

## SSC CHSL 31 Jan 2017 Morning Shift

### Reasoning

#### Instructions

For the following questions answer them individually

#### Question 1

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

Zoology : Animals : : Virology : ?

- A Mitochondria
- B Virus
- C Protozoa
- D Bacteria

**Answer:** B

#### Explanation:

Zoology is the scientific study of the animals, similarly Virology is the branch of science that deals with the study of *viruses*.

=> Ans - (B)

#### Question 2

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

PLUMBER : REBMULP : : ? : LABREV

- A VEBRAL
- B VERBLE
- C VERBAL
- D VABREL

**Answer:** C

#### Explanation:

Expression = PLUMBER : REBMULP : : ? : LABREV

The pattern followed is that the word is written in *reverse order*, i.e. first letter at last position, second at second last and so on.

Similarly, reverse of **VERBAL** : LABREV

=> Ans - (C)

### Question 3

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

Hi : Sr :: Fg : ?

A Hi

B dC

C Ut

D Jk

**Answer: C**

#### Explanation:

Expression = Hi : Sr :: Fg : ?

Alphabets at the corresponding position from the reverse end are written, first letter being capital and other being small.

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

Similarly, Fg : Ut

=> Ans - (C)

### Question 4

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

11 : 132 :: 12 : ?

A 130

B 160

C 156

D 158

**Answer: C**

#### Explanation:

Expression = 11 : 132 :: 12 : ?

The pattern followed is =  $x : x(x + 1)$

Eg :- 11 : 11(11 + 1) = 11 : 132

Similarly,  $12 \times (12 + 1) = 12 \times 13 = 156$

=> Ans - (C)

### Question 5

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

A Condemn

B Criticize

C Reproach

D Praise

**Answer:** D

### Explanation:

Condemn, criticize and reproach are expressions of disappointment, hence praise is the odd one out.

=> Ans - (D)

### Question 6

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

A BC

B IF

C CL

D GH

**Answer:** A

### Explanation:

If all alphabets are numbered in ascending order, A=1 , B=2 , C=3 , D=4 and so on.

=> BC = 23 , IF = 96 , CL = 312 , GH = 78

Now, only 23 is a prime number, hence BC is the odd one out.

=> Ans - (A)

### Question 7

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

A 2714

B 8432

C 6742

D 7858

**Answer:** D

**Explanation:**

The pattern followed is that the product of first two digits is equal to the last 2 digits.

Eg :-  $2 \times 7 = 14$ ,  $8 \times 4 = 32$  and  $6 \times 7 = 42$

But  $7 \times 8 \neq 58$ , hence 7858 is the odd one out.

=> Ans - (D)

**Question 8**

**Findout the odd word/letters/number/number pair from the given alternatives.**

A 687

B 777

C 993

D 745

**Answer:** D

**Explanation:**

Apart from 745, sum of digits of other numbers is 21, hence 745 is the odd one out.

=> Ans - (D)

**Question 9**

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

**?, flight lieutenant, squadron leader, wing commander**

A Flying officer

B Air marshal

C Air vicemarshal

D Group captain

**Answer:** A

**Explanation:**

Posts of an air force officer in increasing order.

= Flying officer -> Flight lieutenant -> Squadron leader -> Wing commander

=> Ans - (A)

### Question 10

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

12, 24, 72, 288, ?

A 1440

B 3250

C 3025

D 2025

**Answer:** A

### Explanation:

Consecutive integers are multiplied.

$$12 \times 2 = 24$$

$$24 \times 3 = 72$$

$$72 \times 4 = 288$$

$$288 \times 5 = \mathbf{1440}$$

=> Ans - (A)

### Question 11

In the following question, two statements are given each followed by two conclusions I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements.

**Statement:**

(I) Major companies are nowadays surviving because of the strong supply chain system.

(II) Supply chain comprises of logistics, retailers and distributors.

**Conclusions:**

(I) Retailers play most important role because they interact with customers on first hand.

(II) If an organization has strong logistics, then product can easily be available to the customers in such an era of competition.

A Only conclusion II follows

B Conclusion I and II both follow

C Neither I nor II follow

**D** Only conclusion I follows

**Answer:** A

### Question 12

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

**FU, GT, HS, IR, ?**

**A** JQ

**B** KO

**C** MN

**D** EF

**Answer:** A

### Explanation:

Expression : FU, GT, HS, IR, ?

The pattern followed in each letter of the terms is :

1st letter : F (+1 letter) = G (+1 letter) = H (+1 letter) = I (+1 letter) = J

2nd letter : U (-1 letter) = T (-1 letter) = S (-1 letter) = R (-1 letter) = Q

Thus, missing term = **JQ**

=> Ans - (A)

### Question 13

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

**OP, RS, VW, ? , GH**

**A** ZA

**B** AB

**C** CD

**D** GE

**Answer:** B

### Explanation:

Expression : OP, RS, VW, ? , GH

The pattern followed in each letter of the terms is :

1st letter : O (+3 letters) = R (+4 letters) = V (+5 letters) = A (+6 letters) = G

2nd letter : P (+3 letters) = S (+4 letters) = W (+5 letters) = B (+6 letters) = H

Thus, missing term = **AB**

=> Ans - (B)

#### Question 14

Ankit scored 32, 45 and 49 marks in Physics, English and Philosophy respectively. The maximum marks in each subject is 50. Determine his overall percentage for the three subjects.

A 58

B 50

C 42

D 84

**Answer: D**

#### Explanation:

Total marks scored by Ankit in Physics, English and Philosophy respectively =  $32 + 45 + 49 = 126$

Total aggregate marks of the three subjects =  $3 \times 50 = 150$

$\therefore$  Required percentage =  $\frac{126}{150} \times 100$

=  $\frac{126}{3} \times 2 = 84\%$

=> Ans - (D)

#### Question 15

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

i. Premanifest

ii. Premalignant

iii. Premake

iv. Premarital

A ii, iii, iv, i

B iii, ii, i, iv

C iv, i, ii, iii

D i, ii, iii, iv

**Answer: B**

#### Explanation:

As per the order of dictionary :

= Premake -> Premalignant -> Premanifest -> Premarital

≡ iii, ii, i, iv

=> Ans - (B)

### Question 16

In a certain code language, "MOBILE" is written as "OQDKNG". How is "RANGER" written in that code language?

A TCPIGT

B TCPGIT

C TPCIGT

D GTTCPT

Answer: A

### Explanation:

"MOBILE" is written as "OQDKNG"

The pattern followed is :

M	O	B	I	L	E
(+2)	(+2)	(+2)	(+2)	(+2)	(+2)
O	Q	D	K	N	G

Similarly, for RANGER :

R	A	N	G	E	R
(+2)	(+2)	(+2)	(+2)	(+2)	(+2)
T	C	P	I	G	T

=> Ans - (A)

### Question 17

Find the missing number in the given table

16	49	64
36	25	6
38	16	?

A 24

B 32



C 20

D 25

Answer: C

### Question 18

If "A" denotes "multiplied by", "C" denotes "subtracted from", "D" denotes "added to" and "B" denotes "divided by", then

76 C 54 D 210 B 3 A 15 = ?

A 1072

B 1050

C 1830

D 1431

Answer: A

### Explanation:

Expression : 76 C 54 D 210 B 3 A 15 = ?

$$76 - 54 + 210 \div 3 \times 15$$

$$= 22 + (210 \times 5)$$

$$= 22 + 1050 = 1072$$

=> Ans - (A)

### Question 19

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

j\_l\_jk\_m\_kl\_

A jkljm

B kmjjj

C kmljm

D mkjlm

Answer: C

### Explanation:

The pattern followed is that in groups of 4, the term 'jklm' is repeated.

= jklm jklm jklm

=> Ans - (C)

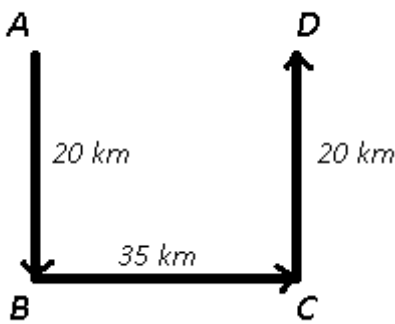
### Question 20

Karan travels 20 km towards the south, and then takes a left, and travels 35 km further. Again, he takes a left and travels 20 km further. How far is he from his original position?

- A 35 km
- B 25 km
- C 30 km
- D 40 km

Answer: A

Explanation:



Let Karan start from point A and travels 20 km towards the south to reach B, and then takes a left, and travels 35 km to reach C. Again, he takes a left and travels 20 km northwards and finally stop at point D.

Thus, he is **35 km** from his original position.

=> Ans - (A)

### Question 21

A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'A' can be represented by 21, 67 etc., and 'R' can be represented by 66, 57 etc. Similarly, you have to identify the set for the word 'GRIM'.

#### MATRIX 1:

	0	1	2	3	4
0	Q	R	A	N	B
1	W	I	N	H	L
2	E	N	S	G	O
3	N	Y	G	O	M
4	M	T	O	F	A

#### MATRIX 2:

	5	6	7	8	9
5	Z	M	R	I	Q
6	X	R	N	W	A
7	C	S	Y	E	V
8	S	N	T	M	S
9	G	B	E	R	U

A 23, 57, 11, 88

B 32, 66, 58, 67

C 95, 02, 11, 86

D 23, 11, 57, 88

**Answer: A**

#### Explanation:

(A) : 23, 57, 11, 88 = GRIM

(B) : 32, 66, 58, 67 = GRIN

(C) : 95, 02, 11, 86 = GAIN

(D) : 23, 11, 57, 88 = GIRM

=> Ans - (A)

### Question 22

Introducing a boy, Amarjeet says, "He is the son of the daughter of my father." How is boy related to the Amarjeet?

- A Nephew
- B Maternal uncle
- C Son
- D Cousin

**Answer: A**

**Explanation:**

Daughter of Amarjeet's father = Amarjeet's sister

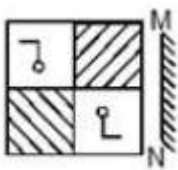
Now, the boy is son of Amarjeet's sister, => Amarjeet is the boy's uncle.

=> The boy is Amarjeet's nephew.

=> Ans - (A)

**Question 23**

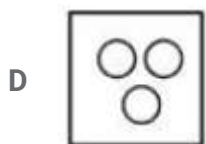
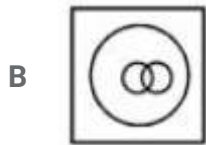
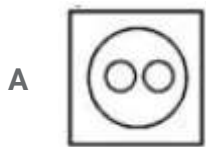
If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure ?



**Answer: B**

Question 24

Identify the diagram that best represents the relationship among the given classes. Human being, Doctors, Postgraduates

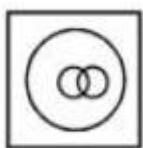


Answer: B

Explanation:

Doctors can be postgraduates and postgraduates can be doctors as well, but both of them are human beings.

