Mphasis Placement Old Paper

Mphasis Aptitude Questions

1. In how many ways can the 7 letters A, B, C, D, E, F, and G be arranged so that C and E never together.

5040
6480
3600
1440

Ans: 3600

C and E never together = Total arrangements C and E together, Total arrangements are 7! C and E together = pack c and e into one unit + 5 other alphabets = 6! 2!, (2! is to arrange c and e internally), C and E never together = Total arrangements C and E together = 7! 6! 2! = 3600

2. A can do a piece of work in 8 days and B can do the same work in 6 days. A and B undertook to do it for Rs. 3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?

Rs. 500
Rs. 700
Rs. 650
Rs. 400

Ans: d

C's 1 day's work = 1/3 - (1/8 + 1/6) = 1/3 - 7/24 = 1/24A's wages : B's wages : C's wages = 1/8 : 1/6 : 1/24 = 3 : 4 : 1C's share (for 3 days) = Rs. (3 * 1/24 * 3200) = Rs. 400

3. In how many ways can the letters of the word 'MANAGE' be arranged?

360
144
256
720

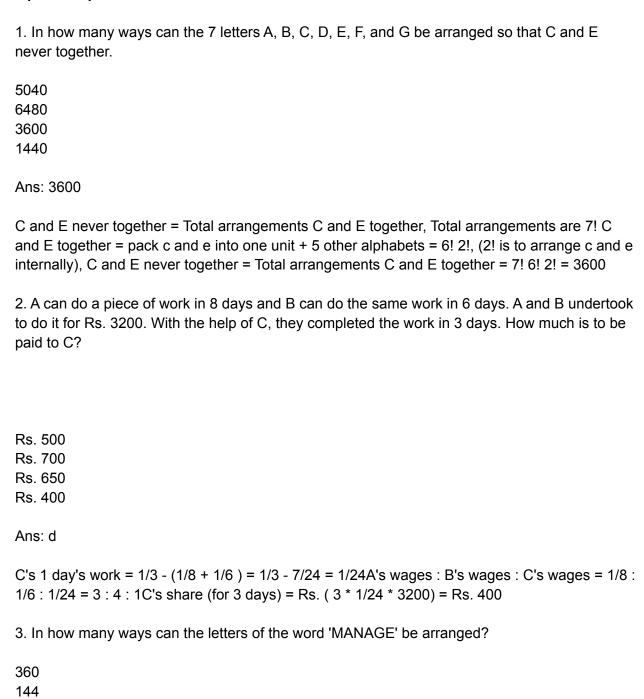# Mphasis Placement Old Paper

Ans: a

The word 'MANAGE' contains 6 letters, namely 1M, 2A, 1N, 1G and 1N.The required number of ways = 6! /2! = 360

4. If log a/b + log b/a = log (a + b), then

a + b = 1
a - b = 1
a = b
a2 - b2 = 1

Ans: a

According to formulae: log a/b + log b/a = log a+b,log a+b = log (a/b * b/a) = log 1, Hence, a + b = 1.

5. The H.C.F. of two numbers is 30 and the other two factors of their L.C.M. are 10 and 12. The larger of the two numbers is:

310
320
360
345

Ans: c

Clearly, the numbers are (30 x 10) and (30 x 12).Larger number = (30 x 12) = 360.

6. If a number is exactly divisible by 85, then what will be the remainder when the same number is divided by 17?

3
4
1
0

Ans: d

85 is a multiple of 17 (i.e., 17 x 5 = 85), any number which is divisible by 85 will also be divisible by 17.

7. In how many ways can a number 6084 be written as a product of two different factors?

27
13
14
26

Ans: b

Factorizing 6084: = 2^2 x 3^2 x 13^2If N = a^p b^q c^r, where a,b,c are primes, Number of factors is represented by :(p+1)(q+1)(r+1) => (2+1)(2+1)(2+1) = 27Number of Ordered pairs of any two factors is (27 + 1)/2 = 14Since 6084 is a perfect square, evidently the ordered pair (78,78) is also counted in the above 14 pairs. So, the number of ways in which 6084 can be expressed as a product of two different factors is 13.

8. A rectangular courtyard 3.78 meters long 5.25 meters wide is to be paved exactly with square tiles, all of the same sizes. what is the largest size of the tile which could be used for the purpose?

