

## SSC CHSL 30 Jan 2017 Morning Shift

### Reasoning

#### Instructions

For the following questions answer them individually

#### Question 1

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

Seismology : Earthquake :: Hydrology : ?

- A Child
- B Water
- C Medicine
- D Disease

**Answer: B**

#### Explanation:

Seismology is the branch of science concerned with earthquakes, similarly Hydrology is the branch of science concerned with the properties of the earth's *water*.

=> Ans - (B)

#### Question 2

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

DR:SE :: NC: ?

- A PF
- B DO
- C OD
- D PE

**Answer: B**

#### Explanation:

Expression = DR:SE :: NC: ?

The pattern followed when we *reverse* the code is :

R	D
(+1)	(+1)
S	E

Similarly, reverse of NC :

C	N
(+1)	(+1)
D	O

=> Ans - (B)

### Question 3

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

KD:PW :: RN: ?

A IM

B MI

C WM

D ME

Answer: A

### Explanation:

Expression = KD:PW :: RN: ?

Alphabets at the corresponding position from the reverse end are written.

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, RN : IM

=> Ans - (A)

### Question 4

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

37: 10 :: 65: ?

A 11

B 15

C 16

D 14

Answer: A

**Explanation:**

Expression = 37: 10 :: 65: ?

The pattern followed is that the second number is equal to the sum of digits of first number.

Eg :-  $37 \equiv 3 + 7 = 10$

Similarly,  $65 \equiv 6 + 5 = 11$

=> Ans - (A)

**Question 5**

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

- A Quit India Movement
- B Non-Cooperation Movement
- C Salt Satyagraha Movement
- D Bardoli Satyagraha Movement

**Answer:** D

**Explanation:**

Quit India Movement, Non-Cooperation Movement and Salt Satyagraha Movement were led by Mahatma Gandhi while Bardoli Satyagraha Movement was led by Sardar Vallabhai Patel, hence Bardoli Satyagraha Movement is the odd one out.

=> Ans - (D)

**Question 6**

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

- A PR
- B LN
- C YW
- D AC

**Answer:** C

**Explanation:**

(A) : P (+2 letters) = R

(B) : L (+2 letters) = N

(C) : Y (-2 letters) = W

(D) : A (+2 letters) = C

=> Ans - (C)

### Question 7

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

A 235

B 678

C 347

D 268

**Answer:** B

### Explanation:

The pattern followed is that sum of first two digits in a number is equal to the third digit, but  $6 + 7 \neq 8$ , hence 678 is the odd one out.

=> Ans - (B)

### Question 8

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

A 48

B 180

C 18

D 150

**Answer:** D

### Explanation:

Apart from 150, all other numbers contain digit 8, hence 150 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.

?, Vice President, Prime Minister, Deputy Prime Minister

- A Chief Minister
- B Governor
- C Defense Minister
- D President

**Answer:** D

**Explanation:**

A Deputy Prime Minister can take the position of acting Prime Minister when the Prime Minister is temporarily absent.

Similarly, a Vice President can take the position of acting **President** when the President is temporarily absent.

=> 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.**

**JI, LK, NM, ?**

- A ST
- B OP
- C QR
- D PO

**Answer:** D

**Explanation:**

Expression : JI, LK, NM, ?

The pattern followed in each letter of the terms is :

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

2nd letter : I (+2 letters) = K (+2 letters) = M (+2 letters) = O

Thus, missing term : **PO**

=> Ans - (D)

### Question 11

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

Gw, Jt, Np, ?

A SK

B Sk

C Rk

D RI

**Answer: B**

#### **Explanation:**

Expression : Gw, Jt, Np, ?

The pattern followed in each letter of the terms is :

1st letter : G (+3 letters) = J (+4 letters) = N (+5 letters) = S

2nd letter : w (-3 letters) = t (-4 letters) = p (-5 letters) = k

Thus, missing term : **Sk**

=> Ans - (B)

### Question 12

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

17, 27, 42, 62, ?

A 82

B 87

C 81

D 84

**Answer: B**

#### **Explanation:**

Multiples of 5 are added.

$$17 + 10 = 27$$

$$27 + 15 = 42$$

$$42 + 20 = 62$$

$$62 + 25 = \mathbf{87}$$

=> Ans - (B)

### Question 13

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) Many rituals, if incorporated in daily routine can make positive changes in one's life.

(II) Bending forward in mosque or prostrating before God are great exercises as these involve backstretch, squat, bend and rise again.

**Conclusions:**

(I) Religion offers great scope for exercise.

(II) If only these religious rituals are practiced daily, they can make positive changes in health of an individual.

A Only conclusion II follows

B Conclusion I and II both follow

C Neither I nor II follow

D Only conclusion I follows

**Answer: B**

### Question 14

If the 14th September of an year is a Tuesday, then which day of the week will the 17th October of the same year be?

A Thursday

B Saturday

C Sunday

D Monday

**Answer: C**

**Explanation:**

According to the question, 14th September is Tuesday

Number of days left in September =  $30 - 14 = 16$

Similarly, odd days from 14th September till 17th October =  $(16 + 17) \% 7$

$$= 2 + 3 = 5$$

Thus, day on 17th October = Tuesday (+5) = Sunday

=> Ans - (C)

### Question 15

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

- i. Heredity
- ii. Hesitate
- iii. Heavy
- iv. Herald

A iii, iv, i, ii

B i, iv, iii, ii

C ii, iii, i, iv

D iv, iii, ii, i

**Answer: A**

### Explanation:

As per the order of dictionary :

= Heavy -> Herald -> Heredity -> Hesitate

≡ iii, iv, i, ii

=> Ans - (A)

### Question 16

In a certain code language,"MASTER" is written as "RETSAM". How is "LITERACY" written in that code language?

A ETICRACY

B YCARETIL

C YARCETIC

D ETICYACR

**Answer: B**

### Explanation:

"MASTER" is written as "RETSAM"

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

Similarly, LITERACY : **YCARETIL**



=> Ans - (B)

### Question 17

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

R	X	?
D	V	L
N	B	F

A Q

B R

C S

D T

**Answer: B**

#### Explanation:

The pattern followed is that the alphabets are numbered alphabetically, A=1, B=2, C=3 and so on and then the first alphabet in each column is obtained by :

$$D=4 \text{ and } N=14, \Rightarrow 4 + 14 = 18 \equiv R$$

$$V=22 \text{ and } B=2, \Rightarrow 22 + 2 = 24 \equiv X$$

$$\text{Similarly, } L=12 \text{ and } F=6, \Rightarrow 12 + 6 = 18 \equiv R$$

=> Ans - (B)

### Question 18

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

76 B 19 C 7 A 3 D 25=?

A 4

B 3

C 5

D 6

**Answer: D**

#### Explanation:

Expression : 76 B 19 C 7 A 3 D 25=?

$$\equiv 76 \div 19 \times 7 + 3 - 25$$

$$= (4 \times 7) - 22$$

$$= 28 - 22 = 6$$

=> 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?

M\_N\_M\_MR\_R\_N

A RMRMN

B RRNNM

C RNRNM

D MMRRN

**Answer:** B

### Explanation:

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

= MRNRMN MRNRMN

=> Ans - (B)

### Question 20

Starting from his house, Manish moves 25 km towards south-east and then turns to the west and covers another 7 km. How far (in kilometres) is he now from his house?

A 21

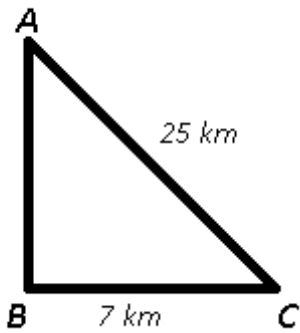
B 23

C 24

D 28

**Answer:** C

### Explanation:



Let Manish starts from point A and moved 25 km south east to reach point C, then he turned west and travelled 7 km and finally stopped at point B.

Thus, in  $\triangle ABC$ ,

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

$$\Rightarrow (AB)^2 = (25)^2 - (7)^2$$

$$\Rightarrow (AB)^2 = 625 - 49 = 576$$

$$\Rightarrow AB = \sqrt{576} = 24 \text{ km}$$

$\Rightarrow$  Ans - (C)

#### 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, 'F' can be represented by 32, 42 etc. and 'M' can be represented by 88, 68 etc. Similarly, you have to identify the set for the word 'SNOW'.

Matrix - I

	0	1	2	3	4
0	I	N	U	H	E
1	U	I	N	L	L
2	W	G	I	N	E
3	W	W	F	I	U
4	W	W	F	N	E

Matrix - II

	5	6	7	8	9
5	I	S	D	R	O
6	O	I	I	M	S
7	O	S	G	I	O
8	D	M	T	M	I
9	S	D	D	M	S

**B** 95, 23, 79, 10

**C** 99, 01, 57, 30

**D** 69, 12, 65, 20

**Answer: D**

**Explanation:**

(A) : 76, 43, 59, 21 = SNOG

(B) : 95, 23, 79, 10 = SNOU

(C) : 99, 01, 57, 30 = SNDW

(D) : 69, 12, 65, 20 = **SNOW**

=> Ans - (D)

**Question 22**

**Anjali's brother, Shyam, is the grandfather of Rajendra's son. How is Shyam related to Rajendra?**

**A** Brother

**B** Son

**C** Father

**D** Maternal Uncle

**Answer: C**

**Explanation:**

It is given that Shyam is the grandfather of Rajendra's son.

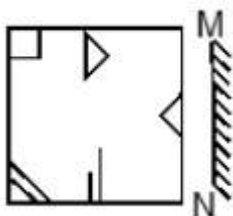
Thus, Rajendra is the son of Shyam.

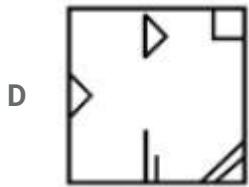
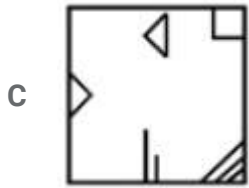
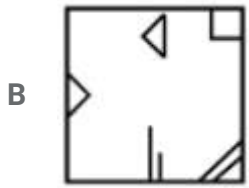
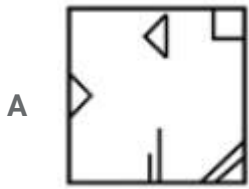
Thus, Shyam is the father of Rajendra.

=> Ans - (C)

**Question 23**

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



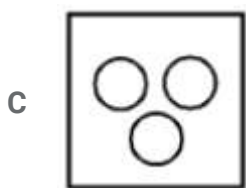
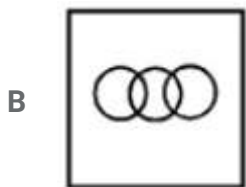
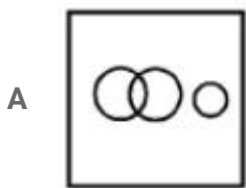


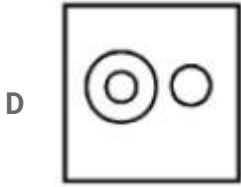
Answer: B

Question 24

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

Husband, Wife, Son



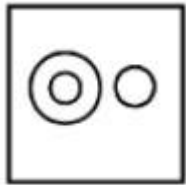


Answer: D

**Explanation:**

A husband is always a son first (but vice-versa may not be true), and a wife (being a woman) can never be a husband or son.

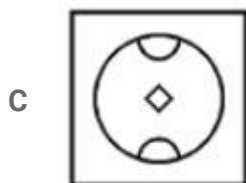
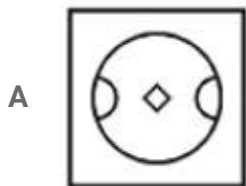
Thus, the venn diagram that best describes above relationship is :

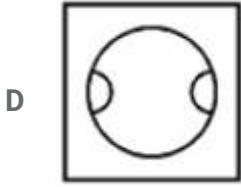


=> Ans - (D)

**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: B

## General Awareness

### Instructions

For the following questions answer them individually

### Question 26

Which of these Indians has been awarded with Bharat Ratna?

- A Atal Bihari Vajpayee
- B Subhas Chandra Bose
- C Rahul Gandhi
- D P. V. Narasimha Rao

Answer: A

### Question 27

\_\_\_\_\_ is a drug that makes your heart work more slowly, used for treating high blood pressure.

- A Contraceptive
- B Beta-Blocker
- C Depressant
- D Enema

Answer: B

### Question 28

*Ocimum tenuiflorum* is the scientific name of \_\_\_\_\_.

- A Neem
- B Mango
- C Babul
- D Tulsi

**Answer: D**

#### Question 29

**Which gland secretes bile, a digestive fluid?**

- A pancreas
- B liver
- C thyroid
- D testes

**Answer: B**

#### Question 30

**The Chemical formula of Ammonium chloride is \_\_\_\_\_.**

- A  $(NH_4)_2Cl$
- B  $NH_4Cl_3$
- C  $NH_4Cl_2$   
2Cl
- D  
b:  $NH_4Cl_3$   
c:  $NH_4Cl_2$   
d:  $NH_4Cl$

**Answer: D**

#### Question 31

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



- A Iron
- B Nitrogen
- C Iodine
- D Lead

**Answer: B**

### Question 32

**In Internet, what is the full form of TCP ?**

- A Transfer Control Program
- B Transfer Control Protocol
- C Transmission Control Program
- D Transmission Control Protocol

**Answer: B**

### Question 33

**Which of these languages is generally not spoken in Southern part of India?**

- A Telugu
- B Konkani
- C Maithili
- D Malayalam

**Answer: C**

### Question 34

**If demand curve for radial car tyres is  $D = 230000 - 19P$  and supply curve is  $S = 180000 + 6P$ , find the equilibrium Quantity?**

- A 19200 units
- B 291000 units

- C 29100 units
- D 192000 units

**Answer: D**

### Question 35

**Match the characteristics with their market structure:**

- (a) Differentiated products, but close substitutes for consumers so their demand curves are elastic.
- (b) Firm will tend to set output so that it earns maximum profits.