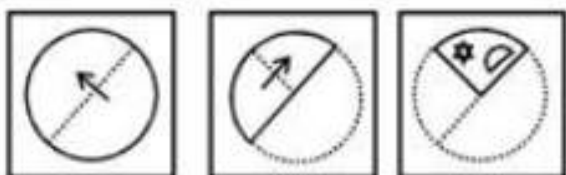
Thus, the venn diagram that best describes above relationship is :

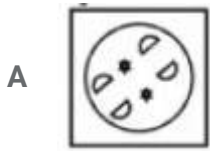


=> Ans - (B)

Question 25

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





Answer: B

## General Awareness

### Instructions

For the following questions answer them individually

### Question 26

Keoladeo National Park is in .....

- A Karnataka
- B Madhya Pradesh
- C Maharashtra
- D Rajasthan

Answer: D

### Question 27

Which of these is the only Bollywood actor who has won National Film Award for the category of Best Actor?

- A Aamir Khan
- B Salman Khan
- C Shahrukh Khan
- D Saif Ali Khan

**Answer: D**

**Question 28**

**Which drug is used to cure Incontinence?**

- A Oxybutynin
- B Ranitidine
- C Azithromycin
- D Levothyroxine

**Answer: A**

**Question 29**

**In which part of the cell are proteins made?**

- A reticulum
- B Golgi apparatus
- C ribosomes
- D lysosome

**Answer: C**

**Question 30**

**Polio is a disease caused by which of the following?**

- A Bacteria
- B Mosquito
- C Virus

**D** Cockroach

**Answer: C**

**Question 31**

**Chemical formula of Ammonia is .....**

**A** PH<sub>3</sub>

**B** NO<sub>2</sub>

**C** AlN

**D** NH<sub>3</sub>

**Answer: D**

**Question 32**

**Which of the following elements has the lowest melting point?**

**A** Oxygen

**B** Platinum

**C** Sodium

**D** Tin

**Answer: A**

**Question 33**

**If price of an article decreases from Rs 600 to Rs 500, when quantity demanded increases from 10000 units to 12000 units. Find point elasticity of demand?**

**A** 1.2

**B** 1.2

**C** 1.5

**D** 1.5

**Answer: A**



**Question 34**

The market for sugar is in equilibrium. If the supply of sugar increases, the equilibrium price of sugar will .....and the equilibrium quantity will .....

- A increase; increase
- B decrease; decrease
- C increase; decrease
- D decrease; increase

**Answer: D**

**Question 35**

Which of the following is a greenhouse gas or a gas which can deplete the ozone layer?

- A  $\text{BCl}_3$
- B  $\text{Ni}(\text{CO})_4$
- C  $\text{CH}_3\text{OH}$
- D  $\text{CCl}_3\text{F}$

**Answer: D**

**Question 36**

Pentlandite is an ore/mineral of .....

- A Titanium
- B Nickel
- C Uranium
- D Zinc

**Answer: B**

**Question 37**

Who was the first man to go to space?

- A Yuri Gagarin
- B Yuri Rontgen
- C Yuris Cui
- D Yuris Mahatinn

**Answer: A**

**Question 38**

**What is the capital of Italy?**

- A Tashkent
- B Rome
- C Wellington
- D Oslo

**Answer: B**

**Question 39**

**Nathu La pass is located in .....**

- A Pakistan
- B Nepal
- C Bhutan
- D India

**Answer: D**

**Question 40**

**Which of these countries got Independence from United Kingdom?**

- A Uzbekistan
- B United States
- C Venezuela

**D** South Korea

**Answer: B**

**Question 41**

**The decision to effect the Partition of Bengal was announced in 1905 by?**

**A** Lord William Bentinck

**B** Lord Mountbatten

**C** Warren Hastings

**D** Lord Curzon

**Answer: D**

**Question 42**

**Inventor of Instant Noodles was a citizen of which country?**

**A** China

**B** South Korea

**C** Japan

**D** North Korea

**Answer: C**

**Question 43**

**Find the power of a convex lens if the image formed is at a distance of 20 cm from the lens when the object is placed on the other side of the lens at 25 cm from the optical centre?**

**A** 1 diopters

**B** 9 diopters

**C** 9 diopters

**D** 1 diopters

**Answer: C**

**Question 44**

**What is the unit of the physical quantity "Capacitance"?**

- A weber
- B farad
- C tesla
- D ohm

**Answer: B**

**Question 45**

**Parliament conducts .....sessions each year.**

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

**Answer: C**

**Question 46**

**Who is the Founder of International Premier Tennis League?**

- A Leander Paes
- B Roger Federer
- C Martina Navratilova
- D Mahesh Bhupathi

**Answer: D**

**Question 47**

**Who is the author of the book "The daughter of the east"?**

- A Taslima Nasreen

- B** Benazir Bhutto
- C** Chandrika Bhutani
- D** Sharmila Tagore

**Answer: B**

#### **Question 48**

**Which company developed 'Hack' Programming Language?**

- A** Google
- B** Microsoft
- C** Facebook
- D** Apple

**Answer: C**

#### **Question 49**

**According to the Hornbostel-Sachs system of Indian Musical Instruments, Ghungroo can be classified as**

- A** Chordophones
- B** Aerophones
- C** Membranophones
- D** Idiophones

**Answer: D**

#### **Question 50**

**What is the minimum age to become the Prime Minister of India if he or she is a member of Rajya Sabha?**

- A** 18
- B** 25
- C** 30
- D** 35

Answer: C

## Mathematics

### Instructions

For the following questions answer them individually

### Question 51

Factorise  $x^2 + 3x - 18$

A  $(x+18)$   
 $(x-1)$

B  $(x+1)(x+18)$

C  $(x+6)$   
 $(x-3)$

D  $(x+6)(x+3)$

Answer: C

### Explanation:

Expression :  $x^2 + 3x - 18$

$$= x^2 + 6x - 3x - 18$$

$$= x(x + 6) - 3(x + 6)$$

$$= (x + 6)(x - 3)$$

=> Ans - (C)

### Question 52

Rohit walks at 17 km/hr and Ruchira cycles at 22 km/hr towards each other. What was the distance between them when they started if they meet after 44 minutes?

A 42.9 km

B 35.8 km

C 21.5 km

D 28.6 km

**Answer: D**

**Explanation:**

Speed of Rohit = 17 km/hr and speed of Ruchira = 22 km/hr

They are travelling towards each other, thus relative speed =  $17 + 22 = 39$  km/hr

Time taken = 44 min =  $\frac{44}{60}$  hr =  $\frac{11}{15}$  hr

Distance = speed  $\times$  time

$$= 39 \times \frac{11}{15} = \frac{143}{5}$$

$$= 28.6 \text{ km}$$

=> Ans - (D)

**Question 53**

**If sum of the roots of a quadratic equation is 7 and product of the roots is 12. Find the quadratic equation.**

**A**  $x^2 - 7x + 12 = 0$

**B**  $x^2 + 7x + 12 = 0$

**C**  $x^2 - 7x - 12 = 0$

**D**  $x^2 + 7x - 12 = 0$

**Answer: A**

**Explanation:**

A quadratic equation is of the form :  $x^2 - (\text{sum of roots})x + (\text{product of roots}) = 0$

Let the roots of equation are  $\alpha$  and  $\beta$

$$\Rightarrow \text{Sum of roots} = \alpha + \beta = 7$$

$$\text{Product of roots} = \alpha\beta = 12$$

$$\text{Equation : } x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$\Rightarrow x^2 - 7x + 12 = 0$$

=> Ans - (A)

**Question 54**

**20% discount is offered on an item. By applying a promo code the customer wins 10% cash back. What is the effective discount?**

**A** 30.8 percent

**B** 30 percent

**C** 12 percent

D 28 percent

**Answer:** D

**Explanation:**

Let the marked price of item = Rs.  $100x$

$$\text{Amount after 20 \% discount} = 100x - \frac{20}{100} \times 100x$$

$$= 100x - 20x = \text{Rs.}80x$$

$$\text{Selling price after 10 \% cashback} = 80x - \frac{10}{100} \times 80x$$

$$= 80x - 8x = \text{Rs.}72x$$

$$\Rightarrow \text{Total discounted amount} = 100x - 72x = \text{Rs.}28x$$

$$\therefore \text{Effective discount} = \frac{28x}{100x} \times 100 = 28\%$$

$\Rightarrow$  Ans - (D)

**Question 55**

Reduce 2530/1430 to lowest terms.

A 47/17

B 23/13

C 47/19

D 29/17

**Answer:** B

**Explanation:**

$$\text{Expression : } \frac{2530}{1430}$$

Dividing both numerator and denominator by 10, we get =  $\frac{253}{143}$

Similarly, dividing by 11, we get :

$$= \frac{23}{13}$$

$\Rightarrow$  Ans - (B)

**Question 56**

If  $5x - 3 \geq 3 + x/2$  and  $4x - 2 \leq 6 + x$ ; then  $x$  can take which of the following values?

A 1

B 2



C -1

D -2

**Answer: B**

**Explanation:**

Expression 1 :  $5x - 3 \geq 3 + x/2$

$$\Rightarrow 5x - \frac{x}{2} \geq 3 + 3$$

$$\Rightarrow \frac{9x}{2} \geq 6$$

$$\Rightarrow x \geq \frac{4}{3} \text{ -----(i)}$$

Expression 2 :  $4x - 2 \leq 6 + x$

$$\Rightarrow 4x - x \leq 6 + 2$$

$$\Rightarrow 3x \leq 8$$

$$\Rightarrow x \leq \frac{8}{3} \text{ -----(ii)}$$

Combining inequalities (i) and (ii), we get :  $\frac{4}{3} \leq x \leq \frac{8}{3}$

The only value that  $x$  can take among the given options = 2

$\Rightarrow$  Ans - (B)

**Question 57**

**The first and last terms of an arithmetic progression are -32 and 43. If the sum of the series is 88, then it has how many terms?**

A 16

B 15

C 17

D 14

**Answer: A**

**Explanation:**

First term of AP,  $a = -32$  and last term,  $l = 43$

Let there be  $n$  terms

$$\text{Sum of AP} = \frac{n}{2}(a + l) = 88$$

$$\Rightarrow \frac{n}{2}(-32 + 43) = 88$$

$$\Rightarrow \frac{11n}{2} = 88$$

$$\Rightarrow n = 88 \times \frac{2}{11}$$

$$\Rightarrow n = 8 \times 2 = 16$$

=> Ans - (A)

### Question 58

The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 18% per annum is Rs 81. The sum is .....

