8-digit number $30x558y2$ is divisible by 88 then the number must be divisible by 11

If it is divisible by 11 then,

Sum of digits at even place - Sum of digits at odd place = 0 or multiple of 11

$$\Rightarrow (0+5+8+2) - (3+x+5+y) = 0 \text{ or multiple of } 11$$

$$\Rightarrow 15 - 8 - (x+y) = 0 \text{ or multiple of } 11$$

$$\Rightarrow 7 - (x+y) = 0 \text{ or multiple of } 11$$

If $7 - (x+y) = \text{multiple of } 11$ then $x+y$ is negative which is not a possible case

$$\Rightarrow 7 - (x+y) = 0$$

$$\Rightarrow x+y = 7$$

$$\therefore 6x+6y = 6(x+y) = 6(7) = 42$$

Hence, the correct answer is Option C

Question 65

If each side of a rectangle is increased by 22%, then its area will increase by:

- A 48.84%
- B 50%
- C 44%
- D 46.65%

Answer: A

Explanation:

let the length of rectangle be l
let the breadth of rectangle be b
both sides are increased by 22%
so area is $122\% \times 122\%$
 $\Rightarrow 14884$
percentage increased is
 $\frac{10000 - 14884}{100}$
 $= 48.84\%$
Hence answer is option a

Question 66

A person purchased a vehicle for ₹4,89,828 and sold it for ₹5,89,828. What is the profit percent he earned on this vehicle (correct to two decimal places)?

- A 25%
- B 15%
- C 18.65%
- D 20.42%

Answer: D

Explanation:

$$\text{profit}\% = \frac{\text{c.p} - \text{s.p}}{\text{c.p}} \times 100$$
$$= \frac{589828 - 489828}{489828} \times 100$$
$$= 20.42\%$$

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Question 67

If $\operatorname{cosec} \theta = 3x$ and $\cot \theta = \frac{3}{x}$, ($x \neq 0$) then the value of $6 \left(x^2 - \frac{1}{x^2} \right)$ is:

- A $\frac{1}{4}$
- B 1
- C $\frac{2}{3}$
- D $\frac{1}{2}$

Answer: C

Explanation:

$$\text{Given, } \operatorname{cosec} \theta = 3x \text{ and } \cot \theta = \frac{3}{x}$$
$$\text{We know that, } \operatorname{cosec}^2 \theta - \cot^2 \theta = 1$$
$$\Rightarrow (3x)^2 - \left(\frac{3}{x}\right)^2 = 1$$
$$\Rightarrow 9x^2 - \frac{9}{x^2} = 1$$
$$\Rightarrow 9 \left(x^2 - \frac{1}{x^2} \right) = 1$$

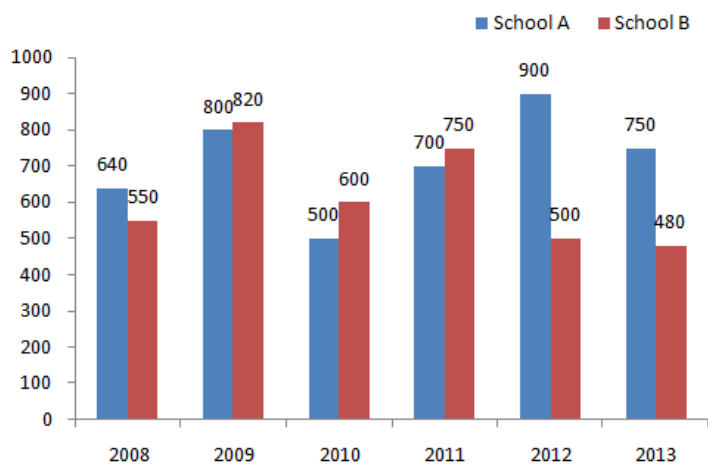
$$\Rightarrow x^2 - \frac{1}{x^2} = 9$$

$$\therefore 6 \left(x^2 - \frac{1}{x^2} \right) = \frac{6}{9} = \frac{2}{3}$$

Hence, the correct answer is Option C

Question 68

The given Bar Graph presents the number of students of two schools for six years.



In which year, the percentage increase in students in school B is the highest in comparison to its previous year?

