Instructions

In each of the following questions, select the related word/letters /number from the given alternatives.

Question 1

Eye: Cataract : : Skin : ?

A Pyorrhea

B Sinusitis

C Eczema

D Trachoma

Answer: C

Explanation:
Cataract is a clouding of the lens in the eye which leads to a decrease in vision, similarly, **eczema** is a medical condition in which patches of skin become rough and inflamed with blisters which cause itching and bleeding.

=> Ans - (C)

Question 2

Vitamin A : Carrot :: Vitamin C : ?

A Meat

B Fish

C Egg

D Orange

Answer: D

Explanation:
Carrot is a good source of vitamin A whereas Orange is a good source of vitamin C.

Hence, option D is the correct answer.

Question 3

ACF : GIL :: MOR : ?

A SUX

B TUX

C UWZ

D SVY

Answer: A

Explanation:
The pattern followed here is,

A + 6 = G, C + 6 = I, F + 6 = L

Code for MOR will be,

M + 6 = S, O + 6 = U, R + 6 = X

Hence, option A is the correct answer.

Question 4

32 : 66: : 134 : ?

A 271

B 268

C 270

D 275

Answer: C

Explanation:
The pattern followed here is,

(32 x 2) + 2 = 66.

Therefore, code for 134 will be,

(134 x 2) + 2 = 270.

Hence, option C is the correct answer.

Instructions

In the following questions, find the odd word/number from the given alternatives.

Question 5

A Sweater

B Muffler

C Socks

D Shawl

Answer: C

Explanation:
A sock is a type of clothing worn on feet and all other clothing's mentioned in the options are worn on upper parts of the body.

Hence, option C is the correct answer.

Question 6

A QWBS

B MPTD

C UIAE

D RVGW

Answer: C

Explanation:

Except in option C, other options contain consonants in them. (Only Option C contains vowels in it)

Hence, option C is the correct answer.

Question 7

A 1942

B 1937

C 1935

D 1925

Answer: A

Explanation:
Except '1942' other numbers are odd numbers.

Hence, option A is the correct answer.

Instructions
For the following questions answer them individually

Question 8

Arrange the leaves according to their size (Small to large):
1. Mango leaf
2: Tamarind leaf
3: Papaya leaf
4. Banana leaf

A 1, 2, 3, 4

B 3, 2, 4, 1

C 2, 1, 3, 4

D 2, 3, 1, 4

Answer: C

Explanation:
The size of the leaf's in ascending order would be,

1) Tamarind 2) Mango 3) Papaya 4) Banana

Hence, option C is the correct answer.

Question 9

In the following questions, a series is given with one term missing. Choose the correct alternative form the given ones that will complete the series.

N, P, R, ?

A T

B U

C O

D V

Answer: A

Explanation:
The pattern followed here is,

N + 2 = P

P + 2 = R

R + 2 = T

Hence, option A is the correct answer.

Question 10

In the following questions, a series is given with one term missing. Choose the correct alternative form the given ones that will complete the series.

1 4 9 16
25 36 49 ?
81 100 ? 144

A 64 & 121

B 20 & 100

C 121 & 46

D 95 & 150

Answer: A

Explanation:
The given numbers are the squares of natural numbers starting from '1'

Hence, missing numbers are squares of 8 and 11 i.e 64 and 121.

Hence, option A is the correct answer.

Question 11

In the following questions, a series is given with one term missing. Choose the correct alternative form the given ones that will complete the series.

4, 3, 2.5, 2.25, ?

A 1

B 1.125

C 2

D 2.125

Answer: D

Explanation:
The pattern followed here is,

4 - 1 = 3,

3- 0.5 = 2.5,

2.5 - 0.25 = 2.25,

2.25 - 0.125 = 2.125.

Hence, option D is the correct answer.

Question 12

If 8th of April falls on Monday, what would be the 30th day of that month

A Sunday

B Monday

C Tuesday

D Wednesday

Answer: C

Explanation:
If 8th of April falls on Monday then 15th, 22nd, 29th will also be Monday. Therefore, 30th of that month will be Tuesday.

Hence, option C is the correct answer.

Question 13

From the given alternatives. Select the word which cannot be formed using the letters of the given word. ESTABLISHMENT

A TABLE

B BLUNT

C TENTS

D STATE

Answer: B

Explanation:
Except the word 'BLUNT' other words given in the options can be formed using "ESTABLISHMENT"

There is no 'U' in the given word "ESTABLISHMENT".

Hence, option B is the correct answer.

Question 14

If SUNDAY is coded as 012345 and BIG is coded as 678, how would you encode SANDBAY ?

A 0234456

B 0423645

C 0432645

D 0342456

Answer: B

Explanation:
SUNDAY is coded as '012345' and BIG is coded as '678'

Each alphabet on the left is directly related to each number on the right.

S = 0 ; U = 1 ; N = 2 ; D = 3 ; A = 4 ; Y = 5 ; B = 6 ; I = 7 ; G = 8

In the same way,

SANDBAY is coded as '0423645'

Hence, option B is the correct answer.

Question 15

Select the correct combination of mathematical signs to replace * signs and to balance the following equation-
9 * 3 * 3 * 3 * 6

A ÷ x - =

B + - x =

C - + + =

D x + - =

Answer: A

Explanation:
The correct combination would be,

9 ÷ 3 x 3 - 3 = 6

Hence, option A is the correct answer.

Question 16

Select the correct response. If RAJ = 29, EDUCATION = ?

A 85

B 86

C 88

D 92

Answer: D

Explanation:
The pattern followed here is,

R(18) + A(1) + J(10) = 29

The code for EDUCATION will be,

E(5) + D(4) + U(21) + C(3) + A(1) + T(20) + I(9) + O(15) + N(14) = 92

Hence, option D is the correct answer.

Question 17

At dusk, Rohit started walking facing the west, After a while, he met his friend and both turned to their left. They halted for a while and started moving by turning again to their right. Finally Rohit waved 'good bye' to his friend and took a left turn at a corner. At which direction is Rohit moving now ?

A South

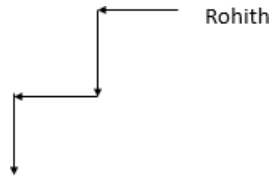
B West

C North

D East

Answer: A

Explanation:
As per the given question,

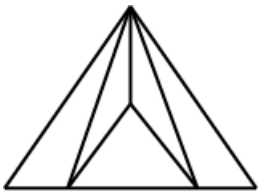


Finally, Rohit is facing South.

Hence, option A is the correct answer.

Question 18

Find the number of triangles in the given figure



A 6

B 7

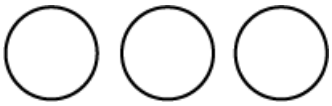
C 8

D 9

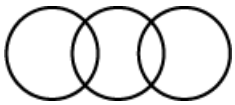
Answer: B

Question 19

Which figure best represents the relation among Man, Vegetables and Cow ?

A 

B 

C 

D 

Answer: A

Explanation:
All three given entities are completely different from each other.

Hence, option A is the correct answer.

Question 20

There are two statements labelled as Assertion (A) and Reason (R).
A.A little gap is left between iron rails.
R. Iron expands is summer.

A Both (A) and (R) are true.

B Both (A) and (R) are false.

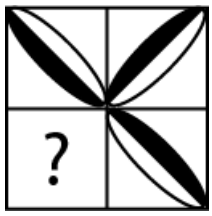
C (A) is true and (R) is false.

D (A) is false and (R) is true.

Answer: A

Question 21

Which answer figure will complete the pattern in the question figure:



A


B

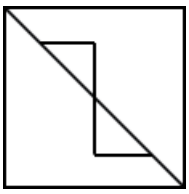

C

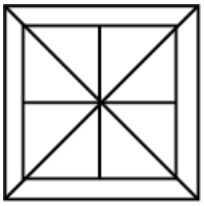

D

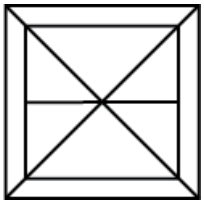

Answer: B

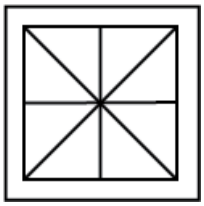
Question 22

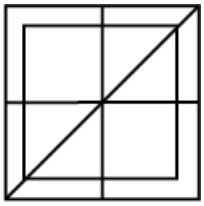
From the given answer figures, select the one in which the question figure is hidden / embedded.



A 

B 

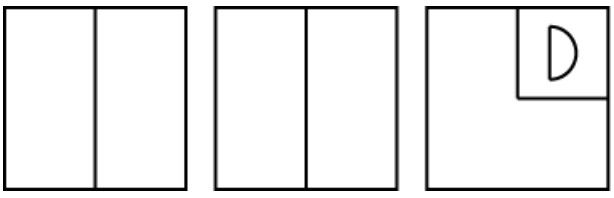
C 

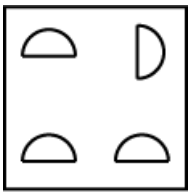
D 

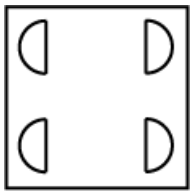
Answer: A

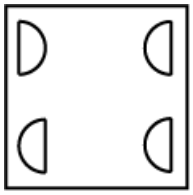
Question 23

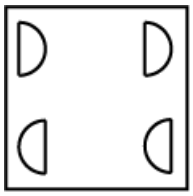
A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.