- A Rs 2500
- B Rs 5000
- C Rs 10000
- D Rs 7500

**Answer:** A

### Explanation:

Let the given sum = Rs.  $100x$

Rate of interest = 18% and time period = 2 years

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

$$= 100x\left[\left(1 + \frac{18}{100}\right)^2 - 1\right]$$

$$= 100x\left[\left(\frac{118}{100}\right)^2 - 1\right] = 100x\left(\frac{13924-10000}{10000}\right)$$

$$= \frac{3924x}{100}$$

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

$$= \frac{100x \times 18 \times 2}{100} = 36x$$

$$\Rightarrow \text{Difference between simple and compound interests} = \frac{3924x}{100} - 36x = 81$$

$$\Rightarrow \frac{3924x - 3600x}{100} = 81$$

$$\Rightarrow 324x = 81 \times 100$$

$$\Rightarrow x = \frac{81 \times 100}{324} = \frac{100}{4} = 25$$

$\therefore$  Value of given sum =  $100 \times 25 = Rs.2500$

### Question 59

In what ratio is the segment joining (12,1) and (3,4) divided by the Y axis?

- A 4:1
- B 1:4
- C 4:3

D 3:4

Answer: A

**Explanation:**

Using section formula, the coordinates of point that divides line joining  $A = (x_1, y_1)$  and  $B = (x_2, y_2)$  in the ratio  $a : b$

$$= \left( \frac{ax_2 + bx_1}{a+b}, \frac{ay_2 + by_1}{a+b} \right)$$

Let the ratio in which the segment joining (12,1) and (3,4) divided by the y-axis =  $k : 1$

Since, the line segment is divided by y-axis, thus x coordinate of the point will be zero, let the point of intersection =  $(0, y)$

Now, point P (0,y) divides (12,1) and (3,4) in ratio =  $k : 1$

$$\Rightarrow 0 = \frac{(3 \times k) + (12 \times 1)}{k+1}$$

$$\Rightarrow 3k + 12 = 0$$

$$\Rightarrow k = \frac{-12}{3} = -4$$

$\therefore$  Line segment joining (12,1) and (3,4) is divided by the Y axis in the ratio = 4 : 1 externally

$\Rightarrow$  Ans - (A)

**Question 60**

The line passing through (4,3) and (y,0) is parallel to the line passing through (1,2) and (3,0). Find y?

A 1

B 7

C 2

D 5

Answer: B

**Explanation:**

Slope of line passing through  $(x_1, y_1)$  and  $(x_2, y_2)$  is  $\frac{y_2 - y_1}{x_2 - x_1}$

$$\Rightarrow \text{Slope of line passing through (1,2) and (3,0)} = \frac{0-2}{3-1} = \frac{-2}{2} = -1$$

$$\text{Slope of line passing through (4,3) and (y,0)} = \frac{0-3}{y-4} = \frac{-3}{(y-4)}$$

Also, slopes of parallel lines are equal.

$$\Rightarrow \frac{-3}{y-4} = -1$$

$$\Rightarrow y - 4 = 3$$

$$\Rightarrow y = 3 + 4 = 7$$

$\Rightarrow$  Ans - (B)

**Question 61**

A bag has Rs 20 in the form of 1 rupee, 50paise and 10paise coins in the ratio of 2:3:5. Find the number of 50paise coins.

- A 25
- B 10
- C 15
- D 5

**Answer: C**

**Explanation:**

Let the number of 1-rupee, 50-paise and 10-paise coins be  $2x$ ,  $3x$  and  $5x$  respectively.

Total amount in the bag = Rs. 20

$$\Rightarrow (1 \times 2x) + \left(\frac{50}{100} \times 3x\right) + \left(\frac{10}{100} \times 5x\right) = 20$$

$$\Rightarrow 2x + \frac{3x}{2} + \frac{x}{2} = 20$$

$$\Rightarrow \frac{4x+3x+x}{2} = 20$$

$$\Rightarrow 8x = 20 \times 2 = 40$$

$$\Rightarrow x = \frac{40}{8} = 5$$

$$\therefore \text{Number of 50 paise coins} = 3x = 3 \times 5 = 15$$

$\Rightarrow$  Ans - (C)

**Question 62**

In a class of 60 students there are 33 girls. The average weight of these girls is 62 Kg and average weight of the full class is 66.5 kg. What is the average weight of the boys of the class?

- A 72 kg
- B 71 kg
- C 70 kg
- D 73 kg

**Answer: A**

**Explanation:**

Total number of students = 60 and number of girls = 33

$$\Rightarrow \text{Number of boys in class} = 60 - 33 = 27$$

Average weight of girls = 62 kg

=> Total weight of girls =  $62 \times 33 = 2046$  kg

Similarly, total weight of full class =  $66.5 \times 60 = 3990$  kg

=> Total weight of boys =  $3990 - 2046 = 1944$  kg

$\therefore$  Average weight of boys =  $\frac{1944}{27} = 72$  kg

=> Ans - (A)

### Question 63

When a number is increased by 32, it becomes 116% of itself. What is the number?

A 384

B 480

C 200

D 288

**Answer: C**

#### Explanation:

Let the number be  $100x$

According to ques, =>  $100x + 32 = \frac{116}{100} \times 100x$

=>  $100x + 32 = 116x$

=>  $116x - 100x = 32$

=>  $x = \frac{32}{16} = 2$

$\therefore$  Number =  $100 \times 2 = 200$

=> Ans - (C)

### Question 64

If the sum of the measures of all the interior angles of polygon is  $1800^\circ$ , find the number of sides of the polygon?

A 12

B 14

C 16

D 8

**Answer: A**

**Explanation:**

Let number of sides of the polygon =  $n$

Sum of all interior angles of a polygon having  $n$  sides =  $(n - 2) \times 180^\circ = 1800^\circ$

$$\Rightarrow (n - 2) = \frac{1800}{180} = 10$$

$$\Rightarrow n = 10 + 2 = 12$$

$\therefore$  The polygon having sum of interior angles  $1800^\circ$  has 12 sides

$\Rightarrow$  Ans - (A)

**Question 65**

**In an isosceles trapezium .....**

- A Opposite sides are parallel
- B Opposite angles are supplementary
- C Opposite angles are not equal
- D Diagonals bisect opposite angles

**Answer: B**

**Explanation:**

In an isosceles trapezium, the non parallel sides are equal in length, and since one pair of sides is parallel, thus opposite angles are supplementary.

$\Rightarrow$  Ans - (B)

**Question 66**

**P and Q can do a project in 60 and 30 days respectively. In how many days can they complete 90% of the project if they work together?**

- A 9 days
- B 27 days
- C 36 days
- D 18 days

**Answer: D**

**Explanation:**

Let total work to be done = 60 units

P can complete the work alone in 60 days

$$\Rightarrow P\text{'s efficiency} = \frac{60}{60} = 1 \text{ unit/day}$$

Q can complete the work alone in 30 days

$$\Rightarrow Q\text{'s efficiency} = \frac{60}{30} = 2 \text{ units/day}$$

(P + Q)'s 1 day's work = 1 + 2 = 3 units/day

$$\Rightarrow 90\% \text{ of the work} = \frac{90}{100} \times 60 = 54 \text{ units}$$

$\therefore$  Time taken by them together to complete 90% of the work =  $54 \div 3 = 18$  days

$\Rightarrow$  Ans - (D)

### Question 67

The total surface area of a hemisphere is 166.32 sq cm, find its curved surface area?

A 221.76 sq cm

B 36.96 sq cm

C 110.88 sq cm

D 55.44 sq cm

**Answer: C**

### Explanation:

Let radius of hemisphere =  $r$  cm

$$\text{Total surface area of hemisphere} = 3\pi r^2 = 166.32 \text{ -----(i)}$$

Multiplying equation (i) by  $\frac{2}{3}$

$$\Rightarrow \frac{2}{3} \times 3\pi r^2 = \frac{2}{3} \times 166.32$$

$$\Rightarrow \text{Curved Surface area of hemisphere} = 2\pi r^2 = 2 \times 55.44 = 110.88 \text{ cm}^2$$

$\Rightarrow$  Ans - (C)

### Question 68

When a discount of 20% is given on a monthly train pass, the profit is 44%. If the discount is 29%, then the profit is .....

A 73 percent

B 118.2 percent

C 17.4 percent

D 27.8 percent

**Answer: D**

**Explanation:**

Let marked price of monthly train pass = Rs. 100

When discount of 20% is given,  $\Rightarrow$  Selling price of ticket =  $\frac{(100-20)}{100} \times 100 = Rs.80$

Let cost price =  $Rs.x$

$$\Rightarrow \text{Profit \%} = \frac{80-x}{x} \times 100 = 44$$

$$\Rightarrow \frac{80-x}{x} = \frac{44}{100} = \frac{11}{25}$$

$$\Rightarrow 2000 - 25x = 11x$$

$$\Rightarrow 11x + 25x = 36x = 2000$$

$$\Rightarrow x = \frac{2000}{36} = Rs. 55.56$$

If discount is 29%,  $\Rightarrow$  Selling price =  $\frac{(100-29)}{100} \times 100 = Rs.71$

$$\Rightarrow \text{Profit \%} = \frac{71-55.56}{55.56} \times 100$$

$$= \frac{1544}{55.56} \approx 27.8\%$$

$\Rightarrow$  Ans - (D)

**Question 69**

If  $\tan 5\pi/3 = x$ , then the value of  $x$  is

A  $-\sqrt{3}$

B 1

C  $1/2$

D  $-\sqrt{3}/2$

**Answer: A**

**Explanation:**

Expression :  $\tan 5\pi/3 = x$

$$= \tan(2\pi - \frac{\pi}{3})$$

$$= -\tan(\frac{\pi}{3}) = -\sqrt{3}$$

$\Rightarrow$  Ans - (A)

**Question 70**

If  $\sin(A/2) = x$ , then the value of  $x$  is



A  $\sqrt{[(1 + \cos A)/2]}$

B  $\sqrt{[(1 - \cos A)/2]}$

C  $\sqrt{[(1 - \sin A)/2]}$

D  $\sqrt{[(1 + \sin A)/2]}$

**Answer: B**

**Explanation:**

Using double angle formula, we know that  $\cos(2\theta) = \cos^2\theta - \sin^2\theta$

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

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

Replacing  $\theta$  by  $\frac{A}{2}$ , we get :

$$\Rightarrow \cos A = 1 - 2\sin^2\left(\frac{A}{2}\right)$$

$$\Rightarrow 2\sin^2\left(\frac{A}{2}\right) = 1 - \cos A$$

$$\Rightarrow \sin^2\left(\frac{A}{2}\right) = \frac{(1 - \cos A)}{2}$$

$$\Rightarrow \sin\left(\frac{A}{2}\right) = \sqrt{\frac{(1 - \cos A)}{2}}$$

$\Rightarrow$  Ans - (B)

**Question 71**

If  $\cos A \cot A / (1 - \sin A) = x$ , then the value of x is

A  $1 - \operatorname{cosec} A$

B  $1 + \operatorname{cosec} A$

C  $1 + \sec A$

D  $1 - \sec A$

**Answer: B**

**Explanation:**

Expression :  $\cos A \cot A / (1 - \sin A) = x$

$$= \frac{\cos A}{\sin A} \times \frac{\cos A}{1 - \sin A}$$

Multiplying numerator and denominator by  $(1 + \sin A)$

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

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

$$= \frac{\cos^2 A(1+\sin A)}{\sin A \times \cos^2 A} = \frac{1+\sin A}{\sin A}$$

$$= \frac{\sin A}{\sin A} + \frac{1}{\sin A} = 1 + \operatorname{cosec} A$$

=> Ans - (B)

### Question 72

Read the data and answer the given questions

Division/STD	Boys	Girls
Div A/Standard 5	15	15
Div B/Standard 5	35	40
Div C/Standard 5	30	15
Div A/Standard 6	10	25
Div B/Standard 6	20	40
Div C/Standard 6	30	30

What is the ratio of boys to girls ?