- A (a) Pure competition, (b) Pure Monopoly
- B (a) Monopolistic competition, (b) Oligopoly
- C (a) Oligopoly, (b) Pure Monopoly
- D (a) Monopolistic competition, (b) Pure Monopoly

**Answer: B**

### Question 36

**Indravati Tiger Reserve is in which state?**

- A Telangana
- B Rajasthan
- C Chhattisgarh
- D West Bengal

**Answer: C**

### Question 37

**Pyrolusite is an ore/mineral of \_\_\_\_\_.**

- A Mercury
- B Manganese
- C Molybdenum
- D Lead

**Answer: B**

**Question 38**

**What does IMF stand for?**

- A International Monetary Fund
- B Indian Money Fund
- C International Machine Federation
- D Institute of Monetary Finance

**Answer: A**

**Question 39**

**What is the capital of Ireland?**

- A Brussels
- B Helsinki
- C Ottawa
- D Dublin

**Answer: D**

**Question 40**

**A bound collection of maps is called \_\_\_\_\_.**

- A Cryosphere
- B Geomorphology
- C Atlas
- D Contour lines

**Answer: C**

**Question 41**

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

- A Uzbekistan
- B India
- C Venezuela
- D South Korea

**Answer: B**

#### **Question 42**

**The Biography of Humayun was written by \_\_\_\_\_.**

- A Nur Jehan
- B Jodha
- C Anarkali
- D Gulbadan Begum

**Answer: D**

#### **Question 43**

**Who Invented Internet Protocol?**

- A Vint Cerf
- B David Chaum
- C Georges Claude
- D Josephine Cochrane

**Answer: A**

#### **Question 44**

**Find the power of a convex lens if the image formed is at a distance of 10 cm from the lens when the object is placed on the other side of the lens at 40 cm from the optical centre?**

- A 12.5 diopters
- B 7.5 diopters

C -12.5 diopters

D -7.5 diopters

**Answer: A**

#### **Question 45**

**Filament of electric bulb is made of \_\_\_\_.**

A Magnesium

B Lead

C Tin

D Tungsten

**Answer: D**

#### **Question 46**

**Under which Article was Emergency in India declared in 1975?**

A Article 1

B Article 152

C Article 286

D Article 352

**Answer: D**

#### **Question 47**

**The United Nations Green Climate Fund is Headquartered in which country?**

A South Korea

B U.S.A

C Canada

D Australia

**Answer: C**

**Question 48**

**Anjum Chopra is associated with which Sport?**

- A Javelin Thrower
- B Archery
- C Cricket
- D Badminton

**Answer: C**

**Question 49**

**Who is the author of "Life of Pi"?**

- A Eleanor Catton
- B Aravind Adiga
- C Yann Martel
- D Kiran Desai

**Answer: C**

**Question 50**

**Which was the first garden-tomb in the Indian subcontinent?**

- A Tomb of Jahangir
- B Humayun's Tomb
- C Taj Mahal
- D Tomb of Muhammad Iqbal

**Answer: B**

**English**

**Instructions**

For the following questions answer them individually

**Question 51**

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

**feeding frenzy**

- A a mad rush to complete a big project before deadline
- B an episode of frantic competition for something
- C a party where people hog on food
- D a craze which rapidly spreads all over the world

**Answer: B**

**Question 52**

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

**You might as well(A)/read a novel instead of(B)/staring at the ceiling.(C)/No error(D)**

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

**Answer: D**

**Question 53**

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

- A galeons
- B audacity
- C garbbling
- D cerebrum

**Answer: D**

**Question 54**

**Improve the bracketed part of the sentence.**

**The pet has just finished its meal (and is satisfied now).**

- A now and was satisfied
- B now and is satisfied
- C then and is satisfied
- D no improvement

**Answer: D**

**Question 55**

**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.**

**Ajit said to the policeman, 'What have I done to deserve so severe a punishment?'**

- A Ajit asked the policeman that, what he has done to be deserving so severe a punishment.
- B Ajit asked the policeman that, what he has done to deserve so severe a punishment.
- C Ajit asked the policeman that, what he had done to deserve so severe a punishment.
- D Ajit asked the policeman what he had done to deserve so severe a punishment.

**Answer: D**

**Question 56**

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

**One will need to watch what  
P-happens in the United States  
Q-presidential elections  
R-after the forthcoming**

- A RPQ
- B QRP
- C PRQ
- D QPR



**Answer: C**

**Question 57**

**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 kangaroo carried her baby in her pouch.**

- A** The baby is carried by the kangaroo in her pouch.
- B** The baby is being carried by the kangaroo in her pouch.
- C** The baby had been carried by the kangaroo in her pouch.
- D** The baby was carried by the kangaroo in her pouch.

**Answer: D**

**Question 58**

**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'.**

**There was already a sizable(A)/ gap between her car and(B)/the one front of her.(C)/No error(D)**

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

**Answer: C**

**Question 59**

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

**Involving or causing sudden great damage or suffering.**

- A** tragic
- B** fatal
- C** catastrophic

D pathetic

Answer: C

**Question 60**

Improve the bracketed part of the sentence.

The air hostess gave me a cup (which had) coffee.

A containing

B filled with

C of

D no improvement

Answer: C

**Question 61**

Select the synonym of to concoct

A to obliterate

B to contrive

C to decimate

D to pulverize

Answer: B

**Question 62**

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.

My aunt wears \_\_\_\_\_ outfits to ensure she is noticed everywhere she goes.

A vivid

B spirited

C active

D b

**Answer: A**

**Question 63**

**Select the antonym of to exile**

- A** to relegation
- B** to usher
- C** to banish
- D** to ostracism

**Answer: B**

**Question 64**

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

**Three examples will  
P-suffice as evidence  
Q-of her backsliding  
R-on long-held positions**

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

**Answer: D**

**Question 65**

**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.**

**Mayur's second promotion in eleven months confirms he is at the \_\_\_\_\_ of his career.**

- A** roof
- B** zenith
- C** climax

**D** vertex

**Answer:** B

**Question 66**

**Select the antonym of to envisage**

**A** oblivious

**B** to apprehend

**C** to confront

**D** to visualize

**Answer:** A

**Question 67**

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

**excuse my French**

**A** to apologize for swearing

**B** to speak in a language that others can't understand

**C** being excessively polite

**D** lack of foreign language skills

**Answer:** A

**Question 68**

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

**A small, nonrigid airship or dirigible, especially one used chiefly for observation.**

**A** float

**B** poise

**C** bob

**D** blimp

**Answer: D**

**Question 69**

**Select the synonym of eccentric**

- A whimsical
- B chronic
- C bona fide
- D typic

**Answer: A**

**Question 70**

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

- A ameenable
- B bevarage
- C chorused
- D loudable

**Answer: C**

**Explanation:**

Start Group:

**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.

But representatives have cynically chosen to look the other \_\_\_\_\_(1)\_\_\_\_\_ when matters of justice are involved. They seem to have only a will to power; to be part of a new \_\_\_\_\_(2)\_\_\_\_\_ elite. \_\_\_\_\_(3)\_\_\_\_\_ they forget that the history of struggle is the future of struggle. Maoism is one extreme \_\_\_\_\_(4)\_\_\_\_\_ struggle \_\_\_\_\_(5)\_\_\_\_\_ corrupt appropriative and greedy elites; there are others.

look the other \_\_\_\_\_(6)\_\_\_\_\_ when matters of justice are involved.

**Question 71**

**look the other\_\_\_\_\_ when matters of justice are involved.**

- A road
- B action
- C way
- D method

**Answer: C**

**Question 72**

They seem to have only a will to power; to be part of a new \_\_\_\_\_ elite.

- A exploitative
- B decent
- C ethical
- D fair

**Answer: A**

**Question 73**

\_\_\_\_\_ they forget that the history of struggle is the future of struggle.

- A Hence
- B So
- C In spite of
- D But

**Answer: D**

**Question 74**

Maoism is one extreme \_\_\_\_\_ struggle

- A size
- B form of
- C sample

D paragon

Answer: B

### Question 75

\_\_\_\_\_ corrupt appropriative and greedy elites; there are others.

A against

B of

C for

D with

Answer: A

**Explanation:**

End Group:

## Mathematics

### Instructions

For the following questions answer them individually

### Question 76

If  $(7x - 13) - (12x + 3) = 14$ , then the value of  $x$  is \_\_\_\_\_ .

A -6

B 6

C  $\frac{2}{5}$

D  $-\frac{2}{5}$

Answer: A

**Explanation:**

$$\text{Expression : } (7x - 13) - (12x + 3) = 14$$

$$\Rightarrow 7x - 13 - 12x - 3 = 14$$

$$\Rightarrow -5x - 16 = 14$$

$$\Rightarrow -5x = 16 + 14 = 30$$

$$\Rightarrow x = \frac{30}{-5} = -6$$

=> Ans - (A)

### Question 77

Chutki can bake 30 cakes in 15 hours. Chutki and Badki together can bake 90 cakes in 30 hours. How many cakes Badki can bake in 10 hours?

A 75

B 20

C 10

D 60

Answer: C

#### Explanation:

Cakes baked by Chutki in 1 hour =  $\frac{30}{15} = 2$

Cakes baked by Chutki and Badki together in 1 hour =  $\frac{90}{30} = 3$

=> Cakes baked by Badki in 1 hour =  $3 - 2 = 1$

∴ Cakes baked by Badki in 10 hours =  $10 \times 1 = 10$

=> Ans - (C)

### Question 78

If  $3x^2 = 10^2 - 5^2$ , find the value of x?

A 7

B 5

C 9

D 11

Answer: B

#### Explanation:

Expression :  $3x^2 = 10^2 - 5^2$

=>  $3x^2 = 100 - 25$

=>  $3x^2 = 75$

=>  $x^2 = \frac{75}{3} = 25$

=>  $x = \sqrt{25} = 5$



=> Ans - (B)

### Question 79

The average revenues of 9 consecutive years of a company is Rs 65 lakhs. If the average of first 5 years is Rs 60 lakhs and that of last 5 years is Rs 72 lakhs, find the revenue for the 5th year.

A Rs 77 lakhs

B Rs 75 lakhs

C Rs 73 lakhs

D Rs 71 lakhs

**Answer: B**

### Explanation:

Total revenues of 9 years of the company =  $65 \times 9 = \text{Rs. } 585$  lakhs

Total revenue of first 5 years =  $60 \times 5 = \text{Rs. } 300$  lakhs

Total revenue of last 5 years =  $72 \times 5 = \text{Rs. } 360$  lakhs

$\therefore$  Revenue of 5th year =  $(300 + 360) - 585 = 660 - 585$

= Rs. 75 lakhs

=> Ans - (B)

### Question 80

What should be the missing digit so that the number 347\_547 becomes exactly divisible by 11?

A 5

B 3

C 9

D 2

**Answer: B**

### Explanation:

For a number to be divisible by 11, difference between the sum of digits at odd places and even places (starting from right to left) should be divisible by 11.

Let the number be =  $347x547$

Sum of digits at odd places =  $7 + 5 + 7 + 3 = 22$

$$\text{Sum of digits at even places} = 4 + x + 4 = (8 + x)$$

$$\text{Difference} = 22 - 8 - x = 14 - x$$

Now, for  $(14 - x)$  to be divisible by 11, it should be equal to 11.

$$\Rightarrow 14 - x = 11$$

$$\Rightarrow x = 14 - 11 = 3$$

$\Rightarrow$  Ans - (B)

### Question 81

Rajesh sells a machine for Rs 57 lakhs at a loss. Had he sold it for Rs 67 lakh, his gain would have been 7 times the former loss. Find the cost price of the machine.

A Rs 58.25 lakhs

B Rs 65.75 lakhs

C Rs 75.14 lakhs

D Rs 50.75 lakhs

**Answer: A**

### Explanation:

Let cost price of the machine = Rs.  $x$  lakhs

When selling price = Rs. 57 lakhs

$$\Rightarrow \text{Loss} = \text{Rs. } (x - 57) \text{ lakhs}$$

If selling price = Rs. 67 lakhs

$$\Rightarrow \text{Profit} = \text{Rs. } (67 - x) \text{ lakhs}$$

According to ques, Profit =  $7 \times$  loss

$$\Rightarrow (67 - x) = 7 \times (x - 57)$$

$$\Rightarrow 67 - x = 7x - 399$$

$$\Rightarrow 7x + x = 399 + 67 = 466$$

$$\Rightarrow x = \frac{466}{8} = \text{Rs. } 58.25 \text{ lakhs}$$

$\Rightarrow$  Ans - (A)

### Question 82

If  $7 + 4x > 3 + 3x$  and  $3x - 2 < 5 - x$ ; then  $x$  can take which of the following values?

A 2

B 3

C 1

D -5

**Answer: C**

**Explanation:**

Expression 1 :  $7 + 4x > 3 + 3x$

$$\Rightarrow 4x - 3x > 3 - 7$$

$$\Rightarrow x > -4 \text{ -----(i)}$$

Expression 2 :  $3x - 2 < 5 - x$

$$\Rightarrow 3x + x < 5 + 2$$

$$\Rightarrow 4x < 7$$

$$\Rightarrow x < \frac{7}{4} \text{ -----(ii)}$$

Combining inequalities (i) and (ii), we get :  $-4 < x < \frac{7}{4}$

Thus,  $x$  can take values = -3, -2, -1, 0, 1

$\Rightarrow$  Ans - (C)

### Question 83

If 2 pair of trouser is offered free on purchase of 3 pair of trousers priced Rs 900 each what is the effective discount on each pair of trouser?

A 40 percent

B 33.33 percent

C 30 percent

D 20 percent

**Answer: A**

**Explanation:**

Cost price of 1 trouser = Rs. 900

Cost price of 5 trousers =  $5 \times 900 = Rs.4,500$

If 2 trousers are offered free on purchase of 3 trousers,  $\Rightarrow$  Cost of 3 trousers =  $3 \times 900 = Rs.2,700$

$$\Rightarrow \text{Effective discount} = \frac{4500-2700}{4500} \times 100$$

$$= \frac{1800}{45} = \frac{200}{5} = 40\%$$

$\Rightarrow$  Ans - (A)

**Question 84**

Find the value of  $p$  if  $3x + p$ ,  $x - 10$  and  $-x + 16$  are in arithmetic progression.

A 16

B 36

C -16

D -36

**Answer: D**

**Explanation:**

Terms in arithmetic progression :  $(3x + p)$ ,  $(x - 10)$ ,  $(-x + 16)$

=> Difference between first two terms is equal to the difference between last two terms

$$\Rightarrow (x - 10) - (3x + p) = (-x + 16) - (x - 10)$$

$$\Rightarrow -2x - 10 - p = -2x + 16 + 10$$

$$\Rightarrow -p = 26 + 10 = 36$$

$$\Rightarrow p = -36$$

=> Ans - (D)

**Question 85**

The point  $P(3,-2)$  divides the segment joining the points  $(x,0)$  and  $(0,y)$  in the ratio 1:3. Find  $x$  and  $y$ ?

A  $x = 4$ ;  $y = -8$

B  $x = -3$ ;  $y = -8$

C  $x = 3$ ;  $y = 8$

D  $x = -3$ ;  $y = 8$

**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  $a : b$

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

Now, point  $P(3,-2)$  divides  $(x,0)$  and  $(0,y)$  in ratio = 1 : 3

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

$$\Rightarrow x = \frac{3 \times 4}{3} = 4$$

$$\text{Similarly, } -2 = \frac{(1 \times y) + (3 \times 0)}{1+3}$$

$$\Rightarrow y = -2 \times 4 = -8$$

$\Rightarrow$  Ans - (A)

### Question 86

What is the equation of the line if its slope is  $\frac{1}{4}$  and y-intercept is  $-3$ ?

A  $x - 4y = 12$

B  $x + 4y = 12$

C  $x - 4y = -12$

D  $x + 4y = -12$

**Answer:** A

### Explanation:

Slope,  $m = \frac{1}{4}$  and y-intercept,  $c = -3$

Equation of line =  $y = mx + c$

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

$$\Rightarrow y = \frac{x-12}{4}$$

$$\Rightarrow 4y = x - 12$$

$$\Rightarrow x - 4y = 12$$

$\Rightarrow$  Ans - (A)

### Question 87

A thief is stopped by a policeman from a distance of 250 metres. When the policeman starts the chase, the thief also starts running. Assuming the speed of the thief as 5 km/h and that of police man as 7 km/h, how far the thief would have run, before he is over-taken?

