



RRB JE 1st June 2019 Shift-2

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Instructions

For the following questions answer them individually

Question 1

Which city hosted the 2012 Olympic Games?

- A Paris
- B Barcelona
- C Berlin
- D London

Answer: D

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Question 2

Choose from the alternatives the figure that best completes the pattern given below.





Answer: B

Explanation:

If we complete the above figure, then the missing pattern is represented by the red colour.



=> Ans - (B)

Question 3

In which of the following countries has Google opened the first African Artificial Intelligence lab recently?

- A Algeria
- B Ethiopia
- C Morocco
- D Ghana

Answer: D

Question 4

A cyclist goes from a place P to Q; first at 4 km/h and later at 5 km/h in 1 hour 24 minutes altogether. If the distances covered in the first and second part of the journey are in the ratio 2 : 1, when did the cyclist change his speed after start?

- A 24 minutes
- B 1 hour
- C 45 minutes
- D 30 minutes

Answer: B

Explanation:

Let total distance of the journey be $3x$ km..

Thus, the cyclist travelled $2x$ km at 4 km/hr and x km at 5 km/hr

Using, time = distance/speed

$$\Rightarrow \frac{2x}{4} + \frac{x}{5} = 1 + \frac{24}{60}$$

$$\Rightarrow \frac{10x+4x}{20} = \frac{7}{5}$$

$$\Rightarrow \frac{7x}{10} = \frac{7}{5}$$

$$\Rightarrow x = 2$$

Thus, total distance = 6 km, and the cyclist change his speed after travelling 4 km in = $\frac{4}{4} = 1$ hour

\Rightarrow Ans - (B)

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Question 5

Which offer is better?

- 1) Two successive discounts of 10% and 20%
- 2) Single discount of 30%

- A (2)
B (1)
C Cannot be determined
D Both (1) & (2) are the same

Answer: A

Explanation:

Let the marked price of a product is Rs. 100

1) Effective discount after two successive discounts of 10% and 20%

$$= 10 + 20 - \frac{10 \times 20}{100}$$

$$= 30 - 2 = 28$$

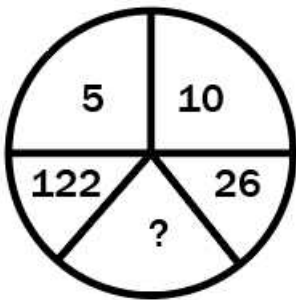
2) Single discount of 30%

Thus, 2) is better.

\Rightarrow Ans - (A)

Question 6

Choose the alternative that best replaces the question mark(?) in the given figure.



- A 54
B 50
C 61
D 58

Answer: B

Explanation:

The pattern followed is starting from 5, and going in clockwise direction, pattern followed is : $n^2 + 1$, where n is prime number.

$$(2)^2 + 1 = 5$$

$$(3)^2 + 1 = 10$$

$$(5)^2 + 1 = 26$$

$$(7)^2 + 1 = 50$$

$$(11)^2 + 1 = 122$$

=> Ans - (B)

Question 7

The variance of a set of value x_1, x_2, \dots, x_n , is given by which of the following formulae?

A Latek 1

B Latek 2

C Latek 3

D Latek 4

Answer: A

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Question 8

Find the ODD one out from the given options.

A E : Z

B B : F

C C : J

D D : Q

Answer: B

Explanation:

If A=1, B=2, C=3 and so on, the pattern here followed is :

$$(A) : E \equiv (5)^2 + 1 = 26 \equiv Z$$

$$(B) : B \equiv (2)^2 + 1 = 5 \equiv E \neq F$$

$$(C) : C \equiv (3)^2 + 1 = 10 \equiv J$$

$$(D) : D \equiv (4)^2 + 1 = 17 \equiv Q$$

=> Ans - (B)

Question 9

Complete the series.

7, 26, 63, 124, 215, 342, (....)

A 481

B 421

C 391

D 511

Answer: D

Explanation:

The numbers are of the form $n^3 - 1$

$$(2)^3 - 1 = 7$$

$$(3)^3 - 1 = 26$$

$$(4)^3 - 1 = 63$$

$$(5)^3 - 1 = 124$$

$$(6)^3 - 1 = 215$$

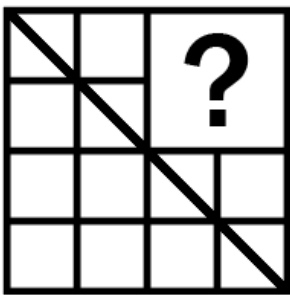
$$(7)^3 - 1 = 342$$

$$(8)^3 - 1 = 511$$

=> Ans - (D)

Question 10

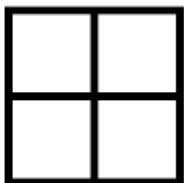
Choose from the alternatives the figure that best completes the pattern given below.



A



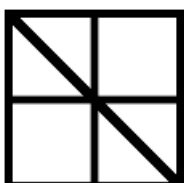
B



C



D



Answer: B

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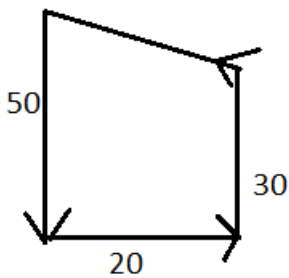
Question 11

Going 50 m to the south of my house, I turn left and go another 20 m. Then turning to the north, I go 30 m and then start walking to my house. In which direction am I walking now?