- A 33 : 28
- B 33 : 34
- C 34 : 33
- D 28 : 33

Answer: D

#### Explanation:

Total number of boys = 15 + 35 + 30 + 10 + 20 + 30 = 140

Total number of girls = 15 + 40 + 15 + 25 + 40 + 30 = 165

=> Required ratio =  $\frac{140}{165}$

= 28 : 33

=> Ans - (D)

### Question 73

Read the data and answer the given questions

Marks	No of Students
40 and above	25
30 and above	49
20 and above	78
10 and above	99
0 and above	118

How many students have scored above 20 marks and more but less than 40 ?

- A 49
- B 78
- C 53
- D 127

**Answer:** C

#### Explanation:

Number of students who scored :

40 and above = 25

30 and above =  $49 - 25 = 24$

20 and above =  $78 - 49 = 29$

10 and above =  $99 - 78 = 21$

0 and above =  $118 - 99 = 18$

=> Students who have scored marks 20 or more but less than 40 =  $29 + 24 = 53$

=> Ans - (C)

### Question 74

Read the data given in the table and answer the questions

Year	GDP growth rate in %
2011	3
2012	7
2013	-7
2014	-6
2015	-8

If the GDP of the country was \$8 trillion at the end of 2011, what was it at the beginning of 2013?

- A \$8.56 trillion

B \$7.44 trillion

C \$8.24 trillion

D \$8 trillion

**Answer: A**

**Explanation:**

GDP at the beginning of 2013 is equal to the GDP at the end of 2012

=> GDP growth rate in 2012 = 7%

GDP at the end of 2011 = GDP at the beginning of 2012 = \$8 trillion

∴ GDP at the beginning of 2013 =  $\frac{100+7}{100} \times 8$  trillion

=  $\frac{214}{25}$  = \$8.56 trillion

=> Ans - (A)

**Question 75**

Read the data in the table and answer the questions

Subjects	Marks scored
English	70
Hindi	40
Maths	75
Science	35
Arts	70

Five points are to be deducted from this students average of marks scored because of poor attendance. What will be this student's net average marks scored?

A 53

B 48

C 43

D 58

**Answer: A**

**Explanation:**

Total marks scored by the student = 70 + 40 + 75 + 35 + 70 = 290

=> Average marks =  $\frac{290}{5}$  = 58

But due to poor attendance, 5 marks are deducted

∴ Net average = 58 - 5 = 53

=> Ans - (A)

# English

## Instructions

For the following questions answer them individually

### Question 76

Select the word with the correct spelling.

- A enobles
- B theistick
- C sagacity
- D bristeled

Answer: C

### Question 77

In the following question, sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

The insecticide is very powerful and can kill a wide .....of insects.

- A volume
- B spectrum
- C rainbow
- D plethora

Answer: B

### Question 78

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

A soldier or sailor, who rebels or refuses to obey the orders of a person in authority.

- A radical
- B anarchist

C mutineer

D revolutionary

**Answer: C**

#### Question 79

Improve the bracketed part of the sentence. Many such mishaps can be avoided if we (are) careful.

A be

B might be

C were

D no improvement

**Answer: D**

#### Question 80

Select the word with the correct spelling.

A ambolism

B agendoms

C neglige

D heckling

**Answer: D**

#### Question 81

In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

He swam to(A)/an island that(B)/was not far away.(C)/No error(D)

A A

B B

C C

D D

**Answer: D**

**Question 82**

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

**The partners will celebrate their triumph tomorrow.**

- A** The triumph would be celebrated by the partners a day after.
- B** The triumph will be celebrated by the partners tomorrow.
- C** The triumph would have been celebrated by the partners a day after.
- D** The triumph will have been celebrated by the partners tomorrow.

**Answer: D**

**Question 83**

**Select the synonym of "sinister"**

- A** malevolent
- B** magnanimous
- C** auspicious
- D** benevolent

**Answer: A**

**Question 84**

**Rearrange the parts of the sentence in correct order**

**Every government wants**

**P: all, they have so many votes**

**Q: to shower favours on**

**R: farmers; after**

- A** RQP
- B** RPQ
- C** PRQ
- D** QRP

Answer: D

**Question 85**

In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

The two children were(A)/identical except for(B)/the colour for their eyes.(C)/No error(D)

A A

B B

C C

D D

Answer: C

**Question 86**

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

An unintended consequence of an event or action, especially an unwelcome one.

A reverberation

B backlash

C flak

D repercussion

Answer: D

**Question 87**

In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one, which best express the same sentence in Indirect/Direct speech.

I said to my sister, "where were you this evening?"

A I asked my sister where she was that evening.

B I asked my sister where she had been that evening.

C I asked my sister where she was this evening.

D I asked my sister where she has been that evening.



**Answer: B**

**Question 88**

**Rearrange the parts of the sentence in correct order**

**Due to poor organic matter**

**P: in soil is below the required**

**Q: incorporation, organic carbon**

**R: level in most parts of India**

**A RPQ**

**B QRP**

**C QPR**

**D PRQ**

**Answer: C**

**Question 89**

**In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.**

**The best way to .....the children's poor test grades is to teach again the lesson and give a second test.**

**A rectify**

**B right**

**C revise**

**D reform**

**Answer: A**

**Question 90**

**Select the antonym of "frolic"**

**A drudgery**

**B romp**

**C antic**

D drollery

Answer: A

### Question 91

Select the antonym of "affidavit"

A affirmation

B slander

C oath

D testimony

Answer: B

### Question 92

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

to drive someone up the wall

A to make someone very irritated

B to break the barriers of misunderstanding between two persons

C to encourage someone

D to be the cause of someone's success

Answer: A

### Question 93

Improve the bracketed part of the sentence.

The candidate was so ignorant that the officer was (compelled for asking) him to leave.

A being compelled to be asking

B so compelled to ask

C compelled to ask

D no improvement

Answer: C

**Question 94**

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

**dry run**

- A a party without drinks
- B a rehearsal of a performance before the real one
- C doing a fruitless task
- D escaping form an unpleasant situation

**Answer: B**

**Question 95**

Select the synonym of "probable"

- A futile
- B plausible
- C absurd
- D preposterous

**Answer: B**

**Question 96**

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Several countries .....the world are now replacing the .....model of criminal justice partly .....wholly with different models of restorative justice, .....promising results in crime control. The process is more collaborative, consensual and inclusive, that is characteristic .....indigenous systems of justice.

1. Several countries .....the world

- A cross
- B across
- C beyond

D over

Answer: B

### Question 97

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Several countries .....the world are now replacing the .....model of criminal justice partly .....wholly with different models of restorative justice, .....promising results in crime control. The process is more collaborative, consensual and inclusive, that is characteristic .....indigenous systems of justice.

2. now replacing the .....

A opposing

B anti

C against

D adversarial

Answer: D

### Question 98

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Several countries .....the world are now replacing the .....model of criminal justice partly .....wholly with different models of restorative justice, .....promising results in crime control. The process is more collaborative, consensual and inclusive, that is characteristic .....indigenous systems of justice.

3. model of criminal justice partly .....

A or

B nor

C and

D but

Answer: A

**Question 99**

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Several countries .....the world are now replacing the .....model of criminal justice partly .....wholly with different models of restorative justice, .....promising results in crime control. The process is more collaborative, consensual and inclusive, that is characteristic .....indigenous systems of justice.

4. ....promising results in crime control.

- A to yield
- B yielding
- C for yielding
- D yield

**Answer: B**

**Question 100**

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Several countries .....the world are now replacing the .....model of criminal justice partly .....wholly with different models of restorative justice, .....promising results in crime control. The process is more collaborative, consensual and inclusive, that is characteristic .....indigenous systems of justice.

5. that is characteristic .....indigenous systems of justice.

- A for
- B as
- C of
- D like

**Answer: C**

# SSC CHSL 31 Jan 2017 Evening Shift

## Reasoning

### Instructions

For the following questions answer them individually

### Question 1

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

Sheep : Flock :: Grapes : ?

- A Bunch
- B Stock
- C Hectare
- D Land

**Answer:** A

### Explanation:

Expression = Sheep : Flock :: Grapes : ?

A group of sheeps is called flock, similarly a group of grapes is called bunch.

=> Ans - (A)

### Question 2

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

HEK : MJP :: NKQ : ?

- A SRX
- B SQY
- C SPV
- D SUW

**Answer:** C

### Explanation:

Expression = HEK : MJP :: NKQ : ?

The pattern followed is :

H	E	K
(+5)	(+5)	(+5)
M	J	P

Similarly, NKQ : SPV

N	K	Q
(+5)	(+5)	(+5)
S	P	V

=> Ans - (C)

### Question 3

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

OPQ : MQO :: VWX : ?

A TXW

B TXV

C UTS

D USR

**Answer: B**

### Explanation:

Expression = OPQ : MQO :: VWX : ?

The pattern followed is :

O	P	Q
(-2)	(+1)	(-2)
M	Q	O

Similarly, VWX : TXV

V	W	X
(-2)	(+1)	(-2)
T	X	V

=> Ans - (B)

### Question 4

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

8 : 9 :: 25 : ?

A 32

B 36

C 49

D 55

**Answer:** A

**Explanation:**

Expression =  $8 : 9 :: 25 : ?$

The pattern followed is =  $a^b : b^a$

Eg :-  $2^3 : 3^2 = 8 : 9$

Similarly,  $25 = 5^2$

$\Rightarrow 2^5 = 32$

$\Rightarrow$  Ans - (A)

**Question 5**

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

A Herd

B Stock

C Gang

D Cub

**Answer:** D

**Explanation:**

Herd, stock are gang represents a group of animals, goods and criminals respectively while a cub is the young one of a carnivorous mammal, hence cub is the odd one out.

$\Rightarrow$  Ans - (D)

**Question 6**

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

A AZ

B CX

C BY

D DV

**Answer:** D



**Explanation:**

When the letters are written in reverse order

```

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

```

A is opposite of Z, B of Y and C of X, but D is opposite of W and not V, hence DV is the odd one out.