A 500 metres

B 750 metres

C 375 metres

D 625 metres

**Answer:** D

### Explanation:

Since the thief is escaping from the police man, thus they both are running in same direction.

Speed of thief = 5 km/hr and speed of policeman = 7 km/hr

=> Relative speed = 7 - 5 = 2 km/hr

Distance between them = 250 metres = 0.25 km

=> Time taken =  $\frac{\text{distance}}{\text{speed}}$

$$= \frac{0.25}{2} = \frac{1}{8} \text{ hr}$$

∴ Distance covered by thief before he was caught =  $5 \times \frac{1}{8}$

= 0.625 km = 625 metres

=> Ans - (D)

### Question 88

In  $\triangle ABC$ , D and E are points on side AB and AC respectively. DE is parallel to BC. If lengths of AD, DB and DE are 8 cm, 6 cm and 7.2 cm respectively, find length of BC?

A 12.6 cm

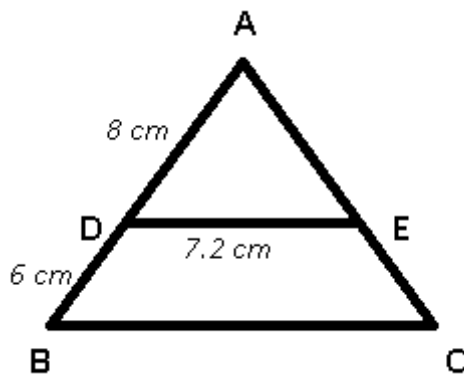
B 9.3 cm

C 8.1 cm

D 5.4 cm

Answer: A

Explanation:



DE is parallel to BC

$$\Rightarrow \frac{AD}{AB} = \frac{DE}{BC}$$

$$\Rightarrow \frac{8}{8+6} = \frac{7.2}{BC}$$

$$\Rightarrow \frac{4}{7} = \frac{7.2}{BC}$$

$$\Rightarrow BC = 1.8 \times 7 = 12.6 \text{ cm}$$

=> Ans - (A)

**Question 89**

In a triangle the length of the side opposite the angle which measures 30 degree is  $9\sqrt{3}$  cm, what is the length of the side opposite to the angle which measures 60 degree?

- A 27 cm
- B 9 cm
- C  $12\sqrt{3}$  cm
- D  $\frac{(15\sqrt{3})}{2}$  cm

**Answer:** A

**Explanation:**

In the given triangle, two angles are  $30^\circ$  and  $60^\circ$ ,  $\Rightarrow$  Third angle =  $90^\circ$

In a 30-60-90 triangle, the hypotenuse is always twice as long as the side opposite the  $30^\circ$  angle and the side opposite the  $60^\circ$  angle is  $\sqrt{3}$  times as long as the side opposite the  $30^\circ$  angle.

The ratio of sides opposite  $30^\circ$ ,  $60^\circ$  and  $90^\circ$  angles =  $1 : \sqrt{3} : 2$

Length of the side opposite the  $30^\circ$  angle =  $9\sqrt{3}$  cm

$\Rightarrow$  Length of side opposite the  $60^\circ$  angle =  $\sqrt{3} \times 9\sqrt{3} = 27$  cm

$\Rightarrow$  Ans - (A)

**Question 90**

When a number is increased by 26, it becomes 113% of itself. What is the number?

- A 200
- B 312
- C 390
- D 234

**Answer:** A

**Explanation:**

Let the number be  $100x$

According to ques,  $\Rightarrow 100x + 26 = \frac{113}{100} \times 100x$

$\Rightarrow 100x + 26 = 113x$

$\Rightarrow 113x - 100x = 26$

$\Rightarrow x = \frac{26}{13} = 2$

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

=> Ans - (A)

### Question 91

Volume of a cylinder is 2310 cubic cm. If circumference of its base is 44 cm, find the curved surface area of the cylinder?

- A 660 sq cm
- B 1320 sq cm
- C 1980 sq cm
- D 330 sq cm

**Answer:** A

### Explanation:

Let radius of base of cylinder =  $r$  cm and height =  $h$  cm

Circumference of base =  $2\pi r = 44$

$$\Rightarrow 2 \times \frac{22}{7} \times r = 44$$

$$\Rightarrow r = 44 \times \frac{7}{44} = 7 \text{ cm}$$

Now, volume of cylinder =  $\pi r^2 h = 2310$

$$\Rightarrow \frac{22}{7} \times (7)^2 \times h = 2310$$

$$\Rightarrow 22 \times 7 \times h = 2310$$

$$\Rightarrow h = \frac{2310}{154} = 15 \text{ cm}$$

$\therefore$  Curved Surface area of cylinder =  $2\pi r h$

$$= 44 \times 15 = 660 \text{ cm}^2$$

### Question 92

A bank offers 5% compound interest per half year. A customer deposits Rs. 3200 each on 1st January and 1st July of a year. At the end of the year, the amount he would have gained by way of interest is:

- A Rs 976
- B Rs 242
- C Rs 488
- D Rs 122

**Answer:** B



**Explanation:**

Principal = Rs. 3,200 and Rate = 5%

$$\begin{aligned}
 \text{Amount on half yearly basis} &= P\left(1 + \frac{R}{2 \times 100}\right)^{2 \times T} \\
 &= \left[3200\left(1 + \frac{5}{2 \times 100}\right)^{2 \times 1}\right] + \left[3200\left(1 + \frac{5}{2 \times 100}\right)^{2 \times \frac{1}{2}}\right] \\
 &= \left[3200 \times \left(\frac{41}{40}\right)^2\right] + \left[3200 \times \frac{41}{40}\right] \\
 &= [2 \times (41)^2] + [80 \times 41] \\
 &= (2 \times 41) \times (41 + 40) \\
 &= 82 \times 81 = \text{Rs. } 6,642
 \end{aligned}$$

$\therefore$  Compound Interest = Rs.(6,642 - 6,400) = Rs. 242

=> Ans - (B)

**Question 93**

By increasing the price of entry ticket to a fair in the ratio 11:16, the number of visitors to the fair has decreased in the ratio 19:9. In what ratio has the total collection increased or decreased?

- A decreased in the ratio 209:144
- B increased in the ratio 144:209
- C increased in the ratio 99:304
- D decreased in the ratio 304:99

**Answer:** A

**Explanation:**

Let cost of original ticket = Rs 11 and number of visitors = 190

=> Original revenue =  $11 \times 190 = \text{Rs } 2090$

After increase in cost of ticket

New cost of ticket = Rs 16 and number of visitors = 90

=> New Revenue =  $16 \times 90 = \text{Rs } 1440$

Since, new revenue is smaller than original revenue, thus total collection has decreased.

$\therefore$  Decrease of total collection ratio =  $\frac{2090}{1440} = 209 : 144$

=> Ans - (A)

**Question 94**

What is the value of  $\cos 4\pi/3$ ?

- A  $-1/2$
- B  $\sqrt{3}/2$

C  $-1/\sqrt{2}$

D  $-\sqrt{3}/2$

**Answer:** A

**Explanation:**

Expression :  $\cos 4\pi/3$

$$= \cos\left(\pi + \frac{\pi}{3}\right)$$

$$= -\cos\left(\frac{\pi}{3}\right) = \frac{-1}{2}$$

=> Ans - (A)

**Question 95**

**tan3A is equal to**

A  $3\tan A - \tan^3 A / (1 - 3\tan^2 A)$

B  $3\tan A + \tan^3 A / (1 - 3\tan^2 A)$

C  $3\tan A - \tan^3 A / (1 + 3\tan^2 A)$

D  $3\tan A + \tan^3 A / (1 + 3\tan^2 A)$

**Answer:** A

**Explanation:**

Expression :  $\tan(3A)$

$$= \frac{\sin(3A)}{\cos(3A)} = \frac{\sin(2A+A)}{\cos(2A+A)}$$

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

Using,  $\sin(2x) = 2\sin x \cos x$  and  $\cos(2x) = \cos^2 x - \sin^2 x$

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

Taking  $\sin A$  common from numerator and  $\cos A$  from denominator,

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

$$= \tan A \frac{3\cos^2 A - \sin^2 A}{\cos^2 A - 3\sin^2 A}$$

Dividing both numerator and denominator by  $\cos^2 A$ , we get :

$$= \tan A \frac{3 - \tan^2 A}{1 - 3\tan^2 A}$$

$$= \frac{3\tan A - \tan^3 A}{1 - 3\tan^2 A}$$

=> Ans - (A)

**Question 96**

$\sin A / (1 + \cos A)$  is equal to

- A  $(\operatorname{cosec} A - \cot A)$
- B  $(\operatorname{cosec} A + \cot A)$
- C  $\sqrt{[(\operatorname{cosec} A - \cot A)]}$
- D  $\sqrt{[(\operatorname{cosec} A + \cot A)]}$

**Answer:** A

**Explanation:**

Expression :  $\frac{\sin A}{1 + \cos A}$

Multiplying numerator and denominator by  $(1 - \cos A)$

$$\begin{aligned}
 &= \frac{\sin A}{1 + \cos A} \times \frac{1 - \cos A}{1 - \cos A} \\
 &= \frac{\sin A(1 - \cos A)}{1 - \cos^2 A} = \frac{\sin A(1 - \cos A)}{\sin^2 A} \\
 &= \frac{1 - \cos A}{\sin A} = \frac{1}{\sin A} - \frac{\cos A}{\sin A} \\
 &= \operatorname{cosec} A - \cot A
 \end{aligned}$$

=> Ans - (A)

**Question 97**

Refer the below data table and answer the following question.

	Boys	Girls
Medical	30	80
Engineering	80	40

What percent students who chose Engineering are girls ?

- A 33.33
- B 17.39
- C 66.67
- D 50

**Answer:** A

**Explanation:**

Number of girls who chose engineering = 40

Total number of engineers =  $80 + 40 = 120$

=> Percent of the girls who choose engineering =  $\frac{40}{120} \times 100$

$$= \frac{100}{3} \approx 33.33\%$$

=> Ans - (A)

### Question 98

Refer the below data table and answer the following question.

	Cumulative production
January	360
February	620
March	840
April	1510
May	1800
June	2250

How many cars were manufactured in the months of April and May ?

- A 740
- B 890
- C 3310
- D 960

**Answer:** D

#### **Explanation:**

Number of cars produced in :

January = 360

February =  $620 - 360 = 260$

March =  $840 - 620 = 220$

April =  $1510 - 840 = 670$

May =  $1800 - 1510 = 290$

June =  $2250 - 1800 = 450$

=> Number of cars that were manufactured in the month of the April and may =  $670 + 290 = 960$

### Question 99

Refer the below data table and answer the following question.

Day of the week	Distance jogged (in km)
Monday	1.5
Tuesday	0.5
Wednesday	2
Thursday	4.5
Friday	4
Saturday	4
Sunday	4

It 400 calories are burned by jogging 5km, how many calories were burnt in the given week?

- A 1690 calories
- B 1590 calories
- C 1540 calories
- D 1640 calories

**Answer:** D

#### Explanation:

Total distance jogged in entire week

$$= 1.5 + 0.5 + 2 + 4.5 + 4 + 4 + 4 = 20.5 \text{ km}$$

Calories burned after jogging 5 km = 400 calories

$$\Rightarrow \text{Calories burned after jogging } 20.5 \text{ km} = \frac{400}{5} \times 20.5$$

$$= 80 \times 20.5 = 1640 \text{ calories}$$

$\Rightarrow$  Ans - (D)

### Question 100

Refer the below data table and answer the following question.

Items	Yearly expence in lakhs
Raw Materilas	12
Labour	8
Rent	5
Interest	3
Taxes	1

Labour and Interest are what percent of total expenses ?

- A 20.34 percent
- B 13.09 percent

C 34.84 percent

D 37.93 percent

**Answer: D**

**Explanation:**

Yearly expense in labour and interest (in lakhs) = 8 + 3 = 11

Total expenses (in lakhs) = 12 + 8 + 5 + 3 + 1 = 29

$$\Rightarrow \text{Required \%} = \frac{11}{29} \times 100$$

$$= \frac{1100}{29} \approx 37.93\%$$

$\Rightarrow$  Ans - (D)

# SSC CHSL 30 Jan 2017 Afternoon Shift

## Reasoning

### Instructions

For the following questions answer them individually

### Question 1

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

Entomology : Insects:: Seismology: ?

A Man

B Fossils

C Earthquakes

D Diseases

**Answer: C**

### Explanation:

Entomology is the branch of zoology concerned with the study of insects, similarly Seismology is the branch of science concerned with *earthquakes*.

=> Ans - (C)

### Question 2

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

ZWU : TQO:: LIG : ?

A EFG

B FCA

C DEF

D EFC

**Answer: B**

### Explanation:

Expression = ZWU : TQO:: LIG : ?

The pattern followed is :

Z	W	U
(-6)	(-6)	(-6)
T	Q	O

Similarly, LIG : FCA

L	I	G
(-6)	(-6)	(-6)
F	C	A

=> Ans - (B)

### Question 3

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

EV : LO :: JQ : ?

A JQ

B FU

C QJ

D HS

**Answer: C**

### Explanation:

Expression = EV : LO :: JQ : ?

The pattern followed is :

E	V
(+7)	(-7)
L	O

Similarly, JQ : QJ

J	Q
(+7)	(-7)
Q	J

=> Ans - (C)

### Question 4

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

12 : 132 :: 14 : ?

A 172

B 182

C 176

D 180

**Answer: B**



**Explanation:**

Expression =  $12 : 132 :: 14 : ?$

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

Eg :-  $12 : 12(12 - 1) = 12 : 132$

Similarly,  $14 \times (14 - 1) = 14 \times 13 = 182$

=> Ans - (B)

**Question 5**

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

A Hyderabad

B Kerala

C Tamil Nadu

D Karnataka

**Answer:** A

**Explanation:**

Apart from Hyderabad, all other are states of the country, while Hyderabad is the capital of Telangana, hence it is the odd one out.

=> Ans - (A)

**Question 6**

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

A BCD

B GHW

C EOA

D GTS

**Answer:** C

**Explanation:**

Except EOA, none of the options contain any vowel, hence EOA is the odd one out.

=> Ans - (C)

### Question 7

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

A 51

B 66

C 83

D 93

**Answer: C**

#### **Explanation:**

Apart from 83, all are composite numbers divisible by 3, hence 83 is the odd one out.

=> Ans - (C)

### Question 8

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

A 153

B 177

C 187

D 221

**Answer: B**

#### **Explanation:**

153, 187 and 221 are multiples of 17, hence 177 is the odd one out.

=> Ans - (B)

### Question 9

A series is given with one term missing. Select the correct alternative from the given ones that will complete the series. Mercury, Venus, Earth, ?

A Jupiter

B Saturn

C Mars

D Pluto

Answer: C

**Explanation:**

The position of planets is given.

