



2016 SSC CGL 29 Aug Evening Shift

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Reasoning

Instructions

For the following questions answer them individually

Question 1

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

FUNGI: MYCOLOGY:: TISSUE: ??

- A Haematology
- B Cytology
- C Histology
- D Bacteriology

Answer: C

Explanation:

Mycology is the branch of biology concerned with the study of fungi, similarly histology is the study of tissue.

=> Ans - (C)

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Question 2

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

BDFH : YWUS :: JLNP : ?

- A QOMK
- B ACEF
- C ZXUT
- D UVWX

Answer: A

Explanation:

Expression = BDFH : YWUS

The pattern followed is that there are as many alphabets to the left of the first letter as there are to the right of the leftmost letter in right hand side

B is the second letter and Y is the second last, D is 4th from left end and W is 4th from right end. F is 6th from left end and U is 5th from right end. Finally, H is 8th from left end and S is 8th from right end in English alphabetical series.

Similarly, for JLNP :

Now, J is 10th from left end, thus first letter will be 10th from right end = Q

L is 12th from left end, second letter will be 12th from right end = O

N is 14th from left end, third letter will be 14th from right end = M

P is 16th from left end, fourth letter will be 16th from right end = K

Thus, missing term = **QOMK**

=> Ans - (A)

Question 3

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

18 : 30 :: 36 : ?

- A 78
- B 64
- C 66
- D 68

Answer: C

Explanation:

Expression = 18 : 30 :: 36 : ?

The pattern followed is = $n : 2n - 6$

Eg = $18 : 2(18) - 6 = 18 : 30$

Similarly, $2(36) - 6 = 72 - 6 = 66$

=> Ans - (C)

Question 4

For the following questions

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

- A Arithmetic
- B Mathematics
- C Geometry
- D Algebra

Answer: B

Explanation:

Arithmetic, Geometry and Algebra are all part of Mathematics, hence it is the odd one out.

=> Ans - (B)

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Question 5

For the following questions

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

- A ACEG
- B BDFG
- C JLNP
- D SUWY

Answer: B

Explanation:

(A) : A (+2 letters) = C (+2 letters) = E (+2 letters) = G

(B) : B (+2 letters) = D (+2 letters) = F (+1 letter) = G

(C) : J (+2 letters) = L (+2 letters) = N (+2 letters) = P

(D) : S (+2 letters) = U (+2 letters) = W (+2 letters) = Y

=> Ans - (B)

Question 6

For the following questions

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

A 16, 32

B 20, 40

C 64, 81

D 81, 162

Answer: C

Explanation:

Ratio of each pair :

(A) : $\frac{32}{16} = 2$

(B) : $\frac{40}{20} = 2$

(C) : $\frac{81}{64} = 1.2$

(D) : $\frac{162}{81} = 2$

=> Ans - (C)

Question 7

Arrange the following words as per order in the dictionary

1. Weather

2. Weasand

3. Wealth

4. Weapon

5. Weekend

A 3,2,4,1,5

B 3,2,1,4,5

C 3,4,2,1,5

D 3,4,1,2,5

Answer: C

Explanation:

As per order in the dictionary

= Wealth -> Weapon -> Weasand -> Weather -> Weekend

≡ 3,4,2,1,5

=> Ans - (C)

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Question 8

Choose the correct alternative from the given ones that will complete the series

BFK, KOT, UYD,?

- A BFJ
- B ADG
- C FJO
- D PSX

Answer: C

Explanation:

Expression : BFK, KOT, UYD,?

The pattern is same for each letter in the terms which is :

1st letter : B (+9 letters) = K (+10 letters) = U (+11 letters) = F

2nd letter : F (+9 letters) = O (+10 letters) = Y (+11 letters) = J

3rd letter : K (+9 letters) = T (+10 letters) = D (+11 letters) = O

Thus, missing term = **FJO**

=> Ans - (C)

Question 9

Find the missing number in the series

2, 3, 8, ?, 112, 565

- A 565
- B 112
- C 27
- D 8

Answer: C

Explanation:

The pattern followed is :

$$2 \times 1 + 1 = 3$$

$$3 \times 2 + 2 = 8$$

$$8 \times 3 + 3 = 27$$

$$27 \times 4 + 4 = 112$$

$$112 \times 5 + 5 = 565$$

=> Ans - (C)

Question 10

A woman pointing to a man said, "He is the widower of my uncle's brother's daughter." How is the man related to the woman?

- A Brother-in-law

- B Brother
- C Uncle
- D Nephew

Answer: A

Explanation:

The woman's uncle's brother is that woman's father.

Now, her father's daughter is her sister.

Also, that man was married to that woman's sister, thus he's her brother-in-law.

=> Ans - (A)

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Question 11

P, Q, R and S are four friends. P is shorter than Q but taller than R who is shorter than S. Who is the shortest among all?

- A P
- B Q
- C R
- D S

Answer: C

Explanation:

P is shorter than Q but taller than R, => $Q > P > R$

Also, R is shorter than S, => $S > R$

Combining above statements, R is the shortest.

=> Ans - (C)

Question 12

From the given alternative words, select the word which cannot be formed using the letter of the given word.

IMPRACTICABLE

- A CAPABLE
- B PARTICLE
- C PRACTICAL
- D PEACE

Answer: D

Explanation:

The word IMPRACTICABLE does not contain 2 E's, thus the word 'Peace' cannot be formed.

=> Ans - (D)

Question 13

If **BROTHER** is coded as **GWTYMJW**, then **SCHOOL** is coded as

- A WGLSSP
- B WGLSSQ
- C XHMTTQ
- D XHMTTP

Answer: C

Explanation:

BROTHER is coded as GWTYMJW

The pattern followed is :

B	R	O	T	H	E	R
(+5)	(+5)	(+5)	(+5)	(+5)	(+5)	(+5)
G	W	T	Y	M	J	W

Similarly, for SCHOOL :

S	C	H	O	O	L
(+5)	(+5)	(+5)	(+5)	(+5)	(+5)
X	H	M	T	T	Q

=> Ans - (C)

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Question 14

If '+' means subtraction, '÷' means addition, '<' means multiplication and '>' means division, then find the value of the given statement, The value of $9 \div 7 < 8 > (4 > 2) + 5$ will be

- A 32
- B 18
- C 16
- D 11

Answer: A

Explanation:

Expression : $9 \div 7 < 8 > (4 > 2) + 5$

$$\equiv 9 + 7 \times 8 \div (4 \div 2) - 5$$

$$= 9 + \frac{56}{2} - 5$$

$$= 4 + 28 = 32$$

=> Ans - (A)

Question 15

If $5 * 3 = 19$ and $8 * 5 = 49$, then what should $6 * 4$ be?

- A 24
- B 28
- C 18

D 16

Answer: B

Explanation:

The pattern followed is that $a * b = a \times b + (a - b)^2$

Eg : $5 * 3 = 5 \times 3 + (5 - 3)^2 = 15 + 4 = 19$

and $8 * 5 = 8 \times 5 + (8 - 5)^2 = 40 + 9 = 49$

Similarly, $6 * 4 = 6 \times 4 + (6 - 4)^2 = 24 + 4 = 28$

=> Ans - (B)

Question 16

Select the missing number from the given responses.