=> Ans - (D)

**Question 7**

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

A 1728

B 4096

C 5832

D 2746

**Answer: D**

**Explanation:**

$1728 = (12)^3$ ,  $4096 = (16)^3$  and  $5832 = (18)^3$ , but 2746 is not a perfect cube number, hence 2746 is the odd one out.

=> Ans - (D)

**Question 8**

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

A 655

B 360

C 826

D 995

**Answer: C**

**Explanation:**

Apart from 826, other numbers are divisible by 5, hence 826 is the odd one out.

=> Ans - (C)

### Question 9

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

CD, GH, KL, ?

A PN

B NO

C NP

D OP

**Answer: D**

#### **Explanation:**

Expression : CD, GH, KL, ?

The pattern followed in each letter of the terms is :

1st letter : C (+4 letters) = G (+4 letters) = K (+4 letters) = O

2nd letter : D (+4 letters) = H (+4 letters) = L (+4 letters) = P

Thus, missing term = **OP**

=> Ans - (D)

### Question 10

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

EDCB, IHGF, MLKJ, ?

A QPON

B QLNO

C KNOL

D LMON

**Answer: A**

#### **Explanation:**

Expression : EDCB, IHGF, MLKJ, ?

The pattern followed in each letter of the terms is :

1st letter : E (+4 letters) = I (+4 letters) = M (+4 letters) = Q

2nd letter : D (+4 letters) = H (+4 letters) = L (+4 letters) = P

3rd letter : C (+4 letters) = G (+4 letters) = K (+4 letters) = O

4th letter : B (+4 letters) = F (+4 letters) = J (+4 letters) = N

Thus, missing term = **QPON**

=> Ans - (A)

### Question 11

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

13, 21, 48, 112, ?

A 237

B 280

C 255

D 290

**Answer:** A

### Explanation:

Cubes of consecutive natural numbers are added.

$$13 + 2^3 = 21$$

$$21 + 3^3 = 48$$

$$48 + 4^3 = 112$$

$$112 + 5^3 = 237$$

=> Ans - (A)

### Question 12

In the following question, two statements are given each followed by two conclusions I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements.

**Statement:**

(I) Pre - school culture is prevailing in all parts of the country now.

(II) Parents have less time to spend with their children so toddlers are admitted to school at a very early age.

**Conclusions:**

(I) Number of preschools is increasing in all parts of country.

(II) Children at a very age are exposed to the outer world resulting in changes in behavior patterns.

A Only conclusion II follows

B Conclusion I and II both follow

- C Neither I nor II follow
- D Only conclusion I follows

**Answer:** D

### Question 13

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

Infant, Childhood, Adolescence, ?

- A Bachelor
- B Adult
- C Widow
- D Old

**Answer:** B

#### **Explanation:**

The stages of a person's life is given.

= Infant -> Childhood -> Adolescence -> Adult

=> Ans - (B)

### Question 14

M, N, O, P and Q are standing in a row. P is at an end and third to the right of O. N is to the right of Q but left of P. Who is at the left end?

- A M
- B N
- C O
- D P

**Answer:** A

#### **Explanation:**

P is at an end and third to the right of O.

=> P is at the extreme right end, and O is second from left end.

N is to the right of Q but left of P.

=> Q sits in the middle, and N sits between Q and P.

Thus, Arrangement :

M	O	Q	N	P
---	---	---	---	---

∴ M is at the left end.

=> Ans - (A)

### Question 15

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

- i. Misleader
- ii. Monarchy
- iii. Mobil
- iv. Manage
- v. Movies

A i, iv, iii, ii, v

B iv, i, iii, v, ii

C i, iii, ii, v, iv

D iv, i, iii, ii, v

**Answer: D**

### Explanation:

As per the order of dictionary :

= Manage -> Misleader -> Mobil -> Monarchy -> Movies

≡ iv, i, iii, ii, v

=> Ans - (D)

### Question 16

In a certain code language, "FIRMLY" is written as "TKHWJK". How is "PUBLIC" written in that code language?

A DOXRAG

B DWRAGJ

C DWRAGK

D DWRAHJ

**Answer: B**

### Explanation:

"FIRMLY" is written as "TKHWJK"

The pattern followed is that the word is divided into parts : (FIR) (MLY) and each part is written in reverse order to find the code : (RIF) (YLM)

R	I	F	Y	L	M
(+2)	(+2)	(+2)	(-2)	(-2)	(-2)
T	K	H	W	J	K

Similarly, PUBLIC is written as : (BUP) (CIL)

B	U	P	C	I	L
(+2)	(+2)	(+2)	(-2)	(-2)	(-2)
D	W	R	A	G	J

=> Ans - (B)

### Question 17

Find the missing Number

19	29	45
4	5	3
5	6	?
3	4	6

A 5

B 7

C 4

D 3

Answer: B

#### Explanation:

In each column the pattern followed is that the sum of second term and the product of last two terms is equal to the first term.

$$\text{Eg :- } 4 + (5 \times 3) = 19$$

$$\text{and } 5 + (6 \times 4) = 29$$

$$\text{Similarly, } 3 + (x \times 6) = 45$$

$$\Rightarrow 6x = 45 - 3 = 42$$

$$\Rightarrow x = \frac{42}{6} = 7$$

=> Ans - (B)

### Question 18

If  $52*14= 33$ ,  $44*8= 26$  and  $86*14= 50$ , then what will  $43*15$  be?

A 43

B 58

C 26

D 29

**Answer: D**

### Explanation:

The pattern followed is that for the numbers,  $a * b = c$ , we have  $c = \frac{(a+b)}{2}$

$$\text{Eg :- } 52*14= 33 \equiv \frac{(52+14)}{2} = \frac{66}{2} = 33$$

$$\text{and } 86*14= 50 \equiv \frac{(86+14)}{2} = \frac{100}{2} = 50$$

$$\text{Similarly, } 43*15 \equiv \frac{(43+15)}{2} = \frac{58}{2} = 29$$

=> Ans - (D)

### Question 19

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

ab\_d\_bb\_a\_bd

A badd

B babd

C badb

D abdd

**Answer: C**

### Explanation:

The pattern followed is that in groups of 4, the term 'abbd' is repeated.

= abbd abbd abbd

=> Ans - (C)

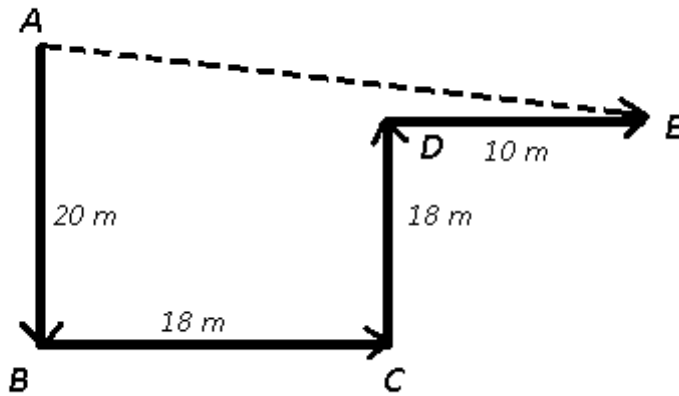
### Question 20

Starting from a point, Suraj walked 20 m south, then he turned left and walked 18 m, he again turned left and walked 18 m, then he turned right and walked 10 m. How far and in which direction is he now from the starting point?

- A  $\sqrt{784}$  m in north
- B  $\sqrt{788}$  m in south-east
- C  $\sqrt{786}$  m in south-west
- D  $\sqrt{790}$  m in north-west

Answer: B

Explanation:



Let Suraj started from point A and walked 20 m south to reach B, then turned left and walked for 18 m to reach point C, again turned left for 18 m and finally stopped at point E.

$$\text{Thus, } AE = \sqrt{(18 + 10)^2 + (20 - 18)^2}$$

$$\Rightarrow AE = \sqrt{784 + 4} = \sqrt{788} \text{ m}$$

$\therefore$  Suraj is  $\sqrt{788}$  m in south-east direction from his starting point.

$\Rightarrow$  Ans - (B)



### Question 21

A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'U' can be represented by 10, 33 etc. and 'N' can be represented by 75,89 etc. Similarly, you have to identify the set for the word 'BOARD'

#### MATRIX 1:

	0	1	2	3	4
0	R	B	U	P	A
1	U	A	R	B	P
2	P	R	U	A	B
3	A	P	B	U	R
4	B	U	A	R	P

#### MATRIX 2:

	5	6	7	8	9
5	D	N	S	H	O
6	S	D	O	N	H
7	N	O	H	D	S
8	H	S	D	O	N
9	O	H	N	S	D

A 32, 76, 04, 21, 55

B 01, 66, 11, 43, 99

C 40, 59, 41, 00, 66

D 30, 67, 42, 34, 78

**Answer: A**

#### Explanation:

(A) : 32, 76, 04, 21, 55 = **BOARD**

(B) : 01, 66, 11, 43, 99 = BDARD

(C) : 40, 59, 41, 00, 66 = BOURD

(D) : 30, 67, 42, 34, 78 = AOARD

=> Ans - (A)

### Question 22

Rahul said, "The boy in that picture is the brother of the daughter of my paternal grandfather's only son". How is the boy in the picture related to Rahul?

- A Cousin
- B Father
- C Nephew
- D Brother

**Answer: D**

**Explanation:**

Rahul's paternal grandfather's only son is Rahul's father.

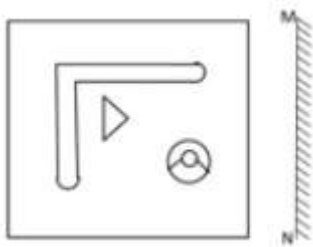
Now, the boy is the brother of daughter of Rahul's father, => Rahul and the boy are siblings.

Thus, That boy is Rahul's brother.

=> Ans - (D)

**Question 23**

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

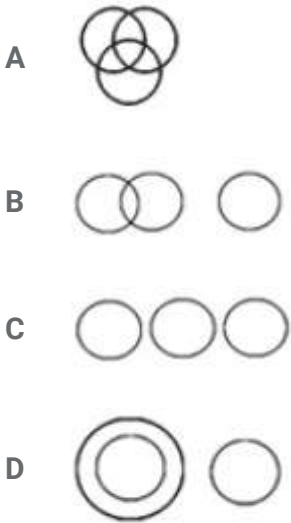




Answer: A

Question 24

Identify the diagram that best represents the relationship among the given classes.  
Student, Badminton Player, Girl



Answer: A

Explanation:

A student can be either a badminton player or a girl, similarly a girl can be a student or a badminton player and vice-versa.