= Mercury -> Venus -> Earth -> Mars

=> Ans - (C)

**Question 10**

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

**AB, BC, CD, DE, EF ?**

A GH

B FE

C FG

D IJ

Answer: C

**Explanation:**

Expression : AB, BC, CD, DE, EF ?

The pattern followed is that two consecutive English alphabets are written, and the next pair starts from the last letter of previous pair.

Eg :- AB, then B is followed by C, thus next term = BC

Similarly, last term is EF, and F is followed by G, thus missing term : **FG**

=> Ans - (C)

**Question 11**

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

**BDG, KMP, TVY, ?**

A CDH

B CEH

C HEC

**D** CEI

**Answer: B**

**Explanation:**

Expression : BDG, KMP, TVY, ?

The pattern followed in each letter of the terms is :

1st letter : B (+6 letters) = K (+6 letters) = T (+6 letters) = C

2nd letter : D (+6 letters) = M (+6 letters) = V (+6 letters) = E

3rd letter : G (+6 letters) = P (+6 letters) = Y (+6 letters) = H

Thus, missing term = **CEH**

=> Ans - (B)

**Question 12**

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

**11, 13, 17, 19, ?**

**A** 22

**B** 23

**C** 29

**D** 31

**Answer: B**

**Explanation:**

2 and 4 are alternatively added in the given numbers.

$$11 + 2 = 13$$

$$13 + 4 = 17$$

$$17 + 2 = 19$$

$$19 + 4 = \mathbf{23}$$

=> Ans - (B)

### Question 13

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) Glaciers are receding and the temperature rise of the world is more than last year this time. (II) Pollution level of the Earth is rising a lot resulting in avalanches.

**Conclusions:**

(I) Pollution is resulting into hike in temperature of the world. (II) Pollution is the only reason for depletion of the nature.

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

**Answer: C**

### Question 14

A is taller than B but smaller than E. C is the smallest of all. D is taller than A but smaller than E. Who is the tallest of the five?

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

**Answer: D**

**Explanation:**

A is taller than B but smaller than E,  $\Rightarrow E > A > B$

Also, C is the smallest of all.

D is taller than A but smaller than E,  $\Rightarrow E > D > A$

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

$\therefore$  E is the tallest of the five.

$\Rightarrow$  Ans - (D)

### Question 15

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

- i. Terrace
- ii. Tenant
- iii. Tea
- iv. Tomorrow

A iii, ii, i, iv

B i, ii, iii, iv

C iv, i, ii, iii

D i, iii, ii, iv

**Answer: A**

#### **Explanation:**

As per the order of dictionary :

= Tea -> Tenant -> Terrace -> Tomorrow

≡ iii, ii, i, iv

=> Ans - (A)

### Question 16

In a certain code language, "NATURE" is written as "TANURE". How is "LISTEN" written in that code language?

A NETSIL

B TENSIL

C SILTEN

D LITSEN

**Answer: C**

#### **Explanation:**

"NATURE" is written as "TANURE"

The pattern followed is that the word is divided into two parts : (NAT) (URE), then the first part is written in reverse order and the second as it is to find the desired code, i.e. = (TAN) (URE)

Similarly, code for LISTEN : **SILTEN**

=> Ans - (C)

### Question 17

If "+" means "minus", "x" means "divided by", "÷" means "plus" and "" means "multiplied by", then  $96 \times 12 - 4 + 13 \div 21 = ?$

A 42

B 40

C 37

D 333

**Answer: B**

#### **Explanation:**

Expression :  $96 \times 12 - 4 + 13 \div 21 = ?$

$$\equiv 96 \div 12 \times 4 - 13 + 21$$

$$= (8 \times 4) + 8$$

$$= 32 + 8 = 40$$

=> Ans - (B)

### Question 18

If "S" denotes "multiplied by", "V" denotes "subtracted from", "M" denotes "added to" and "L" denotes "divided by", then

$44 \text{ L } 11 \text{ S } 7 \text{ V } 7 \text{ M } 9 = ?$

A 32

B 25

C 37

D 30

**Answer: D**

#### **Explanation:**

Expression :  $44 \text{ L } 11 \text{ S } 7 \text{ V } 7 \text{ M } 9 = ?$

$$\equiv 44 \div 11 \times 7 - 7 + 9$$

$$= (4 \times 7) + 2$$

$$= 28 + 2 = 30$$

=> 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?

\_d\_be\_c\_ed\_b

A edbcb

B cdebc

C edcbc

D eedcb

**Answer: C**

#### **Explanation:**

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

= edcb edcb edcb

=> Ans - (C)

### Question 20

Ramesh moves toward the east and covers 30 m and then takes a right and covers 40 m. Find the direction and the distance from the initial point to the final point.

A 50 m north

B 50 m northeast

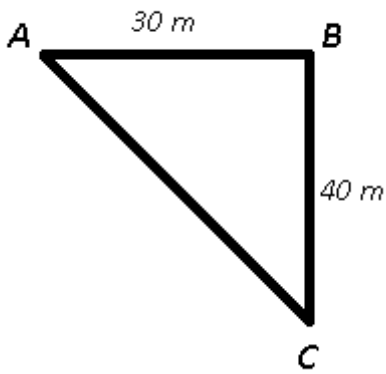
C 40 m southeast

D 50 m southeast

**Answer: D**

#### **Explanation:**





Let Ramesh starts from point A and moved towards east for 30 m to reach point B, then turned right for 40 m and stopped at point C.

Thus, in  $\triangle ABC$ ,

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

$$\Rightarrow (AC)^2 = (30)^2 + (40)^2$$

$$\Rightarrow (AC)^2 = 900 + 1600 = 2500$$

$$\Rightarrow AC = \sqrt{2500} = 50 \text{ m}$$

Thus, Ramesh is 50 m south-east of his original position.

=> Ans - (D)

### 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 in two matrices given below. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, e.g., '8' can be represented by 21, 32 etc. and 'W' can be represented by 97, 89 etc. Similarly, you have to identify the set for the word 'SAINT'.

Matrix-I

	0	1	2	3	4
0	S	L	K	J	J
1	B	S	F	F	G
2	I	B	S	H	H
3	D	I	B	S	H
4	E	E	I	B	C

Matrix-II

	5	6	7	8	9
5	O	A	N	Q	Q
6	T	O	A	N	R
7	U	T	O	A	N
8	V	P	T	O	W
9	P	V	W	T	O

**A** 00, 56, 20, 68, 76

**B** 11, 67, 31, 57, 12

**C** 22, 78, 20, 02, 44

**D** 33, 67, 42, 00, 99

**Answer: A**

**Explanation:**

(A) : 00, 56, 20, 68, 76 = **SAINT**

(B) : 11, 67, 31, 57, 12 = SAINF

(C) : 22, 78, 20, 02, 44 = SAIKC

(D) : 33, 67, 42, 00, 99 = SAISO

=> Ans - (A)

**Question 22**

**Sumit's grandfather's brother is the father of Hemant's father. How is Sumit related to Hemant?**

**A** Brother

**B** Cousin

**C** Father

**D** Uncle

**Answer: B**

**Explanation:**

Father of Hemant's father is = Hemant's grandfather

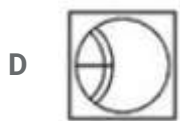
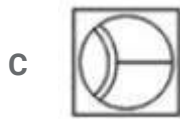
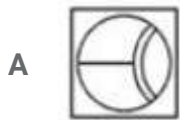
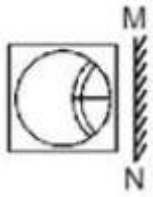
Now, Hemant's grandfather is brother of Sumit's grandfather.

=> Sumit and Hemant are cousins.

=> Ans - (B)

Question 23

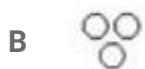
If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?



Answer: C

Question 24

Identify the diagram that best represents the relationship among the given classes. Engine, Car, Battery



Answer: C

Explanation:

Engine and Battery are both parts of a car but they are both different (hence do not intersect).

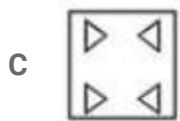
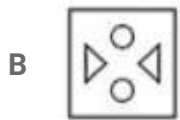
Thus, the venn diagram that best describes above relationship is :



=> Ans - (C)

### 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?



D Figure 4

Answer: A

## General Awareness

### Instructions

For the following questions answer them individually

### Question 26

Rock Shelters of Bhimbetka is located in the foothills of?

A Western Ghats

B Aravalli Range

C Vindhya Range

**D** Eastern Ghats

**Answer: C**

**Question 27**

**Highest Civilian Honour received by Udit Narayan is**

**A** Padma Shri

**B** Padma Bhushan

**C** Padma Vibhushan

**D** Bharat Ratna

**Answer: B**

**Question 28**

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

**A** Fexofenadine

**B** Tramadol

**C** Sumatriptan

**D** Levothyroxine

**Answer: C**

**Question 29**

**In which of the following the dominant phase is Gametophyte?**

**A** Bryophyta

**B** Pteridophyta

**C** Gymnosperms

**D** Angiosperms

**Answer: A**

**Question 30**

**Anaerobic respiration refers to which of the following?**

- A Respiration without Oxygen
- B Respiration with Oxygen
- C Respiration without CO<sub>2</sub>
- D Respiration with CO<sub>2</sub>

**Answer: A**

**Question 31**

**.....bond holds the atoms together within a water molecule.**

- A Nonpolar covalent
- B Polar covalent
- C Ionic
- D Coordinate

**Answer: B**

**Question 32**

**Atomic number of which of the following elements is greater than that of Neon?**

- A Oxygen
- B Magnesium
- C Nitrogen
- D Boron

**Answer: B**

**Question 33**

**.....defines data types and the relationships among them.**

- A Data definition language
- B Data manipulation language
- C Query language
- D OQL

**Answer: A**

#### **Question 34**

.....is a depiction of the Hindu God Shiva as the cosmic dancer who performs his divine dance called Tandavam.

- A Murugan
- B Nataraja
- C Vishnu
- D Venkateshwar

**Answer: B**

#### **Question 35**

If demand curve for renting a car is  $D = 90000 - 23P$  and supply curve is  $S = 9000 + 7P$ , find the equilibrium Price?

- A Rs 1800
- B Rs 900
- C Rs 3600
- D Rs 2700

**Answer: D**

#### **Question 36**

The demand curve .....

- A shows that as the price of a good increases, demand for the good will increase
- B shows that as the price of a good increases, demand for the good will decrease

**C** has a positive gradient

**D** indicates that there is a direct relationship between quantity demanded and price

**Answer: B**

### Question 37

**Which type of pathogen causes the waterborne disease Cholera?**

**A** Algal

**B** Bacterial

**C** Protozoan

**D** Viral

**Answer: B**

### Question 38

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

**A** As

**B** Kr

**C** C<sub>4</sub>H<sub>8</sub>

**D** CH<sub>4</sub>

**Answer: D**

### Question 39

**Which of the following is not a National Park?**

**A** Corbett National Park

**B** Kaziranga National Park

**C** Satara National Park

**D** Bandipur National Park

**Answer: C**



**Question 40**

**Who was the first Indian astronomer to calculate the time taken by earth to orbit the sun?**

- A Aryabhatta
- B Ved Bhatnagara
- C Bhaskaracharya
- D Bishu devtamapi

**Answer: C**

**Question 41**

**What is the capital of New Zealand?**

- A Brussels
- B Canberra
- C Wellington
- D Ankara

**Answer: C**

**Question 42**

**Which among the following games was very popular in ancient India?**

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

**Answer: A**

**Question 43**

**Ashoka The Great (273-232 B.C.) was the ruler of which dynasty?**

- A Mewar

- B Mughal
- C Maurya
- D Peshwas

**Answer: C**

#### **Question 44**

**Who Invented LED?**

- A Nick Holonyak
- B Elias Howe
- C Chuck Hull
- D Christiaan Huygens

**Answer: A**

#### **Question 45**

**Who first determined the value of G (gravitational constant)?**

- A Lord Cavendish
- B R.R Heyl
- C Boyle
- D Poynting

**Answer: A**

#### **Question 46**

**The work done by centripetal force is .....**

- A positive
- B zero
- C negative
- D unity

**Answer: B**

**Question 47**

**Indian Constitution has how many Parts?**

**A** 22

**B** 32

**C** 42

**D** 52

**Answer: A**

**Question 48**

**Article 31B of the Indian Constitution "Validation of certain Acts and Regulations" deals with the**

**A** State Government

**B** Union Government

**C** Directive principles of state policy

**D** Fundamental rights of the Indian Citizen

**Answer: D**

**Question 49**

**Who among the following has not scored even a single triple hundred in test matches?**

**A** Brian Lara

**B** Virender Sehwag

**C** Sachin Tendulkar

**D** Chris Gayle

**Answer: C**

**Question 50**

**Who is the author of "The Twentieth Wife"?**

- A Aparna Sinha
- B Bapsi Sidhwa
- C R. K. Narayan
- D Indu Sundaresan

**Answer: D**

## English

### Instructions

For the following questions answer them individually

### Question 51

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 corrupt officer was a .....to the department.

- A disgrace
- B disinterred
- C discontent
- D despair

**Answer: A**

### Question 52

Select the antonym of to condemn

- A to decry
- B to laud
- C to reprobate
- D to proscribe

**Answer: B**

### Question 53

Rearrange the parts of the sentence in correct order.

It is a pity that

Psuch violence hardly

Qcomes within the

Rpurview of the law

A QRP

B RPQ

C PRQ

D PQR

Answer: D

### Question 54

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'.

For kindergarten children, /(A)drawing by crayons is always(B)/even more preferable then sketch pens. (C)/No error(D)

A A

B B

C C

D D

Answer: C

### Question 55

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.

Jay posted the video on YouTube.

A The video has been posted on YouTube by Jay.

B The video was posted on YouTube by Jay.

C The video had been posted on YouTube by Jay.

**D** The video is posted on YouTube by Jay.

**Answer: B**

**Question 56**

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

**The more technologically  
Advanced and wired a  
Vulnerable it is to a cyber attack  
Environment is, the more**

**A** RPQ

**B** QRP

**C** PRQ

**D** QPR

**Answer: C**

**Question 57**

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

**A** antequas

**B** carotane

**C** scewl

**D** apoplexy

**Answer: D**

**Question 58**

**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.**

**'What do you want?' Sheila asked Rohan.**

**A** Sheila asked Rohan what do you want.

**B** Sheila asked Rohan what he wanted.

**C** Sheila asked Rohan what does he want.

D Sheila asked Rohan what he wants.

**Answer: B**

#### Question 59

In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase. to cry over spilt milk

A to dwell pointlessly on past misfortunes

B to feel sorry for others' misfortunes

C to immediately start crying after making a mistake to avoid punishment

D to acknowledge one's mistake and move ahead

**Answer: A**

#### Question 60

Improve the bracketed part of the sentence. The pilgrim (lain) in the shade of the tree.

A lied

B laid

C lay

D no improvement

**Answer: C**

#### Question 61

Improve the bracketed part of the sentence. The department granted him permission (to stay) in Dubai.