24	20	36
15	11	18
55	40	?

A 45

B 65

C 70

D 80

Answer: B

Explanation:

In each row, the first two numbers are added and twice the difference is subtracted to obtain the third number.

Eg : $24 + 20 - 2(24 - 20) = 44 - 8 = 36$

and $15 + 11 - 2(15 - 11) = 26 - 8 = 18$

Similarly, $55 + 40 - 2(55 - 40) = 95 - 30 = 65$

=> Ans - (B)

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Question 17

A man walks 7 km towards south and turns to the left. After walking 5 km, he turns to the right and walks 7 km. In which direction is he now from the starting point?

A West

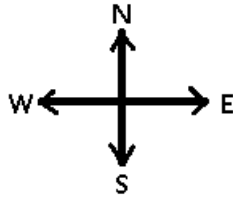
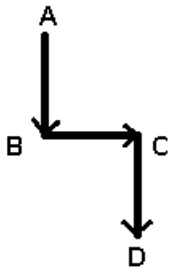
B South

C South-East

D North-East

Answer: C

Explanation:



Let the man starts from point A, he walks 7 km south, then he turns left and walks towards east for 5 km and reaches point C. Finally, he turns right and walks towards south and reaches point D.

Thus, he is at south-east position from his initial position.

=> Ans - (C)

Question 18

Consider the given statement/s to be true and decide which of the given conclusions/assumptions can definitely be drawn from the given statement.

Statement 1: When water is cooled, it turns into ice.

Statement 2: When water is heated, it turns into steam.

Conclusion I: Water is a solid.

Conclusion II: Water is a gas.

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

Answer: D

Explanation:

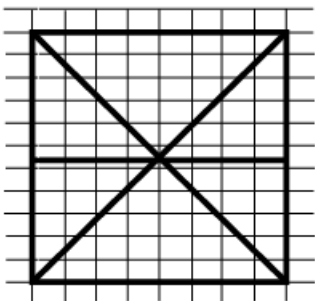
When water is cooled, it turns into ice, this does not indicate that water is solid, and thus first conclusion does not follow.

When water is heated, it turns into steam, this does not indicate that water is gas, and thus second conclusion does not follow.

=> Ans - (D)

Question 19

What is total number of triangles in the given figure?



- A 16
- B 32
- C 40
- D 12

Answer: D

Explanation:

Small triangles = 6

Triangles made by combining 2 small triangles = 2

Triangles made by combining 3 small triangles = 4

So, total = $6 + 2 + 4 = 12$

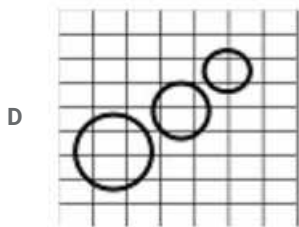
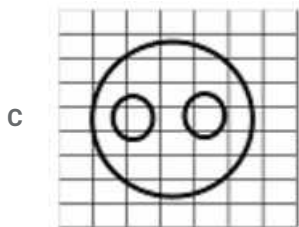
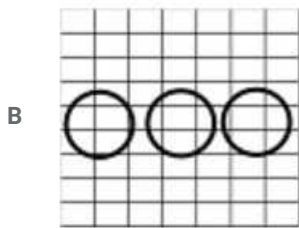
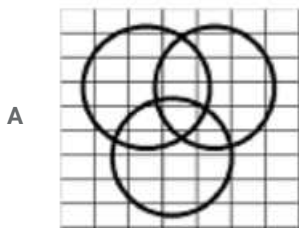
=> Ans - (D)

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Question 20

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

Men, Rodents and living beings



Answer: C

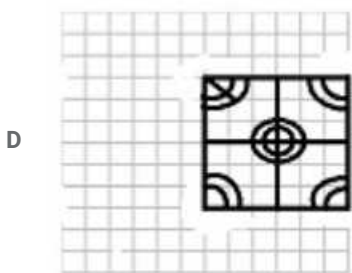
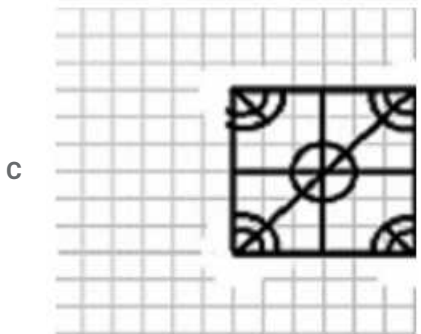
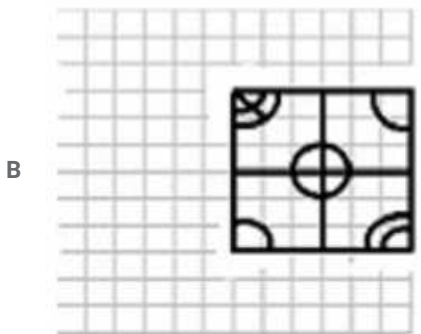
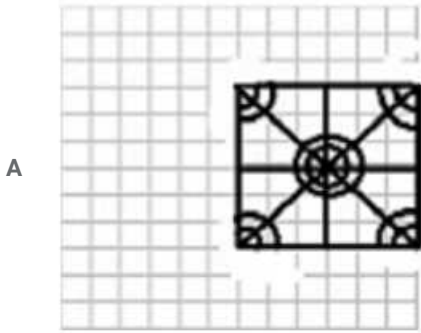
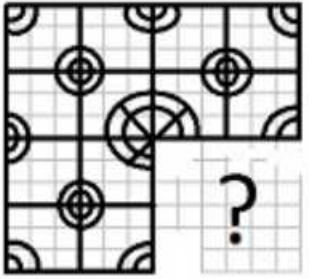
Explanation:

Rodents and men both come under the category of living beings but are completely different from each other. Thus, the third figure best describes above relationship.

=> Ans - (C)

Question 21

Which answer figure will complete the pattern in the figure?



Answer: D

Explanation:

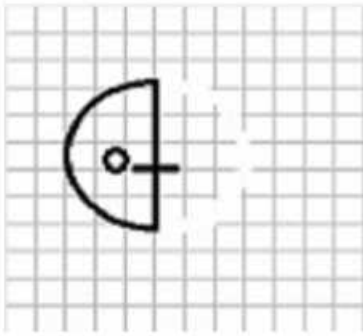
The bottom right part of the square is missing and there are no diagonals in that part, thus first and third options are eliminated.

Also, there are two circles in the middle, thus second option is also not possible.