A 

B 

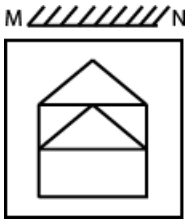
C 

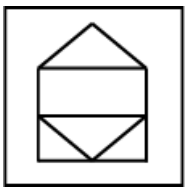
D 

Answer: B

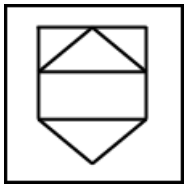
Question 24

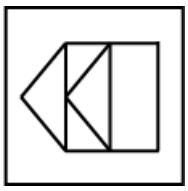
If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure ?



A 

B 

C 

D 

Answer: B

Question 25

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 form 5 to 9. A letter from these matrices can be represented first by its row and next by its column, e.g. 'A' can be represented by00, 23, etc. and 'P' can be represented by 55, 69, etc. Similarly you have to identify the set for the word given in the question.
BEAST

Matrix - I

	0	1	2	3	4
0	A	B	C	D	E
1	B	C	D	E	A
2	C	D	E	A	B
3	D	E	A	B	C
4	E	A	B	C	D

Matrix - II

	5	6	7	8	9
5	P	Q	R	S	T
6	Q	R	S	T	P
7	R	S	T	P	Q
8	S	T	P	Q	R
9	T	P	Q	R	S

A 33, 42, 58, 55, 87

B 31, 68, 32, 55, 95

C 24, 22, 23, 58, 59

D 42, 31, 10, 13, 77

Answer: C

Explanation:
As per the given question,

B can be represented by - 01, 10, 24, 33, 42.

Similarly,

E - 04, 13, 22, 31, 40

A - 00, 14, 23, 32, 41.

S - 58, 67, 76, 85, 99.

T - 59, 68, 77, 86, 95.

24, 22, 23, 58, 59 is one of the combinations for BEAST.

Hence, option C is the correct answer.

General Awareness

Instructions
For the following questions answer them individually

Question 26

Production function refers to the functional relationship between input and_____.

A product

B produce

C output

D service

Answer: C

Question 27

'Self Reliance' was the main objective of

A Fourth Plan

B Seventh Plan

C Third Plan

D Sixth Plan

Answer: D

Question 28

District Judge is under the control of

A State Government

B High Court

C Supreme Court

D Governor

Answer: B

Question 29

What is the meant by social justice ?

A All should have same economic rights

B All should have same political rights

C All kinds of discrimination based on caste, creed, colour and sex should be eliminated

D All should be granted right to freedom of religion

Answer: C

Question 30

_____ are essential for liberty.

A Restrictions

B Rights

C Privileges

D Laws

Answer: B

Question 31

Name the country which launched the first Satellite "Sputnik" into the space.

A United States of America

B Soviet Union

C Japan

D England

Answer: B

Question 32

Who is commonly known as the Iron Man ?

A Sardar Vallabh Bhai Patel

B Vittal Bhai Patel

C Bal Gangadhar Tilak

D Bipin Chandra Pal

Answer: A

Question 33

Mahavira's first disciple was

A Bhadrabahu

B Sthulabhadra

C Charvaka

D Jamali

Answer: D

Question 34

Which of the following is the most numerous tribe in India ?

A Todas

B Bhils

C Garos

D Gonds

Answer: D

Question 35

Soils of Western Rajasthan have a high content of

A Aluminium

B Calcium

C Nitrogen

D Phosphrous

Answer: B

Question 36

Activity of an enzyme can be modulated by change of ?

A pH

B Light

C Humidity

D Rainfall

Answer: A

Question 37

Proteins are digested by

A Proteases

B Amylases

C Lipases

D Nucleases

Answer: A

Question 38

Jaundice is a disease which effects

A Heart

B Liven

C Spleen

D Gall bladder

Answer: B

Question 39

Which metal is the heaviest in periodic table among the following ?

A Os

B Pt

C Pb

D W

Answer: A

Question 40

The chemical formula of the laughing gas is

A NO

B N_2O_3

C NO_2

D N_2O_3

Answer: B

Question 41

Outside of cooking utensils are generally left black from below because

A it is difficult to clean daily

B black surface is a good conductor of heat

C black suface is a poor conductor of heat

D black surface is a good absorber of heat

Answer: D

Question 42

The colour of sky appears blue due to

A reflection

B refraction

C scattering of shorter wave lengths

D dispersion

Answer: C

Question 43

GUI stands for

A Graphical User Interface

B Graphical User Information

C Graphical User Interaction

D Graphical User Instruction

Answer: A

Question 44

Indian Council of Forestry Research and Education is located in

A Dehradum

B Ranchi

C New Delhi

D Raipur

Answer: A

Question 45

Cholesterol is absent in

A Groundnut oil

B Butter oil

C Butter milk

D Ice cream

Answer: A

Question 46

India's first Crypto-Currency exchange "coincome" has launched by which payment gateway ?

A Direcpay

B Citrus pay

C Payzippy

D Billdesk

Answer: D

Question 47

“Dandia” is a popular dance of

A Gujarat

B Assam

C Jharkhand

D Maharashtra

Answer: A

Question 48

‘Natya Shastra was written by

A Bharat Muni

B Narad Muni

C Jandu Muni

D Vyas Muni

Answer: A

Question 49

Vardhaman Mahavir is also known as

A Jena

B Great teacher

C Great preacher

D Jain

Answer: A

Question 50

“Ranji Trophy” is associated with

A Hockey

B Football

C Cricket

D Kabaddi

Answer: C

Quantitatve aptitude

Instructions
For the following questions answer them individually

Question 51

The value of 0.65 x 0.65 + 0.35 x 0.35+0.70 x 0.65 is

A 1.75

B 1.00

C 1.65

D 1.55

Answer: B

Explanation:
Expression : $(0.65 \times 0.65) + (0.35 \times 0.35) + (0.70 \times 0.65)$

= $(0.65)^2 + (0.35)^2 + 2(0.35)(0.65)$

Comparing with : $(x)^2 + (y)^2 + 2(x)(y) = (x + y)^2$

= $(0.65 + 0.35)^2 = (1)^2 = 1$

=> Ans - (B)

Question 52

How many numbers between 400 and 800 are divisible by 4, 5 and 6 ?

A 7

B 8

C 9

D 10

Answer: A

Explanation:
L.C.M. of (4,5,6) = 60

Numbers between 400 and 800 that are divisible by 60 are : 420, 480,……, 780

The above series is an arithmetic progression with first term $= a = 420$, common difference $= d = 60$ and last term $= l = 780$

Let number of terms be n

Thus, last term of an A.P. = $l = a + (n - 1)d$

=> $420 + (n - 1) \times (60) = 780$

=> $(n - 1) \times (60) = 780 - 420 = 360$

=> $(n-1) = \frac{360}{60} = 6$

=> $n = 6 + 1 = 7$

∴ Numbers between 400 and 800 are divisible by 4, 5 and 6 = **7**

=> Ans - (A)

Question 53

If sum of two number be a and their product be, b, then the sum of their reciprocals is

A $\frac{1}{a} + \frac{1}{b}$

B $\frac{b}{a}$

C $\frac{a}{b}$

D $\frac{1}{ab}$

Answer: C

Explanation:
Let the two numbers be x and y

Given x+y=a

xy=b

$\frac{1}{x} + \frac{1}{y}$=?

$\frac{1}{x} + \frac{1}{y} = \frac{x+y}{xy} = \frac{a}{b}$

Question 54

In a camp of 160 students provisions are available for 10 days. If 40 more students join the camp, how long will the provisions last ?

A 5

B $6\frac{1}{2}$

C 8

D $12\frac{1}{2}$

Answer: C

Explanation:

$No.ofmen_1 \times No.ofdays_1 = No.ofdays_2 \times No.ofdays_2$

$160 \times 10 = (160 + 40) \times x$

$160 \times 10 = 200 \times x$

$\Rightarrow$ x=8 days

Question 55

Three taps A, B, C can fill an overhead tank in 4, 6 and 12 hours respectively. How long would the three taps take to fill the tank if all of them are opened together ?

A 2 hrs.

B 4 hrs

C 3 hrs

D 5 hrs

Answer: A

Explanation:

Time taken by tap A to fill the tank in one hour = $\frac{1}{4}$

Time taken by tap B to fill the tank in one hour = $\frac{1}{6}$

Time taken by tap C to fill the tank in one hour = $\frac{1}{12}$

Time taken by all taps to fill the tank in one hour = $\frac{1}{4} + \frac{1}{6} + \frac{1}{12}$ or $\frac{6}{12}$ or $\frac{1}{2}$

Total time taken by all three taps together to fill the tank = 2 hours.

Hence, option A is the correct answer.