14cm
42 cm
21 cm
None

Ans: c

3.78 meters =378 cm = 2 3 3 3 75.25 meters=525 cm = 5 5 3 7The common factors are 3 and 7, therefore the LCM = 3 7 = 21Hence the largest size of square tiles that can be paved exactly with square tiles is 21 cm.

9. A boat can travel at a speed of 13 km/hr in still water. If the speed of the stream is 4 km/hr, find the time taken by the boat to go 68 km downstream.

2 hours
3 hours
4 hours
5 hours

Ans: c

Speed downstream = (13 + 4) km/hr = 17 km/hr.Time taken to travel 68 km downstream = (68/ 17) hrs = 4 hrs.

10. An article was sold for Rs. 2770. Had it been sold for Rs. 3000 there would have been an additional gain of 10%. Cost Price of the article is:

2300
2360
1950
1150

Ans: a

Original CP = Rs. X, New profit = (3000 x) Rs.New profit % = (3000 x)*100/CP, (300000 100x)/CP (277000 + 100x)/CP = 1023000/CP = 10, 10CP = 23000, CP = 23000/10, CP = 2300The original Cost price is Rs. 2300

Mphasis Verbal Questions & Answers

1. Select the word or phrase which best expresses the meaning of the given word: WRETCHED

a. Poor

b. Foolish

c. Insane

d. Strained

Ans: a

2. Select the word or phrase which best expresses the meaning of the given word: ADMONISH

a. Punish

b. Curse

c. Dismiss

d. Reprimand

Ans: d

3. Read the sentence to find out whether there is any grammatical error in it. The error, if any, will be in one part of the sentence. The letter of that part is the answer. If there is no error, the answer is 'D'. (Ignore - the errors of punctuation, if any):

(A) I had hoped to have met him yesterday/(B) to discuss the matter with him/(C) but he was not in his house, and so I could not meet him./(D) No error.

a. A

b. B

c. C

d. D

Ans: a

4. Read the sentence to find out whether there is any grammatical error in it. The error, if any, will be in one part of the sentence. The letter of that part is the answer. If there is no error, the answer is 'D'. (Ignore - the errors of punctuation, if any):

(A) Can I lend/(B) your pencil/(C) for a minute, please ?/(D) No error.

a. A

b. B

c. C

d. D

Ans: a

5. Select the correct option that fills the blank to make the sentence meaningfully complete. The ruling party will have to put its own house .... order.

a. in

b. on

c. to

d. into

Ans: a

6. Select the correct option that fills the blank to make the sentence meaningfully complete. He ...... in wearing the old-fashioned coat in spite of his wife's

disapproval.

a. insists

b. persists

c. desists

d. resists

Ans: b

7. Select the correct option that fills the blank(s) to make the sentence meaningfully complete: Raghav is not attracted by the . . . . life of the . . . . , always wandering through the Country-side, begging for charity.

a. proud, almsgiver

b. noble, philanthropist

c. affluent, mendicant

d. natural, philosopher

e. peripatetic, vagabond

Ans: e

8. In the question, each passage consists of six sentences. The first and sixth sentences are given in the beginning. The middle four sentences have been removed and jumbled up. These are labeled as P, Q, R, and S. Select the proper order for the four sentences:

S1: Politeness is not a quality possessed by only one nation or race.

S6: In any case, we should not mock at others' habits.

P: One may observe that a man of one nation will remove his hat or fold his hands by way of greetings when he meets someone he knows.

Q: A man of another country will not do so.

R: It is a quality to be found among all peoples and nations in every corner of the earth.

S: Obviously, each person follows the custom of his particular country.

a. RPQS

b. RPSQ

c. PRQS

d. QPRS

Ans: b

9. Select the word or phrase which best expresses the meaning of the given word. : IRONIC

a. Inflexible

b. Bitter

c. Good-natured

d. Disguisedly sarcastic

Ans: d

10. Select the word or phrase which best expresses the meaning of the given word: ADMONISH

a. Punish

b. Curse

c. Dismiss

d. Reprimand

Ans: d

Mphasis Programming Questions with Answers

1) A tree has 5 levels and each node has either 4 children or no children. All nodes on the same level have the same number of children. How many nodes are there in the tree? (Root is Level 1)

a) 341

b) 256

c) 1024

d) None of these

Ans: c

From the question, we are sure that the root node has three children. Till now the total number of nodes is 4 (root + three children). Only if all the children of the root node have 3 children, the total number of nodes will be 13. Hence each child of the root node will have three children and totally there will be nine children.