- A North west
- B East
- C South east
- D North

Answer: A

Explanation:



now he is walking in north west direction

Question 12

Which word will best complete the relationship given below?

Boat : Oar :: Bicycle : ?

- A Seat
- B Road
- C Wheel
- D Pedal

Answer: D

Question 13

From the full moon day counted as day 1, on which day the moon becomes invisible?

- A Thirteenth day
- B Twelfth day
- C Fifteenth day
- D Tenth day

Answer: C

Question 14

The mean of a set of 12 numbers is 24. If one item is excluded, the mean gets reduced by 3. What is the excluded number?

- A 62
- B 45
- C 57
- D 55

Answer: C

Explanation:

mean of a set of 12 numbers is 24.

total of 12 numbers = $12 \times 24 = 288$

one item is excluded the total numbers becomes 11 and the mean gets reduced by 3

let the excluded number be x and the new mean = 21

according to the question

$$\frac{288-x}{11} = 21$$

solving x = 57

excluded number = 57

Question 15

The mineral which controls the functioning of thyroid is-

- A Calcium
- B Iodine
- C Magnesium
- D Phosphorous

Answer: B

Question 16

P and Q agree to do a job for Rs.850. Q alone can do it in 40 days. But P is twice as fast as Q. In order to finish the job earlier, they take the help of R and all three finish the work in 8 days. How much should R be paid for his work?

- A Rs.340
- B Rs.240
- C Rs.300
- D Rs.320

Answer: A

Explanation:

P is twice as fast as Q

efficiency of P = 2

efficiency of Q = 1

with the help of R they complete the job in 8 days

efficiency of P + Q + R = 2 + 1 + 2 = 5

earning per person per day = $\frac{850}{5} = 170$

So R's earned = $2 \times 170 = 340$

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Question 17

Penicillin, an antibiotic medicine is obtained from-

- A Mushrooms
- B Crude oil
- C Mould
- D Dead animals

Answer: C

Question 18

Simplify: $0.032 \times 0.2 + 0.32 \times 0.002$

Latek

- A 0.00064
- B 0.00704
- C 0.0664
- D 0.0064

Answer: B

Explanation:

$$0.032 \times 0.2 + 0.32 \times 0.002$$

$$0.032 \times 0.2 = 0.0064$$

$$0.32 \times 0.002 = 0.00064$$

$$0.0064 + 0.00064 = 0.00704$$

Question 19

In a spring balance, which part is stretched when a force is applied ?

- A Rubber band
- B Coiled spring
- C Elastic thread
- D Nylon band

Answer: B

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Question 20

Which of the following is the outer covering of teeth?

- A Enamel
- B Gum
- C Skin
- D Ivory

Answer: A

Question 21

Find the greatest number that will exactly divide 25, 35, 40 and 30.

- A 20
- B 35
- C 5
- D 15

Answer: C

Explanation:

In all above option only 5 will be exactly divide by 25, 35, 40 and 30.

Factor of 25 = 5×5

Factor of 35 = 5×7

Factor of 40 = $5 \times 2 \times 2 \times 2$

Factor of 30 = $5 \times 3 \times 2$

H.C.F. of 25, 35, 40 and 30 = 5

(\because Common factor 25, 35, 40 and 30 is 5)

Question 22

Which of the following is an example of ectoparasite?

- A Tape worm
- B Mosquito
- C Hook worm
- D Bacteria

Answer: B

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Question 23

The ratio between the sides of two regular polygons is 1 : 2. Ratio between their interior angles is 2 : 3. Find the number of sides of the polygons.

- A 6, 12
- B 5, 10
- C 7, 14
- D 4, 8

Answer: D

Explanation:

each interior angle = $\frac{(n-2)180^\circ}{n}$

according to the question

$$\frac{(n-2)180^\circ}{2n} = \frac{2}{3}$$

$$\frac{(n-2)180 \times 2n}{n(2n-2)180} = \frac{2}{3}$$

$$\frac{n-2}{n-1} = \frac{2}{3}$$

$$3n - 6 = 2n - 2$$

$$n = 4$$

sides are $n = 4$

$$2n = 2 \times 4 = 8$$

Question 24

In a certain code, 'CENTRAL' is written as 'LARTNEC'. How is 'SEMINAR' written in that code?

- A RANIMES
- B RANIEMS
- C RANEIMS
- D RAINEMS

Answer: A

Question 25

Three beakers have capacity of 250 ml, 650 ml and 200 ml each. 682 ml of juice is poured into the three beakers such that the same fraction of each is filled. How much is poured into the smallest beaker?

- A 122 ml
- B 152 ml
- C 132 ml
- D 124 ml

Answer: D

Explanation:

as juice is poured in such a way that the same fraction of each beaker is filled

$$\text{sum} = 250 + 650 + 200 = 1100 \text{ ml}$$

$$\text{smallest beaker is filled with } \frac{200}{1100} \times 682 = 124 \text{ ml}$$

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Question 26

Which of the following departments comes under the Ministry of Finance in India?

- A Department of Expenditure
- B All of the options
- C Department of Revenue
- D Department of Economic Affairs

Answer: B

Question 27

In a certain code, 'GIVE' is written as 21@# and 'FAIL' is written as 4%19. How is 'FEAL' written in that code?