Question 56

The perimeter of a triangle and an equilateral triangle are same. Also, one of the sides of the rectangle is equal to the side of the triangle. The ratio of the areas of the rectangle and the triangle is

A $\sqrt{3}$ 1

B 1 : $\sqrt{3}$

C 2: $\sqrt{3}$

D 4 : $\sqrt{3}$

Answer: C

Explanation:

Given that the perimeters of rectangle and triangle are equal

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

Let the side of triangle be 'a'

$\Rightarrow$ 2(l+b)=3a

Given that one side of rectangle of rectangle = side of triangle

Let l=a

$\Rightarrow$ 2(a+b)=3a

$\Rightarrow$ 2a+2b=3a

$\Rightarrow$ a=2b

Area of rectangle : Area of triangle = ab : $\frac{\sqrt{3}}{4}a^2$

Substituting a=2b in above equation

$\Rightarrow 2b^2 : \frac{\sqrt{3}}{4} \times 4b^2$

$\Rightarrow 2 : \sqrt{3}$

Question 57

A solid spherical copper ball, whose diameter is 14 cm, is melted and converted into a wire having diameter equal to 14 cm. The length of the wire is

A 27 cm

B $\frac{16}{3}$

C 15 cm

D $\frac{28}{3}$

Answer: D

Explanation:

Radius of spherical copper ball(r) = 7cm

Volume of sphere = $\frac{4}{3}\prod r^3$

Radius of Cylindrical wire(R) = 7cm

Let length of wire be 'L'

Volume of cylinder = $\prod R^2 L$

Here Volume of sphere = Volume of sphere

$\frac{4}{3}\prod r^3 = \prod R^2 L$

$\frac{4}{3} \times 7 \times 7 \times 7 = 7 \times 7 \times L$

$\therefore$ Length of the wire 'L' = $\frac{28}{3}$ cm

Question 58

Discount on a pair of shoes marked at Rs.475 and discounted at 15% is

A Rs. 70

B Rs.71.25

C Rs.72

D Rs.72.25

Answer: B

Explanation:

Marked price = Rs. 475

Discount % = 15%

=> Discounted amount = $\frac{15}{100} \times 475$

$= \frac{15 \times 19}{4} = Rs.\ 71.25$

=> Ans - (B)

Question 59

The cost price of an article is Rs.100. A discount series of 5%, 10% successively reduces the price of a article by

A Rs 4.5

B Rs 14.5

C Rs 24.5

D None of the above

Answer: B

Explanation:
Cost price = Rs. 100

Selling price after first discount of 5% = $100 - (\frac{5}{100} \times 100)$

= $100 - 5 = Rs.\ 95$

Similarly, selling price after second discount of 10% = $95 - (\frac{10}{100} \times 95)$

= $95 - 9.5 = Rs.\ 85.5$

$\therefore$ Amount is reduced by = $100 - 85.5 = Rs.\ 14.5$

=> Ans - (B)

Question 60

A grinder was marked at Rs.3,600/ After given a discount of 10% the dealer made a profit of 8%. Calculate the cost price.

A Rs. 3,000

B Rs.3,312

C Rs.3,240

D Rs.2,960

Answer: A

Explanation:
Marked price = Rs. 3600

Discount % = 10%

=> Selling price = $3600 - (\frac{10}{100} \times 3600)$

= $3600 - 360 = Rs.\ 3240$

Profit % = 8%

=> Cost price = $\frac{3240}{(100+8)} \times 100$

= $30 \times 100 = Rs.\ 3,000$

=> Ans - (A)

Question 61

If $x^2 + 9y^2$ = 6xy, then x: y is

A 1 : 3

B 3 : 2

C 3 : 1

D 2 : 3

Answer: C

Explanation:

$x^2 + 9y^2 = 6xy$

$\Rightarrow x^2 - 6xy + 9y^2 = 0$

$\Rightarrow (x - 3y)^2 = 0$

$\Rightarrow x - 3y = 0$

$\Rightarrow x = 3y$

$\Rightarrow \frac{x}{y} = \frac{3}{1}$

$\therefore$ x:y=3:1

Question 62

In a school $\frac{1}{10}$ of the boys are same in number as $\frac{1}{4}$ of the girls and $\frac{5}{8}$ of the girls are same in number as $\frac{1}{4}$ of the boys. The ratio of the boys to girls in that school is

A 2 : 1

B 5 : 2

C 4 : 3

D 3 : 2

Answer: B

Explanation:

Let the number of Boys be 'B' and the number of girls be 'G'

$\frac{1}{10}B = \frac{1}{4}G$

$\Rightarrow \frac{B}{G} = \frac{5}{2}$

$\therefore$ B:G=5:2

Question 63

The average of 8 numbers is 27. If each of the numbers is multiplied by 8, find the average of new set of numbers.

A 1128

B 938

C 316

D 216

Answer: D

Explanation:

Let the 8 numbers be $x_1, x_2, ..., x_8$

Sum of these 8 numbers = $x_1 + x_2 + ... + x_8 = 27 \times 8 = 216$ ---------- (i)

If each number is multiplied by 8, => Numbers = $8x_1, 8x_2, ..., 8x_8$

Sum = $8(x_1 + x_2 + ... + x_8)$

= 8×216

$\therefore$ New average = $\frac{8 \times 216}{8} = 216$

=> Ans - (D)

Question 64

In a prep school, the average weight of 30 girls in a class among 50 students is 16 kg and that of the remaining students is 15.5 kg. What is the average weight of all the students in the class ?

A 15.2 kg

B 15.8 kg

C 15.4 kg

D 15.6 kg

Answer: B

Explanation:

Average weight of 30 girls = 16 kg

=> Total weight of 30 girls = $16 \times 30 = 480$ kg

Similarly, total weight of remaining $(50 - 30 = 20)$ boys = $15.5 \times 20 = 310$ kg

$\therefore$ Average weight of all the students in the class = $\frac{(480+310)}{50}$

= $\frac{79}{5} = 15.8$ kg

=> Ans - (B)

Question 65

The average age of a husband and his wife was 23 years at the beginning of their marriage. After five years they have a one-year old child. The average age of the family of three, when the child was born, was

A 27 years

B 24 years

C 18 years

D 20 years

Answer: C

Explanation:

Sum of ages of husband and wife at the time of their marriage = $23 \times 2 = 46$ years

Child was 1 year old after 5 years, => child was born 4 years after the marriage.

Sum of the husband and wife after 4 years = 4 years of husband + 4 years of wife

=> Total age = $46 + 8 = 54$ years

=> Required average = $\frac{54}{3} = 18$ years [Child's age was 0, when he was born]

=> Ans - (C)

Question 66

If the profit on sale price be 20%, the percentage of profit on cost price is

A 20%

B 30%

C 22%

D 25%

Answer: D

Explanation:

Let selling price = Rs. 100

=> Profit on selling price = $\frac{20}{100} \times 100 = Rs.\ 20$

Thus, cost price = $100 - 20 = Rs.\ 80$

$\therefore$ Profit on cost price = $\frac{20}{80} \times 100$

$= \frac{100}{4} = 25\%$

=> Ans - (D)

Question 67

A shopkeeper purchased a TV for Rs.2,000 and a radio for Rs.750. He sells the TV at a profit of 20% and ther radio at a loss of 5%. The total loss or gain is

A Gain Rs.353.50

B Gain Rs.362.50

C Loss Rs.332

D Loss Rs.300

Answer: B

Explanation:

Cost price of TV = Rs. 2000

Profit % = 20%

=> Selling price of TV = $2000 + (\frac{20}{100} \times 2000)$

= $2000 + 400 = Rs.\ 2400$

Similarly, selling price of radio = $750 - (\frac{5}{100} \times 750)$

= $750 - 37.5 = Rs.\ 712.5$

Thus, total cost price = $(2000 + 750) = Rs.\ 2750$

and total selling price = $(2400 + 712.5) = Rs.\ 3112.5$

$\therefore$ Gain = $3112.5 - 2750 = Rs.\ 362.50$

=> Ans - (B)

Question 68

A container containing 400 litres of oil lost 8% by leakage. Oil left in the container is

A 320 litres

B 368 litres

C 332 litres

D 32 litres

Answer: B

Explanation:

Quantity of oil originally in the container = 400 litres

Quantity of oil left = $400 - (\frac{8}{100} \times 400)$

= $400 - 32 = 368$ litres

=> Ans - (B)

Question 69

If x^2- 3x + 1 = 0, then the value of $x^5 + \frac{1}{x^5}$ is equal to

A 87

B 123

C 135

D 201

Answer: B

Explanation:

$x^2 - 3x + 1 = 0$

Taking 'x' common

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

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

Squaring on both sides

$x^2 + \frac{1}{x^2} + 2 \times x \times \frac{1}{x} = 9$

$\Rightarrow x^2 + \frac{1}{x^2} = 7 \rightarrow (2)$

Cubing equation(1) on both sides

$x^3 + \frac{1}{x^3} + 3 \times x \times \frac{1}{x} (x + \frac{1}{x}) = 27$

$x^3 + \frac{1}{x^3} + 3 \times 1 \times 3 = 27 (\because x + \frac{1}{x} = 3)$

$x^3 + \frac{1}{x^3} = 27-9 = 18 \rightarrow (3)$

Squaring equation(2) on both sides

$x^4 + \frac{1}{x^4} + 2 \times x^2 \times \frac{1}{x^2} = 49$

$x^4 + \frac{1}{x^4} = 47 \rightarrow (4)$

Multiplying equation(1) and equation(4)

$(x^4 + \frac{1}{x^4})(x + \frac{1}{x}) = 47 \times 3$

$x^5 + \frac{1}{x^5} + x^3 + \frac{1}{x^3} = 47 \times 3 = 141$

$x^5 + \frac{1}{x^5} + 18 = 141 (\because x^3 + \frac{1}{x^3})$

$\therefore x^5 + \frac{1}{x^5} = 123$

Question 70

The value of $\text{cosec}^2 18^\circ - \frac{1}{cot^2 72^\circ}$ is

A $\frac{1}{\sqrt{3}}$

B $\frac{\sqrt{2}}{3}$

C $\frac{1}{2}$

D 1

Answer: D

Explanation:

$\text{cosec}^2 18^\circ - \frac{1}{cot^2 72^\circ}$

$= \text{cosec}^2 18^\circ - tan^2 72^\circ \quad (\because cot^2\ominus = tan^2\ominus)$

$= \text{cosec}^2 18^\circ - tan^2(90 - 72)^\circ$

$= \text{cosec}^2 18^\circ - sec^2 18^\circ \quad (\because sec^2\ominus = tan^2(90^\circ - \ominus))$

$\text{cosec}^2 18^\circ - sec^2 18^\circ = 1 \quad (\because cosec^2\ominus - sec^2\ominus = 1)$

Question 71

The elevation of the top of a tower from a point on the ground is 45°. On travelling 60 m from the point towards the tower, the alevation of the top becomes 60°. The height of the tower, in metres, is

A 30

B $30(3 - \sqrt{3})$

C $30(3 + \sqrt{3})$

D $30\sqrt{3}$

Answer: C

Explanation:

From $\triangle$ ACD,

$\tan 60^\circ = \frac{AD}{CD}$

$\Rightarrow AD = CD\sqrt{3}$

From $\triangle$ ABD,

$\tan 45^\circ = \frac{AD}{BD}$

$\Rightarrow$ AD = BD

$\Rightarrow$ AD = BC+CD

$\Rightarrow AD = 60 + \frac{AD}{\sqrt{3}}$

$\Rightarrow AD - \frac{AD}{\sqrt{3}} = 60$

$\Rightarrow \frac{\sqrt{3}AD - AD}{\sqrt{3}} = 60$

$AD(\sqrt{3} - 1) = 60\sqrt{3}$

$AD = \frac{60\sqrt{3}}{\sqrt{3} -}$

Rationalising above equation

$AD = \frac{60\sqrt{3}}{\sqrt{3} -} \times \frac{\sqrt{3}+1}{\sqrt{3}+1}$

$AD = \frac{60\sqrt{3}(\sqrt{3}+1)}{\sqrt{3}}$

$\therefore AD = 30(\sqrt{3} + 3)$

Question 72

$\frac{(a-b)^2}{(b-c)(c-a)} + \frac{(b-c)^2}{(a-b)(c-a)} + \frac{(a-c)^2}{(a-b)(b-c)}$ $a/= b/= c$ is

,

A 0

B 1

C 2

D 3

Answer: D

Explanation:

Let a=3, b=2, c=1

$\frac{(a-b)^2}{(b-c)(c-a)} + \frac{(b-c)^2}{(a-b)(c-a)} + \frac{(a-c)^2}{(a-b)(b-c)}$

$\frac{(3-2)}{2} \quad \frac{(2-1)}{2} \quad (3-1)^2$

$= \frac{(2-1)(1-3)}{1} + \frac{(3-2)(1-3)}{1} + (3-2)(2-1)$

= - 2 — 2 +4=3

Question 73

The product of two numbers is 2160 and their HCF is 12. Numbers of such possible pairs is

A 1

B 2

C 3

D 4

Answer: B

Explanation:

H.C.F. of the two numbers is 12, let the numbers be $12x$ and $12y$, where x and y are co-prime

Product = $(12x) \times (12y) = 2160$

$= xy = \frac{2160}{144}$

$\Rightarrow xy = 15$

Now, factors of 15 = 1, 3, 5, 15

Thus, possible values of $(x, y) = (1, 15), (3, 5)$

$\therefore$ **2** such pairs are possible.

=> Ans - (B)

Instructions

The following table gives the result of a survey based on newspaper reading habits. Study the table and answer the questions.

Income Group in (Salary/Income per month)	Does not read newspapers	Reads newspapers published in regional languages only	Reads only English Paper	Reads both in regional and English langauages
Below Rs.5,000	162	271	123	52
Rs.5,000 - Rs.10,000	13	285	206	82
Above Rs.10,000	21	209	325	187

Question 74

The number of people who read only English newspapers.

A 975

B 654

C 1086

D 221

Answer: B

Explanation:
Number of people who read only English newspapers

= 123 + 206 + 325 = **654**

=> Ans - (B)

Question 75

The total number of people surveyed are

A 2040

B 1086

C 12961

D 1936

Answer: D

Explanation:
Number of people who do not read newspapers = 162 + 13 + 21 = 196

Number of people who read only in regional languages = 271 + 285 + 209 = 765

Number of people who read only English newspapers = 123 + 206 + 325 = 654

Number of people who read in both languages = 52 + 82 + 187 = 321

=> Total number of people surveyed = 196 + 765 + 654 + 321 = **1936**

=> Ans - (D)

English

Instructions

In the following questions, some part of the sentences have errors and some are correct. Find out which part of a sentence has an error. The number of that part is the answer. If a sentence is free from error, then your answer is (4) i.e., No error.

Question 76

A Could you please give me

B A postal address

C of the Indian Embassy in New York

D No error

Answer: B

Question 77

A Short stories and poems

B of varying quality

C appears in dailies and periodicals

D No error

Answer: C

Question 78

A One of the

B most dangerous disease

C is AIDS

D No error

Answer: B

Instructions

In the following questions, sentence are given with blanks to be filled with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four.

Question 79

Throughout his career, his performance has fairly been _____

A consistence

B consistent

C consisting

D constituted

Answer: B

Question 80

I convey my thanks_____the members of the club.

A for

B of

C to

D about

Answer: C

Question 81

The government____on this issue.

A is divided

B are divided

C is being divided

D divided

Answer: A

Question 82

The student is yet____his home task.

A completion

B compete

C complete

D continue

Answer: C

Instructions

In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.

Question 83

Hard

A difficult

B simple

C common

D easy

Answer: A

Question 84

Humorous

A witty

B innovative

C fashionable

D timid

Answer: A

Question 85

Gather

A scatter

B disperse

C congregate

D separate

Answer: C

Instructions

In the following questions, choose the word opposite in meaning to the given word.

Question 86

Slave

A surf

B landlord

C master

D tenant

Answer: C

Question 87

Deep

A shallow

B hollow

C steep

D low

Answer: A

Question 88

Egoist

A spiritless

B sulfless

C senseless

D soulless

Answer: B

Instructions

In the following questions, four alternatives are given for the Idiom / Phrase printed in bold. Choose the alternative which best expresses the meaning of the Idiom / Phrase.

Question 89

I have told you time and again not to make this mistake.

A always

B often

C sometimes

D rarely

Answer: B

Question 90

He handled the situation with an iron first.

A strictly

B leniently

C softly

D wayward

Answer: A

Question 91

She is leaving the country for good.

A for the time being

B for good times

C temporarily

D permanently

Answer: D

Instructions

In the following questions, a part of the sentence is printed in bold. Below are given alternatives to the bold part at (1), (2) and (3) which may improve the sentence. Choose the correct alternative. In case no improvement is needed your answer is (4)

Question 92

It has been raining since morning.

A from

B for

C during

D No improvement

Answer: D

Question 93

I am neither a poet nor philosopher.

A not philosopher

B nor the philosopher

C nor a philosopher

D No Improvement

Answer: C

Question 94

He was hung for murder

A hang

B hanged

C hanging

D No improvement

Answer: B

Instructions

In the following questions, out of the following questions, out of the four alternatives, choose the one which can be substituted for the given words/sentences.

Question 95

An act of violence to take control of a plane

A hold as hostage

B abduct

C hijack

D kidnap

Answer: C

Question 96

One who is all powerful

omnipotent

B omniscient

C absolute

D almighty

Answer: A

Question 97

That which can not be believed

A inaudible

B incredible

C invincible

D indivisible

Answer: B

Instructions

In the following questions, groups of four words are given. In each group, one word is correctly spelt. Find the correctly spelt word.

Question 9

A Elecution

B Elocation

C Elocution

D Elocutiun

Answer: C

Question 99

A Juxttaposition

B Justaposition

C Jaxtaposition

D Jaustaposition

Answer: A

Question 100

A Hazardous

B Hazardos

C Hazzardous

D Hazardus

Answer: A

Instructions

For the following questions answer them individually

Question 1

By how much is $\frac{3}{5}$th of 75 greater than $\frac{4}{7}$th of 77?

A 0

B 5

C 1

D None of these

Answer: C

Explanation:

$\frac{3}{5} \times 75 = 45$

$\frac{4}{5} \times 77 = 44$

$\therefore$ 45 is greater than 44 by 1

Question 2

The HCF of two numbers 24 and their LCM is 216. If one of the number is 72, then the other number is

A 27

B 72

C 8

D 24

Answer: B

Explanation:

Let the number be a and other number = $b = 72$

We know that : $H.C.F(a, b) \times L.C.M.(a, b) = a \times b$

$\Rightarrow a \times 72 = 24 \times 216$

$\Rightarrow a = \frac{24 \times 216}{72}$

$\Rightarrow a = 24 \times 3 = 72$

=> Ans - (B)

Question 3

$\frac{3}{4}$ of $\frac{1}{7}$ of a number 120, then the number

A 1120

B 560

C 280

D 140

Answer: A

Explanation:

Let the number be 'x'

$4^{3} \times 7^{1} \times x = 120$

$x = \frac{120 \times 7 \times 4}{3}$

$\therefore x = 1120$

Question 4

In a co-educational secondary school 65% of the students are boys. If there are 224 girls in the school, find the number of boys in the school ?