2) Sorting is not possible by using which of the following methods?

a) Insertion

b) Selection

c) Exchange

d) Deletion

Ans: d

3) In tree construction which of the following is a suitable efficient data structure?

a) Array

b) Linked List

c) Stack

d) Queue

Ans: b

A linked list is a form of implementation which we use for most of the other data structures including Queue, stack, and trees. Stack and Queue are not suitable for tree implementation since the order of the elements inside them cannot be changed. Array implementation is not possible for a tree because to denote the left child and right child efficiently we need pointers.

4) Which of the following data structures is needed to convert infix notations to postfix notations?

a) Stack

b) Linked List

c) Queues

d) Tree

Ans: a

5) Postfix form of ((A + B) * C - (D - E) ^ (F + G)) is

a) AB + C * DE - FG + ^ -

b) AB + C * DE - F - G + ^

c) ABC + * DE - - FG + ^

d) ^ - * +ABC - DE + FG

Ans: a

To convert into postfix expressions, the two operands are placed first and then the operator is placed. First the brackets will be executed.

(A+B) will be AB+

AB+ * C will be AB+C*

(D-E) will be DE-

(F+G) will be FG+

DE- ^ FG+ will be DE-FG+^

AB+C* - DE-FG+^ will be AB+C*DE-FG+^-

6) Prefix form of ((A + B) * C - (D - E)) ^ (F + G) is

a) AB + C * DE - - FG + ^

b) AB + C * DE - F - G + ^

c) ABC + * DE - - FG + ^

d) ^ - * +ABC - DE + FG

Ans: d

To convert into prefix expression, the operator will be placed before the two operands.

A+B will be +AB

+AB * C will be *+ABC

D-E will be -DE
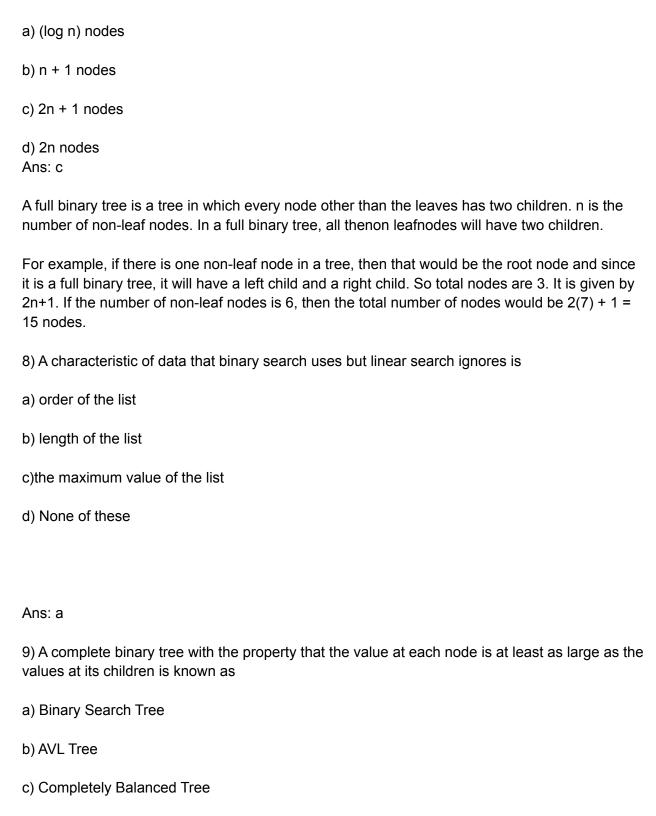
+ABC - -DE will be -+ABC-DE

F+G will be +FG

-*+ABC-DE ^ +FG will be ^-*+ABC-DE+FG

We can also say that the only Option in which prefix is done is Option (d)

7) A full binary tree with n non-leaf nodes contains

a) (log n) nodes

b) n + 1 nodes

c) 2n + 1 nodes

d) 2n nodes
Ans: c

A full binary tree is a tree in which every node other than the leaves has two children. n is the number of non-leaf nodes. In a full binary tree, all thenon leafnodes will have two children.

For example, if there is one non-leaf node in a tree, then that would be the root node and since it is a full binary tree, it will have a left child and a right child. So total nodes are 3. It is given by 2n+1. If the number of non-leaf nodes is 6, then the total number of nodes would be 2(7) + 1 = 15 nodes.