- A 41%@
- B 24@#
- C 4#%9
- D 4#%1

Answer: C

Question 28

Reactions involving loss of hydrogen is known as-

- A Oxidation reaction
- B Combination reaction
- C Reduction reaction
- D Decomposition reaction

Answer: A

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Question 29

Which of these Indian states has a coastline on the Arabian sea?

- A Gujarat
- B West Bengal
- C Odisha
- D Andhra Pradesh

Answer: A

Question 30

Find the missing number in the following series.

126, 129, (...), 147, 171

A 141

B 145

C 132

D 135

Answer: D

Explanation:

126, 129, 135, 147, 171

$$126 + 3 = 129$$

$$129 + 6 = 135$$

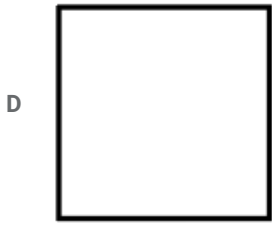
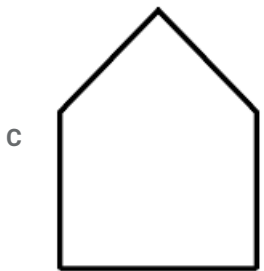
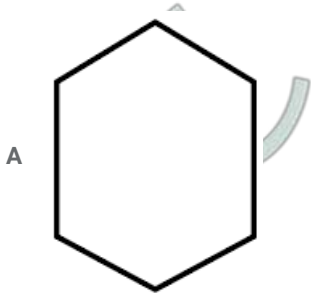
$$135 + 12 = 147$$

$$147 + 24 = 171$$

here difference of 2 consecutive terms multiplied by 2 to get the difference of next two terms

Question 31

Find the ODD one out from the given options.



Answer: C

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Question 32

When does an object float on a liquid?

- A When the density of the object is more than that of the liquid
- B When the object has very high density
- C When both the liquid and the object have the same densities
- D When the density of the object is less than that of the liquid

Answer: D

Question 33

C_nH_{2n} is the general formula of _____ hydrocarbon.

- A Alkanes
- B Both alkanes and alkynes
- C Alkynes
- D Alkenes

Answer: D

Question 34

Which is largest of the following numbers that divides 17, 42, 93 with remainders 4, 3, 15 respectively?

- A 78
- B 17
- C 13
- D 89

Answer: C

Explanation:

By option C,

When 17 is divided by 13 then remainder = 4

When 42 is divided by 13 then remainder = 3

When 93 is divided by 13 then remainder = 15

∴ The largest number will be 13.

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Question 35

If '+' means 'x', '-' means '+', 'x' means '÷' and '÷' means '-', then $6 + 7 \times 3 - 8 \div 20 = ?$

Latek

- A 1
- B -3
- C 2
- D 7

Answer: C

Explanation:

'+' means 'x', '-' means '÷', 'x' means '÷' and '÷' means '-' then substituting we get

$$6 \times 7 \div 3 + 8 - 20$$

$$6 \times \frac{7}{3} + 8 - 20$$

$$14 + 8 - 20 = 2$$

Question 36

Which of the following properties is NOT shown by non-metals?

- A Ductility
- B Sonorous
- C Malleability
- D All of the options

Answer: D

Question 37

_____ is also known as blood sugar.

- A Glucose
- B Trehalose
- C Maltose
- D Sucrose

Answer: A

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Question 38

Complete the series.

5, 6, 8, 12, 20, 36, (...)

- A 68
- B 75
- C 81
- D 72

Answer: A

Explanation:

5, 6, 8, 12, 20, 36, (...)

$$5 + 1 = 6$$

$$6 + 2 = 8$$

$$8 + 4 = 12$$

$$12 + 8 = 20$$

$$20 + 16 = 36$$

$$36 + 32 = 68$$

common difference of 2 consecutive terms are multiplied by 2 to get the next term

Question 39

Which vitamin gets destroyed on heating?

A D

B B1

C E

D A

Answer: B

Question 40

At a given temperature in any gas, liquid or solid, there are particles with different amounts of-

A Potential energy

B Electrical energy

C Mechanical energy

D Kinetic energy

Answer: D

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Question 41

Two right circular cylinders of equal volume have their heights in the ratio 1 : 2. Find the ratio of their radii.

A 1:2

B 2:1

C $1 : \sqrt{2}$

D $\sqrt{2} : 1$

Answer: D

Explanation:

V1 and V2 be the volumes of the cylinder

given that $V_1 = V_2$

$$V1 = \pi r_1^2 h_1$$

$$V2 = \pi r_2^2 h_2$$

$$\pi r_1^2 h_1 = \pi r_2^2 h_2$$

$$r_1^2 h_1 = r_2^2 h_2$$

given that $\frac{h_1}{h_2} = \frac{2}{1}$

$$\frac{r_1^2}{r_2^2} = \frac{h_2}{h_1} = \frac{1}{2}$$

solving $\frac{r_1}{r_2} = \frac{\sqrt{2}}{1}$

Question 42

Two taps can separately fill a cistern in 20 minutes and 25 minutes. Both taps are open for 10 minutes after which the slower one is closed. How long will it take to fill the remaining portion by the other tap alone?