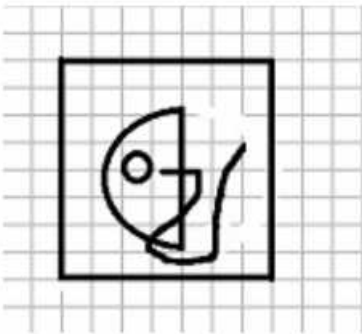
=> Ans - (D)

Question 22

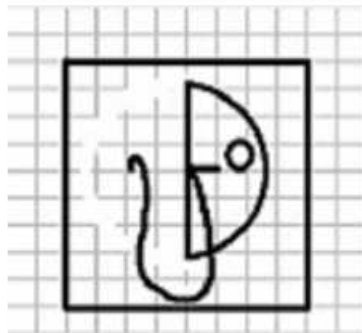
From the given answer figures, select the one in which the figure is hidden/embedded



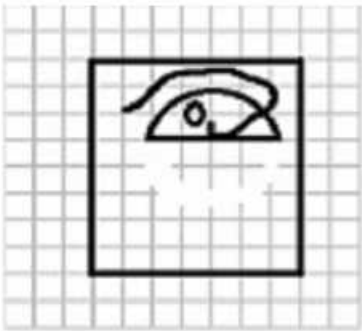
A



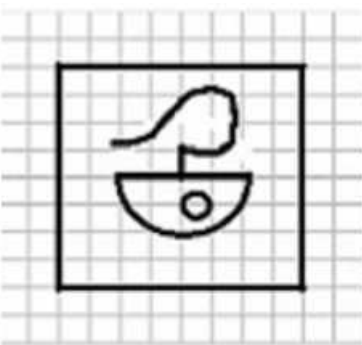
B



C



D



Answer: A

Explanation:

The question figure is embedded in the following figure :

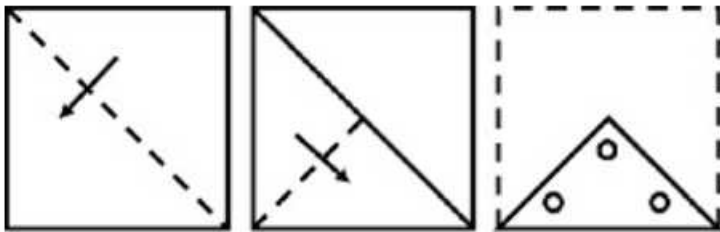


=> Ans - (A)

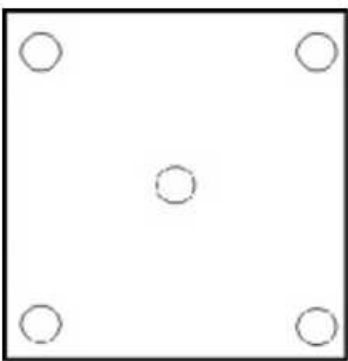
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Question 23

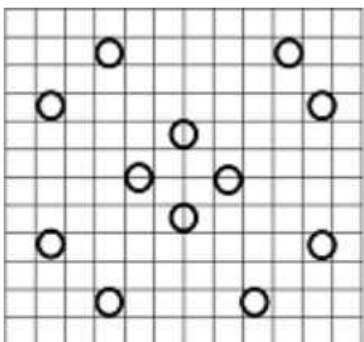
A piece of paper is folded and cut as shown below in the figures. From the given answer figures, indicate how it will appear when opened.



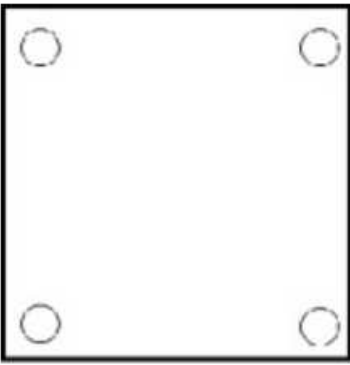
A



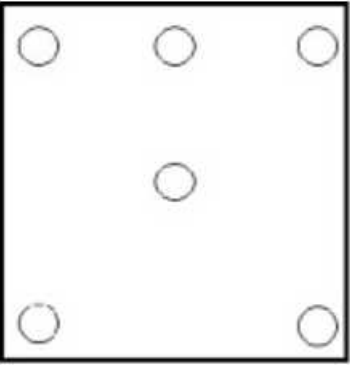
B



C



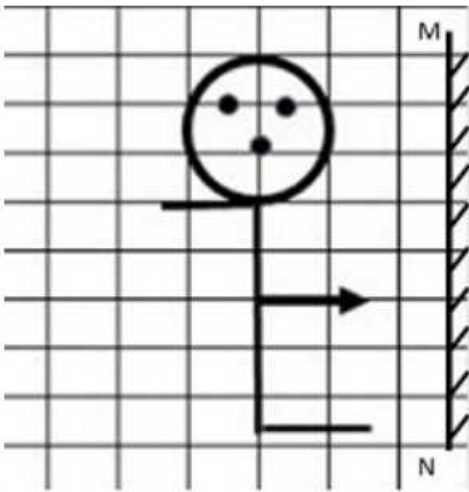
D



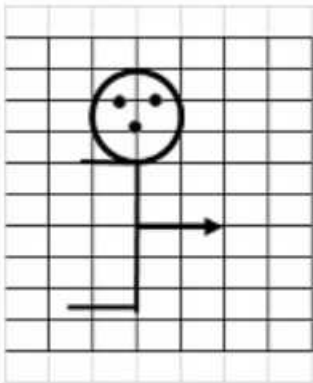
Answer: B

Question 24

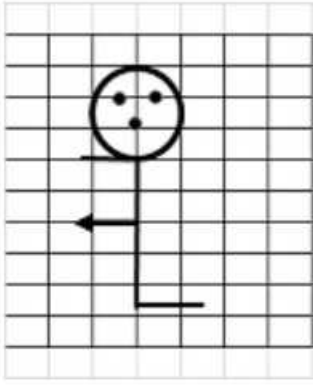
If a mirror is placed on the line MN, then which of the answer figure is the right image?



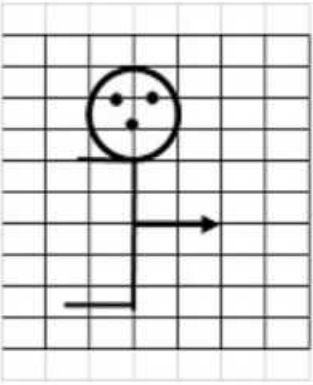
A



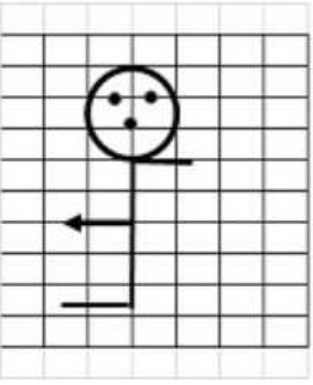
B



C



D



Answer: D

Explanation:

A vertical mirror is placed, so the object at the left will appear at the right and vice-versa. The arrow in the middle initially pointing right will now point left hand side, thus first and third options are eliminated.

Also, the direction of horizontal lines on either side of the arrow will also change, and thus second option is invalid.

=> Ans - (D)

Question 25

In the question, a word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A from these matrices can be represented first by its row and next by its column. e.g. N can be represented by 01, 14 etc. and A can be represented by 55, 69, etc. You have to identify the set for the word 'GOOD'.