A 400

B 425

C 416

D None of these

Answer: C

Explanation:

Let total students = $100x$

=> % of girls = $(100 - 65)\% = 35\%$

According to ques,

$\Rightarrow 100^{35} \times 100x = 224$

$\Rightarrow 35x = 224$

$\Rightarrow x = \frac{224}{35} = 6.4$

$\therefore$ Number of boys = $100^{65} \times 100 \times 6.4$

$= 65 \times 6.4 = 416$

=> Ans - (C)

Question 5

A mixture of 30 litres of spirit and water contains 20% of water in it. How much water must be added to it, to make the water 25% in the new mixture ?

A 3 litres

B 2 litres

C 4 litres

D None of these

Answer: B

Explanation:

% water in 30 litres of mixture = 20%

$\Rightarrow$ Quantity of water = $100^{20} \times 30 = 6$ litres

Let x litres of water is added

According to ques,

$\Rightarrow x + 6 = \frac{25}{100} \times (x + 30)$

$\Rightarrow 4x + 24 = x + 30$

$\Rightarrow 4x - x = 30 - 24$

$\Rightarrow 3x = 6$

$\Rightarrow x = \frac{6}{3} = 2$

$\therefore$ **2 litres** of water must be added to make the water 25% in the new mixture.

=> Ans - (B)

Question 6

The ages of x and y are in the ratio 3:1. Fifteen years hence, the ratio will be 2:1. The present ages (in years) are:

A 30, 10

B 45, 15

C 21, 7

D 60, 20

Answer: B

Explanation:

Let the present ages of x and y be $3x$ and x

The ratio between the ages of x and y after 15 years will be 2:1

$\Rightarrow \frac{3x+15}{x+15} = \frac{2}{1}$

$\Rightarrow 3x + 15 = 2x + 30$

$\Rightarrow x = 15$

$\therefore$ Present ages of x and y are 45 and 15 respectively.

Hence, option B is the correct answer.

Question 7

Gold is 19 times as heavy as water and copper is 9 times as heavy as water. In what ratio should these be mixed to get an alloy 15 times as heavy as water ?

A 1 : 1

B 2 : 1

C 1 : 2

D 3 : 2

Answer: D

Explanation:

Gold is 19 times as heavy as water i.e G = $19W$

Copper is 9 times as heavy as water i.e C = $9W$

Let both the metals be mixed in the ratio of $A : B$. Then,

$\frac{A(G)}{A+B} + \frac{B(C)}{A+B} = 15W$

$A(19W) + B(9W) = 15W(A + B)$

$19A + 9B = 15A + 15B$

$4A = 6B$

$A : B = 3 : 2$

Hence, option D is the correct answer.

Question 8

The average of Rajeev's marks in 7 subjects is 75. His average in six subjects excluding science is 72. How many marks did he get in science ?

A 72

B 90

C 93

D None of these

Answer: C

Explanation:

Average marks in 7 subjects = 75

=> Total marks in 7 subjects = $75 \times 7 = 525$

Similarly, total marks in 6 subjects excluding Science = $72 \times 6 = 432$

$\therefore$ Marks scored in Science = $525 - 432 = 93$

=> Ans - (C)

Question 9

If 75% a number is added to 75, the result is the number itself. Then the number is

A 400

B 300

C 60

D 50

Answer: B

Explanation:

Let the number be $100x$

According to ques,

=> $(\frac{75}{100} \times 100x) + 75 = 100x$

=> $75x + 75 = 100x$

=> $100x - 75x = 25x = 75$

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

$\therefore$ Number = $100 \times 3 = 300$

=> Ans - (B)

Question 10

If a sum of money doubles itself in 8 years at simple interest, the rate percent per annum is

A 11.5

B 12

C 12.5

D 13

Answer: C

Explanation:

Let principal sum = Rs. P and rate of interest = $r\%$

Amount under simple interest after 8 years = $P + \frac{P \times R \times T}{100}$

=> $P + (\frac{P \times r \times 8}{100}) = 2P$

=> $\frac{P \times 8r}{100} = 2P - P = P$

=> $r = \frac{100}{8} = 12.5\%$

=> Ans - (C)

Question 11

If 18 binders bind 900 books in 10 days, how many binders will be required to bind 660 books in 12 days ?

A 22

B 14

C 13

D 11

Answer: D

Explanation:

As per the given question equation can be written as,

$\frac{900}{10 \times 18} = \frac{660}{12 \times x}$

$\Rightarrow 5x = 55$

$\Rightarrow x = 11$

Hence, option D is the correct answer.

Question 12

The largest four digit number which is a perfect cube, is

A 9999

B 9261

C 8000

D None

Answer: B

Explanation:

9999 is the largest 4 digit number and $(20)^3 = 8000$

This means that the closest cube root of the largest perfect cube is most likely 21. So $(21)^3 = 9261$ is the largest perfect cube of four digits.

=> Ans - (B)

Question 13

The difference between a two-digit number and the number obtained by interchanging the digits is 27. What is the differences between the digits of the number ?

A 3

B 5

C 6

D Can't be determined

Answer: A

Explanation:

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

=> Number = $10x + y$

After interchanging the digits, new number = $10y + x$

According to ques,

=> $(10x + y) - (10y + x) = 27$

=> $9x - 9y = 27$

=> $9(x - y) = 27$

=> $(x - y) = \frac{27}{9} = 3$

∴ Differences between the digits of the number = **3**

=> Ans - (A)

Question 14

A mixture of 70 litres of wine and water contains 10% water. How much water must be added to make water 12 and half% of the total mixture ?

A 2 litres

B 10 litres

C 12 litres

D 4 litres

Answer: A

Explanation:

% water in 70 litres of mixture = 10%

=> Quantity of water = $\frac{10}{100} \times 70 = 7$ litres

Let x litres of water is added

According to ques,

=> $x + 7 = \frac{12.5}{100} \times (x + 70)$

=> $8x + 56 = x + 70$

=> $8x - x = 70 - 56$

=> $7x = 14$

=> $x = \frac{14}{7} = 2$

$\therefore$ **2 litres** of water must be added to make the water 12.5% in the new mixture.

=> Ans - (A)

Question 15

A train of length 150m takes 40.5 seconds to cross a tunnel of length 300m. The speed of the train (in km/hr) is

A 40

B $26\frac{2}{3}$

C $13\frac{1}{3}$

D 48

Answer: A

Explanation:

Total distance travelled by train = 150m+300m = 450 metres

Total time = 40.5 sec

Speed of train = $\frac{450}{40.5}$ m/sec

$= \frac{100}{9}$ m/sec

Speed of train in km/hr = $\frac{100}{9} \times \frac{18}{5}$

= 40 km/hr

Question 16

The value of $\sqrt{2\sqrt[3]{4}\sqrt{2\sqrt[3]{4}}\sqrt[4]{2\sqrt[3]{4}}.....}$ **is**

A $2^{\sqrt[3]{4}}$

B $\sqrt{2\sqrt[3]{4}}$

C $2^{\sqrt{4}}$

D $\sqrt[3]{4}$

Answer: A

Explanation:

To find : $y = \sqrt{2\sqrt[3]{4}\sqrt{2\sqrt[3]{4}}\sqrt[4]{2\sqrt[3]{4}}.....}$

Let $2^{\sqrt[3]{4}} = x$

=> $y = \sqrt{(x) \times (\sqrt{x}) \times (\sqrt[4]{x}) \times .....}$

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

$\Rightarrow y^2 = (x)^{[1+2+4+.....+\infty]}$

Now, sum of infinite G.P. = $\frac{a}{(1-r)}$, where first term = $a = 1$ and common ratio = $r = \frac{1}{1-\frac{1}{2}}$

$\Rightarrow y^2 = (x)$

$\Rightarrow y^2 = (x)^2$

$\Rightarrow y = x$

$\therefore \sqrt{2\sqrt[3]{4}\sqrt{2\sqrt[3]{4}\sqrt[4]{2\sqrt[3]{4}}.....}} = 2^{\sqrt[3]{4}}$

=> Ans - (A)

Question 17

The value of $\frac{3\sqrt{2}}{(\sqrt{3}+\sqrt{6})} - \frac{4\sqrt{3}}{(\sqrt{6}+\sqrt{2})} + \frac{\sqrt{6}}{(\sqrt{2}+\sqrt{3})}$ is

A $\sqrt{2}$

B 0

C $\sqrt{3}$

D $\sqrt{6}$

Answer: B

Explanation:

$\frac{3\sqrt{2}}{(\sqrt{3}+\sqrt{6})} - \frac{4\sqrt{3}}{(\sqrt{6}+\sqrt{2})} + \frac{\sqrt{6}}{(\sqrt{2}+\sqrt{3})}$

$= \frac{6\sqrt{6}+18+6\sqrt{2}+6\sqrt{3}-(12\sqrt{2}+24+12\sqrt{3}+12\sqrt{6})+6\sqrt{3}+6+6\sqrt{6}+6\sqrt{2}}{(\sqrt{3}+\sqrt{6})(\sqrt{6}+\sqrt{2})(\sqrt{2}+\sqrt{3})}$

$= \frac{6\sqrt{6}+18+6\sqrt{2}+6\sqrt{3}-12\sqrt{2}-24-12\sqrt{3}-12\sqrt{6}+6\sqrt{3}+6+6\sqrt{6}+6\sqrt{2}}{(\sqrt{3}+\sqrt{6})(\sqrt{6}+\sqrt{2})(\sqrt{2}+\sqrt{3})}$