- A 2 minutes
- B 4 minutes
- C 10 minutes
- D 5 minutes

Answer: A

Explanation:

$$\text{workdone} = \text{efficiency} \times \text{time}$$

Two taps P1 and P2 can separately fill a cistern in 20 minutes and 25 minutes.

$$\text{work done} = \text{LCM}(20, 25) = 100$$

$$\text{efficiency of P1} = \frac{100}{20} = 5$$

$$\text{efficiency of P2} = \frac{100}{25} = 4$$

Both taps are open for 10 minutes after which the slower one is closed.

$$\text{workdone} = (\text{efficiency of P1} + \text{efficiency of P2}) \times 10 + \text{efficiency of P1} \times x$$

where x = time required by P1 to fill the remaining portion by the other tap alone

substituting

$$100 = (5 + 4) \times 10 + 5x$$

solving x = 2 minutes

Question 43

Sodium carbonate is a basic salt, because it is a salt of-

- A Strong acid and strong base
- B Weak acid and strong base
- C Strong acid and weak base
- D Weak acid and weak base

Answer: B

Question 44

Which of these trees is used for its timber?

- A Rosewood
- B Mahogany
- C All of the options
- D Teak

Answer: C

Question 45

In this question, a statement is given followed by three conclusions. Choose the conclusion(s) which best fit(s) logically.

Statement:

$$N \leq R > Q \geq S$$

Conclusions:

- I. $R \geq S$
- II. $S < R$
- III. $N < Q$

- A Only conclusion III is true
- B Only conclusions I and III are true
- C Only conclusion I is true
- D Only conclusion II is true

Answer: D

Explanation:

$$N \leq R > Q \geq S$$

conclusion I : $R \geq S$

$R \geq S$ is not true . from the statement we have $R > Q \geq S$

so $R > S$ is true but $R \geq S$ not true

thus conclusion I not possible

conclusion II : $S < R$

from the statement we have $R > S$

thus $S < R$ is true

conclusion III : $N < Q$

from the statement we cannot form a conclusion between N and Q

thus not true

only conclusion II is true

Question 46

Article 17 of Indian Constitution deals with-

- A Right to education
- B Abolition of titles
- C Abolition of untouchability

D Equality before law

Answer: C

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Question 47

Find $(1 - \sin^2\theta)(\tan^2\theta + 1) - 1$

A 2

B $\operatorname{cosec}^2\theta$

C -2

D 0

Answer: D

Explanation:

$$\sin^2\theta + \cos^2\theta = 1 \dots\dots\dots(1)$$

$$1 + \tan^2\theta = \sec^2\theta \dots\dots\dots(2)$$

$$\sec^2\theta = \frac{1}{\cos^2\theta} \dots\dots\dots(3)$$

$$(1 - \sin^2\theta)(\tan^2\theta + 1) - 1$$

solving

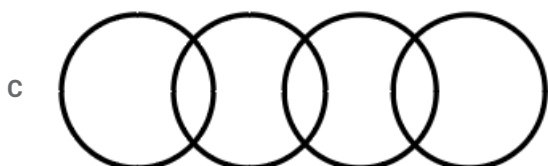
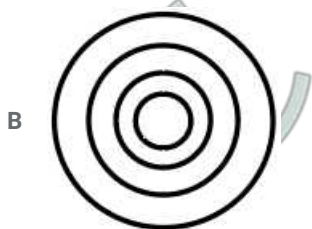
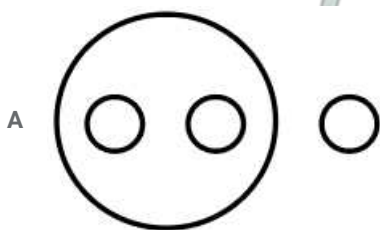
$$(\cos^2\theta)(\sec^2\theta) - 1$$

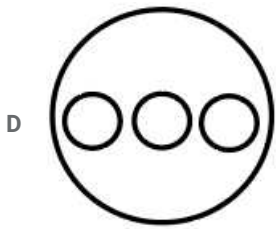
$$\cos^2\theta \times \frac{1}{\cos^2\theta} - 1 = 1 - 1 = 0$$

Question 48

Choose the figure that best represents the relationship among the classes given below.

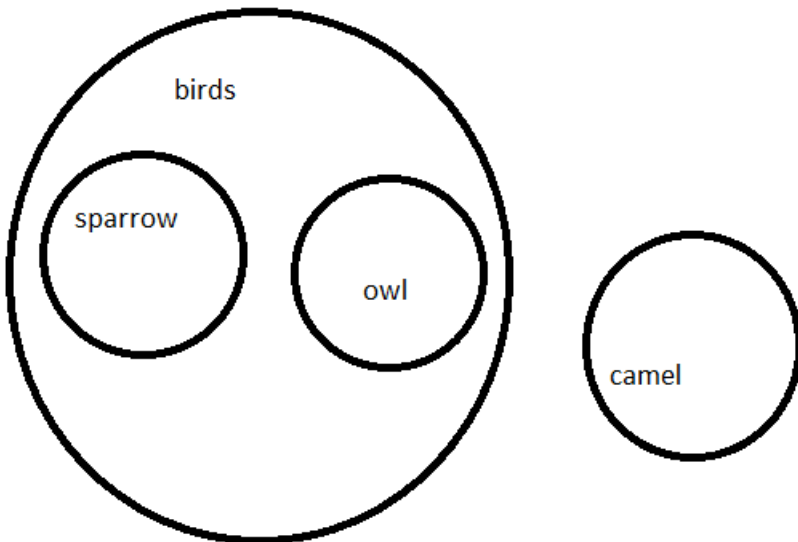
Sparrow, Owl, Camel, Birds





Answer: A

Explanation:



sparrow and owl are different birds but belongs to the class 'birds'

camel is an animal not belongs to the class birds

hence option A represents the correct relationship

Question 49

When sound hits a solid surface what will happen?