- A 2010
- B 2013
- C 2009
- D 2011

Answer: C

Explanation:

There is a decrease in number of students in school B in 2010, 2013 compared to its previous year respectively

$$\text{Percentage increase in number of students in school B in 2009 compared to its previous year} = \frac{(820-550)}{550} \times 100 = 49.09$$

$$\text{Percentage increase in number of students in school B in 2011 compared to its previous year} = \frac{(750-600)}{600} \times 100 = 25$$

Hence, the correct answer is Option C

Question 69

If $\cos x = \frac{-1}{2}$ and $\pi < x < \frac{3\pi}{2}$, then the value of $2 \tan^2 x - 3 \operatorname{cosec}^2 x$ is:

- A 10
- B 8
- C 2
- D 4

Answer: C

Explanation:

$$\text{Given, } \cos x = \frac{-1}{2}$$

$$\Rightarrow \sec x = -2$$

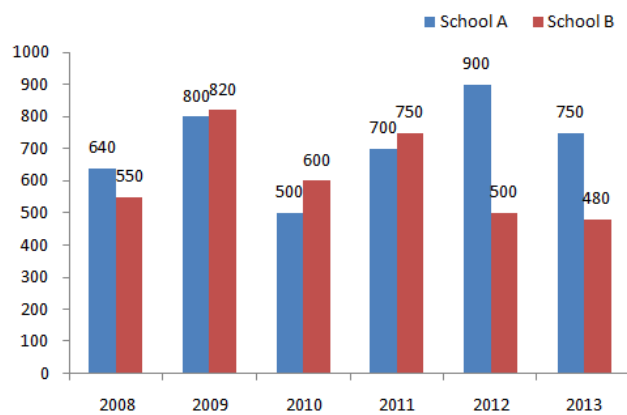
$$\begin{aligned}
 \therefore 2 \tan^2 x - 3 \operatorname{cosec}^2 x &= 2 (\sec^2 x - 1) - \frac{3}{\sin^2 x} \\
 &= 2 (\sec^2 x - 1) - \frac{3}{1 - \cos^2 x} \\
 &= 2 \left((-2)^2 + 1 \right) - \frac{3}{1 - (-\frac{1}{2})^2} \\
 &= 2 (4 - 1) - \frac{3}{1 - \frac{1}{4}} \\
 &= 2 (3) - \frac{3}{\frac{3}{4}} \\
 &= 6 - 4 \\
 &= 2
 \end{aligned}$$

Hence, the correct answer is Option C

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Question 70

The given Bar Graph presents the number of students of two schools for six years.



What is the ratio of students taken for all years together from School B to that from school A ?

- A 370 : 429
- B 415 : 401
- C 401 : 415
- D 429 : 370

Answer: A

Explanation:

Total number of students in school B in all years = $550 + 820 + 600 + 750 + 500 + 480 = 3700$

Total number of students in school A in all years = $640 + 800 + 500 + 700 + 900 + 750 = 4290$

\therefore Required ratio = $3700 : 4290 = 370 : 429$

Hence, the correct answer is Option A

Question 71

Two numbers are in the ratio 3 : 4. On increasing each of them by 30, the ratio becomes 9 : 10. The sum of the numbers is:

- A 35
- B 30

C 32

D 25

Answer: A

Explanation:

Let the two numbers be $3x, 4x$

According to the problem

$$\frac{3x+30}{4x+30} = \frac{9}{10}$$

$$\Rightarrow 30x + 300 = 36x + 270$$

$$\Rightarrow 6x = 30$$

$$\Rightarrow x = 5$$

$$\therefore \text{Sum of the numbers} = 3x + 4x = 7x = 7(5) = 35$$

Hence, the correct answer is Option A

Question 72

In a $\triangle ABC$, the bisectors of $\angle B$ and $\angle C$ meet at O within the triangle. If $\angle A = 110^\circ$, then the measure of $\angle BOC$ is:

A 110°

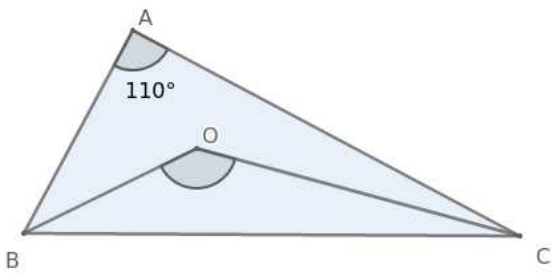
B 55°

C 145°

D 84°

Answer: C

Explanation:



From the figure,

OB and OC are angular bisectors of $\angle B$ and $\angle C$

$$\Rightarrow \angle OBC = \frac{\angle B}{2} \text{ and } \angle OCB = \frac{\angle C}{2}$$

In $\triangle ABC$,

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

$$\Rightarrow 110^\circ + \angle B + \angle C = 180^\circ$$

$$\Rightarrow \angle B + \angle C = 180^\circ - 110^\circ$$

$$\Rightarrow \angle B + \angle C = 70^\circ \dots\dots\dots(1)$$

In $\triangle OBC$,

$$\angle BOC + \angle OBC + \angle OCB = 180^\circ$$

$$\Rightarrow \angle BOC + \frac{\angle B}{2} + \frac{\angle C}{2} = 180^\circ$$

$$\Rightarrow \angle BOC + \frac{\angle B + \angle C}{2} = 180^\circ$$

$$\Rightarrow \angle BOC + \frac{70^\circ}{2} = 180^\circ$$

$$\Rightarrow \angle BOC = 180^\circ - 35^\circ$$

$$\Rightarrow \angle BOC = 145^\circ$$

Hence, the correct answer is Option C

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Question 73

If $x = 2 + \sqrt{3}$ then the value of $x^3 + x^{-3}$ is:

A $-52\sqrt{3}$

B $52\sqrt{3}$

C -52

D 52

Answer: D

Explanation:

Given, $x = 2 + \sqrt{3}$

$$\Rightarrow \frac{1}{x} = \frac{1}{2 + \sqrt{3}}$$

$$\Rightarrow \frac{1}{x} = \frac{1}{2 + \sqrt{3}} \times \frac{2 - \sqrt{3}}{2 - \sqrt{3}}$$

$$\Rightarrow \frac{1}{x} = \frac{2 - \sqrt{3}}{4 - 3}$$

$$\Rightarrow \frac{1}{x} = 2 - \sqrt{3}$$

$$\therefore x + \frac{1}{x} = (2 + \sqrt{3}) + (2 - \sqrt{3}) = 4$$

$$\Rightarrow \left(x + \frac{1}{x}\right)^3 = 4^3$$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3 \cdot x \cdot \frac{1}{x} \left(x + \frac{1}{x}\right) = 64$$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3(4) = 64$$

$$\Rightarrow x^3 + x^{-3} = 52$$

Hence, the correct answer is Option D

Question 74

There are two circles of radius 5 cm and 3 cm respectively. The distance between their centres is 10 cm. The length (in cm) of a transverse common tangent is:

A 9

B 8

C 10

D 6

Answer: D

Explanation:

Given, distance between centres of circles (d) = 10 cm

Radius of first circle (r_1) = 5 cm

Radius of second circle (r_2) = 3 cm

\therefore The length of transverse common tangent = $\sqrt{d^2 - (r_1 + r_2)^2} = \sqrt{10^2 - (5 + 3)^2} = \sqrt{100 - 64} = 6 \text{ cm}$

Question 75

The average age of fifteen persons is 32 years. If two more persons are added, then the average is increased by 3 years. The new persons have age difference of 7 years. The age (in years) of the younger among the new persons is:

- A 50
- B 58
- C 54
- D 61

Answer: C

Explanation:

let the sum of ages of 15 persons be x

given, the average age of 15 persons is 32

$$x/15=32$$

$$x=480.$$

given that when two persons with age difference of 7 is added the average is increased by 3

let the weights of two persons be y and $y+7$

$$\text{so, } x+y+y+7/17=32+3$$

$$\text{but } x=480$$

$$487+2y/17=35$$

$$487+2y=595$$

$$2y=108$$

$$y=54$$

age of y is younger age among the two

hence answer is option c

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English

Instructions

For the following questions answer them individually

Question 76

Select the most appropriate passive form of the given sentence.

The surgeon successfully operated upon the patient.

- A The patient was successfully operated upon by the surgeon.
- B The surgeon has been successfully operated upon by the patient.
- C The patient is successfully operated upon by the surgeon.

D The patient is being successfully operated upon by the surgeon.

Answer: A

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Question 77

Select the correctly spelt word.

A opportunity

B oppurtunity

C oppertunity

D oportunity

Answer: A

Question 78

Select the most appropriate synonym of the given word.

RESOLUTE

A determined

B uncertain

C hesitant

D unsure

Answer: A

Question 79

Identify the segment which contains the grammatical error.

Lack of formal education did not prevent Lincoln to become a great leader.