A of stay

B of staying

C for stay

D no improvement

**Answer: D**

**Question 62**

**Select the synonym of perusal**

- A inspection
- B delinquency
- C inconsideration
- D laxity

**Answer: A**

**Question 63**

**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 salesman tried to(A)/sell me a solar water heater(B)/but I already have one.(C)/No error(D)**

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

**Answer: D**

**Question 64**

**Select the antonym of assiduous**

- A lethargic
- B scrupulous
- C diligent
- D exacting

**Answer: A**

**Question 65**

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



- A scrimped
- B avering
- C duodenum
- D evadance

**Answer: C**

#### Question 66

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 union allows the employees to bargain .....for higher wages.

- A wholly
- B collectively
- C fully
- D completely

**Answer: B**

#### Question 67

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

To be full of or covered with a mass of small bubbles.

- A scintillating
- B brew
- C frothy
- D aerated

**Answer: C**

#### Question 68

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

Comment added to a text or diagram.

- A lexicon
- B thesaurus
- C terminology
- D annotation

**Answer: D**

**Question 69**

**Select the synonym of consensus**

- A cacophony
- B harmony
- C tumult
- D clamour

**Answer: B**

**Question 70**

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

- A to keep complaining over small issues
- B to raise a false alarm
- C to act as if one feels sorry for the other person
- D to report to a higher authority the mistakes committed by others

**Answer: B**

**Explanation:**

Start Group:

**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.

Cyber security has .....(1) interesting parallel to terrorism. ....(2) are asymmetric. Ensuring

security of data, information, and communication is considerably harder than hacking into a system. The attacker has an inherent .....(3) in both conventional terrorism and cyber attacks. In the case .....(4) statesponsored attacks, the challenges are of a much .....(5) magnitude.

**Question 71**

**Cyber security has .....interesting parallel to terrorism.**

- A a
- B an
- C the
- D two

**Answer: B**

**Question 72**

**.....are asymmetric.**

- A Both
- B Two
- C Twice
- D Together

**Answer: A**

**Question 73**

**The attacker has an inherent .....in both conventional terrorism and cyber attacks.**

- A advantage
- B resource
- C comfort
- D sanction

**Answer: A**

**Question 74**

**In the case .....statesponsored attacks**

- A for
- B of
- C with
- D about

**Answer: B**

**Question 75**

**the challenges are of a much .....magnitude.**

- A heightened
- B heighted
- C high
- D higher

**Answer: D**

**Explanation:**

End Group:

## Mathematics

**Instructions**

For the following questions answer them individually

**Question 76**

**Mansukh can do a piece of work in 10 hours. If he is joined by Jayanti who is 50% more efficient, in what time will they together finish the work?**

- A 2 hours
- B 6 hours
- C 4 hours
- D 3 hours

**Answer: C**

**Explanation:**

Let total work to be done = 20 units

Mansukh's efficiency =  $\frac{20}{10} = 2$  units/hr

Jayanti is 50% more efficient than Mansukh,  $\Rightarrow$  Jayanti's efficiency =  $\frac{150}{100} \times 2 = 3$  units/hr

$\Rightarrow$  Mansukh and Jayanti 1 day's work =  $2 + 3 = 5$  units/hr

$\therefore$  Time taken by them to finish the work together =  $\frac{20}{5} = 4$  hours

$\Rightarrow$  Ans - (C)

**Question 77**

If the amount received at the end of 2nd and 3rd year at Compound Interest on a certain Principal is Rs 25088, and Rs 28098.56 respectively, what is the rate of interest?

- A 6 percent
- B 24 percent
- C 12 percent
- D 19 percent

**Answer: C**

**Explanation:**

Compound interest at the end of 2nd year = Rs. 25,088

Compound interest at the end of 3rd year = Rs. 28,098.56

$\Rightarrow$  Difference =  $28098.56 - 25088 = \text{Rs. } 3010.56$

This is the interest obtained on the amount of 2nd year.

$\therefore$  Rate of interest,  $r = \frac{3010.56}{25088} \times 100 = 12\%$

$\Rightarrow$  Ans - (C)

**Question 78**

The value of x for which the expressions  $19 - 5x$  and  $19x + 5$  become equal is .....

- A 7/12
- B -7/12
- C -12/7
- D 12/7

**Answer: A**

**Explanation:**

Expressions :  $19 - 5x$  and  $19x + 5$

$$\Rightarrow 19 - 5x = 19x + 5$$

$$\Rightarrow 19x + 5x = 19 - 5$$

$$\Rightarrow 24x = 14$$

$$\Rightarrow x = \frac{14}{24} = \frac{7}{12}$$

$\Rightarrow$  Ans - (A)

**Question 79**

The mean of marks secured by 45 students in division A of class X is 69, 65 students of division B is 65 and that of 50 students of division C is 63. Find the mean of marks of the students of three divisions of Class X.

A 65.5

B 64.8

C 64.1

D 66.9

**Answer:** A

**Explanation:**

Total marks secured by 45 students in division A =  $45 \times 69 = 3105$

Total marks secured by 65 students in division B =  $65 \times 65 = 4225$

Total marks secured by 50 students in division C =  $50 \times 63 = 3150$

$$\Rightarrow \text{Mean of marks of the students of three divisions of Class X} = \frac{(3105+4225+3150)}{(45+65+50)}$$

$$= \frac{10480}{160} = 65.5$$

$\Rightarrow$  Ans - (A)

**Question 80**

If  $a:b = 5:8$ , find the value of  $(6a - 5b)/(a + 2b)$ .

A 10/21

B 21/10

C -21/10

D  $-10/21$

**Answer: D**

**Explanation:**

It is given that  $a : b = 5 : 8$

Let  $a = 5$  and  $b = 8$

To find :  $\frac{6a-5b}{a+2b}$

$$= \frac{(6 \times 5) - (5 \times 8)}{(5) + (2 \times 8)}$$

$$= \frac{30 - 40}{5 + 16} = \frac{-10}{21}$$

=> Ans - (D)

**Question 81**

If  $9/4$ th of  $7/2$  of a number is 126, then  $7/2$ th of that number is .....

A 56

B 284

C 72

D 26

**Answer: A**

**Explanation:**

Let the number be  $x$

According to ques,

$$\Rightarrow \frac{9}{4} \times \frac{7}{2} \times x = 126$$

$$\Rightarrow \frac{63}{8}x = 126$$

$$\Rightarrow x = \frac{126}{63} \times 8$$

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

$$\therefore \left(\frac{7}{2}\right)^{th} \text{ of the number} = \frac{7}{2} \times 16$$

$$= 7 \times 8 = 56$$

=> Ans - (A)

**Question 82**

The ratio of present ages of Ratna and Shantanu is 5:4. After 19 years the ratio of their ages will be 10:9. What is Ratna's present age?

A 19

**B** 15

**C** 9

**D** 72

**Answer: A**

**Explanation:**

Let Ratna's present age =  $5x$  years and Shantanu's present age =  $4x$  years

$$\text{According to ques, } \Rightarrow \frac{5x+19}{4x+19} = \frac{10}{9}$$

$$\Rightarrow 45x + 171 = 40x + 190$$

$$\Rightarrow 45x - 40x = 190 - 171$$

$$\Rightarrow 5x = 19$$

$$\Rightarrow x = \frac{19}{5}$$

$$\therefore \text{Ratna's age} = 5 \times \frac{19}{5} = 19 \text{ years}$$

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

**Question 83**

If  $5 - 5x < 4 - x$  and  $2 - x < 6 - 4x$ , then  $x$  can take which of the following values?

**A** 1

**B** 2

**C** -1

**D** -2

**Answer: A**

**Explanation:**

$$\text{Expression 1 : } 5 - 5x < 4 - x$$

$$\Rightarrow 5x - x > 5 - 4$$

$$\Rightarrow 4x > 1$$

$$\Rightarrow x > \frac{1}{4} \text{ -----(i)}$$

$$\text{Expression 2 : } 2 - x < 6 - 4x$$

$$\Rightarrow 4x - x < 6 - 2$$

$$\Rightarrow 3x < 4$$



$$\Rightarrow x < \frac{4}{3} \text{-----(ii)}$$

Combining inequalities (i) and (ii), we get :  $\frac{1}{4} < x < \frac{4}{3}$

The only value that  $x$  can take among the given options = 1

$\Rightarrow$  Ans - (A)

#### Question 84

The ten's digit of a 2digit number is greater than the units digit by 4. If we subtract 36 from the number, the new number obtained is a number formed by interchange of the digits. Find the number.

A 95

B 84

C 73

D Cannot be determined

**Answer:** D

#### Explanation:

Let the unit's digit of the number be  $y$  and ten's digit be  $x$

$$\Rightarrow \text{Number} = 10x + y$$

$$\text{According to ques, } \Rightarrow x - y = 4 \text{-----(i)}$$

$$\text{According to question, } \Rightarrow 10x + y - 36 = 10y + x$$

$$\Rightarrow 9x - 9y = 36$$

$$\Rightarrow x - y = \frac{36}{9} = 4 \text{-----(ii)}$$

Equations (i) and (ii) are same and thus we have two variables and one equation

Number can be = 95 , 84 , 73 , 62 , 51 , 40 and thus the solution cannot be determined.

$\Rightarrow$  Ans - (D)

#### Question 85

A thief is stopped by a policeman from a distance of 450 metres. When the policeman starts the chase, the thief also starts running. Assuming the speed of the thief as 7 km/h and that of policeman as 12 km/h, how far the thief would have run, before he is overtaken?

A 504 metres

B 756 metres

C 378 metres

D 630 metres

**Answer:** D

**Explanation:**

Since the thief is escaping from the police man, thus they both are running in same direction.

Speed of thief = 7 km/hr and speed of policeman = 12 km/hr

=> Relative speed =  $12 - 7 = 5$  km/hr

Distance between them = 450 metres = 0.45 km

=> Time taken =  $\frac{\text{distance}}{\text{speed}}$

$$= \frac{0.45}{5} = \frac{9}{100} \text{ hr}$$

∴ Distance covered by thief before he was caught =  $7 \times \frac{9}{100}$

= 0.63 km = 630 metres

=> Ans - (D)

**Question 86**

Marked price of an item is Rs 900. On purchase of 2 items discount is 6%, on purchase of 3 items discount is 12%. Rajani buys 5 items, what is the effective discount?

A 17.5 percent

B 9.6 percent

C 35 percent

D 37 percent

**Answer: B**

**Explanation:**

Marked price of item = Rs. 900

=> Marked price of 2 items =  $2 \times 900 =$  Rs. 1800

Amount saved on buying 2 items =  $\frac{6}{100} \times 1800 =$  Rs.108

Marked price of 3 items =  $3 \times 900 =$  Rs. 2700

Amount saved on buying 3 items =  $\frac{12}{100} \times 2700 =$  Rs.324

Thus, on buying 5 items, total amount saved =  $108 + 324 =$  Rs. 432

Total marked price of 5 items =  $5 \times 900 =$  Rs. 4500

∴ Effective discount =  $\frac{432}{4500} \times 100$

$$= \frac{432}{45} = 9.6\%$$

=> Ans - (B)

**Question 87**

$\Delta ABC$  is similar to  $\Delta PQR$ . Length of  $AB$  is 36 cm and length of the corresponding side  $PQ$  is 16 cm. If area of  $\Delta ABC$  is 1296 sq cm, what is the area of  $\Delta PQR$ ?

- A 128 sq cm
- B 512 sq cm
- C 64 sq cm
- D 256 sq cm

**Answer:** D

**Explanation:**

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

Also, length of  $AB = 36$  cm and length of the corresponding side  $PQ = 16$  cm

Let area of  $\Delta PQR = x$  sq cm

$\Rightarrow$  Ratio of Area of  $\Delta ABC$  : Area of  $\Delta PQR =$  Ratio of square of corresponding sides  $= (AB)^2 : (PQ)^2$

$$\Rightarrow \frac{1296}{x} = \frac{(36)^2}{(16)^2}$$

$$\Rightarrow x = (16)^2 = 256 \text{ sq cm}$$

$\Rightarrow$  Ans - (D)

**Question 88**

What is the slope of the line parallel to the line passing through the points (6,3) and (2,1)?

- A 1/2
- B 1
- C 2
- D 1

**Answer:** A

**Explanation:**

Slope of line passing through points (2,1) and (6,3)

$$= \frac{3-1}{6-2} = \frac{2}{4} = \frac{1}{2}$$

Slope of two parallel lines is always equal.

$\Rightarrow$  Slope of the line parallel to the line having slope  $1/2 = \frac{1}{2}$

$\Rightarrow$  Ans - (A)

**Question 89**

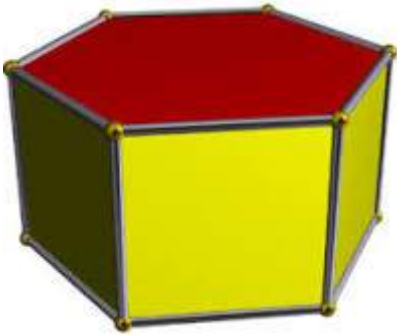
**A hexagonal prism has 18 edges. How many vertices does it have?**

- A 8
- B 12
- C 20
- D 22

**Answer: B**

**Explanation:**

Hexagonal prism :



Euler's formula :  $V + F - E = 2$  where V is number of vertices , F is number of faces and E is number of edges.

Hexagonal Prism has 18 edges and 8 faces.

$$\Rightarrow V = 2 + E - F = 2 + 18 - 8$$

$$\Rightarrow V = 20 - 8 = 12$$

$\Rightarrow$  Ans - (B)

**Question 90**

**When a number is increased by 21, it becomes 114% of itself. What is the number?**

- A 150
- B 252
- C 315
- D 189

**Answer: A**

**Explanation:**

Let the number be  $100x$

$$\text{According to ques, } \Rightarrow 100x + 21 = \frac{114}{100} \times 100x$$

$$\Rightarrow 100x + 21 = 114x$$

$$\Rightarrow 114x - 100x = 21$$

$$\Rightarrow x = \frac{21}{14} = 1.5$$

$$\therefore \text{Number} = 100 \times 1.5 = 150$$

$\Rightarrow$  Ans - (A)

**Question 91**

The total cost of a microwave oven with mixer was Rs 36750. The mixer was sold at a profit of 32% and the microwave oven at a loss of 22%. If the sale price was the same in both the items, then the cost price of the cheaper item was .....

A Rs 13100

B Rs 18375

C Rs 13650

D Rs 16850

**Answer: C**

**Explanation:**

Let cost price of microwave oven =  $Rs.100x$

$$\Rightarrow \text{Cost price of mixer} = Rs.(36,750 - 100x)$$

Selling price of mixer (32% profit) = Selling price of microwave oven (22% loss)

$$\Rightarrow \frac{132}{100} \times (36,750 - 100x) = \frac{78}{100} \times 100x$$

$$\Rightarrow 48510 - 132x = 78x$$

$$\Rightarrow x = \frac{48510}{210} = 231$$

$$\Rightarrow \text{Cost price of microwave oven} = 100 \times 231 = Rs.23,100$$

$$\Rightarrow \text{Cost price of mixer} = 36,750 - 23,100 = Rs.13,650$$

$\therefore$  Mixer is cheaper with cost price = Rs. 13,650

**Question 92**

The diameter of a circle is equal to the side of the square. What is the area of the square if the area of the circle is  $64\pi$  sq cm?