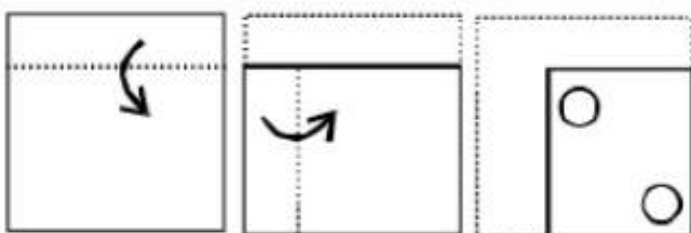
Thus, the venn diagram that best describes above relationship is :

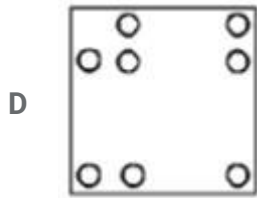
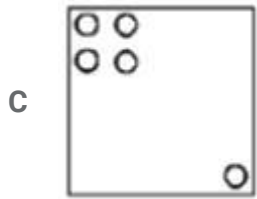
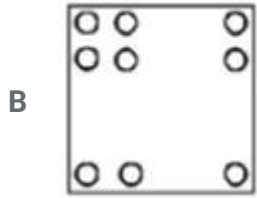
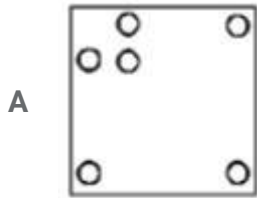


=> Ans - (A)

Question 25

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





Answer: C

## General Awareness

### Instructions

For the following questions answer them individually

### Question 26

\_\_\_\_\_ in Chandrapur district is the oldest and the largest National Park in Maharashtra.

A Tadoba Andhari Tiger Project

B Bandipur National Park

C Bandhavgarh National Park

D Dandeli Wildlife Sanctuary

Answer: A

**Question 27**

**Name the first Indian to win an Oscar**

- A AR Rahman
- B Bhanu Athaiya
- C Satyajit Ray
- D Gulzar

**Answer: B**

**Question 28**

**The outer white part of the eye that protects the inner structures is \_\_\_\_\_.**

- A Iris
- B Sclera
- C Retina
- D Cornea

**Answer: B**

**Question 29**

**Proteins are made up of \_\_\_\_\_.**

- A Amino acids
- B Fatty acids
- C Glucose
- D Nucleotides

**Answer: A**

**Question 30**

The modern periodic table consists of 18 groups and 7 periods. What is the atomic number of the element placed in the 4th group and the 4th period?

- A 24
- B 20
- C 22
- D 12

**Answer: C**

**Question 31**

A Gigabyte equals all of the following, except \_\_\_\_\_.

- A 1000 megabytes
- B trillion bytes
- C Million kilobytes
- D 1 thousandth of a terabyte

**Answer: B**

**Question 32**

If price of an article decreases from Rs 800 to Rs 750, when quantity demanded increases from Q1 units to 2250 units, and if point elasticity of demand is -2 find Q1?

- A 2400 units
- B 2000 units
- C 1800 units
- D 1500 units

**Answer: B**

**Question 33**

Which of the following is false about minimum wages?

- A A minimum wage law benefits all unskilled workers.
- B A minimum wage harms firms by forcing them to pay higher wages.
- C A minimum wage harms customers because the law usually leads to higher product prices.
- D A minimum wage increases unemployment.

**Answer: A**

#### **Question 34**

**Which of the following is a greenhouse gas or a gas which can deplete the ozone layer?**

- A Br<sub>2</sub>
- B OF<sub>2</sub>
- C CHCl<sub>2</sub>F
- D CO

**Answer: C**

#### **Question 35**

**Which was Al Gore's Oscar winning Documentary?**

- A Heartbroken Kid
- B An Inconvenient Truth
- C Senna
- D To be or not to be

**Answer: B**

#### **Question 36**

**Which of the following is the hottest planet?**

- A Earth
- B Venus
- C Jupiter

**D** Neptune

**Answer: B**

**Question 37**

**Which of these was not from the Mughal Dynasty?**

**A** Humayun

**B** Akbar

**C** Sher Shah Suri

**D** Kamran Mirza

**Answer: C**

**Question 38**

**Who set up the Sabarmati Ashram in Ahmedabad?**

**A** Subhash Chandra Bose

**B** Mohandas Gandhi

**C** Jawaharlal Nehru

**D** Sarojini Naidu

**Answer: B**

**Question 39**

**Who discovered Catalysis?**

**A** Messcureni

**B** Berzelius

**C** Hooke

**D** Garner

**Answer: B**



#### Question 40

Find the power of a convex lens if the image formed is at a distance of 20 cm from the lens when the object is placed on the other side of the lens at 60 cm from the optical centre?

- A 3.33 diopters
- B 6.67 diopters
- C -6.67 diopters
- D -3.33 diopters

**Answer: B**

#### Question 41

What is the unit of the physical quantity "Heat capacity"?

- A watt per kelvin
- B joule per kelvin
- C newton per kelvin
- D pascal per kelvin

**Answer: B**

#### Question 42

The power to grant pardons or suspend or remit the sentence of any convicted persons is vested in the \_\_\_\_\_.

- A President
- B Vice President
- C Supreme Court Judge
- D Defence Minister

**Answer: A**

#### Question 43

Uniform Civil Code is mentioned in which article of Indian Constitution?

A 44

B 4

C 14

D 34

**Answer: A**

**Question 44**

**Abhinav Bindra won Gold Medal for which Sport in Olympics?**

A Shooting

B Wrestling

C Hockey

D Athletics

**Answer: A**

**Question 45**

**Who is the author of "The Namesake"?**

A Salman Rushdie

B Jhumpa Lahiri

C Amish Tripathi

D Chetan Bhagat

**Answer: B**

**Question 46**

**Moringa Oleifera is the scientific name of \_\_\_\_\_.**

A Banyan

B Gulmohar

C Amla

**D** Drumstick

**Answer: D**

**Question 47**

**Cheraw is a folk dance of \_\_\_\_\_.**

**A** Mizoram

**B** Puducherry

**C** Gujarat

**D** Rajasthan

**Answer: A**

**Question 48**

**The brand name Teflon represents which polymer?**

**A** Polystyrene

**B** Polypropylene

**C** Polytetrafluoroethylene

**D** Polyethylene terephthalate

**Answer: C**

**Question 49**

**Gandhinagar is the Capital City of \_\_\_\_\_.**

**A** Himachal Pradesh

**B** Goa

**C** Gujarat

**D** Madhya Pradesh

**Answer: C**

### Question 50

The Iron Pillar is located in?

- A Qutb Minar Complex
- B Humayun's Tomb
- C Red Fort Complex
- D Mahabodhi Temple Complex

**Answer:** A

## Mathematics

### Instructions

For the following questions answer them individually

### Question 51

The value of  $x$  for which the expressions  $11x + 7$  and  $17x - 1$  become equal is \_\_\_\_\_.

- A  $-4/3$
- B  $3/4$
- C  $4/3$
- D  $-3/4$

**Answer:** C

### Explanation:

Expressions :  $11x + 7$  and  $17x - 1$

$$\Rightarrow 11x + 7 = 17x - 1$$

$$\Rightarrow 17x - 11x = 7 + 1$$

$$\Rightarrow 6x = 8$$

$$\Rightarrow x = \frac{8}{6} = \frac{4}{3}$$

$\Rightarrow$  Ans - (C)

### Question 52

A wholesaler sells a watch to a retailer at a gain of 36% and the retailer sells it to a customer at a loss of 25%. If the customer pays Rs 2499, what had it cost the wholesaler?

- A Rs 2548
- B Rs 2450
- C Rs 3123
- D Rs 2352

**Answer:** B

#### **Explanation:**

For the wholesaler,

Let the cost price = Rs.  $100x$

With profit of 36%, Selling price =  $\frac{136}{100} \times 100x = Rs.136x$

For the retailer,

Cost price = Rs.  $136x$

With a loss of 25%, Selling price =  $\frac{75}{100} \times 136x = Rs.102x$

For the customer,

Cost price =  $102x = 2499$

$$\Rightarrow x = \frac{2499}{102} = \frac{49}{2} = 24.5$$

$\therefore$  Cost price for retailer =  $100 \times 24.5 = Rs.2450$

### Question 53

A student multiplied a number by 11/13 instead of 13/11. What is the percentage error in the calculation?

- A 39.67 percent
- B 28.4 percent
- C 14.2 percent
- D 19.83 percent

**Answer:** B

#### **Explanation:**

Let the number be 143

When the student multiplied it by 11/13,  $\Rightarrow$  original result =  $\frac{11}{13} \times 143 = 121$

When the student multiply it by 13/11,  $\Rightarrow$  New result =  $\frac{13}{11} \times 143 = 169$

$$\Rightarrow \text{Percentage error in calculation} = \frac{(169-121)}{169} \times 100$$

$$= \frac{4800}{169} = 28.4\%$$

$\Rightarrow$  Ans - (B)

#### Question 54

5\*[-0.6 (2.8 + 1.2)] of 0.3 is equal to

A -1.44

B -1.08

C -1.2

D -3.6

**Answer: D**

#### Explanation:

Expression : 5\*[-0.6 (2.8 + 1.2)] of 0.3

$$= 5[(-0.6) \times (4)] \times 0.3$$

$$= 5 \times (-2.4) \times 0.3$$

$$= (-12) \times 0.3 = -3.6$$

$\Rightarrow$  Ans - (D)

#### Question 55

If  $(x + y):(x - y) = 5:2$ , find value of  $(4x + 5y) / (x - 4y)$

A  $43/5$

B  $-5/43$

C  $-43/5$

D  $5/43$

**Answer: C**

#### Explanation:

$$\text{Given : } \frac{x+y}{x-y} = \frac{5}{2}$$

$$\Rightarrow 2x + 2y = 5x - 5y$$

$$\Rightarrow 2y + 5y = 5x - 2x \Rightarrow 7y = 3x$$

$$\Rightarrow y = \frac{3x}{7}$$

$$\text{To find: } \frac{4x+5y}{x-4y}$$

$$= [4x + 5(\frac{3x}{7})] \div [x - 4(\frac{3x}{7})]$$

$$= (4x + \frac{15x}{7}) \div (x - \frac{12x}{7})$$

$$= (\frac{43x}{7}) \div (\frac{-5x}{7})$$

$$= \frac{43x}{7} \times \frac{-7}{5x} = \frac{-43}{5}$$

$\Rightarrow$  Ans - (C)

### Question 56

P and Q can do a project in 25 and 50 days respectively. In how many days can they complete 18% of the project if they work together?

A 6 days

B 3 days

C 12 days

D 9 days

**Answer: B**

### Explanation:

Let total work to be done = 50 units

P can complete the work alone in 25 days

$$\Rightarrow \text{P's efficiency} = \frac{50}{25} = 2 \text{ units/day}$$

Q can complete the work alone in 50 days

$$\Rightarrow \text{Q's efficiency} = \frac{50}{50} = 1 \text{ unit/day}$$

(P + Q)'s 1 day's work = 2 + 1 = 3 units/day

$$\Rightarrow 18\% \text{ of the work} = \frac{18}{100} \times 50 = 9 \text{ units}$$

$$\therefore \text{Time taken by them together to complete 18\% of the work} = \frac{9}{3} = 3 \text{ days}$$

$\Rightarrow$  Ans - (B)

### Question 57

In a class of 56 students there are 21 girls. The average weight of these girls is 56 Kg and average weight of the full class is 62.875 kgs. What is the average weight of the boys of the class?