A to become

B did not prevent

C a great leader

D Lack of

Answer: A

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Question 80

Select the most appropriate antonym of the given word.

ASCENT

A descent

B nascent

C crescent

D recent

Answer: A

Question 81

Select the wrongly spelt word.

A extract

B extension

C explanation

D eligible

Answer: C

Question 82

Select the most appropriate word for the group of words.

An official pardon

A regicide

B amnesia

C redemption

D amnesty

Answer: D

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Instructions

In the following passage some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

Comprehension:

As the rains receded I got a strange job. Our neighbour, a (1) _____ merchant decided to become a politician. But he was (2) _____ so he wanted me to (3) _____ him everywhere he went and read and write (4) _____ him. For my work I was to be paid decent (5) _____.

Question 83

Select the most appropriate option to fill in blank number 1

A prosperous

B affluent

C populous

D ambitious

Answer: A

Question 84

Select the most appropriate option to fill in blank number 2

- A illegible
- B illogical
- C illegitimate
- D illiterate

Answer: D

Question 85

Select the most appropriate option to fill in blank number 3

- A coincide
- B coexist
- C accompany
- D attend

Answer: C

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Question 86

Select the most appropriate option to fill in blank number 4

- A from
- B for
- C through
- D on

Answer: B

Question 87

Select the most appropriate option to fill in blank number 5

- A wages
- B bonus
- C prize
- D reward

Answer: A

Instructions

For the following questions answer them individually

Question 88

Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.

- A. Little did she know that I was out of job once again.
- B. But all the money soon vanished into the bottomless pit of household needs.
- C. I returned home with my pockets full of my earnings.
- D. However, my grandmother was happy that I had become responsible.

A CDAB

B BCDA

C DBAC

D CBDA

Answer: D

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Question 89

Fill in the blank with the most appropriate word.

I had _____ pain in the stomach after taking lunch.

A heavy

B huge

C acute

D strict

Answer: C

Question 90

Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.

- A. But when their short racing careers are over, greyhounds are adopted as household pets.
- B. Greyhound racing is a popular spectator sport in the United States.
- C. They worry that the greyhounds would need a large space to run to get sufficient exercise.
- D. Unfortunately, many people hesitate to adopt a retired racing greyhound as a pet.

A DBCA

B BDAC

C DACB

D BADC

Answer: D

Question 91

Identify the segment which contains the grammatical error
Pleasure cannot derive from giving pain to innocent people.

A from giving

B Pleasure cannot derive

- C pain to
- D innocent people

Answer: B

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Question 92

Select the most appropriate word for the group of words.

One who walks on foot

- A pediatrician
- B pauper
- C protagonist
- D pedestrian

Answer: D

Question 93

Fill in the blank with the most appropriate word.

All organizations seek sincere and _____ employees.

- A industrious
- B inert
- C inactive
- D industrial

Answer: A

Question 94

Select the most appropriate meaning of the given idiom.

Pass the hat

- A to collect money
- B to avoid work
- C to play a game
- D to sell something

Answer: A

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Question 95

Identify the most appropriate option to substitute the underlined segment. If no substitution is required, select No substitution.

No sooner was his name called out when he was gone onto the stage to receive the award.

- A than he went

- B and he was going
- C but he went
- D No substitution

Answer: A

Question 96

Select the most appropriate indirect form of the given sentence.
Father said to his daughter, "I will attend your convocation tomorrow."

- A Father told his daughter that he will be attending her convocation the next day.
- B Father told his daughter that he would attend her convocation the next day.
- C Father told his daughter I will attend her convocation tomorrow.
- D Father told his daughter that he will attend her convocation tomorrow.

Answer: B

Question 97

Select the most appropriate synonym of the given word.
INTREPID

- A invisible
- B cowardly
- C gallant
- D insecure

Answer: C

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Question 98

Select the most appropriate antonym of the given word.
FLEXIBLE

- A variable
- B pliant
- C stiff
- D elastic

Answer: C

Question 99

Identify the most appropriate option to substitute the underlined segment. If no substitution is required, select No substitution.
I was astonished on the ignorance in the villagers.

- A at the ignorance of

- B on the ignorance by
- C over the ignorance between
- D No substitution

Answer: A

Question 100

Select the most appropriate meaning of the given idiom.

As the crow flies

- A a long winding path
- B to be directionless
- C to be uncertain
- D the shortest route

Answer: D

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