Matrix - I

	0	1	2	3	4
0	B	N	G	L	D
1	G	L	D	B	N
2	D	B	N	G	L
3	N	G	L	D	B
4	L	D	B	N	G

Matrix - II

	5	6	7	8	9
5	A	I	K	O	R
6	I	K	O	R	A
7	K	O	R	A	I
8	O	R	A	I	K
9	R	A	I	K	O

A 02, 58, 68, 04

B 44, 99, 76, 20

C 31, 67, 76, 22

D 33, 76, 86, 41

Answer: B

Explanation:

(A) : 02, 58, 68, 04 = GORD

(B) : 44, 99, 76, 20 = **GOOD**

(C) : 31, 67, 76, 22 = GOON

(D) : 33, 76, 86, 41 = DORD

=> Ans - (B)

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General Awareness

Instructions

For the following questions answer them individually

Question 26

Which state has the lowest birth rate in India ?

A Kerala

B Uttar Pradesh

C Bihar

D West Bengal

Answer: A

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Question 27

The Secretariat of SAARC is set up at _____

A Washington

B Kathmandu

C Hague

D New Delhi

Answer: B

Question 28

The outermost range of Himalays is called_____

A Kali

- B Shiwaliks
- C Dehradun
- D Kumaon

Answer: B

Question 29

Who is generally considered to be the father of the Indian Renaissance?

- A Rabindranath Tagore
- B Raja Rammohan Roy
- C Mahatma Phule
- D M.G. Ranade

Answer: B

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Question 30

The longest river of peninsular India is_____

- A Narmada
- B Godavari
- C Mahanadi
- D Cauvery

Answer: B

Question 31

Which element gives hardness to stainless steel?

- A Zinc
- B Lead
- C Carbon
- D Tin

Answer: C

Question 32

Which of the following is responsible for transport of food and other substances in plants?

- A Xylem
- B Phloem
- C Chloroplast

D None of these

Answer: B

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Question 33

The washing machine works on the principle of _____

A Dialysis

B Diffusion

C Reverse osmosis

D Centrifugation

Answer: D

Question 34

Which is not an external storage device?

A CD-ROM

B DVD-ROM

C Pen Drive

D RAM

Answer: D

Question 35

Which of the following is the correct description of the term sex-ratio as used in the context of the census of population?

A Number of males per 1000 females.

B Number of females per 1000 males.

C Number of females per 100 males.

D Number of females in a sample of 1000 persons.

Answer: B

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Question 36

The atomic power station in Rajasthan is situated at:

A Pokhran

B Suratgarh

C Rawatbhata

D Chittorgarh

Answer: C

Question 37

The Sahitya Akademi Awards are given for best writings in how many Indian languages?

- A 12
- B 15
- C 20
- D 24

Answer: D

Question 38

Right to Privacy comes under _____

- A Article 19
- B Article 20
- C Article 21
- D Article 18

Answer: C

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Question 39

The foreign traveller who visited India during the reign of Shahjahan was _____

- A Thomas Roe
- B William Hawkins
- C Ibn Batuta
- D Manucci

Answer: D

Question 40

The GST (Goods and Services Tax), recently passed by Government will be levied on which of the following products?

- A Petroleum Crude
- B Tobacco
- C Natural Gas
- D Aviation Turbine Fuel

Answer: B

Question 41

Who was elected the Prime Minister of Nepal recently?

- A Keshav Kumar Budhathoki
- B Khadga Prasad Sharma Koli
- C Sushil Koirala
- D Pushpakamal Dahal 'Prachanda'

Answer: D

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Question 42

Which lobe of human brain is associated with hearing?

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

Answer: C

Question 43

Which of the following is not soluble in water?

- A Lead sulphate
- B Zinc sulphate
- C Potassium sulphate
- D Sodium sulphate

Answer: A

Question 44

Activated Charcoal is used to remove colouring matter from pure substances by _____

- A Bleaching
- B Oxidation
- C Adsorption
- D Reduction

Answer: C

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Question 45

Chernobyl disaster is the result of pollution by _____

- A Oil spill
- B Acid rain
- C Carbon dioxide
- D Radioactive waste

Answer: D

Question 46

Which of the following caused radioactive pollution along the coast of Kerala?

- A Plutonium
- B Zinc
- C Thorium
- D Radium

Answer: C

Question 47

In mammals, an important role of excretion is played by _____

- A Large intestine
- B Kidneys
- C Lungs
- D Liver

Answer: B

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Question 48

The second Green Revolution aims at increasing agricultural output to promote

- A Availability of easy credit to big farmers
- B Co-operative farming
- C Inclusive growth
- D Development of rural sector

Answer: C

Question 49

Which of the following causes rainfall during winters in the north-western part of India?

- A Western disturbances
- B Cyclonic depression
- C Southwest monsoon
- D Retreating monsoon

Answer: A

Question 50

The 'Blue Water Policy' was introduced by the Portuguese leader _____

- A Francisco-de-Almeida
- B Alfonso de Albuquerque
- C Francis Caron
- D Francis Martin

Answer: A

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Mathematics

Instructions

For the following questions answer them individually

Question 51

If the sum of a number and its reciprocal be 2, then the number is

- A 0
- B 1
- C -1
- D 2

Answer: B

Explanation:

Let the number be x

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

$$\Rightarrow x^2 + 1 = 2x$$

$$\Rightarrow x^2 - 2x + 1 = 0$$

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

$$\Rightarrow x - 1 = 0$$

$$\Rightarrow x = 1$$

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

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Question 52

The area of a rectangle is 60 cm² and its perimeter is 34 cm, then the length of the diagonal is

- A 17cm
- B 11cm
- C 15cm
- D 13cm

Answer: D

Explanation:

Let the length and breadth of rectangle be l and b cm respectively

$$\Rightarrow \text{Diagonal} = d = \sqrt{l^2 + b^2} \text{ cm}$$

$$\text{Area of rectangle} = lb = 60 \text{ -----(i)}$$

$$\text{Perimeter of rectangle} = 2(l + b) = 34$$

$$\Rightarrow l + b = \frac{34}{2} = 17$$

Squaring both sides,

$$\Rightarrow (l + b)^2 = (17)^2$$

$$\Rightarrow l^2 + b^2 + 2lb = 289$$

$$\Rightarrow l^2 + b^2 + 2(60) = 289 \quad [\text{Using (i)}]$$

$$\Rightarrow l^2 + b^2 = 289 - 120 = 169$$

$$\Rightarrow \sqrt{l^2 + b^2} = \sqrt{169}$$

$$\Rightarrow d = 13 \text{ cm}$$

\Rightarrow Ans - (D)

Question 53

A cloth merchant has announced 25% rebate in prices. If one needs to have a rebate of ₹ 40, then how many metres of cloth costing ₹ 32 per metre he should purchase.