- A 128 sq cm
- B 196 sq cm
- C 108 sq cm
- D 256 sq cm

**Answer: D**

**Explanation:**

Let radius of circle =  $r$  cm

$$\text{Area of circle} = \pi r^2 = 64\pi$$

$$\Rightarrow r^2 = 64$$

$$\Rightarrow r = \sqrt{64} = 8 \text{ cm}$$

Thus, diameter of circle = Side of square =  $2 \times 8 = 16$  cm

$$\therefore \text{Area of square} = (16)^2 = 256 \text{ cm}^2$$

$\Rightarrow$  Ans - (D)

**Question 93**

**The radius of a hemisphere is 14 cm, find its volume?**

- A 11498.66 cubic cm
- B 1916.44 cubic cm
- C 2874.67 cubic cm
- D 5749.33 cubic cm

**Answer: D**

**Explanation:**

Radius of hemisphere = 14 cm

$$\text{Volume of hemisphere} = \frac{2}{3}\pi r^3$$

$$= \frac{2}{3} \times \frac{22}{7} \times (14)^3$$

$$= \frac{2}{3} \times 44 \times 196 = \frac{17248}{3}$$

$$= 5749.33 \text{ cm}^3$$

$\Rightarrow$  Ans - (D)

**Question 94**

**If  $\cos 11\pi/6 = x$ , then the value of  $x$  is**

A  $-\sqrt{3}/2$

B  $1/2$

C  $2$

D  $\sqrt{3}/2$

**Answer: D**

**Explanation:**

Expression :  $\cos 11\pi/6 = x$

$$= \cos\left(2\pi - \frac{\pi}{6}\right)$$

$$= \cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}$$

=> Ans - (D)

**Question 95**

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

A  $\tan(A - B)$

B  $\tan(A + B)$

C  $\cot(A - B)$

D  $\cot(A + B)$

**Answer: A**

**Explanation:**

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

$$= \left( \frac{\sin A}{\cos A} - \frac{\sin B}{\cos B} \right) \div \left( 1 + \frac{\sin A \sin B}{\cos A \cos B} \right)$$

$$= \left( \frac{\sin A \cos B - \cos A \sin B}{\cos A \cos B} \right) \div \left( \frac{\cos A \cos B + \sin A \sin B}{\cos A \cos B} \right)$$

$$= \left[ \frac{\sin(A-B)}{\cos A \cos B} \right] \div \left[ \frac{\cos(A-B)}{\cos A \cos B} \right]$$

$$= \left[ \frac{\sin(A-B)}{\cos A \cos B} \right] \times \left[ \frac{\cos A \cos B}{\cos(A-B)} \right]$$

$$= \frac{\sin(A-B)}{\cos(A-B)} = \tan(A - B)$$

=> Ans - (A)

**Question 96**

If  $\tan^2 A + \cot^2 A + 2 = x$ , then the value of x is

A  $\tan^2 A \operatorname{cosec} 2A$

B  $\sec A \operatorname{cosec} A$

C  $\sec^2 A \operatorname{cosec}^2 A$

D  $\tan A \operatorname{cosec} A$

**Answer: C**

**Explanation:**

Expression :  $\tan^2 A + \cot^2 A + 2 = x$

Using,  $(\sec^2 A - \tan^2 A = 1)$  and  $(\operatorname{cosec}^2 A - \cot^2 A = 1)$

$$= (\sec^2 A - 1) + (\operatorname{cosec}^2 A - 1) + 2$$

$$= \sec^2 A + \operatorname{cosec}^2 A = \frac{1}{\cos^2 A} + \frac{1}{\sin^2 A}$$

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

$$= \frac{1}{\cos^2 A \sin^2 A} = \sec^2 A \operatorname{cosec}^2 A$$

=> Ans - (C)

**Question 97**

Refer the below data table and answer the following question.

	Boys	Girls
Medical	20	55
Engineering	60	30

What percent students who Engineering are girls ?

A 18.18

B 33.33

C 35.29

D 50

**Answer: B**

**Explanation:**

Number of girls who chose engineering = 30

Total number of engineers = 60 + 30 = 90

$$\Rightarrow \text{Percent of the girls who choose engineering} = \frac{30}{90} \times 100$$

$$= \frac{100}{3} = 33.33\%$$

=> Ans - (B)



**Question 98**

Refer the below data table and answer the following question.

	Cumulative production
January	580
February	1070
March	1720
April	2340
May	2860
June	3210

How many car were manufactured in the form of months April and May ?

- A 1140
- B 870
- C 1270
- D 5200

**Answer:** A

**Explanation:**

Number of cars produced in :

January = 580

February =  $1070 - 580 = 490$

March =  $1720 - 1070 = 650$

April =  $2340 - 1720 = 620$

May =  $2860 - 2340 = 520$

June =  $3210 - 2860 = 350$

=> Number of cars that were manufactured in the month of the April and may =  $620 + 520 = 1140$

=> Ans - (A)

### Question 99

Refer the below data table and answer the following question.

Day of the week	Distance jogged (in km)
Monday	4
Tuesday	2.5
Wednesday	3.5
Thursday	2
Friday	4.5
Saturday	2
Sunday	4

If 400 calories are burned by jogging 5 km, How many calories were burnt in the given week

- A 1750 calories
- B 1850 calories
- C 1800 calories
- D 1700 calories

**Answer: C**

#### Explanation:

Total distance jogged in entire week

$$= 4 + 2.5 + 3.5 + 2 + 4.5 + 2 + 4 = 22.5 \text{ km}$$

Calories burned after jogging 5 km = 400 calories

$$\Rightarrow \text{Calories burned after jogging 22.5 km} = \frac{400}{5} \times 22.5$$

$$= 80 \times 22.5 = 1800 \text{ calories}$$

$\Rightarrow$  Ans - (C)

### Question 100

Refer the below data table and answer the following question.

Items	Yearly expence in lakhs
Raw Materilas	5
Labour	5
Rent	2
Interest	5
Taxes	4

Labour and Interest are what percent total expenses ?

- A 47.62 percent
- B 40.37 percent

C 33.12 percent

D 54.87 percent

**Answer:** A

**Explanation:**

Yearly expense in labour and interest (in lakhs) = 5 + 5 = 10

Total expenses (in lakhs) = 5 + 5 + 2 + 5 + 4 = 21

$$\Rightarrow \text{Required \%} = \frac{10}{21} \times 100$$

$$= \frac{1000}{21} \approx 47.62\%$$

$\Rightarrow$  Ans - (A)

# SSC CHSL 30 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.

Haemoglobin : Blood :: Chlorophyll : ?

- A Leaf
- B Animal
- C Human
- D Oxygen

Answer: A

### Explanation:

Haemoglobin is found in blood, similarly Chlorophyll is found in *leaves*.

=> Ans - (A)

### Question 2

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

MP : PN :: QR : ?

- A PT
- B TP
- C LM
- D NR

Answer: B

### Explanation:

Expression = MP : PN :: QR : ?

The pattern followed is :

M	P
(+3)	(-2)
P	N

Similarly, QR : TP

Q	R
(+3)	(-2)
T	P

=> Ans - (B)

### Question 3

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

ST : ZM :: KR : ?

A KR

B RK

C LR

D LK

**Answer: B**

### Explanation:

Expression = ST : ZM :: KR : ?

The pattern followed is :

S	T
(+7)	(-7)
Z	M

Similarly, KR : RK

K	R
(+7)	(-7)
R	K

=> Ans - (B)

### Question 4

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

3 : 27 :: 4 : ?

A 96

B 64

C 44

D 48

**Answer: B**

**Explanation:**

Expression =  $3 : 27 :: 4 : ?$

The pattern followed is =  $x : x^3$

Eg :-  $3 : 3^3 = 3 : 27$

Similarly,  $4^3 = 64$

=> Ans - (B)

**Question 5**

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

A Curd

B Oil

C Cheese

D Butter

**Answer:** B

**Explanation:**

Curd, cheese and butter are made from milk, hence oil is the odd one out.

=> Ans - (B)

**Question 6**

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

A LA

B PR

C OC

D US

**Answer:** B

**Explanation:**

All the words except PR contain one vowel, hence PR is the odd one out.

=> Ans - (B)

**Question 7**

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

- A 8
- B 64
- C 125
- D 343

**Answer: B**

**Explanation:**

$$8 = 2^3$$

$$64 = 4^3 = 8^2$$

$$125 = 5^3$$

$$343 = 7^3$$

Thus, 64 is the only number which is both a perfect cube and square.

=> Ans - (B)

### Question 8

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

- A 844
- B 972
- C 716
- D 345

**Answer: D**

**Explanation:**

The pattern followed is that the difference between the first two digits is equal to the third digit, but  $3 - 4 \neq 5$ , hence 345 is the odd one out.

=> Ans - (D)

### Question 9

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

?, Lal Bahadur Shastri, Indira Gandhi, Morarji Desai, Choudhary Charan Singh

- A Jawahar Lal Nehru

- B Rajiv Gandhi
- C Manmohan Singh
- D V. P. Singh

**Answer:** A

**Explanation:**

The given list is of India's Prime Ministers in chronological order.

= Jawahar Lal Nehru -> Lal Bahadur Shastri -> Indira Gandhi -> Morarji Desai -> Choudhary Charan Singh

=> Ans - (A)

**Question 10**

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

**VW, XU, ZS, BQ, ?**

- A OD
- B DO
- C EO
- D FO

**Answer:** B

**Explanation:**

Expression : VW, XU, ZS, BQ, ?

The pattern followed in each letters of the terms is :

1st letter : V (+2 letters) = X (+2 letters) = Z (+2 letters) = B (+2 letters) = D

2nd letter : W (-2 letters) = U (-2 letters) = S (-2 letters) = Q (-2 letters) = O

Thus, missing term = **DO**

=> Ans - (B)

**Question 11**

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

**AN, DQ, GT, JW, ?**

- A MA



**B** NZ

**C** MZ

**D** LY

**Answer: C**

**Explanation:**

Expression : AN, DQ, GT, JW, ?

The pattern followed in each letters of the terms is :

1st letter : A (+3 letters) = D (+3 letters) = G (+3 letters) = J (+3 letters) = M

2nd letter : N (+3 letters) = Q (+3 letters) = T (+3 letters) = W (+3 letters) = Z

Thus, missing term = **MZ**

=> Ans - (C)

**Question 12**

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

**76, 101, 151, 226, ?**

**A** 351

**B** 426

**C** 326

**D** 301

**Answer: C**

**Explanation:**

Multiples of 25 are added.

$$76 + 25 = 101$$

$$101 + 50 = 151$$

$$151 + 75 = 226$$

$$226 + 100 = \mathbf{326}$$

=> Ans - (C)

### Question 13

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) The pass percentage in a subject Political Science is very low as compared to others in the same curriculum.

(II) The students who were admitted to the programme did not study Political Science earlier.

**Conclusions:**

(I) The foundation of the subject is very important for a student to perform well in examination.

(II) Political Science is a generic subject and students can attempt it without any problem.

- 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 14

The first of April is a Wednesday. What day of the week will it be on the first of May of the same year?

- A Saturday
- B Friday
- C Sunday
- D Monday

**Answer: B**

**Explanation:**

According to the question, 1st April is Wednesday

Odd days from 1st April till 1st May =  $(30) \% 7 = 2$

Thus, day on 1st May = Wednesday (+2) = Friday

=> Ans - (B)

### Question 15

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

- i. Treasure
- ii. Treadmill
- iii. Training
- iv. Translate

A iii, iv, i, ii

B iv, i, iii, ii

C i, iii, ii, iv

D iii, iv, ii, i

**Answer:** D

#### **Explanation:**

As per the order of dictionary :

= Training -> Translate -> Treadmill -> Treasure

≡ iii, iv, ii, i

=> Ans - (D)

### Question 16

In a certain code language, "VERBAL" is written as "KZAQDU". How is "CURIOUS" written in that code language?

A RTHNQTB

B BTQHNTR

C RTNHQTB

D RTNHQTA

**Answer:** A

#### **Explanation:**

"VERBAL" is written as "KZAQDU"

The pattern followed is that the word is written in reverse order, then the preceding letters are written to form the code.

L	A	B	R	E	V
(-1)	(-1)	(-1)	(-1)	(-1)	(-1)
K	Z	A	Q	D	U

Similarly, CURIOUS is written as SUOIRUC

S	U	O	I	R	U	C
(-1)	(-1)	(-1)	(-1)	(-1)	(-1)	(-1)
R	T	H	N	Q	T	B

=> Ans - (A)

### Question 17

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

?	12	9
36	108	72
9	9	8

A 0

B 4

C 2

D 6

Answer: B

### Explanation:

The pattern followed is that in each column, the number at the middle is obtained by multiplying the other two.

$$\text{Eg :- } 12 \times 9 = 108$$

$$9 \times 8 = 72$$

$$\text{Similarly, } 9 \times x = 36$$

$$\Rightarrow x = \frac{36}{9} = 4$$

=> Ans - (B)

### Question 18

If "A" means "plus", "B" means "divide", "C" means "multiply" and "D" means "minus", then  
 180 B 36 C 5 A 8 D 32 = ?

A 0

B 3

C 1

D 2

**Answer: C**

**Explanation:**

Expression :  $180 \div 36 \times 5 + 8 - 32 = ?$

$$\equiv 180 \div 36 \times 5 + 8 - 32$$

$$= (5 \times 5) - 24$$

$$= 25 - 24 = 1$$

=> Ans - (C)

**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? KK\_LL\_K\_L\_LL

A LKML

B LKKK

C LLKL

D LKKL

**Answer: C**

**Explanation:**

The pattern followed is that the terms 'KK' and 'LLLL' are repeated alternatively.

= KK LLLL KK LLLL

=> Ans - (C)

**Question 20**

Rahul's school is in the north-east direction from his house. In which direction, is his house from his school?

A North-west

B South-west

C South-east

D West

**Answer: B**

**Explanation:**

Rahul's school is in the north-east direction from his house.

Thus, opposite of north-east is south-west

Thus, his house is **South-west** from his school

=> 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, 'F' can be represented by 32, 42, etc., and 'M' can be represented by 88, 68, etc. Similarly, you have to identify the set for the word 'SURE'.

Matrix - I

	0	1	2	3	4
0	U	N	U	H	E
1	U	A	N	L	I
2	E	G	A	N	E
3	E	L	F	A	U
4	L	G	F	N	E

Matrix - II

	5	6	7	8	9
5	I	S	B	R	O
6	R	I	T	M	S
7	R	S	G	R	O
8	T	S	G	M	R
9	S	T	G	M	O

A 76, 00, 77, 24

B 56, 10, 89, 30

C 86, 34, 65, 85

D 69, 02, 75, 66

**Answer: B**

### Explanation:

(A) : 76, 00, 77, 24 = SUGE

(B) : 56, 10, 89, 30 = **SURE**

(C) : 86, 34, 65, 85 = SURT

(D) : 69, 02, 75, 66 = SURI

=> Ans - (B)

**Question 22**

A boy says to a girl, "Your father's wife is the only daughter of my maternal grandmother." How is the boy related to the girl?