=0

Question 18

If $a^2 + b^2 + c^2$= 2(a-b-c)-3, then the value of 4a - 3b + 5c is

A 2

B 3

C 5

D 6

Answer: A

Explanation:

$a^2 + b^2 + c^2$= 2(a-b-c)-3

We can write the above equation as

$a^2 - 2a + 1 + b^2 + 2b + 1 + c^2 + 2c + 1 = 0$

$\Rightarrow (a-1)^2 + (b+1)^2 + (c+1)^2 = 0$

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

$(b+1)^2 = 0 \Rightarrow b = -1$

$(c+1)^2$=0⇒ c=-1

4a-3b+5c= 4(1)-3(-1)+5(-1)=4+3-5=2

Question 19

If 2x + $\frac{2}{x}$ = 3 then the value of $x^3 + \frac{1}{x^3}$ + 2 is

A $-\frac{9}{8}$

B $-\frac{25}{8}$

C $\frac{7}{8}$

D 11

Answer: C

Explanation:

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

$2(x+\frac{1}{x}) = 3$

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

Cubing on both sides

$(x+\frac{1}{x})^3 = \frac{27}{8}$

$x^3+\frac{1}{x^3}+3\times x\times \frac{1}{x}(x+\frac{1}{x}) = \frac{27}{8}$

$\Rightarrow x^3 + \frac{1}{x^3} + 3(\frac{3}{2}) = \frac{27}{8}$

$\Rightarrow x^3 + \frac{1}{x^3} = \frac{27}{8} - \frac{9}{2} = \frac{-9}{8}$

$x^3 + \frac{1}{x^3} + 2 = \frac{-9}{8} + 2 = \frac{7}{8}$

Question 20

Out of the given responses, one of the factors of $(a^2-b^2)^3+(b^2-c^2)^3+(c^2-a^2)^3$ is

A (a + b) (a - b)

B (a + b) (a + b)

C (a - b) (a - b)

D (b - c) (b - c)

Answer: A

Explanation:

Let, X = a^2-b^2, Y = b^2-c^2, Z = c^2-a^2

Then, X + Y + Z = 0 (i.e $a^2-b^2+b^2-c^2+c^2-a^2$ = 0)

We know that,

$X^3 + Y^3 + Z^3$ = 3XYZ i.e,

$(a^2-b^2)^3+(b^2-c^2)^3+(c^2-a^2)^3$ = 3 $(a^2-b^2)(b^2-c^2)(c^2-a^2)$

One of the factors is,

$a^2-b^2 (or)(a+b)(a-b)$

Hence, option A is the correct answer.

Question 21

If X = $\sqrt[3]{5}$ + 2, then the value of $x^3 - 6x^2$ + 12x - 13 is

A -1

B 1

C 2

D 0

Answer: D

Explanation:
Given x=\sqrt[3]{5}+2

$x^3 - 6x^2$ + 12x - 13

$= (\sqrt[3]{5} + 2)^3 - 6(\sqrt[3]{5} + 2)^2 + 12(\sqrt[3]{5} + 2) - 13$

$= (5 + 8 + 6 \times 5^{\frac{2}{3}} + 12 \times 5^{\frac{1}{3}}) - 6[5^{\frac{1}{3}} + 4 + 4 \times 5^{\frac{1}{3}}] + 12(5^{\frac{1}{3}} + 2) - 13$

$= 13 + 6 \times 5^{\frac{2}{3}} + 12 \times 5^{\frac{1}{3}} - 6 \times 5^{\frac{2}{3}} - 24 - 24 \times 5^{\frac{1}{3}} + 12 \times 5^{\frac{1}{3}} + 24 - 13$

= 0

Question 22

A tower standing on a horizontal plane subtends a certain angle at a point 160 m apart from the foot of the tower. On advancing 100 m towards it, the tower is found to subtend an angle twice as before. The height of the tower is

A 80 m

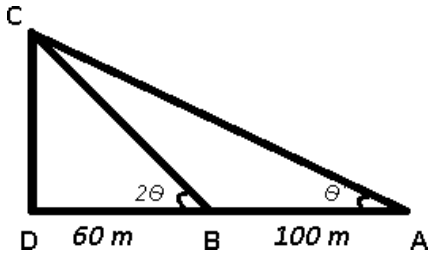
B 100 m

C 160 m

D 200 m

Answer: A

Explanation:



Given : CD is the tower, AD = 160 m and AB = 100 m

=> BD = 160 - 100 = 60 m

To find : CD = h = ?

Solution : $\angle$ DBC = 2θ and $\angle$ DAC = θ

In $\triangle$ ACD,

=> $tan(\theta) = \frac{CD}{DA}$

$\Rightarrow tan(\theta) = \frac{h}{160}$ ----------(i)

Similarly, in $\triangle$ BCD,

$\Rightarrow tan(2\theta) = \frac{CD}{DB}$

$\Rightarrow tan(2\theta) = \frac{h}{60}$

$\Rightarrow \frac{2tan\theta}{1-tan^2\theta} = \frac{h}{60}$

Substituting value from equation (i), we get :

$\Rightarrow 2 \times \frac{h}{160} = [1 - (\frac{h}{160})^2] \times (\frac{h}{60})$

$\Rightarrow \frac{60}{80} = 1 - (\frac{h}{160})^2$

$\Rightarrow (\frac{h}{160})^2 = 1 - \frac{3}{4} = \frac{1}{4}$

$\Rightarrow \frac{h}{160} = \sqrt{\frac{1}{4}} = \frac{1}{2}$

$\Rightarrow h = \frac{160}{2} = 80$

$\therefore$ Height of tower is **80 m**

=> Ans - (A)

Question 23

$\angle A, \angle B, \angle C$ are three angles of a triangle. If $\angle A - \angle B = 15^\circ$, $\angle B - \angle C = 30^\circ$, then $\angle A$, $\angle B$ and $\angle C$ are

A $80^\circ, 60^\circ, 40^\circ$

B $70^\circ, 50^\circ, 60^\circ$

C $80^\circ, 65^\circ, 35^\circ$

D $80^\circ, 55^\circ, 45^\circ$

Answer: C

Explanation:

Given $\angle A - \angle B = 15^\circ \rightarrow (1)$

$\angle B - \angle C = 30^\circ \rightarrow (2)$

From equation (1), $\angle B = \angle A - 15^\circ$

Substituting $\angle B$ value in equation (2)

$(\angle A - 15) - \angle C = 30^\circ$

$\Rightarrow \angle C = \angle A - 45^\circ$

We know that $\angle A + \angle B + \angle C = 180^\circ$

Substituting $\angle A, \angle B, \angle C$ values in above equation

$\angle A + (\angle A - 15^\circ) + (\angle A - 45^\circ) = 180^\circ$

$\Rightarrow 3\angle A = 240^\circ$

$\angle A = 80^\circ$

Substituting $\angle A$ value in equation (1)

$80^\circ - \angle B = 15^\circ$

$\Rightarrow \angle B = 65^\circ$

Substituting $\angle B$ in equation (2)

$65^\circ - \angle C = 30^\circ$

$\Rightarrow \angle C = 35^\circ$

$\therefore \angle A = 80^\circ, \angle B = 65^\circ, \angle C = 35^\circ$

Question 24

If ABC is an equilateral triangle and D is a point on BC such that AD $\perp$ BC, then

A AB : BD = 1 : 1

B AB : BD = 1 : 2

C AB : BD = 2 : 1

D AB : BD = 3 : 2

Answer: C

Explanation:
Let each side of the triangle be 'x'

AD $\perp$ BC $\Rightarrow$ 'D' is midpoint of BC

BD=DC= $\frac{x}{2}$

then AD:BD=x: $\frac{x}{2}$ =2:1

Question 25

Sin A + Sin^2 A = 1, then the value of cos^2 A + cos^4 A is

A 2

B $\frac{2}{3}$

C $1\frac{1}{2}$

D 1

Answer: D

Explanation:
Given sin A+sin^2 A=1

==> sin A = 1-sin^2 A

==> sin A = cos^2 A ($\because cos^2A + sin^2A$=1)

cos^2 A=sin A ==> cos^4A=sin^2A

$\therefore cos^2A + cos^4A = 1 (\because sinA + sin^2A = 1)$

Reasoning

Instructions

In each of the following questions, select the related word/number from the given alternatives.

Question 26

Psychology : Mind : : Arithmetic : ?

A Knowledge

B Number

C Height

D ormulas

Answer: B

Explanation:
The study of human mind and its functions is referred as 'Psychology' and

Branch of mathematics dealing with study of numbers is referred as 'Arithmetics'

Hence, option B is the correct answer.

Question 27

Ice : Coldness : : Earth : ?

A Weight

B Jungle

C Gravitation

D Sea

Answer: C

Explanation:
Coldness is the property of Ice whereas Gravity is the property of Earth.

Hence, option C is the correct answer.

Question 28

Teacher : School : : Nurse : ?

A Doctors

B Patients

C Medicine

D Hospitals

Answer: D

Explanation:
Teacher is the person who teaches students in school whereas Nurse is the one who works in hospitals.

Hence, option D is the correct answer.

Question 29

11 : 1331 : : 9 : ?

A 979

B 991

C 729

D 879

Answer: C

Explanation:

The pattern followed here is,

$11^3 = 1331$ likewise,

$9^3 = 729$.