- A Sound gets absorbed
- B Sound gets refracted
- C Sound gets absorbed and reflected
- D Sound gets reflected

Answer: C

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Question 50

Sum and difference of the ages of two children are 33 and 3 respectively. What is the age of the elder child?

- A 24 years
- B 18 years
- C 15 years
- D 16 years

Answer: B

Explanation:

let the ages of 2 children be x,y

sum of their ages = 33

$$x + y = 33 \dots\dots\dots(1)$$

difference of their ages = 3

$$x - y = 3 \dots\dots\dots(2)$$

solving (1) and (2)

$$x = 18$$

substitute x= 18 in (1)

$$18 + y = 33$$

$$y = 15$$

thus age of elder child = 18

Question 51

What comes in the place of '*'?

$$(216)^{1.3} \times (36)^{1.8} + (6)^{0.5} = 6^*$$

- A 3
- B 4
- C 5
- D 7

Answer: D

Question 52

Who wrote the lyrics of the song 'Sare Jahan Se Achcha'?

- A Mohammed Iqbal
- B Rabindranath Tagore
- C Munshi Premchand
- D Kavi Pradeep

Answer: A

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Question 53

Find the ODD one out from the given options.

- A 111
- B 666
- C 888
- D 222

Answer: A

Question 54

In this question, three statements are given followed by three conclusions. Choose the conclusion(s) which best fit(s) logically.

Statements:

- 1) Some actors are writers.
- 2) All writers are dancers.
- 3) No actor is a director.

Conclusions:

- I. No writer is an actor.
- II. Some actors are dancers.
- III. Some writers are not directors.

- A Only conclusions II and III follow
- B Only conclusions I and II follow
- C All conclusions follow
- D Only conclusion I follows

Answer: A

Question 55

How do green plants in the sea help fish to respire?

- A They give out oxygen and carbon dioxide simultaneously
- B They take oxygen and give out carbon dioxide
- C They give out oxygen
- D They give out carbon dioxide

Answer: C

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Question 56

What is the speed of a sound wave whose frequency is 2000 Hz and whose wavelength is 0.2 m?

- A 400 m/s
- B 200 m/s
- C 300 m/s
- D 450 m/s

Answer: A

Explanation:

$$\text{frequency} = \frac{\text{speed of the sound wave}}{\text{wavelength}}$$

given

frequency = 2000 Hz

wavelength = 0.2 m

substituting

$$2000 = \frac{c}{0.2}$$

solving

speed of a sound wave = 400 m/s

Question 57

Alkynes are hydrocarbons which have

- A Single bonds
- B Triple bonds
- C Double bonds
- D More than four bonds

Answer: B

Question 58

When was the internal emergency declared in India during the period of Indira Gandhi as Prime Minister?

- A 1973
- B 1978
- C 1975
- D 1984

Answer: C

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Question 59

An article bought at 20% discount is sold at 25% profit. What is the profit or loss compared with the original price?

- A No profit or loss
- B 20% loss
- C 10% loss
- D 10% profit

Answer: A

Explanation:

if 20% discount is given on marked price then selling price = 80

since the profit% is 25%

$$100 == 80$$

$$125 == x$$

$$\text{solving } x = 80 \times \frac{125}{100} = 100$$

here original cost price and selling price are equal

hence no profit or loss

Question 60

The first Asian games were held in-

- A Pakistan
- B China
- C India
- D Iran

Answer: C

Question 61

Which of the following formula states the relation between current, potential difference and resistance?

- A $R = \frac{V}{I}$
- B $R = \frac{I}{V}$
- C $I = VR$
- D $R = VI$

Answer: A

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Question 62

Which of the following is the least toxic of nitrogenous wastes?

- A Creatinine
- B Urea
- C Creatine
- D Uric acid

Answer: D

Question 63

Total age of two members in a family four years hence will be 64 years. Four years back their ages was in the ratio 3 : 1. What is the age of the younger of the two?

- A 10
- B 16
- C 12
- D 15

Answer: B

Explanation:

let the ages of two persons be x and y

4 years back their ages was in the ratio 3 : 1

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

solving

$$x - 4 = 3y - 12$$

$$3y - x = 8 \dots \dots \dots (1)$$

Total age of two members in a family four years hence will be 64 years

$$x + y + 8 = 64$$

$$x + y = 56 \dots \dots \dots (2)$$

from (2) $x = 56 - y$

substitute x in (1)

$$8 = 3y - (56 - y)$$

solving $y = 16$

$$x + 16 = 56$$

$$x = 40$$

therefore age of younger person is 16

Question 64

Who launched the countrywide 'Pulse Polio Programme 2019?'

- A Arun Jaitley
- B Narendra Modi
- C Ram Nath Kovind
- D Dr. Harsh Vardhan

Answer: C

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Question 65

What is the chemical name of milk of magnesia?

- A Ammonium hydroxide
- B Sodium hydroxide
- C Magnesium hydroxide
- D Calcium hydroxide

Answer: C

Question 66

If the Simple Interest on a sum of money at 5% for 3 years is Rs.1200, what will be the Compound Interest for the same period and rate for the same sum?