- A Brother
- B Sister
- C Son
- D Cousin

**Answer:** A

**Explanation:**

Only daughter of the boy's maternal grandmother = Boy's mother

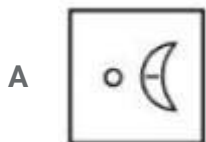
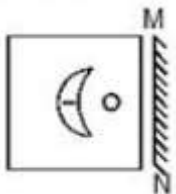
Now, boy's mother is girl's father's wife, => boy and girl are siblings.

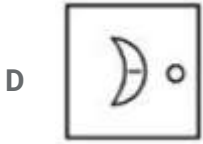
=> The boy is her brother.

=> 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?

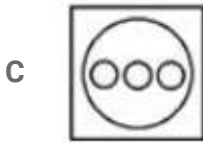
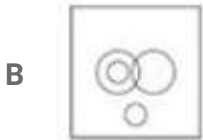
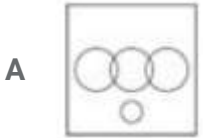




Answer: C

**Question 24**

Identify the diagram that best represents the relationship among the given classes. Earth, Crust, Mantle, Core



Answer: C

**Explanation:**

Crust, Mantle and core are all three layers of the earth, but are different from each other hence do not intersect.

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



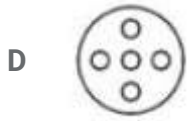
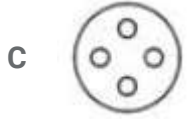
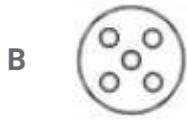
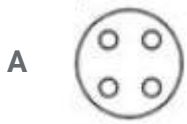
=> Ans - (C)

**Question 25**

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







**Answer: A**

## General Awareness

### Instructions

For the following questions answer them individually

### Question 26

**Panch Mahal is situated in?**

- A Hawa Mahal
- B Gwalior Fort
- C Fatehpur Sikri
- D Agra Fort

**Answer: C**

### Question 27

**Kedarnath Singh won Jnanpith Award for work in which language?**

- A Gujarati

**B** Marathi

**C** Hindi

**D** Telugu

**Answer: C**

**Question 28**

**To which class does Oxyreductases, transferases, hydrolases belong?**

**A** Hormones

**B** Enzymes

**C** Proteins

**D** Vitamins

**Answer: B**

**Question 29**

**Which of the following is not true about Gymnosperms?**

**A** Dominant phase is saprophytes

**B** Vascular bundles are absent

**C** spores are heterospores

**D** Flowers are absent

**Answer: B**

**Question 30**

**The name of first mammal clone sheep is**

**A** Noori

**B** Dolly

**C** Louise

**D** Durga

**Answer: B**

**Question 31**

**What is dehydration?**

- A Removal of acid from a molecule
- B Removal of base from a molecule
- C Removal of water from a molecule
- D Removal of alkali from a molecule

**Answer: C**

**Question 32**

.....character of a bond between two atoms is greater if the difference in their electro negativities is lesser.

- A Polar
- B Metallic
- C Ionic
- D Covalent

**Answer: D**

**Question 33**

.....allows searching for information and computing derived information.

- A Data definition language
- B Data manipulation language
- C Query language
- D OQL

**Answer: C**

**Question 34**

**Garadi is a folk dance of.....**

- A Mizoram
- B Puducherry
- C Gujarat
- D Rajasthan

**Answer: B**

#### **Question 35**

**If price of an article decreases from Rs 80 to Rs 60, quantity demanded increases from 600 units to 750 units. Find point elasticity of demand?**

- A -1
- B 1
- C -1.25
- D 1.25

**Answer: A**

#### **Question 36**

**Which of the following measures will not increase a nation's wealth?**

- A investing in new companies
- B increasing efficiency of factories
- C converting grasslands into orchards
- D By redistributing taxes as subsidies

**Answer: D**

#### **Question 37**

**Which type of pathogen causes the water-borne disease Typhoid fever?**

- A Algal
- B Parasitic

**C** Protozoan

**D** Bacterial

**Answer: D**

**Question 38**

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

**A** B<sub>2</sub>H<sub>6</sub>

**B** Ne

**C** C<sub>6</sub>H<sub>14</sub>

**D** O<sub>3</sub>

**Answer: D**

**Question 39**

**Squadron Leader is one of the ranks of the Indian**

**A** Army

**B** Navy

**C** Air Force

**D** Paramilitary Force

**Answer: C**

**Question 40**

**Which is called country of canals?**

**A** India

**B** Pakistan

**C** Japan

**D** Myanmar

**Answer: B**

**Question 41**

**Male is the Capital of .....**

- A Algeria
- B Maldives
- C Kenya
- D Mauritius

**Answer: B**

**Question 42**

**Mahabalipuram was founded by .....**

- A Rajaraja Chola
- B Narasimha Varman
- C Chandragupta Maurya
- D Vivasvan

**Answer: B**

**Question 43**

**Chhatrapati Shivaji Maharaj (1674-1680 AD) was the ruler of which dynasty?**

- A Nanda
- B Haryanka
- C Maurya
- D Maratha

**Answer: D**

**Question 44**

**Who Invented airbag?**

- A Wright brothers

**B** Reynold B. Johnson

**C** Assen Jordanoff

**D** Ken Kutaragi

**Answer: C**

**Question 45**

**Why boiling point of water decreases at high altitudes?**

**A** Because of high temperature

**B** Because of low atmospheric pressure

**C** Because of low temperature

**D** Because of high atmospheric pressure

**Answer: B**

**Question 46**

**What is the unit of the physical quantity, Momentum?**

**A** newton second

**B** joule second

**C** erg second

**D** pascal second

**Answer: A**

**Question 47**

**Communist Party of India was founded in .....**

**A** 1835

**B** 1885

**C** 1925

**D** 1964

**Answer: C**

**Question 48**

**Article 39A of the Indian Constitution "Equal justice and free legal aid" deals with?**

- A the State Government
- B the directive principles of state policy
- C the Union Government
- D the fundamental rights of the Indian Citizen

**Answer: B**

**Question 49**

**Who among the following has scored 2 triple hundreds in test matches?**

- A Ricky Ponting
- B Jacques Kallis
- C Sachin Tendulkar
- D Brian Lara

**Answer: D**

**Question 50**

**Who is the author of "Swami and Friends"?**

- A Sudeep Nagarkar
- B Devdutt Pattanaik
- C R. K. Narayan
- D Aravind Adiga

**Answer: C**



# English

## Instructions

For the following questions answer them individually

### Question 51

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

To place or deal with close together for contrasting effect.

- A to scrutiny
- B to juxtapose
- C to correlate
- D to contrast

**Answer: B**

### Question 52

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.

After the votes were counted, the family .....was for a Hawaiian vacation.

- A together
- B idea
- C unity
- D consensus

**Answer: D**

### Question 53

Improve the bracketed part of the sentence.

My mother opened the parcel without (worrying) to read the address on it.

- A doubting
- B bothering
- C fearing

D no improvement

**Answer: B**

#### Question 54

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

**to cut to the chase**

A to chase your dreams

B to explain a very long story in brief

C to remove all negative thoughts from one's mind

D to come to the point

**Answer: D**

#### Question 55

Improve the bracketed part of the sentence. She could not cope (by) the heavy workload.

A with

B of

C up

D no improvement

**Answer: A**

#### Question 56

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 teacher will give you instructions.**

A Instructions would be given to you by the teacher.

B Instructions will have been given to you by the teacher.

C Instructions will be given to you by the teacher.

D Instructions were given to you by the teacher.

**Answer: A**

**Question 57**

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

**The architecture**

**P-was designed to promote**

**Q-of the Internet**

**R-connectivity, not security**

**A QPR**

**B RQP**

**C PQR**

**D PRQ**

**Answer: A**

**Question 58**

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

**It secured support from**

**P-government, a significant development in itself**

**Q-other sections of the**

**R-Opposition, and defeated the**

**A RQP**

**B QRP**

**C PRQ**

**D PQR**

**Answer: B**

**Question 59**

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

**curiosity killed the cat**

**A a person who constantly keeps asking questions is avoided by everybody**

**B everybody has a fatal weakness**

**C** being inquisitive about other people's affairs may get you into trouble

**D** everyone feels like killing a nagging person

**Answer: C**

### **Question 60**

**Select the synonym of famished**

**A** glut

**B** jaded

**C** satiated

**D** starved

**Answer: D**

### **Question 61**

**Select the word with the correct spelling**

**A** humbeling

**B** wardrobe

**C** delicat

**D** gazeles

**Answer: B**

### **Question 62**

**Select the antonym of mandate**

**A** injunction

**B** behest

**C** breach

**D** decree

**Answer: C**

**Question 63**

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'.

Not only we seen(A)/the Tali temple but(B)/also the Thirunelli temple.(C)/No error(D)

A A

B B

C C

D D

**Answer: A**

**Question 64**

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 unique selling proposition of(A)/our products are that(B)/they are unbreakable.(C)/No error(D)

A A

B B

C C

D D

**Answer: B**

**Question 65**

Select the antonym of arcane

A mystic

B recondite

C esoteric

D hackneyed

**Answer: D**

**Question 66**

**Select the synonym of thrashing**

- A edifice
- B prefabrication
- C bashing
- D contour

**Answer: C**

**Question 67**

**Select the word with the correct spelling**

- A guttered
- B melower
- C cystetis
- D mutered

**Answer: A**

**Question 68**

**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.**

**My parents will .....my car if I get another speeding ticket.**

- A capture
- B grab
- C confiscate
- D mob

**Answer: C**

**Question 69**

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

A long narrow ditch embanked with its own soil and used for concealment and protection in warfare

- A trench
- B gully
- C furrow
- D moat

**Answer: A**

**Question 70**

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

Vicky said, "Please say nothing about this."

- A Vicky asked her to not to say anything about this.
- B Vicky asked her that she should not to say anything about that.
- C Vicky asked her to say nothing about that.
- D Vicky asked her that she say nothing about that.

**Answer: D**

**Explanation:**

Start Group:

**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 way criminal justice is designed and administered today .....serves any of the purposes for which it is set up: towards securing life and property. It does not .....criminals because of the delay and uncertainties involved in its processes and ridiculously ineffective punishments it imposes .....those few who get convicted. It provides wide discretion to the police and the prosecution, .....the system vulnerable to corruption and manipulation and endangering basic .....of innocent citizens. today .....serves any of the purposes for which it is set up: towards securing life and property.

**Question 71**

today .....serves any of the purposes for which it is set up: towards securing life and property.

- A little
- B only
- C hardly
- D scantily

**Answer: C**

**Question 72**

**It does not .....criminals because of the delay and uncertainties involved in its processes**

- A deter
- B divert
- C ban
- D prohibit

**Answer: A**

**Question 73**

**it imposes .....those few who get convicted.**

- A of
- B onto
- C over
- D on

**Answer: D**

**Question 74**

**.....the system vulnerable to corruption and manipulation**

- A to render
- B rendering
- C rendered



D render

Answer: B

**Question 75**

and endangering basic .....of innocent citizens.

A powers

B facilities

C duties

D rights

Answer: D

**Explanation:**

End Group:

## Mathematics

**Instructions**

For the following questions answer them individually

**Question 76**

(91 + 92 + 93 + ..... +110) is equal to

A 4020

B 2010

C 6030

D 8040

Answer: B

**Explanation:**

Expression : (91 + 92 + 93 + ..... +110)

This is an arithmetic progression with first term,  $a = 91$  , last term,  $l = 110$  and common difference,  $d = 1$

Let number of terms =  $n$

Last term in an A.P. =  $a + (n - 1)d = 110$

$\Rightarrow 91 + (n - 1)(1) = 110$

$$\Rightarrow n - 1 = 110 - 91 = 19$$

$$\Rightarrow n = 19 + 1 = 20$$

$$\therefore \text{Sum of A.P.} = \frac{n}{2}(a + l)$$

$$= \frac{20}{2}(91 + 110)$$

$$= 10 \times 201 = 2010$$

### Question 77

The value of  $x$  for which the expressions  $15x + 4$  and  $13x - 2$  become equal is .....

A -1

B 1

C -3

D 3

Answer: C

### Explanation:

Expressions :  $15x + 4$  and  $13x - 2$

$$\Rightarrow 15x + 4 = 13x - 2$$

$$\Rightarrow 15x - 13x = -2 - 4$$

$$\Rightarrow 2x = -6$$

$$\Rightarrow x = \frac{-6}{2} = -3$$

$\Rightarrow$  Ans - (C)

### Question 78

A car travels a certain distance at 70 km/h and comes back at 30 km/h. Find the average speed for total journey.

A 42 km/hr

B 50 km/hr

C 34 km/hr

D 58 km/hr

Answer: A

### Explanation:

Average speed of the journey is the harmonic mean of the speeds 70 and 30 km/hr

Harmonic mean of two numbers 'x' and 'y' =  $\frac{2}{\frac{1}{x} + \frac{1}{y}}$

$$\begin{aligned}\text{Average speed} &= \frac{2}{\frac{1}{70} + \frac{1}{30}} \\ &= 2 \div \frac{30+70}{30 \times 70} = \frac{2 \times 30 \times 70}{100} \\ &= 2 \times 3 \times 7 = 42 \text{ km/hr}\end{aligned}$$

=> Ans - (A)

### Question 79

The price of an article is cut by 42%, to restore to its original value, the new price must be increased by .....

- A 42 percent
- B 72.41 percent
- C 29.58 percent
- D 52.5 percent

**Answer: B**

### Explanation:

Let the original price of the article = Rs. 100

If the price is cut by 42%, => New price =  $\frac{100-42}{100} \times 100 = Rs.58$

To restore to its original value the new price must be increased by =  $\frac{100-58}{58} \times 100$   
 $= \frac{4200}{58} \approx 72.41\%$

=> Ans - (B)

### Question 80

The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Rs 8. The sum is.....

- A Rs 10000
- B Rs 20000
- C Rs 5000
- D Rs 15000

**Answer: C**

**Explanation:**

Let the given sum = Rs.  $100x$

Rate of interest = 4% and time period = 2 years

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

$$= 100x\left[\left(1 + \frac{4}{100}\right)^2 - 1\right]$$

$$= 100x\left[\left(\frac{26}{25}\right)^2 - 1\right] = 100x\left(\frac{676-625}{625}\right)$$

$$= 100x \times \frac{51}{625} = \frac{204x}{25}$$

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

$$= \frac{100x \times 4 \times 2}{100} = 8x$$

$$\Rightarrow \text{Difference between simple and compound interests} = \frac{204x}{25} - 8x = 8$$

$$\Rightarrow \frac{204x - 200x}{25} = 8$$

$$\Rightarrow 4x = 8 \times 25$$

$$\Rightarrow x = \frac{8 \times 25}{4} = 2 \times 25 = 50$$

$\therefore$  Value of given sum =  $100 \times 50 = \text{Rs. } 5,000$

**Question 81**

If  $(x + y):(x - y) = 11:1$ , find value of  $(5x + 3y)/(x - 2y)$ .