8) A characteristic of data that binary search uses but linear search ignores is

a) order of the list

b) length of the list

c)the maximum value of the list

d) None of these

Ans: a

9) A complete binary tree with the property that the value at each node is at least as large as the values at its children is known as

a) Binary Search Tree

b) AVL Tree

c) Completely Balanced Tree

d) Heap

Ans: d

Heap is a data structure where the data is stored in a tree in such a way that the value of the parent node is ordered based on the value of the child node.

10) The time complexity of the linear search algorithm is

a) O(log n)

b) O(n)

c) O(n2)

d) O(1)

Ans: b

If there are n elements in the array, all the elements will be computed once. Hence, the time complexity of computing all the n elements is O(n).

11) There is a class which contains two integers as private members. There are two member functions (public) defined on it, one to add the two integers and another to subtract the two integers. Ravi wants to add a new functionality, which enables multiplication of the two numbers. Which one of the following options he should adopt?

a) He should define a third member function (public) which multiplies the two numbers.

b) He should define member functions (public) to return the value of both the integers and then multiply them in his code. By returning the values, he can in future do any operation on them giving extensibility to the code.

c) He should define a third member function (private) which multiplies the two numbers.

d) He should define member functions (private) to return the value of both the integers and then multiply them in his code. By returning the values, he can in future do any operation on them giving extensibility to the code.

Ans: a

There are two values defined under private. Hence they cannot be accessed directly and can be done only by using a public member function. There are two functions. One function is to add the two numbers and the other function is to subtract the two numbers. In order to multiply these two numbers a third function has to be defined that will multiply the two integers.

12) A class MARKS has two protected data members, a and b. Two public member functions perform addition and comparison on them. Ravi passes this code to Medha. Medha wants to define a new class which has the functionality of MARKS, but also allows multiplication of the two private members. Which of the following concepts will she use to do this?

a) Inheritance

b) Data-hiding

c) Polymorphism

d) Function Overloading

Ans: a

A new class is written which has the functionality of the class MARKS. In order to gain the functions of an existing class, it will have to be inherited. Hence the concept used is inheritance.

13) Consider the following function definitions:

function operate (integer a, integer b)

{ return a+b }

function operate (float a,float b)

{ return a -b }

What will be the output of the following statement?

operate(4.56, 3.0)

(Consider assumptions as in C++)

a) 7.56

b) 1.56

c) 7

d) cannot be determined

Ans: b

There are two functions with the same name and it is called as function overloading. Now the compiler will decide the function to be called based on the data type of the argument that is passed. Here the data type of the argument is a float. Hence the value a-b is returned.

14) Consider the following code:

class book

{

private:

string title, grade

integer price, tax

public:

function book( ) { title = "Sanskrit"; price = 100; tax = 5;}

function input(string name) { title = name }

}

function main {

book one, two

input("Maths")

}

What will be the value of one.title, one.price and two.title?

a) Maths, cannot be determined, cannot be determined

b) Sanskrit, 100, Sanskrit

c) Maths, 100, Sanskrit

d) Maths, 100, cannot be determined

Ans: c

In this class book, function book() is the constructor. Whenever an object is created, the values are initialized with this constructor. By default, for every object the title will be Sanskrit price is 100 tax is 5. One.input will change the value of title to Maths in object one alone. Therefore, one.title will be Maths, one.price will be 100 and two.title will be Sanskrit.

15) A pseudo-code is used. Assume that when two data-types are processed through an operator, the answer maintains the same data-type as the input data-types.

Assume that all data-types have enough range to accommodate any number.
If two different data-types are operated on, the result assumes the more expressive data-type.
// in the pseudo code refers to comment

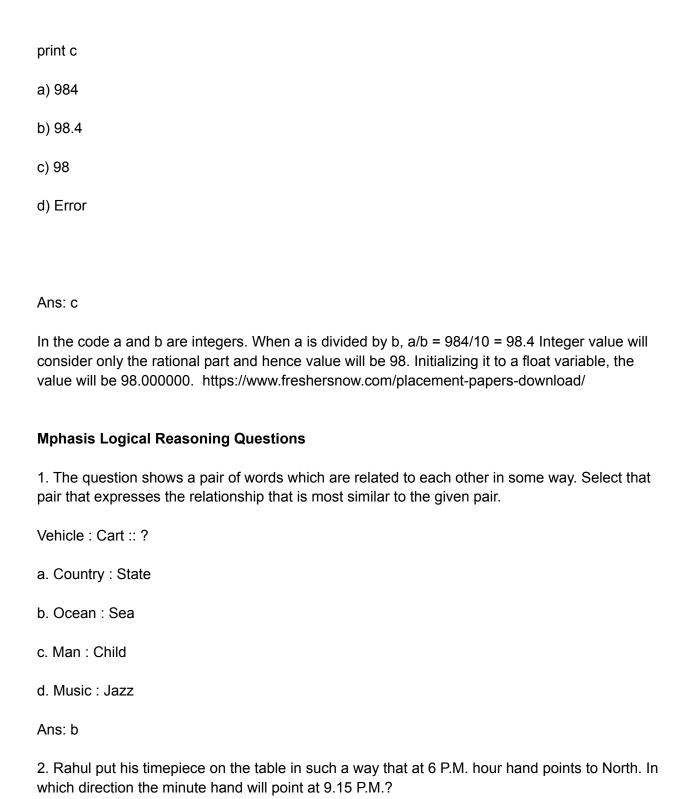What will be the output of the following pseudo-code statements:

integer a = 984, b=10

// float is a data-type to store real numbers.

float c

c = a / b

print c

a) 984

b) 98.4

c) 98

d) Error

Ans: c

In the code a and b are integers. When a is divided by b, a/b = 984/10 = 98.4 Integer value will consider only the rational part and hence value will be 98. Initializing it to a float variable, the value will be 98.000000. https://www.freshersnow.com/placement-papers-download/

Mphasis Logical Reasoning Questions

1. The question shows a pair of words which are related to each other in some way. Select that pair that expresses the relationship that is most similar to the given pair.

Vehicle : Cart :: ?

a. Country : State

b. Ocean : Sea

c. Man : Child

d. Music : Jazz

Ans: b

2. Rahul put his timepiece on the table in such a way that at 6 P.M. hour hand points to North. In which direction the minute hand will point at 9.15 P.M.?

a. South-East

b. South

c. North

d. West

Ans: d

3. From his house, Logu went 15 km to the North. Then he turned west and covered 10 km. Then he turned south and covered 5 km. Finally turning to the east, he covered 10 km. In which direction is he from his house?

a. East

b. West

c. North

d. South

Ans: c

4. Statements:

In a one day cricket match, the total runs made by a team were 200.

Out of these 160 runs were made by spinners.

Conclusions:

I. 80% of the team consists of spinners.

II. The opening batsmen were spinners.

a. Only conclusion I follows

b. Only conclusion II follows

c. Either I or II follows

d. Neither I nor II follows

Ans: d

5. Statements:

Prime age school-going children in urban India have now become avid as well as more regular viewers of television, even in households without a TV.

As a result there has been an alarming decline in the extent of readership of newspapers.

Conclusions:

I. Method of increasing the readership of newspapers should be devised.

II. A team of experts should be sent to other countries to study the impact of TV. on the readership of newspapers.

a. Only conclusion I follows

b. Only conclusion II follows

c. Either I or II follows

d. Neither I nor II follows

Ans: d

6. Look at this series: 36, 34, 30, 28, 24, ... What number should come next?

a. 20

b. 22

c. 23

d. 26

Ans: b

This is an alternating number subtraction series. First, 2 is subtracted, then 4, then 2, and so on.

7. 8, 6, 9, 23, 87 , ... What number should come next?

a. 128

b. 226

c. 324

d. 429

Ans: d

8 x 1 - 2 = 6, 6 x 2 - 3 = 9 , 9 x 3 - 4 = 23, 23 x 4 - 5 = 87, 87 x 5 - 6 = 429.

8. If A + B means A is the mother of B; A - B means A is the brother B; A % B means A is the father of B and A x B means A is the sister of B, which of the following shows that P is the maternal uncle of Q?

a. Q - N + M x P

b. P + S x N Q

c. P - M + N x Q

d. Q - S % P

Ans: c

P - M ? P is the brother of M

M + N ? M is the mother of N

N x Q ? N is the sister of Q

Therefore, P is the maternal uncle of Q.

9. Introducing a boy, a girl said, "He is the son of the daughter of the father of my uncle." How is the boy related to the girl?

a. Brother

b. Nephew

c. Uncle

d. Son-in-law

Ans: a

The father of the boy's uncle -> the grandfather of the boy and daughter of the grandfather -> sister of father.

10. In a certain code ,CERTAIN is coded as XVIGZRM SEQUENCE is coded as HVJFVMXV. How would REQUIRED be coded?

a. FJIVWVIR

b. VJIFWTRY

c. WVJRIFVI

d. IVJFRIVW

Ans: d