- A Rs.9261
- B Rs.1461

C Rs.1561

D Rs.1261

Answer: D

Explanation:

$$SI = \frac{PNR}{100}$$

$$1200 = \frac{P \times 3 \times 5}{100}$$

solving P = 8000

CI :

$$\begin{aligned} Amt &= P(1 + \frac{r}{100})^n \\ &= 8000(1 + \frac{5}{100})^3 \\ &= 9261 \end{aligned}$$

Amount = principal + interest

$$9261 = 8000 + CI$$

solving CI = 1261

Question 67

Which of the following countries successfully test fired the short range Quick Reaction Surface-to-Air Missile (QRSAM) in 2019?

A India

B Russia

C Pakistan

D China

Answer: A

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Question 68

The cation present in sodium chloride (NaCl) is-

A Cl^+

B Na^-

C Na^+

D Cl^-

Answer: C

Question 69

In $\triangle ABC$, $\angle B = 60^\circ$, $\angle C = 40^\circ$ I is the incentre then find $\angle BIC$

A 80

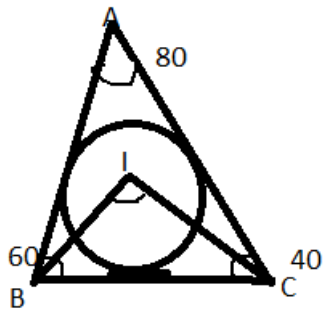
B 130

C 50

D 40

Answer: B

Explanation:



In $\triangle ABC$

given $\angle ABC = 60^\circ$

$\angle ACB = 40^\circ$

therefore $\angle BAC = 80^\circ$ ($180 - (60 + 40)$)

I is the incenter

incenter is the point where angle bisectors of a triangles meet

$$\angle IBC = \frac{60}{2} = 30^\circ$$

$$\angle ICB = \frac{40}{2} = 20^\circ$$

$$\angle BIC = 180 - (30 + 20) = 180 - 50 = 130^\circ$$

Question 70

Read the following information carefully and answer the question given below.

Eight persons— Arun, Renu, Keerthi, Balaji, Abarna, Senthil, Ajitha and Rajesh sit in a row having chairs numbered one to eight in ascending order from left to right. They all are facing north direction.

Keerthi sits on the chair numbered six. There are exactly two persons between Keerthi and Arun. Renu and Rajesh always sit adjacent to each other. Ajitha sits adjacent to neither Arun nor Keerthi. Abarna never sits on a chair having an odd number on it. Neither Renu nor Rajesh sits on chair numbered four. There is only one person between Senthil and Renu. Abarna sits on the right (not an immediate right) of Balaji, and Balaji never sits adjacent to Senthil. How many persons sit between Renu and Arun?

A One

B Three

C Two

D Four

Answer: B

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Question 71

Find the area of a rhombus, one of its sides being 25 cm and one of the diagonals being 30 cm.

A 720cm^2

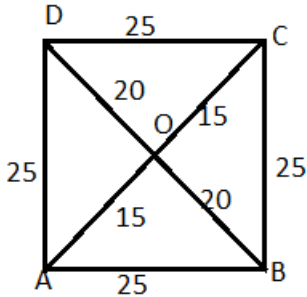
B 542cm^2

C 600cm^2

D 480cm^2

Answer: C

Explanation:



let diagonal CA = 30 cm

$$CA = OA + OC = 15 + 15 = 30$$

from triangle OCB

$$BC^2 = OB^2 + OC^2$$

$$25^2 = OB^2 + 15^2$$

$$625 = OB^2 + 225$$

$$OB^2 = 400$$

$$OB = 20$$

$$DB = OD + OB = 20 + 20 = 40$$

$$\text{area of rhombus} = \frac{1}{2} d_1 d_2$$

$$= \frac{1}{2} \times 30 \times 40$$

$$= 600\text{cm}^2$$

Question 72

Two taps P and Q can fill a cistern in 30 and 20 minutes respectively. Both P and Q were opened for a few minutes after which P was closed. The rest of the cistern was filled by Q in 5 minutes. After how many minutes was pipe P closed?

A 10 minutes

B 12 minutes

C 9 minutes

D 8 minutes

Answer: C

Explanation:

$$\text{workdone} = \text{efficiency} \times \text{time}$$

$$\text{work done} = \text{LCM}(30,20)$$

$$= 60$$

$$\text{efficiency of pipe P} = \frac{60}{30} = 2$$

$$\text{efficiency of pipe Q} = \frac{60}{20} = 3$$

according to question

$$(efficiency\ of\ P + efficiency\ of\ Q)x + efficiency\ of\ Q \times 5 = 60$$

where x = time

$$(2 + 3)x + 3 \times 5 = 60$$

solving $x = 9$

Question 73

Find the missing group of alphabets in the following series.

TA, RE, (...), NM, LQ

A PN

B GF

C PI

D WI

Answer: C

Explanation:

TA, RE, PI, NM, LQ

first letter of each term decreased by 2

second letter of each term decreased by 4

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Question 74

A rat runs 20 m towards east and turns right and runs 10 m and turns right and runs 9 m; and again turns left and runs 5 m, and then turns left again and runs 12 m and finally turns left and runs 6 m. Now which direction is the rat facing?