A 45/4

B 4/45

C -45/4

D -4/45

**Answer: C**

**Explanation:**

$$\text{Given: } \frac{x+y}{x-y} = \frac{11}{1}$$

$$\Rightarrow x + y = 11x - 11y$$

$$\Rightarrow y + 11y = 11x - x \Rightarrow 12y = 10x$$

$$\Rightarrow y = \frac{5x}{6}$$

$$\text{To find: } \frac{5x+3y}{x-2y}$$

$$= \left[5x + 3\left(\frac{5x}{6}\right)\right] \div \left[x - 2\left(\frac{5x}{6}\right)\right]$$

$$= \left(5x + \frac{5x}{2}\right) \div \left(x - \frac{5x}{3}\right)$$

$$= \left(\frac{15x}{2}\right) \div \left(\frac{-2x}{3}\right)$$

$$= \frac{15x}{2} \times \frac{-3}{2x} = \frac{-45}{4}$$

=> Ans - (C)

### Question 82

A rice trader buys 16 quintals of rice for Rs 5632. 20% rice is lost in transportation. At what rate should he sell to earn 25% profit?

- A Rs 225.2 per quintal
- B Rs 550 per quintal
- C Rs 440 per quintal
- D Rs 563.2 per quintal

**Answer: B**

#### Explanation:

Cost price = Rs. 5632 for 16 quintals

$$\begin{aligned} \text{Quantity of rice left with the trader after transportation lost} &= \frac{100-20}{100} \times 16 \\ &= \frac{4}{5} \times 16 = 12.8 \text{ quintals} \end{aligned}$$

$$\begin{aligned} \text{To have 25\% profit, total selling price of the trader should be} &= \frac{125}{100} \times 5632 \\ &= 5 \times 1408 = \text{Rs. } 7040 \end{aligned}$$

$$\therefore \text{Selling price per quintal} = \frac{7040}{12.8} = \text{Rs. } 550$$

=> Ans - (B)

### Question 83

If  $2 + 4x < 5 - \frac{x}{2}$  and  $3x + 3 > -5 - 3x$ ; then  $x$  can take which of the following values?

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

**Answer: D**

#### Explanation:

$$\text{Expression 1 : } 2 + 4x < 5 - \frac{x}{2}$$

$$\Rightarrow 4x + \frac{x}{2} < 5 - 2$$

$$\Rightarrow \frac{9x}{2} < 3$$

$$\Rightarrow x < \frac{2}{3} \text{ -----(i)}$$

$$\text{Expression 2 : } 3x + 3 > -5 - 3x$$

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

$$\Rightarrow x > \frac{-4}{3} \text{ -----(ii)}$$

Combining inequalities (i) and (ii), we get :  $\frac{-4}{3} < x < \frac{2}{3}$

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

$\Rightarrow$  Ans - (D)

#### Question 84

The ten's digit of a 2-digit number is greater than the units digit by 7. If we subtract 63 from the number, the new number obtained is a number formed by interchange of the digits. Find the number.

A 81

B 70

C 92

D Cannot be determined

**Answer:** D

#### Explanation:

Let the unit's digit of the number be  $y$  and ten's digit be  $x$

$$\Rightarrow \text{Number} = 10x + y$$

$$\text{According to ques, } \Rightarrow x - y = 7 \text{ -----(i)}$$

$$\text{According to question, } \Rightarrow 10x + y - 63 = 10y + x$$

$$\Rightarrow 9x - 9y = 63$$

$$\Rightarrow x - y = \frac{63}{9} = 7 \text{ -----(ii)}$$

Equations (i) and (ii) are same and thus we have two variables and one equation

Number can be = 92, 81 and thus the solution cannot be determined.

$\Rightarrow$  Ans - (D)

#### Question 85

$\triangle DEF$  is similar to  $\triangle GHI$ . Length of DE is 9 cm and length of the corresponding side GH is 16 cm. What is the ratio of areas of  $\triangle DEF$  :  $\triangle GHI$ ?

A 3:4

B 9:16

C 81:256

D 16:9

Answer: C

**Explanation:**

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

Also, length of DE = 9 cm and length of the corresponding side GH = 16 cm

=> Ratio of Area of  $\triangle DEF$  : Area of  $\triangle GHI$  = Ratio of square of corresponding sides =  $(DE)^2 : (GH)^2$

$$= \frac{(9)^2}{(16)^2} = \frac{81}{256}$$

∴ The required ratio is 81 : 256

=> Ans - (C)

### Question 86

A carpenter can build a cupboard in 48 hours. After 12 hours he takes a break. What fraction of the cupboard is yet to be built?

A 0.4

B 0.5

C 0.75

D 0.25

Answer: C

**Explanation:**

Time taken to build the cupboard = 48 hours

Time spent = 12 hours

=> Fraction of the cupboard yet to be built =  $\frac{(48-12)}{48} = \frac{36}{48}$

$$= \frac{3}{4} = 0.75$$

=> Ans - (C)

### Question 87

The average revenues of 7 consecutive years of a company is Rs 83 lakhs. If the average of first 4 years is Rs 78 lakhs and that of last 4 years is Rs 90 lakhs, find the revenue for the 4th year.

A Rs 91 lakhs

B Rs 93 lakhs

C Rs 89 lakhs

D Rs 87 lakhs

**Answer: A**

**Explanation:**

Total revenues of 7 years of the company =  $83 \times 7 = \text{Rs. } 581$  lakhs

Total revenue of first 4 years =  $78 \times 4 = \text{Rs. } 312$  lakhs

Total revenue of last 4 years =  $90 \times 4 = \text{Rs. } 360$  lakhs

$\therefore$  Revenue of 4th year =  $(312 + 360) - 581 = 672 - 581$

= Rs. 91 lakhs

=> Ans - (A)

**Question 88**

The slope of the line passing through the points  $(7,-2)$  and  $(x,1)$  is  $-3/10$ . Find  $x$ .

A 4

B 2

C -4

D -3

**Answer: D**

**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 the line passing through the points  $(7,-2)$  and  $(x,1)$

$$= \frac{1 - (-2)}{x - 7} = \frac{-3}{10}$$

$$\Rightarrow \frac{3}{x - 7} = \frac{-3}{10}$$

$$\Rightarrow x - 7 = -10$$

$$\Rightarrow x = -10 + 7 = -3$$

=> Ans - (D)

**Question 89**

10% discount is offered on an item. By applying a promo code the customer wins 5% cash back. What is the effective discount?



- A 15.225 percent
- B 14.5 percent
- C 15 percent
- D 5.5 percent

**Answer: B**

**Explanation:**

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

$$\begin{aligned}\text{Amount after 10 \% discount} &= 100x - \frac{10}{100} \times 100x \\ &= 100x - 10x = \text{Rs.}90x\end{aligned}$$

$$\begin{aligned}\text{Selling price after 5 \% cashback} &= 90x - \frac{5}{100} \times 90x \\ &= 90x - 4.5x = \text{Rs.}85.5x\end{aligned}$$

$$\Rightarrow \text{Total discounted amount} = 100x - 85.5x = \text{Rs.}14.5x$$

$$\therefore \text{Effective discount} = \frac{14.5x}{100x} \times 100 = 14.5\%$$

**Question 90**

**Find the sum of the measures all the interior angles of a polygon having 12 sides.**

- A  $1800^\circ$
- B  $2520^\circ$
- C  $2880^\circ$
- D  $3240^\circ$

**Answer: A**

**Explanation:**

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

Number of sides of polygon,  $n = 12$

$$\Rightarrow \text{Sum of interior angles} = (12 - 2) \times 180^\circ$$

$$= 10 \times 180 = 1800^\circ$$

$\Rightarrow$  Ans - (A)

**Question 91**

**One diagonal of a rhombus is half the other. If the length of the side of the rhombus is 20 cm, what is the area of the rhombus?**

A 320 sq cm

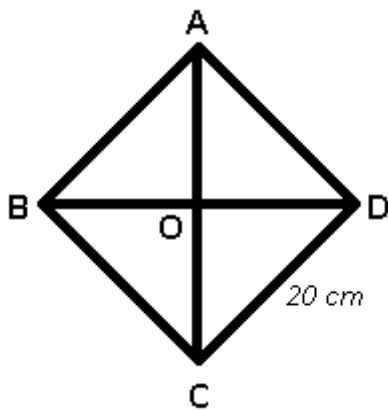
B 160 sq cm

C 240 sq cm

D 360 sq cm

**Answer: A**

**Explanation:**



AC and BD are diagonals of the rhombus ABCD with side = 20 cm

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

=> BD =  $2x$  cm

Diagonal of a rhombus perpendicularly bisect each other.

=> OD =  $x$  cm and OC =  $2x$  cm

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

=>  $(2x)^2 + (x)^2 = (20)^2$

=>  $4x^2 + x^2 = 400$

=>  $x^2 = \frac{400}{5} = 80$

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

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

=  $4x^2 = 4 \times 80 = 320\text{cm}^2$

=> Ans - (A)

### Question 92

The curved surface area of a hemisphere is 27.72 sq cm, find its radius?

- A 4.2 cm
- B 2.1 cm
- C 0.7 cm
- D 1.05 cm

**Answer: B**

**Explanation:**

Let radius of hemisphere =  $r$  cm

Curved surface area of hemisphere =  $2\pi r^2 = 27.72$

$$\Rightarrow r^2 = \frac{27.72}{2\pi}$$

$$\Rightarrow r^2 = 13.86 \times \frac{7}{22}$$

$$\Rightarrow r^2 = 0.63 \times 7 = 4.41$$

$$\Rightarrow r = \sqrt{4.41} = 2.1 \text{ cm}$$

$\Rightarrow$  Ans - (B)

**Question 93**

**If  $6A = 11B = 7C$ ; find  $A : B : C$**

- A 66:42:77
- B 77:42:66
- C 42:77:66
- D 7:11:6

**Answer: B**

**Explanation:**

Let  $6A = 11B = 7C = k$

$$\Rightarrow A = \frac{k}{6}, B = \frac{k}{11}, C = \frac{k}{7}$$

$$\Rightarrow \text{Ratio of } A : B : C = \frac{k}{6} : \frac{k}{11} : \frac{k}{7}$$

$$= \frac{1}{6} : \frac{1}{11} : \frac{1}{7}$$

L.C.M. of 6,11 and 7 = 462, thus multiplying by 462, we get :

$$= \frac{462}{6} : \frac{462}{11} : \frac{462}{7}$$

$$= 77 : 42 : 66$$

$\Rightarrow$  Ans - (B)

**Question 94**

If  $\cos -4\pi/3 = x$ , then the value of  $x$  is

A  $\sqrt{3}/2$

B  $1/2$

C  $-\sqrt{3}/2$

D  $-1/2$

**Answer: D**

**Explanation:**

Expression :  $\cos -4\pi/3$

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

$$= \cos\left(\frac{4\pi}{3}\right)$$

$$= \cos\left(\pi + \frac{\pi}{3}\right) = -\cos\left(\frac{\pi}{3}\right)$$

$$= -\frac{1}{2}$$

=> Ans - (D)

**Question 95**

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

A  $\cot(A - B)$

B  $\tan(A + B)$

C  $\cot(A + B)$

D  $\tan(A - B)$

**Answer: C**

**Explanation:**

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

$$= \left( \frac{\cos A}{\sin A} \frac{\cos B}{\sin B} - 1 \right) \div \left( \frac{\cos B}{\sin B} + \frac{\cos A}{\sin A} \right)$$

$$= \left( \frac{\cos A \cos B - \sin A \sin B}{\sin A \sin B} \right) \div \left( \frac{\sin A \cos B + \cos A \sin B}{\sin A \sin B} \right)$$

$$= \left( \frac{\cos(A+B)}{\sin A \sin B} \right) \div \left( \frac{\sin(A+B)}{\sin A \sin B} \right)$$

$$= \left( \frac{\cos(A+B)}{\sin A \sin B} \right) \times \left( \frac{\sin A \sin B}{\sin(A+B)} \right)$$

$$= \frac{\cos(A+B)}{\sin(A+B)} = \cot(A+B)$$

=> Ans - (C)

### Question 96

If  $2\operatorname{cosec}^2 A = x$ , then the value of  $x$  is

A  $1/(1 - \operatorname{cosec} A) - 1/(1 + \operatorname{cosec} A)$

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

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

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

**Answer: C**

### Explanation:

Expression :  $2\operatorname{cosec}^2 A = x$

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

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

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

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

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

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

=> Ans - (C)

### Question 97

Refer the below data table and answer the following question

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

What is the ratio of boys to girls ?

A 26 : 37

B 39 : 28

C 28 : 39

D 37 : 26

Answer: D

**Explanation:**

Total number of boys =  $40 + 35 + 15 + 35 + 40 + 20 = 185$

Total number of girls =  $10 + 25 + 10 + 35 + 30 + 20 = 130$

=> Required ratio =  $\frac{185}{130}$

= 37 : 26

=> Ans - (D)

**Question 98**

Refer the below data table and answer the following question

Marks	No of Students
40 and above	25
30 and above	44
20 and above	61
10 and above	88
0 and above	105

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

A 44

B 61

C 36

D 105

Answer: C

**Explanation:**

Number of students who scored :

40 and above = 25

30 and above =  $44 - 25 = 19$

20 and above =  $61 - 44 = 17$

10 and above =  $88 - 61 = 27$

0 and above =  $105 - 88 = 17$

=> Students who have scored marks 20 or more but less than 40 =  $17 + 19 = 36$

=> Ans - (C)

### Question 99

Refer the below data table and answer the following question

Year	GDP Growth rate for the year ( in %)
2011	-7
2012	-5
2013	7
2014	4
2015	-4

In the GDP of the country was \$3 trillion at the end of 2013, what was the beginning of 2015?

- A \$3.21 trillion
- B \$2.88 trillion
- C \$3.12 trillion
- D \$3 trillion

**Answer:** C

#### **Explanation:**

GDP at the beginning of 2015 is equal to the GDP at the end of 2014

=> GDP growth rate in 2014 = 4%

GDP at the end of 2013 = GDP at the beginning of 2014 = \$3 trillion

∴ GDP at the beginning of 2015 =  $\frac{104}{100} \times 3$  trillion

= \$3.12 trillion

=> Ans - (C)

### Question 100

Refer the below data table and answer the following question

Subject	Marks scored
English	30
Hindi	65
Math	80
Science	75
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 49
- B 54

C 59

D 64

**Answer: C**

**Explanation:**

Total marks scored by the student =  $30 + 65 + 80 + 75 + 70 = 320$

=> Average marks =  $\frac{320}{5} = 64$

But due to poor attendance, 5 marks are deducted

∴ Net average =  $64 - 5 = 59$

=> Ans - (C)