- A 6m
- B 5m
- C 10m
- D 7m

Answer: B

Explanation:

Cost of 1 m of cloth = Rs. 32

$$\text{Discount on 1 shirt} = \frac{25}{100} \times 32 = \text{Rs. } 8$$

$$\Rightarrow \text{Quantity of cloth one should buy to have a rebate of Rs. } 40 = \frac{40}{8} = 5 \text{ m}$$

\Rightarrow Ans - (B)

Question 54

A profit of Rs. 960 is divided between A and B in the ratio 1/3:1/2. The difference of their profit is :

- A Rs.120
- B Rs.160
- C Rs.180
- D Rs.192

Answer: D

Explanation:

Ratio of profit between A : B = $\frac{1}{3} : \frac{1}{2}$

= 2 : 3

Let A received = Rs. $2x$ and B received = Rs. $3x$

Total amount = $2x + 3x = 960$

$\Rightarrow x = \frac{960}{5} = 192$

\therefore Difference of their profit = $3x - 2x = x = \text{Rs. } 192$

\Rightarrow Ans - (D)

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Question 55

The average monthly salary of 19 members of a group is Rs. 16000. If one more members whose monthly salary is Rs. 20000 has joined the group, then the average salary of the group is

- A Rs.18250
- B Rs.16200
- C Rs.18000
- D Rs.16250

Answer: B

Explanation:

Average monthly salary of 19 members of a group = Rs. 16,000

\Rightarrow Total monthly salary of 19 members = $16,000 \times 19 = \text{Rs. } 304,000$

Salary of new member = Rs. 20,000

\Rightarrow Total salary of 20 members = $304,000 + 20,000 = \text{Rs. } 324,000$

\therefore Average salary of the group = $\frac{324,000}{20} = \text{Rs. } 16,200$

\Rightarrow Ans - (B)

Question 56

A T.V was sold at a profit of 5% If it had been sold at a profit of 10% , the profit would have been Rs. 1000 more. What is its cost price ?

- A Rs.20000
- B Rs.5000
- C Rs.10000

D Rs.15000

Answer: A

Explanation:

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

If profit % = 5%

$$\Rightarrow \text{Profit} = \frac{5}{100} \times 100x = \text{Rs. } 5x$$

Similarly, if profit % = 10%, profit = Rs. $10x$

According to ques,

$$\Rightarrow 10x - 5x = 1000$$

$$\Rightarrow 5x = 1000$$

$$\Rightarrow x = \frac{1000}{5} = 200$$

$$\therefore \text{Cost price} = 100 \times 200 = \text{Rs. } 20,000$$

\Rightarrow Ans - (A)

Question 57

The price of an article is decreased by 10%. To restore it to its former value, the new price must be increased by :

A $9\frac{1}{11}$ %

B 10 %

C 11 %

D $11\frac{1}{9}$ %

Answer: D

Explanation:

Let the original price of the article = Rs. 100

$$\text{If the price is cut by 10%, } \Rightarrow \text{New price} = \frac{100-10}{100} \times 100 = \text{Rs. } 90$$

$$\text{To restore to its original value the new price must be increased by} = \frac{100-90}{90} \times 100$$

$$= \frac{100}{9} = 11\frac{1}{9}\%$$

\Rightarrow Ans - (D)

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Question 58

A moving train passes a platform 50m long in 14 seconds and a lamp post in 10 seconds. The speed of the train (in km/h) is :

A 24

B 36

C 40

D 45

Answer: D

Explanation:

Let the speed of train = s m/sec and length of train = l m

Using, time = distance/speed

The train passes a lamp post in 10 seconds

$$\Rightarrow 10 = \frac{l}{s}$$

$$\Rightarrow l = 10s \text{ -----(i)}$$

Similarly, $14 = \frac{50+l}{s}$

$$\Rightarrow 14s = 50 + 10s \text{ [Using (i)]}$$

$$\Rightarrow 14s - 10s = 4s = 50$$

$$\Rightarrow s = \frac{50}{4} = 12.5 \text{ m/sec}$$

$$\therefore \text{Speed of train (in km/hr)} = \frac{18}{5} \times 12.5 = 45 \text{ km/hr}$$

\Rightarrow Ans - (D)

Question 59

If $x^2 + \frac{1}{x^2} = 2$, then the value of $x - \frac{1}{x}$ is

A -2

B 0

C 1

D -1

Answer: B

Explanation:

Given : $x^2 + \frac{1}{x^2} = 2$ -----(i)

Now, $(x - \frac{1}{x})^2 = x^2 + \frac{1}{x^2} - 2(x)(\frac{1}{x})$

$$\Rightarrow (x - \frac{1}{x})^2 = 2 - 2 \text{ [Using (i)]}$$

$$\Rightarrow x - \frac{1}{x} = 0$$

\Rightarrow Ans - (B)

Question 60

If $pq(p + q) = 1$, then the value of $\frac{1}{p^3q^3} - p^3 - q^3$ is equal to

A 1

B 2

C 3

D 4

Answer: C

Explanation:

Given : $pq(p + q) = 1$

$$\Rightarrow p + q = \frac{1}{pq} \text{ -----(i)}$$

Cubing both sides

$$\Rightarrow (p + q)^3 = \left(\frac{1}{pq}\right)^3$$

$$\Rightarrow p^3 + q^3 + 3pq(p + q) = \frac{1}{p^3q^3}$$

$$\Rightarrow p^3 + q^3 + 3pq\left(\frac{1}{pq}\right) = \frac{1}{p^3q^3} \quad [\text{Using (i)}]$$

$$\Rightarrow \frac{1}{p^3q^3} - p^3 - q^3 = 3$$

\Rightarrow Ans - (C)

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Question 61

A chord of length 16 cm is drawn in a circle of radius 10 cm. The distance of the chord from the centre of the circle is

A 8cm

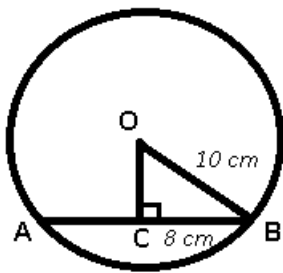
B 6cm

C 4cm

D 12cm

Answer: B

Explanation:



Given : $AB = 16$ cm and $OB = 10$ cm

To find : $OC = ?$

Solution : The line from the centre of the circle to the chord bisects it at right angle.

$$\Rightarrow AC = BC = \frac{1}{2} AB$$

$$\Rightarrow BC = \frac{16}{2} = 8 \text{ cm}$$

In $\triangle OBC$,

$$\Rightarrow (OC)^2 = (OB)^2 - (BC)^2$$

$$\Rightarrow (OC)^2 = (10)^2 - (8)^2$$

$$\Rightarrow (OC)^2 = 100 - 64 = 36$$

$$\Rightarrow OC = \sqrt{36} = 6 \text{ cm}$$

\Rightarrow Ans - (B)