A 69.75 kg

B 72.5 kg

C 67 kg

D 65 kg

**Answer:** C

**Explanation:**

Total number of students = 56 and number of girls = 21

=> Number of boys in class =  $56 - 21 = 35$

Average weight of girls = 56 kg

=> Total weight of girls =  $56 \times 21 = 1176$  kg

Similarly, total weight of full class =  $62.875 \times 56 = 3521$  kg

=> Total weight of boys =  $3521 - 1176 = 2345$  kg

$\therefore$  Average weight of boys =  $\frac{2345}{35} = 67$  kg

=> Ans - (C)

**Question 58**

**A missile travels at 1296 km/h. How many metres does it travel in one second?**

A 320 metres

B 360 metres

C 341 metres

D 334 metres

**Answer:** B

**Explanation:**

Speed of missile = 1296 km/hr

=> Speed in m/s =  $1296 \times \frac{5}{18}$

=  $5 \times 72 = 360$  m/s

$\therefore$  In 1 second, it travels 360 metres

=> Ans - (B)

**Question 59**

**A bag has Rs 11 in the form of 1-rupee, 50-paise and 10-paise coins in the ratio of 4:2:5. Find the number of 50-paise coins.**

A 10



B 8

C 4

D 2

**Answer: C**

**Explanation:**

Let the number of 1-rupee, 50-paise and 10-paise coins be  $4x$ ,  $2x$  and  $5x$  respectively.

Total amount in the bag = Rs. 11

$$\Rightarrow (1 \times 4x) + \left(\frac{50}{100} \times 2x\right) + \left(\frac{10}{100} \times 5x\right) = 11$$

$$\Rightarrow 4x + x + \frac{x}{2} = 11$$

$$\Rightarrow \frac{8x+2x+x}{2} = 11$$

$$\Rightarrow 11x = 11 \times 2 = 22$$

$$\Rightarrow x = \frac{22}{11} = 2$$

$\therefore$  Number of 50 paise coins =  $2x = 2 \times 2 = 4$

$\Rightarrow$  Ans - (C)

**Question 60**

**Marked price of an item is Rs 800. On purchase of 1 item discount is 15%, on purchase of 4 items discount is 38%. Rajshri buys 5 items, what is the effective discount?**

A 33.4 percent

B 16 percent

C 9 percent

D 17.5 percent

**Answer: A**

**Explanation:**

Marked price of item = Rs. 800

$$\text{Amount saved on buying 1 item} = \frac{15}{100} \times 800 = \text{Rs.}120$$

$$\text{Marked price of 4 items} = 4 \times 800 = \text{Rs.} 3200$$

$$\text{Amount saved on buying 4 items} = \frac{38}{100} \times 3200 = \text{Rs.}1216$$

$$\text{Thus, on buying 5 items, total amount saved} = 120 + 1216 = \text{Rs.} 1336$$

$$\text{Total marked price of 5 items} = 5 \times 800 = \text{Rs.} 4000$$

$$\therefore \text{Effective discount} = \frac{1336}{4000} \times 100$$

$$= \frac{334}{10} = 33.4\%$$

=> Ans - (A)

### Question 61

If  $2 + 2x < 5 - x/2$  and  $5x + 3 > 5 - 5x$ ; then  $x$  can take which of the following values?

A 2

B 0

C -2

D 1

Answer: D

#### Explanation:

Expression 1 :  $2 + 2x < 5 - x/2$

$$\Rightarrow 2x + \frac{x}{2} < 5 - 2$$

$$\Rightarrow \frac{5x}{2} < 3$$

$$\Rightarrow x < \frac{6}{5} \text{ -----(i)}$$

Expression 2 :  $5x + 3 > 5 - 5x$

$$\Rightarrow 5x + 5x > 5 - 3$$

$$\Rightarrow 10x > 2$$

$$\Rightarrow x > \frac{1}{5} \text{ -----(ii)}$$

Combining inequalities (i) and (ii), we get :  $\frac{1}{5} < x < \frac{6}{5}$

Thus, the only value that  $x$  can take = 1

=> Ans - (D)

### Question 62

The sum of a non-zero number and thrice its reciprocal is  $13/2$ . Find the number.

A 6

B 7

C 8

D 9

Answer: A

**Explanation:**

Let the number be  $x$

$$\text{According to ques, } \Rightarrow x + \frac{3}{x} = \frac{13}{2}$$

$$\Rightarrow \frac{x^2+3}{x} = \frac{13}{2}$$

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

$$\Rightarrow 2x^2 - 13x + 6 = 0$$

$$\Rightarrow 2x^2 - x - 12x + 6 = 0$$

$$\Rightarrow x(2x - 1) - 6(2x - 1) = 0$$

$$\Rightarrow (2x - 1)(x - 6) = 0$$

$$\Rightarrow x = 6, \frac{1}{2}$$

$$\Rightarrow \text{Ans - (A)}$$

**Question 63**

$\triangle DEF$  is similar to  $\triangle GHI$ . Length of DE is 16 cm and length of the corresponding side GH is 25 cm. What is the ratio of areas of  $\triangle DEF : \triangle GHI$ ?

A 4:5

B 16:25

C 256:625

D 25:16

**Answer: C**

**Explanation:**

It is given that  $\triangle DEF \sim \triangle GHI$

Also, length of DE = 16 cm and length of the corresponding side GH = 25 cm

$$\Rightarrow \text{Ratio of Area of } \triangle DEF : \text{Area of } \triangle GHI = \text{Ratio of square of corresponding sides} = (DE)^2 : (GH)^2$$

$$= \frac{(16)^2}{(25)^2} = \frac{256}{625}$$

$\therefore$  The required ratio is 256 : 625

$$\Rightarrow \text{Ans - (C)}$$

**Question 64**

The line passing through (2,-1) and (y,-2) is parallel to the line passing through (-3,4) and (0,3) Find y?

A -2

B 2

C 5

D -5

**Answer: C**

**Explanation:**

Slope of line passing through  $(x_1, y_1)$  and  $(x_2, y_2)$  is  $\frac{y_2 - y_1}{x_2 - x_1}$

=> Slope of line passing through  $(-3, 4)$  and  $(0, 3) = \frac{3-4}{0+3} = \frac{-1}{3}$

Slope of line passing through  $(2, -1)$  and  $(y, -2) = \frac{-2+1}{y-2} = \frac{-1}{(y-2)}$

Also, slopes of parallel lines are equal.

=>  $\frac{-1}{y-2} = \frac{-1}{3}$

=>  $y - 2 = 3$

=>  $y = 3 + 2 = 5$

=> Ans - (C)

**Question 65**

**Find the sum of the measures all the interior angles of a polygon having 10 sides.**

A 2520°

B 2880°

C 1440°

D 3240°

**Answer: C**

**Explanation:**

Sum of all interior angles of a polygon having  $n$  sides =  $(n - 2) \times 180^\circ$

Number of sides of polygon,  $n = 10$

=> Sum of interior angles =  $(10 - 2) \times 180^\circ$

=  $8 \times 180 = 1440^\circ$

=> Ans - (C)

**Question 66**

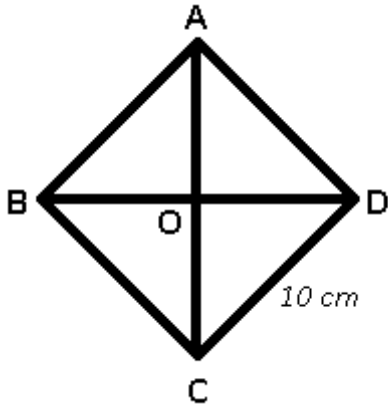
**One diagonal of a rhombus is half the other. If the length of the side of the rhombus is 10 cm, what is the area of the rhombus?**

A 40 sq cm

- B 20 sq cm
- C 100 sq cm
- D 80 sq cm

Answer: D

Explanation:



AC and BD are diagonals of the rhombus ABCD with side = 10 cm

One diagonal of a rhombus is half the other, let AC =  $4x$  cm

$\Rightarrow$  BD =  $2x$  cm

Diagonal of a rhombus perpendicularly bisect each other.

$\Rightarrow$  OD =  $x$  cm and OC =  $2x$  cm

In  $\triangle OCD$ ,  $\Rightarrow (OC)^2 + (OD)^2 = (CD)^2$

$\Rightarrow (2x)^2 + (x)^2 = (10)^2$

$\Rightarrow 4x^2 + x^2 = 100$

$\Rightarrow x^2 = \frac{100}{5} = 20$

$\therefore$  Area of rhombus =  $\frac{1}{2} \times$  Product of diagonals

=  $\frac{1}{2} \times 4x \times 2x$

=  $4x^2 = 4 \times 20 = 80cm^2$

$\Rightarrow$  Ans - (D)

### Question 67

The curved surface area of a hemisphere is 110.88 sq cm, find its radius?

- A 8.4 cm
- B 1.4 cm

C 4.2 cm

D 2.1 cm

**Answer: C**

**Explanation:**

Let radius of hemisphere =  $r$  cm

Curved surface area of hemisphere =  $2\pi r^2 = 110.88$

$$\Rightarrow r^2 = \frac{110.88}{2\pi}$$

$$\Rightarrow r^2 = 55.44 \times \frac{7}{22}$$

$$\Rightarrow r^2 = 2.52 \times 7 = 17.64$$

$$\Rightarrow r = \sqrt{17.64} = 4.2 \text{ cm}$$

$\Rightarrow$  Ans - (C)

**Question 68**

If  $\tan -7\pi/4 = x$ , then the value of  $x$  is

A  $-1/2$

B  $-\sqrt{3}/2$

C  $\sqrt{3}/2$

D 1

**Answer: D**

**Explanation:**

Expression :  $\tan -7\pi/4$

$$\because \tan(-x) = -\tan x$$

$$= -\tan\left(\frac{7\pi}{4}\right)$$

$$= -\left[\tan\left(2\pi - \frac{\pi}{4}\right)\right]$$

$$= -\left[-\tan\left(\frac{\pi}{4}\right)\right] = 1$$

$\Rightarrow$  Ans - (D)

**Question 69**

If  $(\cot A \cot B + 1) / (\cot B - \cot A) = x$ , then the value of  $x$  is

A  $\cot(A + B)$

B  $\cot(A - B)$

C  $\tan(A - B)$

D  $\tan(A + B)$

**Answer: B**

**Explanation:**

Expression :  $(\cot A \cot B + 1) / (\cot B - \cot A) = x$

$$\begin{aligned} &= \left( \frac{\cos A \cos B}{\sin A \sin B} + 1 \right) \div \left( \frac{\cos B}{\sin B} - \frac{\cos A}{\sin A} \right) \\ &= \left( \frac{\cos A \cos B + \sin A \sin B}{\sin A \sin B} \right) \div \left( \frac{\sin A \cos B - \cos A \sin B}{\sin A \sin B} \right) \\ &= \left[ \frac{\cos(A-B)}{\sin A \sin B} \right] \div \left[ \frac{\sin(A-B)}{\sin A \sin B} \right] \\ &= \left[ \frac{\cos(A-B)}{\sin A \sin B} \right] \times \left[ \frac{\sin A \sin B}{\sin(A-B)} \right] \\ &= \frac{\cos(A-B)}{\sin(A-B)} = \cot(A-B) \end{aligned}$$

=> Ans - (B)

**Question 70**

On a certain Principal if the Simple interest for two years is Rs 2400 and Compound interest for the two years is Rs 2544, what is the rate of Interest?