A East

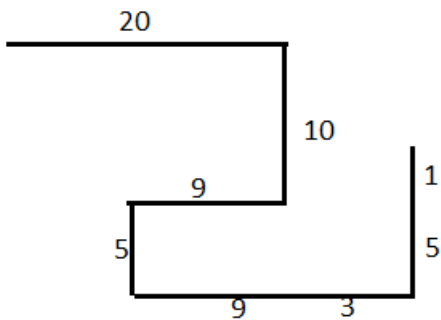
B West

C North

D South

Answer: C

Explanation:



now rat facing in north direction

Question 75

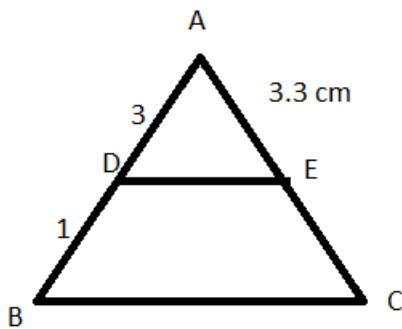
In $\triangle ABC$, D and E are points on sides AB and AC respectively such that $DE \parallel BC$ and $AD : DB = 3 : 1$. If $EA = 3.3$ cm, then find the value of AC.

Latek

- A 4 cm
- B 4.4 cm
- C 5.5 cm
- D 1.1 cm

Answer: B

Explanation:



given that $\frac{AD}{BD} = \frac{3}{1}$

In $\triangle ABC$

$$\frac{AD}{BD} = \frac{AE}{EC}$$

$$\frac{3}{1} = \frac{3.3}{EC}$$

solving $EC = 1.1$

now $AC = AE + EC$

$$AC = 3.3 + 1.1 = 4.4 \text{ cm}$$

Question 76

When a light ray enters from a denser medium to a rarer medium, say from glass to air, how does the light ray bend?

- A Towards normal
- B Bends at 90 degree from normal
- C Away from the normal
- D Bends and merges with the normal

Answer: C

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Question 77

Two articles are sold for Rs.840 and Rs.960 at 20% gain and 4% loss respectively. What is the overall gain or loss percent?

A $\frac{5}{517}$ %gain

B $\frac{15}{517}$ %gain

C $\frac{5}{517}$ %loss

D $\frac{15}{517}$ %loss

Answer: B

Explanation:

1st article :

$$SP1 = 840$$

$$P1 = 20\%$$

$$CP1 = 840 \times \frac{100}{120} = 700$$

2nd article :

$$SP2 = 960$$

$$L2 = 4\%$$

$$CP2 = 960 \times \frac{100}{96} = 1000$$

$$\text{total SP} = SP1 + SP2$$

$$= 840 + 960$$

$$= 1800$$

$$\text{total CP} = CP1 + CP2$$

$$= 700 + 1000$$

$$= 1700$$

$$\text{gain \%} = \frac{SP - CP}{CP} \times 100$$

$$= \frac{1800 - 1700}{1700} \times 100$$

$$= \frac{15}{17} \% \text{ gain}$$

Question 78

The product of two numbers is 192 and their sum is 28. Find the smallest of these two numbers.

A 16

B 18

C 14

D 12

Answer: D

Explanation:

let the numbers be x,y

$$\text{product } xy = 192 \dots\dots\dots(1)$$

$$\text{sum } x + y = 28 \dots\dots\dots(2)$$

$$\text{from (2) } x = 28 - y$$

substitute in (1)

$$(28 - y)y = 192$$

$$28y - y^2 = 192$$

$$y^2 - 28y + 192 = 0$$

solving $y = 12$

$$x + 12 = 28$$

$$x = 16$$

Question 79

Who among the following became the first woman cricketer to play 200 ODIs?

- A Deepti Sharma
- B Goswami
- C Mithali Raj
- D Charlotte Edwards

Answer: C

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Question 80

If 'cinto baoli tsi nzro' means 'her village is Sarurpur', 'mhi cinto keepi tsi oind' means 'her first love is literature', and 'oind geit tsi cinto pki' means 'literature collection is her hobby', which word would mean 'literature'?

- A baoli
- B cinto
- C oind
- D geit

Answer: C

Question 81

With which sports is Walker Cup associated?

- A Hockey
- B Golf
- C Billiards
- D Softball

Answer: B

Question 82

Which of the following fossil fuels has methane as its main constituent?

- A Natural gas
- B Coal

C Petroleum gas

D LPG

Answer: A

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Question 83

Isotopes of an element have-

A Different atomic numbers

B The same physical properties

C Different number of neutrons

D Different chemical properties

Answer: C

Question 84

The blood pressure of a young male human being is normally -

A $\frac{110}{70}$

B $\frac{140}{100}$

C $\frac{120}{80}$

D $\frac{135}{90}$

Answer: C

Question 85

Simplify: $\frac{(0.1 \times 0.1 \times 0.1 + 0.2 \times 0.2 \times 0.2)}{0.5 \times 0.5 \times 0.5 + 1}$

A $\frac{3}{1.125}$

B 0.08

C 0.008

D $\frac{2}{125}$

Answer: C

Explanation:

$$\frac{0.001 + 0.008}{0.125 + 1}$$

$$\frac{0.009}{1.125}$$

$$\frac{1}{125} = 0.008$$

Question 86

Which word will best complete the relationship given below?

Blood : Vein :: Oil : ?

- A Car
- B Petrol
- C Pipeline
- D Engine

Answer: C

Question 87

Simplify: $(2.5/0.0005)/(25/0.05)$

- A 10
- B $\frac{1}{50}$
- C $\frac{1}{10}$
- D 50

Answer: A

Explanation:

$$(2.5/0.0005)/(25/0.05)$$

$$\Rightarrow 5000/500 = 10$$

Question 88

What sum will yield Rs.540 as Simple Interest at 4% for 7.5 years?