Hence, option C is the correct answer.

Question 30

Window : Carpenter :: Statue : ?

A Sculptor

B Mason

C Blacksmith

D Goldsmith

Answer: A

Explanation:
Carpenter is the one who makes a window and sculptor is the one who makes a statue.

Hence, option A is the correct answer.

Instructions

In each of the following questions, find the odd number/letters from the given alternatives.

Question 31

A XWVU

B SRQP

C NMLK

D EDCA

Answer: D

Explanation:
Except in option D other options are in sequence.

Hence, option D is the correct answer.

Question 32

A 24

B 56

C 84

D 94

Answer: D

Explanation:
Every number except 94 is divisible by '4'

Hence, option D is the correct answer.

Instructions
For the following questions answer them individually

Question 33

Which of the given responses would be a meaningful order of the following in ascending order ?
A. 0640 hrs
B. 1930 hrs
C. 1335 hrs
D. 2000 hrs

Answer:d

Question 34

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

A dgggb

B dgbg

C bgdgg

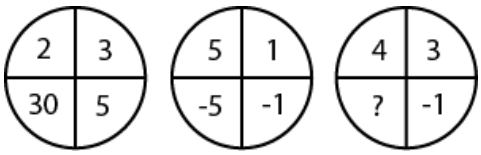
D gdggb

Answer: D

Instructions

In each of the following questions, a series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.

Question 35



A 7

B -12

C 12

D 9

Answer: B

Explanation:
The pattern followed here is,

2 x 3 x 5 = 30,

5 x 1 x -1 = -5,

4 x 3 x -1 = -12

(i.e all the 3 numbers are multiplied)

Hence, option B is the correct answer.

Question 36

50, 65, 82, ?, 122

A 101

B 97

C 105

D 100

Answer: A

Explanation:
The pattern followed here is,

50 + 15 = 65,

65 + 17 = 82,

82 + 19 = 101,

101 + 21 = 122.

Hence, option A is the correct answer.

Instructions
For the following questions answer them individually

Question 37

In a group of 20 people, 8 read Hindi, 11 read English while 5 of them read none of these two. How many of them read Hindi and English both ?

A 8

B 6

C 4

D 2

Answer: C

Explanation:
Given,

$n(h) = 8, n(e) = 11, n(e \cup h) = 20 - 5 = 15$.....(1)

Where, n(h) = number of people who can read Hindi,

n(e) = number of people who can read English

$n(e \cup h)$ = Total number of people who can read both English and Hindi

$n(e \cap h) = n(e) + n(h) - n(e \cup h)$.....(2)

Substitute equation (1) in (2)

$n(e \cap h) = 8 + 11 - 15 = 4$

Hence, option C is the correct answer.

Question 38

Unscramble the following letters to frame a meaningful word and find out the correct numerical sequence of the letters.
R E S T A U R A N T
1 2 3 4 5 6 7 8 9 10

A 10 2 3 5 16 4 7 8 9

B 3 1 2 4 5 7 6 9 8 10

C 1 3 5 2 9 4 8 6 7 10

D 9 1 3 6 2 7 5 4 8 10

Answer: B

Question 39

If 'DICTIONARY' is coded as 5479482361, then 'YARD' can be coded as ?

A 1653

B 1635

C 1536

D 1365

Answer: D

Explanation:
In the given code language, alphabets are directly related to the numbers on the right.

D = 5 ; I = 4 ; C = 7 ; T = 9 ; O = 8 ; N = 2 ; A = 3 ; R = 6 ; Y = 1.

ence, code for YARD is '1365'

Hence, option D is the correct answer.

Question 40

In a row of students Ganesh is 7th from one extreme and 11th from the other. Find the total numbers of students in the row.

A 17

B 18

C 19

D 20

Answer: A

Explanation:
As Ganesh is 7th from one extreme end (say left end), number of students to his left will be '6' and also,

He is 11th from other end (say right end), number of students to his right will be '10'.

Total number of students = 6 + 1 + 10 = 17.

Hence, option A is the correct answer.

Question 41

Find the correct answer for the unsolved equation

5 x 6 x 3 = 356, 1 x 0 x 5 = 510, 5 x 6 x 7 = ?

A 567

B 657

C 210

D 756

Answer: D

Explanation:
Last digit is kept at first, first digit is kept at second, second digit is kept at last.

Code for 5 x 6 x 7 will be '756'

Hence, option D is the correct answer.

Question 42

A, B, C and D are playing a game of carrom. A, C and B, D are partners. C is to the left of D who is facing South. Then A is facing

A North

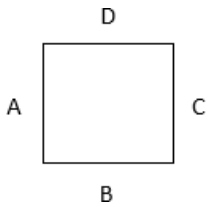
B South

C East

D West

Answer: C

Explanation:
As per the given question, final arrangement will be-

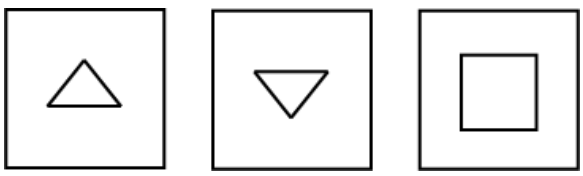


A is facing towards East in the above arrangement.

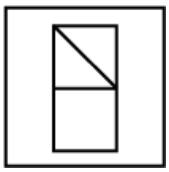
Hence, option C is the correct answer.

Question 43

Select the answer figure in which the question figures are hidden / embedded.

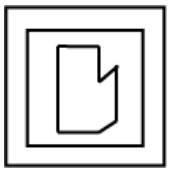


A



B 

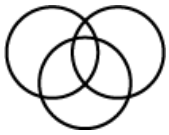
C 

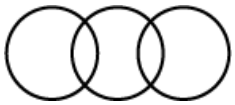
D 

Answer: A

Question 44

Which of the following diagram best depicts the relationship between student, college and school ?

A 

B 

C 

D 

Answer: B

Explanation:

A student can be in a school or in a college but not in both at the same time.

Hence, option B is the correct answer.

Question 45

Statement is given followed by three conclusions I, II and III. You have to consider the statement to be true even 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 statement.
Statement: Comic books contain pictures
Conclusions:
I. All books contain pictures
II. Books may or may not contain pictures
III. Books other than the comic books does not contain pictures.

A Only Conclusion I follows

B Only Conclusion II follows

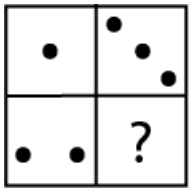
C Both Conclusions I and II follows

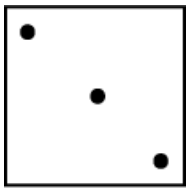
D Neither Conclusion follows

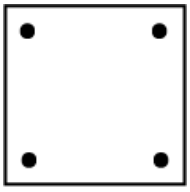
Answer: B

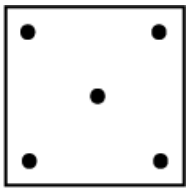
Question 46

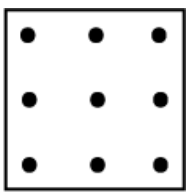
Which one of the answer figure shall complete the given question figure ?



A


B


C


D


Answer: B

Explanation:
The first diagram has only one dot. Second diagram which is below it, has two dots.Third diagram has three dots.

Following the same pattern, fourth diagram must contain four dots in it.

Hence, option B is the correct answer.

Question 47

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

A 

B 

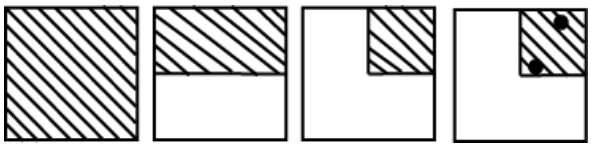
C 

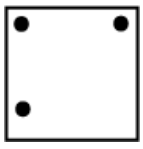
D 

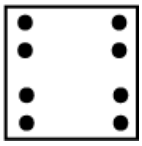
Answer: B

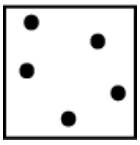
Question 48

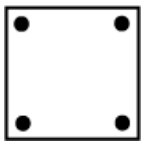
A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.



A 

B 

C 

D 

Answer: B

Question 49

Which of the answer figures is the right images of the given figure ?
P R A Y E R

A ꟼЯAYƎЯ

B ЯƎꟼAƎY

C ЯƎYAЯꟼ

D ꟼЯAYƎЯ

Answer: C

Explanation:
Word : P R A Y E R

In the image of the word, the letters will swap position, i.e. first letter will come at end, second at second last and so on, thus first and last options are not possible. Also, direction of the letters will also be reversed.

=> Ans - (C)

Question 50

A word is represented by only one set of numbers as given in any one of the alternatives. The set of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The column 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., A' can be represented by 01, 13 etc., and S' can be represented by 55, 67 etc. Similarly, you have to identify the set for the letters given.

MATRIX-I

	0	1	2	3	4
0	P	A	I	V	R
1	I	P	R	A	V
2	A	R	V	P	I
3	V	I	P	R	A
4	R	V	A	I	P

MATRIX-II

	5	6	7	8	9
5	S	L	K	M	E
6	K	M	S	E	L
7	M	E	L	K	S
8	L	K	E	S	M
9	E	S	M	L	K

A 65, 23, 14, 55

B 86, 34, 42, 69

C 78, 41, 23, 86

D 57, 11, 33, 96

Answer: D

General Awareness

Instructions
For the following questions answer them individually

Question 51

Earthquakes are caused by ?