Question 62

An angle in a semicircle is

A 45°

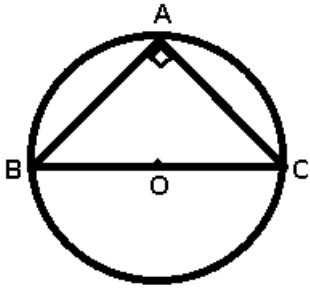
B 60°

C 90°

D 120°

Answer: C

Explanation:



$$\angle BOC = 180^\circ$$

The angle subtended by an arc at the centre of the circle is double the angle subtended by it at any point on the circle.

$$\Rightarrow \angle BOC = 2 \times \angle BAC$$

$$\Rightarrow \angle BAC = \frac{180}{2} = 90^\circ$$

\Rightarrow Ans - (C)

Question 63

If $x = a \cos\theta + b \sin\theta$ and $y = b \cos\theta - a \sin\theta$, then $x^2 + y^2$ is equal to

A ab

B $a^2 + b^2$

C $a^2 - b^2$

D 1

Answer: B

Explanation:

$$\text{Expression 1 : } x = a \cos\theta + b \sin\theta$$

Squaring both sides

$$\Rightarrow x^2 = a^2 \cos^2\theta + b^2 \sin^2\theta + 2ab(\sin\theta)(\cos\theta) \text{ -----(i)}$$

$$\text{Expression 2 : } y = b \cos\theta - a \sin\theta$$

Squaring both sides,

$$\Rightarrow y^2 = b^2 \cos^2\theta + a^2 \sin^2\theta - 2ab(\sin\theta)(\cos\theta) \text{ -----(ii)}$$

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

$$\Rightarrow x^2 + y^2 = [a^2 \cos^2\theta + b^2 \cos^2\theta + 2ab \sin\theta \cos\theta] + [a^2 \sin^2\theta + b^2 \sin^2\theta - 2ab \sin\theta \cos\theta]$$

$$= \cos^2\theta(a^2 + b^2) + \sin^2\theta(a^2 + b^2)$$

$$= (a^2 + b^2)(\cos^2\theta + \sin^2\theta)$$

$$= a^2 + b^2$$

\Rightarrow Ans - (B)

Question 64

A can do a work in 12 days while B can do it in 15 days. They undertake to complete it together for Rs. 450. what will be the share of A in this amount of money ?

- A Rs.200
- B Rs.240
- C Rs.250
- D Rs.300

Answer: C

Explanation:

Let total work to be done = 60 units

A can do the work in 12 days.

$$\Rightarrow \text{A's efficiency} = \frac{60}{12} = 5 \text{ units/day}$$

$$\text{Similarly, B's efficiency} = \frac{60}{15} = 4 \text{ units/day}$$

Total amount = Rs. 450

$$\therefore \text{A's share of money} = \frac{5}{(5+4)} \times 450$$

$$= 5 \times 50 = \text{Rs. } 250$$

\Rightarrow Ans - (C)

Question 65

If $x = \sqrt{2} + 1$, then the value of $x^4 - \frac{1}{x^4}$ is

- A $8\sqrt{2}$
- B $18\sqrt{2}$
- C $6\sqrt{2}$
- D $24\sqrt{2}$

Answer: D

Explanation:

Given : $x = \sqrt{2} + 1$

$$\Rightarrow x^2 = (\sqrt{2} + 1)^2$$

$$\Rightarrow x^2 = 2 + 1 + 2\sqrt{2}$$

$$\Rightarrow x^2 = 3 + 2\sqrt{2}$$

Squaring both sides, $\Rightarrow x^4 = 9 + 8 + 2(3)(2\sqrt{2})$

$$\Rightarrow x^4 = 17 + 12\sqrt{2} \text{-----(i)}$$

$$\Rightarrow \frac{1}{x^4} = \frac{1}{17+12\sqrt{2}}$$

$$\Rightarrow \frac{1}{x^4} = \frac{1}{17+12\sqrt{2}} \times \frac{(17-12\sqrt{2})}{(17-12\sqrt{2})}$$

$$\Rightarrow \frac{1}{x^4} = \frac{17-12\sqrt{2}}{(17)^2 - (12\sqrt{2})^2}$$

$$\Rightarrow \frac{1}{x^4} = \frac{17-12\sqrt{2}}{289-288}$$

$$\Rightarrow \frac{1}{x^4} = 17 - 12\sqrt{2} \text{ -----(ii)}$$

Subtracting equation (ii) from (i)

$$\therefore x^4 - \frac{1}{x^4} = (17 + 12\sqrt{2}) - (17 - 12\sqrt{2})$$

$$= 12\sqrt{2} + 12\sqrt{2} = 24\sqrt{2}$$

\Rightarrow Ans - (D)

Question 66

If $9x^2 + 16y^2 = 60$ and $3x + 4y = 6$, then the value of xy is

A -1

B 1

C -2

D 2

Answer: A

Explanation:

$$\text{Given : } 9x^2 + 16y^2 = 60 \text{ -----(i)}$$

$$\text{and } 3x + 4y = 6$$

Squaring both sides, we get :

$$\Rightarrow (3x + 4y)^2 = (6)^2$$

$$\Rightarrow 9x^2 + 16y^2 + 2(3x)(4y) = 36$$

$$\Rightarrow 60 + 24xy = 36 \quad [\text{Using (i)}]$$

$$\Rightarrow 24xy = 36 - 60 = -24$$

$$\Rightarrow xy = \frac{-24}{24} = -1$$

\Rightarrow Ans - (A)

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Question 67

If in $\triangle ABC$, $DE \parallel BC$, $AB = 7.5\text{cm}$, $BD = 6\text{cm}$ and $DE = 2\text{cm}$, then the length of BC in cm is :

A 6

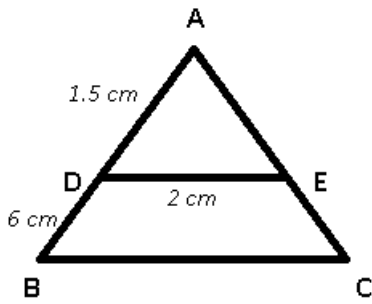
B 8

C 10

D 10.5

Answer: C

Explanation:



Given : $AB = 7.5$ cm and $BD = 6$ cm

$\Rightarrow AD = AB - DB = 1.5$ cm

To find : $BC = ?$

Solution : DE is parallel to BC

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

$$\Rightarrow \frac{1.5}{7.5} = \frac{2}{BC}$$

$$\Rightarrow \frac{1}{5} = \frac{2}{BC}$$

$$\Rightarrow BC = 2 \times 5 = 10 \text{ cm}$$

\Rightarrow Ans - (C)

Question 68

Suppose that the medians BD , CE and AF of a triangle ABC meet at G . Then $AG : GF$ is

A 1:2

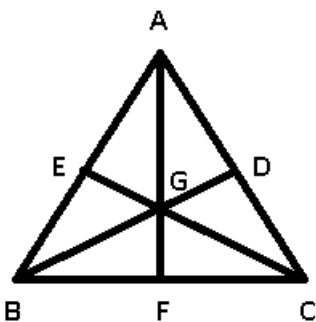
B 2:1

C 1:3

D 2:3

Answer: B

Explanation:



Given : BD , CE and AF are medians of triangle ABC and G is the centroid.