- A Rs.1600
- B Rs.1400
- C Rs.1800
- D Rs.1200

Answer: C

Explanation:

$$SI = \frac{PNR}{100}$$

$$540 = \frac{P \times 7.5 \times 4}{100}$$

$$P = \frac{540 \times 100}{4 \times 7.5}$$

solving P =1800

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Question 89

In 10 seconds, a charge of 25 Coulombs leaves a battery. How much current flows?

- A 2.5 Ampere
- B 25 Ampere
- C 250 Ampere
- D 0.25 Ampere

Answer: A

Question 90

Which of the following are found on the right-hand side of the periodic table towards the top?

- A Both metals and non-metals
- B Non-metals
- C Metalloids
- D Metals

Answer: B

Question 91

If a bus is located at 5 meters from a convex mirror and the image is formed at 2.5 meters at the back of the mirror, then what is the magnification of the mirror?

- A 0.2
- B -0.5
- C -0.2
- D 0.5

Answer: D

Explanation:

Distance of object = 5 meters

Distance of image = 2.5 meters

The formula of magnification of the mirror = distance of image/distance of object

⇒ Magnification of the mirror = $2.5/5 = 0.5$

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Question 92

In this question, two statements are given followed by two conclusions. Choose the conclusion(s) which best fit(s) logically.

Statements:

- 1) No mango is apple.
- 2) No apple is guava.

Conclusions:

- I. Some mangoes are guavas.
- II. Some guavas are apples.

- A Only conclusion II follows
- B Only conclusion I follows

- C Both conclusions I and II follow
 D Neither conclusion I nor II follows

Answer: D

Question 93

If $a + b + c = 2s$, then find the value of $(s - a)^3 + (s - b)^3 + 3(s - a)(s - b)c$.

- A c^2
 B ac
 C $2s$
 D c^3

Answer: D

Explanation:

$$a + b + c = 2s$$

$$(s - a)^3 + (s - b)^3 + 3(s - a)(s - b)c$$

$$(s - a)^3 + (s - b)^3 + 3(s - a)(s - b)(s - a + s - b)$$

let $x = s - a$ and $y = s - b$

$$x^3 + y^3 + 3xy(x + y) = (x + y)^3$$

$$(\because (a + b)^3 = a^3 + b^3 + 3ab(a + b))$$

$$(s - a + s - b)^3 = c^3$$

Question 94

The average of 3 consecutive integers is 'k'. If the next two numbers are added, then the new average is:

- A $k + 3$
 B $k + 2$
 C $k + 1$
 D k

Answer: C

Explanation:

let consecutive integers be $x, x + 1, x + 2$

average of 3 consecutive integers is 'k'

sum of 3 consecutive integers = $3k$

$$\frac{x + x + 1 + x + 2}{3} = k$$

$$\frac{3x + 3}{3} = k$$

$$x + 1 = k$$

$$x = k - 1$$

If the next two numbers are added,

$$\frac{3k + x + 3 + x + 4}{5}$$

$$\frac{3k + 2x + 7}{5}$$

$$\frac{3k+2(k-1)+7}{5}$$

$$\frac{5k+5}{5} = k + 1$$

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Question 95

Tipaimukh Dam is in which of the following states?

- A Tripura
- B Mizoram
- C Nagaland
- D Manipur

Answer: D

Question 96

A train moving at 40 km/h will take 2 hours 15 minutes more to cover a certain distance than when the speed is doubled. What is the distance ?

- A 220 km
- B 200 km
- C 180 km
- D 160 km

Answer: C

Explanation:

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

let the distance be d

then according to the question

$$\frac{9}{4} = \frac{d}{80} - \frac{d}{40}$$

$$\frac{9}{4} = \frac{40 \times d}{80 \times 40}$$

$$\frac{d}{80} = \frac{9}{4}$$

$$d = \frac{9}{4} \times 80 = 180 \text{ km}$$

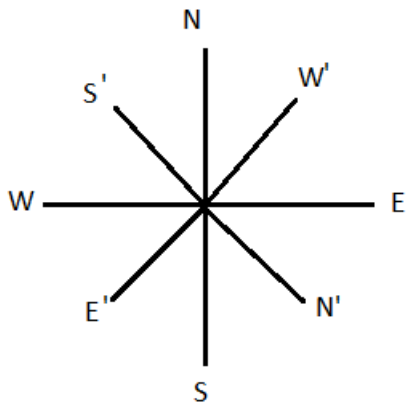
Question 97

If north west becomes south and north east becomes west and so on, what will be the south west?

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

Answer: C

Explanation:



if north west becomes south then south east becomes north

same way if north east becomes west then south west becomes east

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Question 98

Which of the following governments launched the Jal Amrutha scheme in 2019?

- A Andhra Pradesh
- B Kerala
- C Tamil Nadu
- D Karnataka

Answer: D

Question 99

Who among the following founded a weekly newspaper 'Commonweal' in 1914?

- A Lala Lajpat Rai
- B Annie Besant
- C Madan Mohan Malviya
- D Motilal Nehru

Answer: B

Question 100

If 'DELHI' is coded as 'CCIDD', how will 'BOMBAY' be coded?

- A AMJXSV
- B AMJVXS
- C AMJXVS
- D AJMTVT

Answer: C

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