A 12 percent

B 6 percent

C 24 percent

D 18 percent

**Answer: A**

**Explanation:**

Let the principal amount =  $Rs.100x$  and rate of interest =  $r\%$

Time period = 2 years

$$\text{Simple Interest} = \frac{P \times R \times T}{100} = 2400$$

$$\Rightarrow \frac{100x \times r \times 2}{100} = 2400$$

$$\Rightarrow 2rx = 2400$$

$$\Rightarrow x = \frac{2400}{2r} = \frac{1200}{r}$$

$$\text{Compound Interest} = P \left[ \left( 1 + \frac{R}{100} \right)^T - 1 \right] = 2544$$

$$\Rightarrow 100x \left[ \left( 1 + \frac{r}{100} \right)^2 - 1 \right] = 2544$$

$$\Rightarrow 100x \left[ \left( 1 + \frac{r^2}{100^2} + 2 \frac{r}{100} \right) - 1 \right] = 2544$$

$$\Rightarrow \left( 100 \times \frac{1200}{r} \right) \left[ \frac{r^2}{10000} + \frac{2r}{100} \right] = 2544$$

$$\Rightarrow 12r + 2400 = 2544$$

$$\Rightarrow 12r = 2544 - 2400 = 144$$

$$\Rightarrow r = \frac{144}{12} = 12\%$$

### Question 71

If  $2\sec^2 A = x$ , then the value of  $x$  is

A  $1/(1 + \cos A) + 1/(1 - \cos A)$

B  $1/(1 + \tan A) + 1/(1 - \sin A)$

C  $1/(1 + \sin A) + 1/(1 - \sin A)$

D  $1/(1 + \cot A) + 1/(1 - \cos A)$

**Answer: C**

### Explanation:

Expression :  $2\sec^2 A = x$

$$= \frac{2}{\cos^2 A} = \frac{1+1}{1-\sin^2 A}$$

Adding and Subtracting ( $\sin A$ ) in the numerator

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

$$= \frac{(1+\sin A)+(1-\sin A)}{(1-\sin A)(1+\sin A)}$$

$$= \frac{1+\sin A}{(1-\sin A)(1+\sin A)} + \frac{1-\sin A}{(1-\sin A)(1+\sin A)}$$

$$= \frac{1}{1-\sin A} + \frac{1}{1+\sin A}$$

$\Rightarrow$  Ans - (C)

### Question 72

Read the data given in table and answer the questions

Division/STD	Boys	Girls
Div A/Standard 5	30	10
Div B/Standard 5	25	25
Div C/Standard 5	10	20
Div A/Standard 6	40	20
Div B/Standard 6	40	15
Div C/Standard 6	30	10

What is the ratio of boys to girls?

A 18 : 35

B 37 : 20



C 20 : 37

D 7 : 4

**Answer:** D

**Explanation:**

Total number of boys =  $30 + 25 + 10 + 40 + 40 + 30 = 175$

Total number of girls =  $10 + 25 + 20 + 20 + 15 + 10 = 100$

=> Required ratio =  $\frac{175}{100}$

= 7 : 4

=> Ans - (D)

## SSC Stenographer Previous Papers (Latest Pattern)

**Question 73**

Read the data given in table and answer the questions

Marks	No of Students
40 and above	21
30 and above	45
20 and above	70
10 and above	83
0 and above	95

How many students have scored 20 or more but less than 40 ?

A 49

B 70

C 45

D 115

**Answer:** A

**Explanation:**

Number of students who scored :

40 and above = 21

30 and above =  $45 - 21 = 24$

20 and above =  $70 - 45 = 25$

10 and above =  $83 - 70 = 13$

0 and above =  $95 - 83 = 12$

=> Students who have scored marks 20 or more but less than 40 = 25 + 24 = 49

=> Ans - (A)

#### Question 74

Read the data and answer the questions|

GDP	Growth Rate per Year %
2011	3
2012	3
2013	-3
2014	7
2015	4

If the GDP of the country was \$4 trillion at the end of 2012, what was it at the beginning of 2014?

A \$3.88 trillion

B \$4.28 trillion

C \$4.12 trillion

D \$4.16 trillion

**Answer:** A

#### Explanation:

GDP at the beginning of 2014 is equal to the GDP at the end of 2013

=> GDP growth rate in 2013 = -3%

GDP at the end of 2012 = GDP at the beginning of 2013 = \$4 trillion

∴ GDP at the beginning of 2014 =  $\frac{100-3}{100} \times 4$  trillion

=  $\frac{97}{25}$  = \$3.88 trillion

=> Ans - (A)

#### Question 75

Refer the below data table and answer the following Question.

Subjects	Marks Scored
English	70
Hindi	75
Maths	30
Science	75
Arts	60

Five points are to be deducted from this students average of marks scored because of poor attendance. What will be this student's net average marks scored?

A 47

B 52

C 57

D 62

**Answer: C**

**Explanation:**

Total marks scored by the student =  $70 + 75 + 30 + 75 + 60 = 310$

=> Average marks =  $\frac{310}{5} = 62$

But due to poor attendance, 5 marks are deducted

∴ Net average =  $62 - 5 = 57$

=> Ans - (C)

## English

**Instructions**

For the following questions answer them individually

**Question 76**

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

**to crack someone up**

A to cheat on someone

B to make someone cry

C to make someone laugh

D to beat someone

**Answer: C**

**Question 77**

**Select the word with the correct spelling.**

A scrooges

B slippery

C solitude

D chilers

**Answer: A**

#### Question 78

**Improve the bracketed part of the sentence**The Kadampuzha Devi is (worth seeing temple) in Kerala.

A one of the worth seeing temples

B a temple worth seeing

C a temple of worth being seen

D no improvement

**Answer: B**

#### Question 79

**Select the antonym of "humble"**

A diffident

B tentative

C obsequious

D pretentious

**Answer: D**

#### Question 80

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

**to cross your fingers**

A to get extremely confused over trivial decisions

- B to secretly wish bad for someone
- C to refuse someone's request politely
- D to hope that things will happen in the way that one wants them to happen

Answer: D

#### Question 81

In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

The traveller took rest(A)/below the shade(B)/of a large Peepal tree.(C)/No error(D)

- A A
- B B
- C C
- D D

Answer: B

#### Question 82

Select the synonym of "elegantly"

- A ineptly
- B abominably
- C shoddily
- D gracefully

Answer: D

#### Question 83

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

Who ate the last pastry?

- A The last pastry was eaten by whom?
- B The last pastry was eaten by who?

- C The last pastry had been eaten by who?
- D The last pastry has been eaten by whom?

**Answer:** A

#### **Question 84**

**In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.**

**We captured the gymnast's \_\_\_\_\_ acrobatic feats on camera.**

- A superlative
- B tremendous
- C wondrous
- D valued

**Answer:** C

#### **Question 85**

**Select the antonym of "to grumble"**

- A to snivel
- B to kvetch
- C to compliment
- D to squawk

**Answer:** C

#### **Question 86**

**Select the word with the correct spelling.**

- A varieties
- B varicose
- C wrangler
- D sereniti

**Answer: B**

**Question 87**

In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Janice was \_\_\_\_\_ when her husband abruptly announced that their marriage was over.

- A ravaged
- B spoiled
- C wasted
- D devastated

**Answer: D**

**Question 88**

In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

She said a number of lies(A)/and left without(B)/completing her work.(C)/No error(D)

- A A
- B B
- C C
- D D

**Answer: A**

**Question 89**

Select the synonym of "perplexity"

- A empathy
- B amicability
- C puzzlement
- D concordantly

**Answer: C**

**Question 90**

Rearrange the parts of the sentence in correct order.

This is what comes

P-who sits below the Finance Minister

Q-and not consulting the economist

R-out of not knowing economics

A QRP

B RQP

C PRQ

D PQR

**Answer: B**

**Question 91**

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

To make a person or animal go away by waving one's arms at them

A to scam

B to shoo

C to vamoose

D to scoot

**Answer: B**

**Question 92**

Improve the bracketed part of the sentence.

They were angry because they realised that they (have had been cheated).

A had been cheated

B were cheated

C are cheated

D no improvement

**Answer: A**



**Question 93**

**Rearrange the parts of the sentence in correct order.**

**The pith helmets**

**P-gone, but the blood**

**Q-has never dried**

**R-may have long**

**A RPQ**

**B RQP**

**C PQR**

**D QPR**

**Answer: A**

**Question 94**

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

**to expel someone from a position or place.**

**A to oust**

**B to disinherit**

**C to chase**

**D to relegate**

**Answer: A**

**Question 95**

**In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one, which best express the same sentence in Indirect/Direct speech.**

**The professor said to the students, 'Do not make a noise.'**

**A The professor forbade the students from making a noise.**

**B The professor told the students not to make a noise.**

**C The professor forbade the students saying they should not be making a noise.**

**D** The professor tells the students not to make a noise.

**Answer: A**

### Instructions

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The spectre of growing cyber threat demands changes in the \_\_\_\_\_ of users of systems, a \_\_\_\_\_ approach to investment in hardening systems, better training \_\_\_\_\_ computer security practices, and careful engineering of things to be connected to networks. Almost certainly it would \_\_\_\_\_ that certain critical computers and controls are unhooked from the network, a \_\_\_\_\_ known as 'air gapping'.

### Question 96

The spectre of growing cyber threat demands changes in the \_\_\_\_\_ of users of systems

- A attitude
- B look out
- C decision
- D feeling

**Answer: A**

### Question 97

a \_\_\_\_\_ approach to investment in hardening systems

- A lazy
- B lethargic
- C inactive
- D proactive

**Answer: D**

### Question 98

better training \_\_\_\_\_ computer security practices

- A at

**B** for

**C** in

**D** into

**Answer: C**

**Question 99**

Almost certainly it would \_\_\_\_\_ that certain critical computers and controls are unhooked from the network

**A** produce

**B** mean

**C** represent

**D** characterise

**Answer: B**

**Question 100**

a \_\_\_\_\_ known as 'air gapping'.

**A** utility

**B** use

**C** mode

**D** practice

**Answer: D**