To find : $AG : GF = ?$

Solution : In a triangle, a centroid divides the median in the ratio 2 : 1

$$\Rightarrow \frac{AG}{GF} = \frac{BG}{GD} = \frac{CG}{GE} = \frac{2}{1}$$

\Rightarrow Ans - (B)

Question 69

If $\frac{\cos\theta}{1-\sin\theta} + \frac{\cos\theta}{1+\sin\theta} = 4$ then the value of $\theta (0 < \theta < 90^\circ)$ is

- A 60°
- B 45°
- C 30°
- D 35°

Answer: A

Explanation:

$$\text{Given : } \frac{\cos\theta}{1-\sin\theta} + \frac{\cos\theta}{1+\sin\theta} = 4$$

$$\Rightarrow \frac{\cos\theta(1+\sin\theta) + \cos\theta(1-\sin\theta)}{(1-\sin\theta)(1+\sin\theta)} = 4$$

$$\Rightarrow (\cos\theta + \cos\theta\sin\theta) + (\cos\theta - \cos\theta\sin\theta) = 4(1 - \sin^2\theta)$$

$$\Rightarrow 2\cos\theta = 4\cos^2\theta$$

$$\Rightarrow 2\cos\theta = 1$$

$$\Rightarrow \cos\theta = \frac{1}{2}$$

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

$$\Rightarrow \theta = 60^\circ$$

\Rightarrow Ans - (A)

General Science Notes for SSC CGL

Question 70

A sum of Rs. 2000 amounts to Rs. 4000 in two years at compound interest. In how many years does the same amount becomes Rs. 8000.

- A 2
- B 4
- C 6
- D 8

Answer: B

Explanation:

Let the rate of interest = $r\%$

Principal = Rs. 2000 and time = 2 years

$$\text{Amount under compound interest} = P\left(1 + \frac{r}{100}\right)^t$$

$$\Rightarrow 2000\left(1 + \frac{r}{100}\right)^2 = 4000$$

$$\Rightarrow \left(1 + \frac{r}{100}\right)^2 = \frac{4000}{2000} = 2$$

$$\Rightarrow \left(1 + \frac{r}{100}\right) = \sqrt{2} \text{ -----(i)}$$

Let the sum amounted to Rs. 8000 in t years

$$\Rightarrow 2000\left(1 + \frac{r}{100}\right)^t = 8000$$

Substituting value from equation (i)

$$\Rightarrow (\sqrt{2})^t = \frac{8000}{2000} = 4$$

$$\Rightarrow (2)^{\dot{t}} = (2)^2$$

$$\Rightarrow \frac{t}{2} = 2$$

$$\Rightarrow t = 2 \times 2 = 4 \text{ years}$$

\Rightarrow Ans - (B)

Question 71

Two ships are sailing in the sea on the two sides of a light house. The angle of elevation of the top of the light house as observed from the two ships are 30° and 45° respectively. If the light house is 100m high, the distance between the two ships is :(take $\sqrt{3} = 1.73$)

A 173m

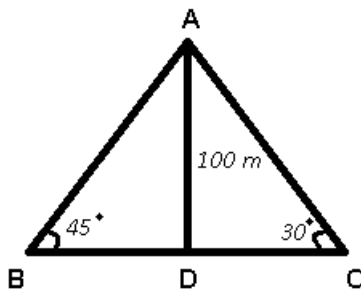
B 200m

C 273m

D 300m

Answer: C

Explanation:



Given : AD is the lighthouse = 100 m

To find : Distance between the ships = BC = ?

Solution : In $\triangle ADC$

$$\Rightarrow \tan(30^\circ) = \frac{AD}{DC}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{100}{DC}$$

$$\Rightarrow DC = 100\sqrt{3}$$

$$\Rightarrow DC = 100 \times 1.73 = 173 \text{ m}$$

Similarly, in $\triangle ABD$

$$\Rightarrow \tan(45^\circ) = \frac{AD}{DB}$$

$$\Rightarrow 1 = \frac{100}{DB}$$

$$\Rightarrow DB = 100 \text{ m}$$

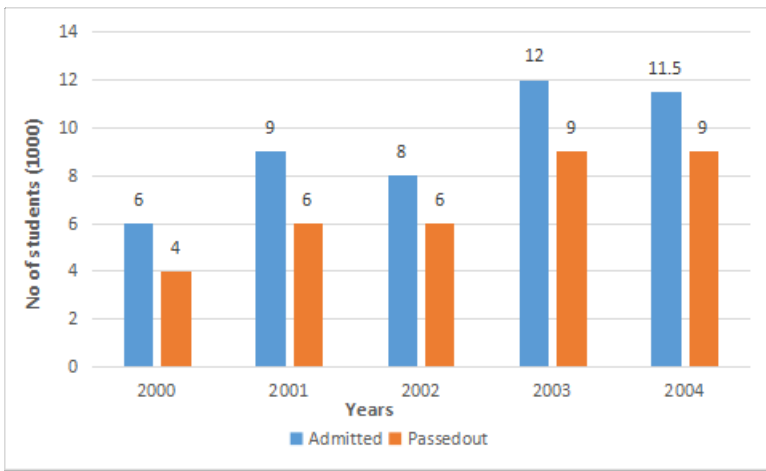
$$\therefore BC = BD + DC$$

$$= 100 + 173 = 273 \text{ m}$$

\Rightarrow Ans - (C)

Instructions

The following figure shows the number of students (in thousands) admitted and passed out per year in a college during years 2000 to 2004. study the figure and answer the questions.



Question 72

The percent increase in the number of students admitted in the year 2003 over that in 2001 is

- A 133.3
- B 33.3
- C 40.3
- D 66.7

Answer: B

Explanation:

Number of students admitted in the year 2003 (in thousands) = 12

Number of students admitted in the year 2001 (in thousands) = 9

$$\Rightarrow \text{Required \% increase} = \frac{12-9}{9} \times 100$$

$$= \frac{100}{3} = 33.3\%$$

\Rightarrow Ans - (B)

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Question 73

During 2000 to 2003, the ratio of the total number of the students passed out to the total number of students admitted is

- A 17/23
- B 17/6
- C 11/23
- D 5/7

Answer: D

Explanation:

During 2000 to 2003,

Total number of the students passed out (in thousands) = 4+6+6+9 = 25

Total number of students admitted (in thousands) = 6+9+8+12 = 35

$$\Rightarrow \text{Required ratio} = \frac{25}{35} = \frac{5}{7}$$

=> Ans - (D)

Question 74

In which of the two years, the pass percentage of students was between 60 to 70 ?