A Tectonism

B Denudation

C Earth's revolution

D Earth's rotation

Answer: A

Question 52

When the days and nights are equal, the rays of the sum directly fall on the ?

A Equator

B Tropic of Cancer

C South Pole

D North Pole

Answer: B

Question 53

Which of the following rivers crosses the equator twice ?

A Amazon

B Nile

C Congo

D Orinoco

Answer: C

Question 54

Who discovered the sea route to India?

A Vascoda Gama in 1498

B Columbus in 1402

C Magellan in 1506

D Sir Hopkins in 1698

Answer: A

Question 55

Who wrote As you like ?

A Bernard Shaw

B Shankespear

C Leotolstoy

D Mulk Raj Anand

Answer: B

Question 56

Who were the three statesmen who formulated NAM ?

A Tito, Nasser and Bhutto

B Nehru, Nasser and Tito

C Nasser, Tito and Nehru

D Nehru, Chouen-Lai and Bhutto

Answer: A

Question 57

UNESCO stands for ?

A United Nations Ecological Science Co-operation

B Union of National Educational Scientific and Cultural Organisation

C United Nations Educational Scientific and Cultural Organisation

D None of these

Answer: C

Question 58

The greatest painter of birds at Jahangir's court was ?

A Khwaja Abdus Samad

B Syed Ali Tabrizi

C Basawan

D Mansur

Answer: D

Question 59

Huen-tsang found Jainsim flourishing in ?

A Orissa

B Kashmir

C Bengal

D Bihar

Answer: C

Question 60

‘Swaraj is my birth right and I shall have it”. This was advocated by ?

A Lala Lajpat Rai

B Lokmanya Tilak

C Mahatma Gandhi

D Sardar Patel

Answer: B

Question 61

1st partition of Bengal under Lord Curzon took place in ?

A 1901

B 1915

C 1905

D 1907

Answer: C

Question 62

Who proposed the chemical evolution of life ?

A Darwin

B Lammarck

C Oparin

D Haechel

Answer: C

Question 63

Water has Maximum density at ?

A Latex1

B Latex2

C Latex3

D Latex4

Answer: B

Question 64

Which of the following chemicals is used in photograph ?

A Aluminium hydroxide

B Silver bromide

C Potassium nitrate

D Sodium chloride

Answer: B

Question 65

Human blood contains - percentage of plasma ?

A 35%

B 40%

C 50%

D 55%

Answer: D

Question 66

Rickets is a disease of the ?

A bones

B tissue

C muscles

D blood

Answer: A

Question 67

Trachoma is disease of the ?

A Liver

B Eyes

C Lungs

D Kidneys

Answer: B

Question 68

Who is regarded as the architect of the Indian Constitution ?

A B.N. Rao

B Dr B.R. Ambedkar

C N.G. Ayyangar

D Dr Rajendra Prasad

Answer: B

Question 69

What is the salary of the Chief Justice of India ?

A ₹1,60,000

B ₹80,000 **C**

₹1,00,000

D ₹75,000

Answer: B

Question 70

How many states in India have two Houses, Viz., Legislative Assembly and Legislative Council ?

A 6

B 8

C 5

D 10

Answer: A

Question 71

The works 'Socialist' and Secular' were added to the Preamble of the Constitution of India by the_Constitution Amendment Act 1976 ?

A 44th

B 42nd

C 32nd

D 9th

Answer: B

Question 72

The typical area of 'sal' forest in the Indian Peninsular upland occurs ?

A on the Western Ghats

B between the Tapti and the Narmada

C to the north-east of the Godavari

D on the Malwa Plateau

Answer: A

Question 73

Which coloured ring represents the Asian Continent in the Olympics Emblem ?

A Blue

B Yello

C Red

D Green

Answer: B

Question 74

The first Indian to share the Oscar Award was ?

A Hargobind Khorana

B Rabindranath Tagore

C Bhanu Athaiya

D None of these

Answer: C

Question 75

The headquarters of Asian Development Bank is located in which of the following cities ?

A Jakarta

B Singapore

C Bangkok

D Manila

Answer: D

English

Instructions

Some parts of the sentences have errors and some have none. Find out which part of a sentence has an error, the appropriate letter (1, 2, 3). If a sentence is free error, (4) is the Answer Sheet.

Question 76

A Either he

B or his wife

C are coming to attend the dinner

D No error

Answer: C

Question 77

A The launch of the first artificial satellite by the Russians

B took the world almost entirely unawares

C and provocation flood of speculations about its significances

D No error

Answer: B

Instructions

Sentence are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four and indicate itin the Answer Sheet.

Question 78

…….the rain forests is very important, if we do not want the flora and fauna found there to become extinct.

A Reserving

B Destroying

C Preserving

D Maintaining

Answer: C

Question 79

If I, had helped him, he……...

A will not be drowned

B would not be drowned

C will not have drowned

D would not have drowned

Answer: D

Question 80

When will you hand……your assignment ?

A in

B back

C down

D into

Answer: A

Instructions

Out of the alternatives, choose the one which best expresses the meaning of the given word and mark it in the Answer Sheet.

Question 81

INTREPID

A hesitant

B fearless

C extrovert

D rash

Answer: B

Question 82

PRODIGAL

A exclusive

B productive

C lavish

D carefree

Answer: C

Question 83

PERSPICUOUS

A relevant

B precise

C brief

D clear

Answer: D

Instructions

In questions choose the word opposite in meaning to the given word and mark it in the Answer Sheet.

Question 84

ELEVATION

A reduction

B humiliation

C depression

D debasement

Answer: C

Question 85

GLOSSY

A dull

B shining

C weary

D tired

Answer: A

Question 86

APPROPRIATE

A dissimilar

B incomparable

C unsuitable

D disparate

Answer: C

Instructions

Four alternatives are given for the idiom/phrase underlined in the sentences. Choose the alternative which best expresses the meaning of the idiom/phrase and mark it in the Answer Sheet.

Question 87

To take someone for a ride

A to give a ride to someone

B to deceive someone

C to be indifferent

D to disclose a secret

Answer: B

Question 88

To move heaven and earth

A to cause an earthquake

B to try everything possible

C to pray to all gods

D to travel in a rocket

Answer: B

Question 89

To smell a rat

A to smell foul

B to see a rat

C to chase a rat

D to be suspicious

Answer: D

Instructions

A part of the sentence is underlined. Below are given alternatives to the underlined part at 1, 2, and 3 which may improve the sentence. Choose the correct alternatives. In case no improvement is needed, your answer is 4.

Question 90

The courtiers used to tell the King how efficient an administrator he was all day long.

A The courtiers all day long used to tell the King how, efficient an administrator he was

B The courtiers and used all day long to tell the King how efficient an administrator he was

C The courtiers used to tell the King all day long how efficient an administrator he was

D No improvement

Answer: C

Question 91

Every Saturday I go out for shopping

A for shops

B to shopping

C for shop

D No improvement

Answer: D

Question 92

We had a grand party and we enjoyed very much.

A We had a grand party and enjoyed very much

B We had a grand party to enjoy very much

C We had a grand party and we enjoyed ourselves

D No improvement

Answer: C

Instructions

Out of the four alternatives, choose the one which can be substituted for the given words/sentence.

Question 93

Release of prisoner from jail on certain terms and conditions.

A Parole

B Parley

C Pardon

D Acquittal

Answer: A

Question 94

Loss of memory

A Ambrosia

B Amnesia

C Insomnia

D Forgetting

Answer: B

Question 95

To struggle helplessly

A Flounder

B Founder

C Fumble

D Finger

Answer: A

Instructions

The animal mind is like a telephone exchange, it receives stimuli from outside through the sense organs and sends out appropriate responses through the nerves that govern muscles, glands and other parts of the body. The organism is constantly interacting with its surroundings receiving messages and acting on the new state of affairs that the messages signify.
But the human mind is not a simple transmitter like a telephone exchange. It is more like a great projector; for instead of merely mediating between an event in the outer world and a creature's responsive action, it transforms or, if you will, distorts the event into an image to be looked at, retained an contemplated. For the images of things we remember are not exact and faithful transcriptions even of our actual sense impressions. The are made as much by what we think as by what we see. It is a well-known fact that if you ask several people the size of moon's disk as they look at it, their estimates will very from the area of dime to that of a barrel top. Like a magic lantern, the mind projects its ideas of things on the screen of what we call 'memory' : but like all projections, these ideas are transformations of actual things. They are in fact, symbols of reality, not pieces of it.

Question 96

An animal mind and a human mind differ like

A a telephone exchange and a projector

B a screen and an image

C a lantern and a candle

D projections and illusions

Answer: A

Question 97

Human memory is subject to

A thought and visual impression

B thought and reasoning

C fancy and fantasy

D nothing but hard training

Answer: A

Instructions

In each of the following Questions, a sentence has been given in Active/passive voice out of the four Alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

Question 98

A good deal of money will be made by the investment.

A That investment has made a good deal of money

B That investment will be making a good deal of money

C That investment had been making a good deal of money

D That investment has been making a good deal of money

Answer: D

Question 99

Who will help me ?

A By whom I shell be helped ?

B By whom will be I helped ?

C By whom would I be helped ?

D By whom I will be helped ?

Answer: B

Question 100

In the following Questions, four words are given, out of which only one words is correctly spelt find the correctly spelt word.

A vaccum

B vacuum

C vacum

D vaccuum

Answer: B