- A 2000 and 2001
- B 2003 and 2004
- C 2001 and 2002
- D none of these

Answer: A

Explanation:

Pass percentage of the students in :

$$2000 : \frac{4}{6} \times 100 = 66.67\%$$

$$2001 : \frac{6}{9} \times 100 = 66.67\%$$

$$2002 : \frac{6}{8} \times 100 = 75\%$$

$$2003 : \frac{9}{12} \times 100 = 75\%$$

$$2004 : \frac{9}{11.5} \times 100 = 78.2\%$$

=> Only in 2000 and 2001 the pass percentage of students was between 60 to 70

=> Ans - (A)

Question 75

The ratio of the number of students admitted in the year 2002 to the average of the number of students passed out in the years 2003 and 2004. is

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

Answer: B

Explanation:

Number of students admitted in the year 2002 = 8000

Total number of students passed out in the years 2003 and 2004 = 9000+9000 = 18000

Average number of students passed out in the years 2003 and 2004 = $\frac{18000}{2} = 9000$

=> Required ratio = $\frac{8000}{9000} = \frac{8}{9}$

=> Ans - (B)

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English

Instructions

For the following questions answer them individually

Question 76

In the following question, out of the four alternatives, choose the word which best expresses the meaning of the given word and click the button corresponding to it.

REVILE

- A REVIVE
- B REVIEW
- C ABUSE
- D REVEAL

Answer: C

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Question 77

In the following question, out of the four alternatives, choose the word which is opposite in meaning to the given word and click the button corresponding to it.

SQUANDER

- A SPEND
- B REDUCE
- C SLANDER
- D SKIMP

Answer: D

Question 78

Four words are given, out of which only one word is spelt correctly. Choose the correctly spelt word and click the button corresponding to it.

- A Sanctaries
- B Sanctauries
- C Santuaries
- D Sanctuaries

Answer: D

Question 79

In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and click the button corresponding to it. If the sentence is free from error, click the "No error" option.

He had already sent me message (a) / that his arrival (b) / was scheduled for Thursday (c) / No error (d)

- A He had already sent me message
- B that his arrival
- C was scheduled for Thursday

D No error

Answer: A

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Question 80

In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and click the button corresponding to it. If the sentence is free from error, click the "No error" option.

Science and technology and (a) / their fallouts do not (b) / complete human culture (c) / No error (d)

A Science and technology and

B their fallouts do not

C complete human culture

D No error

Answer: B

Question 81

In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and click the button corresponding to it. If the sentence is free from error, click the "No error" option.

The angry bird flap (a) / her wings, flies a short (b) / distance and returns. (c) / No error (d)

A The angry bird flap

B her wings, flies a short

C distance and returns

D No error

Answer: A

Question 82

The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative and click the button corresponding to it.

The clock has _____ for want of winding.

A run down

B run short

C run past

D run up

Answer: A

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Question 83

The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative and click the button corresponding to it.

Few people know that flowers use textures to _____ different kinds of insects.

- A signal
- B feel
- C attract
- D distract

Answer: C

Question 84

The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative and click the button corresponding to it.

They abandoned their comrades _____ the wolves.

- A by
- B between
- C on
- D among

Answer: D

Question 85

In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase and click the button corresponding to it.

For keeps

- A Himself
- B Away
- C Forever
- D Hid

Answer: C

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Question 86

In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase and click the button corresponding to it.

Pale into insignificance

- A Seemed less important
- B Was less exciting

- C Was less hectic
- D Was dull and pale

Answer: A

Question 87

In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase and click the button corresponding to it.

With one voice

- A By one man
- B By one community
- C Unanimously
- D In disharmony

Answer: C

Question 88

Out of the four alternatives, choose the one which can be substituted for the given words/sentences and click the button corresponding to it.

Drug which causes people to sleep easily

- A Poppy
- B Soporific
- C Beguile
- D Pedant

Answer: B

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Question 89

Out of the four alternatives, choose the one which can be substituted for the given words/sentences and click the button corresponding to it.

The branch of philosophy concerned with the study of the principles of beauty, especially in art

- A Artistic
- B Aesthetics
- C Ethics
- D Metaphysics

Answer: B

Question 90

Out of the four alternatives, choose the one which can be substituted for the given words/sentences and click the button corresponding to it.

The study of skin

- A Dermatology
- B Dermatoglyphics
- C Stratigraphy
- D Oncology

Answer: A

Question 91

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

She has that rare character - the ability to listen to people.

- A rare ear
- B rare characteristic
- C rare sense
- D No improvement

Answer: D

Explanation:

The given sentence has no error and hence no improvement is required.

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Question 92

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

Both of them have not apologized yet.

- A Neither of them has
- B Any of them have
- C None of the two
- D No improvement

Answer: A

Question 93

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

The greater the demand, higher the price.

- A the high
- B a higher
- C the higher
- D No improvement

Answer: C

Explanation:

'The greater the demand, **the higher** the price' is the correct form of the given sentence.

Question 94

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

His appointment as coach is yet another feather in his wing.

- A feather in his hat
- B badge in his hat
- C feather in his cap
- D No improvement

Answer: C

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Question 95

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

The majority of the rain-fed Indian rivers, either dry up, or become trickle after the monsoon.

- A the trickle
- B a trickle
- C an trickle
- D No improvement

Answer: B

Instructions

A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives and click the button corresponding to it.

It's nothing short of a revolution in how we eat, and it's getting closer every day. Yes, a lot of people are obese, and yes, the definition of "healthy eating" seems to change all the time. But in labs and research centres around the world, scientists are racing to match our genes and our taste buds, creating the perfect diet for each of us, a diet that will fight disease, increase longevity, boost physical and mental performance, and taste great to boot. As food scientist J. Bruce German says, "The foods we like the most will be the most healthy for us."

Is that going to be a great day, or what?

All this will come to pass, thanks to genomics, the science that maps and describes an individual's genetic code. In the future, personalized DNA chips will allow us to assess our own inherited predispositions for certain diseases, then adjust our diets accordingly. So, if you're at risk for heart disease, you won't just go on a generic low-fat diet. You'll eat foods with just the right amount and type of fat that's best for you. You'll even be able to track your metabolism day-to-day to determine what foods you should eat at any given time, for any given activity. "Since people differ in their genetics and metabolism, one diet won't fit all," says German.

As complex as all this sounds, it could turn out to be relatively simple.

Question 96

What are scientists doing?

- A Racing in labs and research centres around the world
- B Asking us to start dieting
- C Creating the perfect diet for us
- D Try and make us taller

Answer: C

Question 97

What does J. Bruce German say?

- A The food we like is not healthy for us
- B The food we like is the healthiest one for us
- C The most healthy food should be liked by us
- D Food scientists like healthy food

Answer: B

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Question 98

What is genomics?

- A The science which describes about maps
- B The science which describes an individual
- C The science which deals with years
- D The science that maps and describes an individual's genetic code

Answer: D

Question 99

Why won't a common diet fit everybody?

- A Because different people eat different food
- B Because their genes are different
- C Since they differ in genetics and metabolism

D Because of their different moods

Answer: C

Question 100

What will be possible in the future?

A Personalised DNA chips for people to assess their own inherited predispositions

B You are at great risk for heart disease

C You will not be able to determine what food you should eat

D You will be unable to adjust your diet

Answer: A

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